Government of Pakistan

Electricity Distribution Efficiency Improvement Project (EDEIP)

Environmental and Social Management Framework (ESMF)

Ministry of Energy
Power Division
Government of Pakistan

MEPCO
ENLIGHTENING LIVES

HESCO

PESHAWAR ELECTRIC SUPPLY COMPANY
WAPDA
PESCO

MoE, PESCO, MEPCO, and HESCO

November 2021

Executive Summary

The Government of Pakistan (GoP) through the Ministry of Energy (MoE) – Power Division (PD), Peshawar Electric Supply Company (PESCO), Multan Electricity Power Company (MEPCO), and Hyderabad Electric Supply Company (HESCO) is planning to implement the **Electricity Distribution Efficiency Improvement Project** (EDEIP) (proposed project). The GoP is seeking financial assistance from the World Bank (WB). Under the project, MoE - PD, PESCO, MEPCO, and HESCO (hereinafter described as implementing agencies or IAs) intend to undertake priority development works to strengthen their respective electricity distribution networks to ensure reliable supply of electricity to their consumers.

To address the generic environmental and social impacts of the proposed project, the present Environmental and Social Management Framework (ESMF) has been prepared, in compliance with the national/provincial regulatory and WB policy requirements. Similarly, a Resettlement Framework (RF) has also been prepared to guide the resettlement planning of the proposed project.

Project Background

Pakistan's electricity sector is in crisis due to high cost of generation, dependent on imported fuels that makes the sector vulnerable to changes in fuel prices and currency exchange rates. Higher cost of electricity supply has exacerbated cost recovery challenges for the distribution companies. This has hampered investments particularly by loss making electricity distribution companies (DISCOs) to strengthen their networks and is resulting in increased outages and interruptions, costing businesses and affecting household welfare. These inefficiencies in the sector are estimated to be costing Pakistan about 6.5 percent of its gross domestic product (GDP), according to a World Bank report published in 2018. Also, in terms of reliability of electricity supply Pakistan is among the lowest performing countries in the world. It is ranked at 167 out of 190 economies on getting electricity indicator in Ease of Doing Business 2019. Moreover, a significant number of households do not have access to electricity and per capita electricity consumption at 471 kWh is less than one-fifth of the world average according to the World Development Indicators 2017. While government is adding low-cost generation and plans to shift the generation mix towards renewable sources targeting 20 percent by 2025 and 30 percent by 2030, yet long-term financial viability of the power sector is dependent on DISCOs' efficiency improvement.

Losses accruing in DISCOs have a cascading effect throughout the energy value chain. In FY19 about PKR 116 billion remained uncollected and total receivables reached PKR 1,050 billion (translates into a turnover rate of 350 days) of which PKR 800 billion were private receivables. Consequently, DISCOs total payables were PKR 971 billion. Moreover, DISCOs also incurred a financial loss of PKR 37 billion in FY19 on account technical and non-technical/pilferage losses exceeding the National Electric Power Regulatory Authority (NEPRA) targets. Non-existent incentive structures and lack of transparency in data collection and reporting are major barriers to improving governance and performance of the DISCOs. Therefore, to make power sector financially viable the DISCOs would need to become more efficient by investing in new technologies which would help improve their performance and profitability.

The proposed project will support the targeted DISCOs (PESCO, MEPCO and HESCO) by providing financial and technical support for investments to modernize their electricity

distribution networks and institutional development resulting in improved operational efficiency in the sector and reliable supply to the consumers. It will help in the (i) physical strengthening of distribution networks; (ii) deployment of modern equipment, technology and information systems; and (iii) provide technical assistance, studies, consultancies and management support. The proposed project will also support in undertaking power sector reforms.

Project Overview

The project development objectives are to improve electricity supply and operational efficiency in targeted areas of selected distribution companies and strengthen the capacity of power sector institutions to implement reforms. The project components are briefly described below.

Component 1: Improving Grid Reliability

This component will finance investments in Secondary Transmission and Grid (STG) and Energy Loss Reduction (ELR) programs of the DISCOs to improve reliability of electricity supply and reduce technical losses. The subprojects financed under this Component can be divided into following categories:

- construction of new 132 kV substations and the associated transmission lines;
- augmentation, extension, conversion, upgradation and rehabilitation of the existing substations and the associated transmission lines;
- construction, rehabilitation and re-conductoring of 132kV (and below) transmission lines with low loss conductors e.g. high-tension low sag (HTLS); and
- expansion and rehabilitation of 33kV and 11kV feeders.

Component 2: Modernizing Operations and Management

This component will support modernization of the DISCOs' operations and management functions using latest equipment, technology and information systems. Major activities include:

- Automation and Information Systems. This entails upgradation deployment of information systems and ERP solutions. This will help improve planning, grid operations and customer services by providing access to and integrating modern information systems e.g. Incident Management System (IMS), feeder automation, transformer monitoring and protection systems, Geographic Information System (GIS), Customer Management System (CMS) and Enterprise Resource Planning (ERP). This will lead to deployment of supervisory control and data acquisition (SCADA[1]) and Distribution Management Systems (DMS) during project implementation (subject to finalization of feasibility and required approvals) to integrate these information systems and to start the implementation of smart grids.
- Revenue Protection Program. It will comprise installation of Aerial Bundled Cables (ABC), Advanced Metering Infrastructure (AMI), Transformer monitoring System, and other measures to pre-empt theft, reduce losses, improve recoveries, and better service delivery based on access to reliable and timely data.

[1] SCADA is a backbone of Smart Grids and a standard for modern utilities and is required by the Regulator and the Grid Code.

Component 3: Building Capacity & Technical Assistance

This component will help build capacity of the DISCOs with particular focus on:

- Improving operations and maintenance. This will cover procurement of tools, equipment, hardware, software, consulting and non-consulting services for improved operations and maintenance practices e.g., for live-line maintenance, upgrade repair workshops, inventory/asset management;
- Training and capacity building. Conduct studies and assessments including preparation/updation of manuals, procedures and systems in particular for HR management, inventory management, procurement, financial management, customer services and safeguards and assist with their implementation and conduct training programs including workshops, seminars and post graduate degrees in relevant fields;
- Project implementation support. This includes financing of: (a) consulting and other services; (b) individual experts/advisors and any incremental staff positions; (c) equipment and software; (d) financial, operational & technical audits; and (e) operating cost of Project Management Units (PMUs). Key activity will be hiring of Project Implementation & Management Support Consultants (PIMS) covering implementation of all project related activities including: procurement, contract administration, quality control, financial management, preparation/updation of feasibilities, designs and bidding documents as well as support in implementation of safeguard instruments.

Component 4: Reform Support

The purpose of the Component 4 is to support MoE- PD, fulfill its policy mandate under the National Electricity Policy 2021, and implement power sector reforms. This component consists of two main subcomponents: a) supporting governance and institutional reforms; and b) supporting transition to wholesale electricity market through commencement of the Competitive Trading Bilateral Contract Market (CTBCM).

Institutional and Policy Framework for Environmental and Social Management

The key regulatory institutions for the management of environmental and social aspects of the proposed project are the provincial Environmental Protection Agencies (EPAs) that have been established under Pakistan Environmental Protection Act 1997. The provincial Environmental Protection Acts are comprehensive legislations and provide the legislative framework for protection, conservation, rehabilitation and improvement of the environment. The project will follow the requirements of these Acts. All the environmental approvals will be obtained from the provincial EPAs. All efforts will be made to protect the environment and comply with environmental quality standards during the construction and operation phases of the project. Other relevant laws and policies include Provincial Wildlife Protection, Preservation, Conservation and Management Acts, Land Acquisition Act (1894), Provincial Antiquities Acts, Explosive Act (1884), Employment of Child Act (1991), Pakistan Labor Policy (2010), National Forest Policy (2015), National Climate Change Policy (2012) and National Environment Policy (2005). In addition to the national/provincial legal requirements, the project will also comply with the World Bank's Environmental and Social Framework (ESF) as well as the Environmental and Social Standards (ESSs) requirements.

Baseline Description

The environmental and socioeconomic characteristics of the areas covered by PESCO, MEPCO and HESCO were studied while preparing the present ESMF. Peshawar Electric

Supply Company (PESCO) is responsible for distribution of electricity in twenty-eight districts of Khyber Pakhtunkhwa (KP). These districts included Peshawar, Upper Chitral, Lower Chitral, Swat, Upper Kohistan, Lower Kohistan, Kolai Palas, Shangla, Battagram, Mansehra, Torghar, Upper Dir, Lower Dir, Malakand, Buner, Mardan, Charsadda, Swabi, Abbottabad, Haripur, Nowshera, Kohat, Hangu, Karak, Bannu, Laki Marwat, Tank and Dera Ismail Khan. PESCO is divided into eight circles covering about 1,204,621 hectares (ha) of land in total. The seven tribal agencies (districts) and six frontier regions are covered by Tribal Areas Electricity Supply Company (TESCO). Multan Electric Supply Company (MEPCO) is the largest power distribution company in the country operating exclusively in 13 administrative districts of Southern Punjab. The districts covered by MEPCO included Multan, Muzaffargarh, Layyah, Dera Ghazi Khan (DG Khan), Rajanpur, Lodhran, Bahawalpur, Rahim Yar Khan, Khanewal, Sahiwal, Pakpattan, Vehari and Bahawalnagar. Hyderabad Electric Supply Company (HESCO) operates in twelve districts of Sindh Province. These districts included Badin, Thatta, Tando Allah Yar, Tando Muhammad Khan, Sanghar, Matiari, Shaheed Benazir Abad (old Nawab Shah), Jamshoro, Mirpurkhas, Umerkot, Tharparker, and Hyderabad. HESCO has administratively divided 13 districts of Sindh Province into four Operation Circles, 15 operation Divisions and 67 operation Sub-divisions along with six construction divisions, and five maintenance divisions.

Environmental and Social Management

To address the generic environmental and social impacts of the proposed project, the present Environmental and Social Management Framework (ESMF) has been prepared, in compliance with the national/provincial regulatory and WB policy requirements. The project's environmental risks and impacts are typical of an electricity distribution system. These are mainly associated with health impacts of low levels of electromagnetic radiation, occupational health and safety related to working at heights for assembly of towers and stringing, and electrical works and those related to the use and disposal of hazardous materials such as transformer oils and possibility of poly-chlorinated biphenyls (PCBs) in obsolete transformers and Sulfur Hexafluoride (SF6) gas in circuit breakers. Such activities are normal and routine work for distribution companies globally for which known as well as reliable mechanisms and safety precautions are expected to be sufficient to prevent accidents. Furthermore, given that the project will finance construction of only a few new substations and will mainly involve rehabilitation of existing substations, rehabilitation and re-conductoring of transmission lines and expansion and rehabilitation of 11kV feeders, the environmental risks and impacts are unlikely to be adverse and significant. Moreover, risks and impacts are expected to be reversible and site-specific without likelihood of impacts going beyond the actual footprint of the project.

Overall, the project is expected to promote socio-economic benefits for the country and extend opportunities for further electrification of currently non-electrified areas, improvement of the quality of electricity supply, voltage improvement and reduction of outages. The project activities may have small scale land acquisition and resettlement impacts. These are mostly small substations of 132 kV rating with small land requirements of 4 to 6 acres for Air Insulated Substations (AIS) and 1-2 acres for Gas Insulated Substations (GIS). Moreover, the DISCOs will conduct a thorough land and resettlement screening. The DISCOs prefer to use government land (several proposed substations for MEPCO are on government land) and small areas needed for construction also offers the flexibility to shift the site in case there are social issues. Therefore, the approach will be very flexible in terms of location and area to be acquired. The DISCOs will prefer land

acquisition through private negotiations though willing buyer-willing seller as a first option, but if this fails, then other modes of acquisition will be used. This will follow the requirements of ESS5. The social risks and issues for the rehabilitation, upgradation, and augmentation are expected to be insignificant, only the existing right of way (ROW) and land of the facilities will be used. The direct potential social impacts are likely to remain limited, site-specific, largely reversible, and can be readily addressed through mitigation measures. In addition to the above, some potential social risks and impacts associated with this project relate to capacity for assessment and management of social risks and impacts by the DISCOs, being relatively new to some of the ESF elements especially related to Environmental and Social Standards (ESSs) 2, 3 and 4.

Components 1 and 2 of the proposed project involve the construction activities and may result in potential adverse environmental and social impacts and risks that will be largely localized, short term in duration and can be managed through implementation of appropriate mitigation measures. The anticipated environmental impacts during design phase of the proposed project included (a) soil erosion (b) soil and water contamination (c) resettlement issues and (d) safety hazards and public health concerns (e) noise emissions and (f) aesthetic value. The care will be adopted in site selection for new grid stations, route selection for transmission lines and type of equipment.

The potential environmental and social impacts during the construction and operation phase of the project included (a) soil erosion and degradation (b) air quality deterioration (c) surface water and ground water contamination (d) loss of vegetation mostly in already modified habitats (e) land acquisition and asset loss (f) damage to irrigation network and public infrastructure (g) noise and vibration (h) safety issues (i) public health issues (j) influx of labor (k) gender issues (l) child labor and (m) impacts on sites of historical, cultural, archaeological or religious significance. The mitigation measures are proposed to tackle these environmental and social impacts during design, construction and operation phases of the project. These mitigation measures will be implemented at construction sites.

The remaining two components (Components 3 and 4) do not include any physical interventions and hence will not entail any direct environmental and or social impacts. However, the environmental and social aspects and considerations will be incorporated in the studies and other activities to be carried out under these components.

Stakeholder Consultations

Consultation with affected people and other stakeholders were held during the preparation of this document. Three stakeholder consultation workshops were organized, one each by MEPCO, HESCO and PESCO. The representatives of government departments, educational institutions and non-governmental organizations participated in these stakeholder workshops. The views of the participants on potential environmental and social impacts and mitigation measures, engagement with the project and future consultations were noted. The concerns and views of the stakeholders will be further considered during the environmental and social studies and implementation of the project. Other than three stakeholder workshops, consultations with affected communities and government departments including environmental protection department and labor department were also held. In addition, meetings were held with the MoE - PD to discuss the project scope, environmental and social implications and risks, GRM procedures and institutional arrangements. A stand-alone Stakeholder Engagement Plan (SEP) has been prepared, which includes communications strategy to inform key stakeholders, including the affected communities, to effectively understand, engage in and support the development of the

project.

Procedure for Preparing Environmental and Social Impact Assessments (ESIAs) and ESMPs

The following steps will be applied during the preparation of ESIAs and ESMPs of the proposed subprojects and their implementation:

Step 1: Screening of sub-projects to assess the ESIA/ESMP requirements

Step 2: Environmental and social aspects will be considered during the analysis of various project alternatives and designs

Step 3: Primary baseline environmental data of the project influence area (covering physical, chemical, biological and socioeconomic environment) will be collected. Assessment of impacts and their significance and preparation of documents (ESMP, Resettlement Plan or RP)

Step 4: Consultations with the stakeholders (including affected communities) during to E&S studies and after completion of draft ESIA. Disclosure of the ESIA, ESMP and RP (including translated summaries) on DISCO's website

Step 5: Submission of E&S documents along with necessary fees to provincial EPAs (Punjab, Sindh and KP) and the World Bank and clearance of these documents from provincial EPAs and WB.

Step 6: Preparation of environmental specification for bidding documents, including preparation of bill of quantities (BOQs) and inclusion of ESMP in the bidding documents.

Step 7: Contractors will develop site-specific construction-ESMPs and will implement them. Regular monitoring of compliance by the Construction supervision consultant and DISCOs.

Institutional Arrangements

DISCOs will be responsible for the overall management, supervision, and execution of the project through the Project Management Unit (PMU). A full-time Project Director (PD) will be appointed to head the PMU. The overall responsibility of environmental performance, including ESMP implementation, will rest with the PMU. Each DISCO has an existing environmental and social unit (ESU), which needs to be fully staffed for the management of environmental and social impacts of the project. DISCOs will depute these specialists to PMU to ensure the effective implementation of ESMF and ESMPs (and also RF and RP). In addition, PMU will also hire independent ESIA consultants for the preparation of safeguard instruments for the proposed subprojects. Construction contractors will also have adequate environmental, health and safety specialists to implement the environmental and social management plans of the ESMP.

Capacity building programs will be conducted for all the project staff including engineers and relevant stakeholders during initial stages of the project to sensitize them on the management of environmental and social issues, and to build the requisite capacities. DISCOs' independent ESIA consultants and construction supervision consultants (CSC) will deliver the training programs. At the construction site, CSC will take the lead in implementing the capacity building plan, though the contractors will also be responsible for conducting training for their own staff and workers. The various aspects that are covered under the capacity building will include general environmental and social awareness, key environmental and social sensitivities of the area, key environmental and

social impacts of the project, ESMP requirements, gender sensitivity, grievance redressal mechanism, WB ESF requirements, occupational health and safety (OHS) aspects including safe and defensive driving practices and waste disposal.

For Component 4, a Project Implementation Unit (PIU) will be established within the MoE.

Grievance Redress Mechanism

A project-specific grievance redress mechanism (GRM) will be established in each DISCO to receive, evaluate, and facilitate the resolution of affected parties' concerns, complaints, and grievances about the environmental and social performance of the Project. A three-tier GRM has been designed to provide a time-bound, early, transparent and fair resolution for affected persons' (APs') and other stakeholders' grievances regarding E&S management of each subproject. All complaints received verbally or in writing will be properly documented and recorded in the Complaint Management Register(s). In addition, an easy-to-access web-based system will be developed to receive the complaints. The first tier of GRM will be established at the field level and will offer the fastest and most accessible mechanism for resolution of grievances at the local level. A local level Grievance Redress Committee (GRC) will be formed for this purpose headed by the ESU Manager, with membership from Land Acquisition Collector and other relevant staff of Revenue Department (when resettlement activities are in progress), contractors' representatives, consultants' representatives, representatives of other relevant departments, and two members from the Aps. At this tier, the designated E&S staff of PMU site office will make attempt to resolve the complaints within two to 10 working days, depending on the nature of grievance. The E&S staff in PMU will refer the unresolved issues or grievances (with written documentation) to the second tier of GRM, the PMU level GRC. The PMU level GRC will be established by each DISCO and will consist of the following persons: (i) the head of PMU will act as head of the GRC; (ii) a representative from DISCO senior management; (iii) Manager/Deputy Manager of ESU; (iv) representative of DC office (where relevant); (v) representative of PIC/CSC; (vi) Chief Resident Engineer of the CSC (on-call); (vii) representative of relevant government offices (on-call); and (viii) two to three representatives of respective project-affected people (on-call). The GRC will suggest corrective measures at the field level and assign clear responsibilities for implementing its decision within 25 working days, depending on the nature of the grievance. In the event that a grievance cannot be resolved directly by the second tier GRC or if complainant is dissatisfied with the decision of GRC, the affected people can seek alternative redress through the Chief Executive Officer (CEO) or Board of Directors of DISCOs, district administration, the Secretary Energy and Power Department or higher-level administrative authorities, the Pakistan Citizen Portal or the court of law, as appropriate.

According to the lessons learned in various project contexts, there is also a need to establish a separate GRM to deal exclusively with those complaints that involve workers employed by the Contractors for construction activities. Such grievances may involve wage rates and unpaid overtime works; irregular and partial payments; lack / inadequacy of living accommodations; lack of clean drinking water and sanitation facilities; lack of medical care in emergencies; lack of protection against gender-based violence (GBV) by labor suppliers, supervisors, and others who also deal with workers. The GRCs dealing with labor grievances / complaints will have members who are directly and indirectly associated with the construction works. The GRC will include a PMU official who is in charge at the worksite as the convener, resident engineer of the CSC, a workers' representative, and the contractor's representative. The convener will designate an official to receive the complaints and ensure the complainant does not lose his/her job and is not intimidated into

withdrawing the complaint before the formal hearing.

The MoE has an online complaint system in place which can be used under EDEIP (Component 4). The Pakistan Citizens Portal may also provide an alternate platform for filing grievances.

Cost of ESMF Implementation

The implementation cost of environmental and social management framework has been estimated to be 61.5 million PKR (about 0.37 million USD). This includes cost of environmental and social training and cost of conducting ESIAs and preparing ESMPs and RPs of subprojects during the project implementation.

List of Acronyms

ABC	Aerial Bundled Cable
AED	Anti-Encroachment Drive
AEDB	Alternative Energy Development Board
AIS	Air Insulated Substation
AMI	Automated metering Infrastructure
BCM	Billion Cubic Meter
BOD	Board of Directors
BOQ	Bill of Quantities
CCI	Council of Common Interest
CD	Circular Debt
CDM	Clean Development Mechanism
CDMP	Circular Debt Management Plan
CMS	Customer Management System
COC	Code of Conduct
CPPA-G	Central Power Purchasing Agency-Guarantee
CRBC	Chashma Right Bank Canal
CSC	Construction Supervision Consultants
CTBCM	Competitive Trading Bilateral Contract Market
DALY	Disability Adjusted Life Years
dB	Decibel
DC	Deputy Commissioner
DISCOs	Distribution Companies
DMS	Distribution Management System
ECA	Employment of Child Act
EDEIP	Electricity Distribution Efficiency Improvement Project
EIA	Environmental Impact Assessment
ELR	Energy Loss Reduction
EPA	Environmental Protection Agency
EPA	Electricity Purchase Agreement
ERP	Emergency Response Plan
ESC	Environmental and Social Cell
ESCP	Environment and Social Commitment Plan

ESDD	Environmental and Social Due Diligence
ESHS	Environmental, Social Health and Safety
ESIA	Environmental and Social Impact Assessment
ESMF	Environmental and Social Management Framework
ESMP	Environmental and Social Management Plan
ESRC	Environmental and Social Risk Classification
ESSs	Environmental and social Standards
FM	Financial Management
GBV	Gender Based Violence
GCA	Gross Command Area
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GIS	Gas Insulated Substation
GIS	Geographic Information System
GoP	Government of Pakistan
GRC	Grievance Redressal Committee
GRM	Grievance Redressal Mechanism
GRS	Grievance Redress Service
HESCO	Hyderabad Electric Supply Company
HR	Human Resource
HT	High Tension
HTLS	High Tension Low Sag
IA	Implementing Agency
IAA	Independent Auction Administrator
IBIS	Indus Basin Irrigation System
IEE	Initial Environmental Examination
ILO	International Labor Organization
IMS	Incident Management System
IMSC	Implementation and Management Support Consultants
ISMO	Independent System and Market Operator
KP	Khyber Pakhtunkhwa
kWh	Kilo Watt Hour
LAA	Land Acquisition Act
LMP	Labor Management Procedure

LPG	Liquified Petroleum Gas
LT	Low Tension
MAF	Million Acre Foot
M&E	Monitoring and Evaluation
MEPCO	Multan Electric Supply Company
MIRAD	Market Implementation and Regulatory Affairs Department
MoE	Ministry of Energy
MSDS	Material Safety Data Sheet
MSIP	Management Strategies and Implementation Plans
MW	Mega Watt
NCS	National Conservation Strategy
NEPRA	National Electric Power Regulatory Authority
NEQs	National Environment Quality Standards
NGO	Non-Governmental Organization
NTDC	National Transmission and Dispatch Company
O&M	Operation and Maintenance
OCHS	Occupational and Community Health and Safety
OHS	Occupational Health and Safety
P&D	Planning and Development
PAPs	Project Affected Persons
PCB	Poly-chlorinated Biphenyl
PD	Power Division
PD	Project Director
PEC	Pakistan Engineering Council
PEPA	Pakistan Environmental Protection Act
PEPCO	Pakistan Environmental Protection Council
PEPCO	Pakistan Electric Power Company
PEPO	Pakistan Environmental Protection Ordinance
PESCO	Peshawar Electric Supply Company
PITC	Power Information Technology Company
PM	Particulate Matter
PMU	Project Management Unit
PPA	Power Purchase Agreement
PPMC	Power Planning and Management Company

PSE	Public Sector Employee
RF	Resettlement Framework
ROW	Right of Way
RP	Resettlement Plan
SCADA	Supervisory Control and Data Acquisition
SEA	Sexual Exploitation and Abuse
SEP	Stakeholder Engagement Plan
SH	Sexual Harassment
SOE	State Owned Enterprise
STG	Secondary Transmission and Grid
STI	Sexually Transmitted Infections
SWD	Sindh Wildlife Department
T&D	Transmission and Distribution
TESCO	Tribal Areas Electricity Supply Company
TL	Transmission Line
UNESCO	United Nations Educational, Scientific and Cultural Organization
VAC	Violence Against Children
WB	World Bank
WHO	World Health Organization

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Annexes

List of Tables and Figures

1. Introduction

The Government of Pakistan (GoP) through the Ministry of Energy (MoE) – Power Division (PD), Peshawar Electric Supply Company (PESCO), Multan Electricity Power Company (MEPCO), and Hyderabad Electric Supply Company (HESCO) is planning to implement the **Electricity Distribution Efficiency Improvement Project** (EDEIP) (proposed project). The GoP is seeking financial assistance from the World Bank (WB). Under the project, the MoE – PD seeks to undertake power sector reforms while PESCO, MEPCO, and HESCO intend to undertake priority development works to strengthen their respective electricity distribution networks to ensure reliable supply of electricity to their consumers. The MoE – PD, PESCO, MEPCO and HESCO are described as implementation agencies (IAs) in this document.

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1.1. Project Background

Over the past few years Pakistan has struggled to meet its fiscal targets. One of the key fiscal risks is the underperformance of the State-Owned Enterprises (SOEs) dominated by power sector entities. The arrears in the electricity sector (the Circular Debt) have grown to an estimated PKR l.6 trillion[2]. Therefore, improving distribution companies' efficiencies is a prime and core requirement to reduce sector's fiscal burden, lower cost of power supply and attract investments.

Pakistan's electricity sector is in crisis due to high cost of generation, dependent on imported fuels that makes the sector vulnerable to changes in fuel prices and currency exchange rates. Higher cost of electricity supply has exacerbated cost recovery challenges for the distribution companies. This has hampered investments particularly by loss making electricity distribution companies (DISCOs) to strengthen their networks and is resulting in increased outages and interruptions, costing businesses and affecting household welfare. These inefficiencies in the sector are estimated to be costing Pakistan about 6.5 percent of its gross domestic product (GDP), according to a World Bank report[3] of 2018. Also, in terms of reliability of electricity supply Pakistan is among the lowest performing countries in the world. It is ranked at 167 out of 190 economies on getting electricity indicator in Ease of Doing Business 2019. Moreover, a significant number of households do not have access to electricity and per capita electricity consumption at 471 kWh is less than one-fifth of the world average according to the World Development Indicators 2017. While government is adding low-cost generation and plans to shift the generation mix towards renewable sources targeting 20 percent by 2025 and 30 percent by 2030, yet long-term financial viability of the power sector is dependent on DISCOs' efficiency improvement.

Losses accruing in DISCOs have a cascading effect throughout the energy value chain. In FY19 about PKR 116 billion remained uncollected and total receivables reached PKR

[2] Zhang, Fan. 2019. *In the Dark: How Much Do Power Sector Distortions Cost South Asia?* South Asia Development Forum. Washington, DC: World Bank.
https://www.doi.org/10.1596/978-1-4648-1154-8.

[3] https://www.worldbank.org/en/region/sar/publication/in-the-dark-how-much-do-power-sector-distortions-cost-south-asia

1,050 billion (translates into a turnover rate of 350 days) of which PKR 800 billion were private receivables. Consequently, DISCOs total payables were PKR 971 billion. Moreover, DISCOs also incurred a financial loss of PKR 37 billion in FY19 on account technical and non-technical/pilferage losses exceeding the National Electric Power Regulatory Authority (NEPRA) targets. Non-existent incentive structures and lack of transparency in data collection and reporting are major barriers to improving governance and performance of the DISCOs. Therefore, to make power sector financially viable the DISCOs would need to become more efficient by investing in new technologies which would help improve their performance and profitability.

1.2. Project Overview

To address some of the problems discussed above, the proposed project will support the targeted DISCOs by providing financial and technical support for investments to modernize their electricity distribution networks and institutional development resulting in improved operational efficiency in the sector and reliable supply to the consumers. It will help in the (i) physical strengthening of distribution networks; (ii) deployment of modern equipment, technology and information systems; and (iii) provide technical assistance, studies, consultancies and management support. Under the proposed project, three DISCOs namely HESCO, MEPCO and PESCO have been selected.

The proposed project will have four components listed below; more details are provided later in the document.

- Improving Grid Reliability
- Modernizing Operations & Management
- Capacity Building & Technical Assistance
- Reform Support.

The project will include a number of subprojects to be implemented by the IAs. Further information on these subprojects is provided later in the document.

1.3. Environmental and Social Assessment of the Project

In accordance with the WB Environmental and Social Framework (ESF), a risk management approach is being followed for the proposed project. The project has been assigned an Environmental and Social Risk Classification (ESRC) of Moderate.

Environmental Aspects. The project's environmental risks and impacts are typical of an electricity distribution system. These are mainly associated with health impacts of low levels of electromagnetic radiation, occupational health and safety related to working at heights for assembly of towers and stringing, and electrical works and those related to the use and disposal of hazardous materials such as transformer oils and possibility of poly-chlorinated biphenyles (PCBs) in obsolete transformers and Sulfur Hexafluoride (SF6) gas in circuit breakers. Such activities are normal and routine work for distribution companies globally for which known as well as reliable mechanisms and safety precautions are expected to be sufficient to prevent accidents. Furthermore, given that the project will finance construction of only a few new substations and will mainly involve rehabilitation of existing substations, rehabilitation and re-conductoring of transmission lines and expansion and rehabilitation of 11kV feeders, the environmental risks and impacts are unlikely to be adverse and significant. Moreover, risks and impacts are expected to be reversible and site-specific without likelihood of impacts going beyond the actual footprint

of the project.

Social Aspects. Overall, the project is expected to promote socio-economic benefits for the country and extend opportunities for further electrification of currently non-electrified areas, improvement of the quality of electricity supply, voltage improvement and reduction of outages. The project activities may have small scale land acquisition and resettlement impacts. These are mostly small substations of 132 kV rating with small land requirements of 4 to 6 acres for Air Insulated Substations (AIS) and 1-2 acres for Gas Insulated Substations (GIS). Moreover, the DISCOs will conduct a thorough land and resettlement screening. The DISCOs prefer to use government land (several proposed substations for MEPCO are on government land) and small areas needed for construction also offers the flexibility to shift the site in case there are social issues. Therefore, the approach will be very flexible in terms of location and area to be acquired. The DISCOs will prefer land acquisition through private negotiations though willing buyer-willing seller as a first option, but if this fails, then other modes of acquisition will be used. This will follow the requirements of ESS5. The social risks and issues for the rehabilitation, upgradation, and augmentation are expected to be insignificant, only the existing right of way (ROW) and land of the facilities will be used. The direct potential social impacts are limited, site-specific, largely reversible, and can be readily addressed through mitigation measures. In addition to the above, some potential social risks and impacts associated with this project relate to capacity for assessment and management of social risks and impacts by the DISCOs, being relatively new to some of the ESF elements especially related to Environmental and Social Standards (ESSs) 2, 3 and 4.

1.4. Environmental and Social Documents

In compliance with the national/provincial regulation and WB ESF, the following specific environmental and social documents are being/will be prepared for the proposed project:

- Environmental and Social Management Framework (the present document)
- Resettlement Framework – to address the resettlement impacts of the project
- Stakeholder Engagement Plan – to describe various modes of stakeholder engagement including consultations and grievance redress mechanism (GRM)
- Labor Management Procedures to describe assessment of potential labor related risks, overview of labor regulation, staff responsibility, policies and procedures.
- Environmental and Social Impact Assessment(s) – for subprojects that can potentially cause significant environmental and social risks and impacts
- Environmental and Social Management Plan(s) – for subprojects that are unlikely to cause significant environmental and social risks and impacts.
- Resettlement Plan (RP) – for subprojects potentially causing involuntary resettlement impacts such as land acquisition.
- Environmental and Social Commitment Plan to summarize the various actions taken and responsibilities to be fulfilled for environmental and social aspects in compliance with the WB ESF.

1.5. Environmental and Social Management Framework

The proposed project is likely to have potential environmental and social impacts, and hence require a detailed environmental and social assessment in compliance with the

government and World Bank requirements. However, exact location and nature of some of the subprojects under Component 1 of the project described in **Section 1.2** are not known at this stage and hence detailed environmental and social assessment of these components cannot be carried out. Therefore, the present ESMF has been prepared to identify generic environmental and social impacts and to formulate a framework for future detailed assessments to be carried out once the nature and location of subprojects are determined. The ESMF has been developed to:

- integrate the environmental and social concerns into the identification, design, and implementation of all the Project interventions in order to ensure that those are environmentally and socially sustainable;
- ensure all relevant environmental and social issues are mainstreamed into the design and implementation of the subprojects;
- consider in an integrated manner the generic environmental and social risk, benefits and impacts of the project and identify generic measures to avoid, minimize and manage risks and impacts while enhancing benefits;
- provide guidance to conduct Environmental and Social Impact Assessments (ESIAs) and prepare Environmental and Social Management Plans (ESMPs) for the subprojects in compliance with the government's policies, acts, and rules as well as with the World Bank's safeguard policies and guidelines.
- To establish clear procedures and methodologies for the environmental and social planning, assessment, review, approval and implementation of subprojects to be financed under the Project;
- To develop methodology for screening of subprojects and to recommend appropriate safeguard instruments for mitigating and monitoring of environmental, social, and resettlement risks/impacts associated with each subproject;
- To specify appropriate roles and responsibilities of all implementing agencies and outline the necessary reporting procedures for managing and monitoring environmental and social concerns related to subprojects;
- To determine the training, capacity building and technical assistance needed to successfully implement the provisions of the ESMF.

1.6. ESMF Study Methodology

The methodology followed in preparing the present ESMF consists of the following steps:

1.6.1. Review of the Project Details

At the onset of the study, the project details were obtained from IAs (PESCO, MEPCO and HESCO) and studied carefully. Meetings were held with the concerned officials as needed. Attempts were made to obtain as much information as available at this stage on the subprojects. Data gaps were identified where needed and data collection needs specified for the ESIA and or ESMPs to be prepared for the individual subprojects.

1.6.2. Review of Relevant Legislation, Policies, and Guidelines

In order to determine the policy, legal and institutional environment for the project, the applicable policies, guidelines and legislations concerning the project's environmental and social aspects were reviewed. As the project is to be implemented in three provinces

namely Khyber Pakhtunkhwa (KP), Punjab and Sindh and funded by the World Bank, the following policies and legislations will be reviewed:

- Policies and legislations of Government of Pakistan, Government of KP, Government of Punjab and Government of Sindh.
- The World Bank Standards, Guidelines, Policies and Directives.

The present ESMF has been prepared following the requirements defined in the WB Environmental and Social Framework (ESF).

During the present study, the above legislations, regulations, and framework were studied in depth to determine their relevance and applicability to the proposed project, in addition to determining and specifying actions to be taken by the project proponents / implementing agencies to fulfill the associated requirements. Further details of these legislations, regulations, and framework are presented later in the document.

1.6.3. Review of Secondary Literature

Under this task, relevant published and unpublished reports and documents were identified and reviewed. These include among others similar environmental assessment reports particularly of donor-funded projects, project documents, environmental and social management frameworks, environmental monitoring reports, news articles, and research reports. The primary objective of this task was to determine the potentially negative environmental as well as social impacts of projects similar to the proposed project and the associated mitigation/management strategies that were proposed to address those impacts. Secondary data was also collected where applicable to obtain baseline conditions of the project area and its surroundings.

1.6.4. Scoping

During this phase, key information on the project was reviewed and interaction between its activities and key environmental resources charted out. A long list of the potential environmental as well as social issues likely to arise as a result of the project was thus developed. Subsequently, the significant potential impacts were short listed, screening out the non-relevant and or insignificant impacts, based upon their nature and severity. Furthermore, the area of influence of the project activities was determined to the extent possible at this stage. Thus, the sectorial as well as spatial boundaries of the project were determined for the purpose of the environmental and social assessment. The stakeholder analysis was also carried out for the consultations carried out during the study discussed below (and during the project implementation).

1.6.5. Stakeholder Engagement

A Stakeholder Engagement Plan (SEP) is being prepared for the proposed project to identify various modes of stakeholder engagement including stakeholder consultations and GRM. As part of this task, consultation framework has also been developed to be implemented during the project implementation particularly during the environmental and social assessment of individual sub-projects and then during their construction phase.

1.6.6. Collection of Baseline Data

During this phase, baseline data was collected and compiled, in order to develop an initial baseline of the project area's physical, biological and socio-economic environment. For this purpose, mostly secondary sources were used to the extent possible as described in **Section 1.6.3** earlier. No instrument data collection and or laboratory analysis was carried

out at this stage; however, need of detailed data collection to be carried out during environmental and social assessment of individual sub-projects was determined.

1.6.7. Impact Assessment

Once the baseline data collection was completed, impact assessment was carried out to identify potentially negative but generic impacts of the proposed activities under the project. Subsequently, generic mitigation measures were identified to address these potential impacts. Site- and sub-project-specific impact assessment will be carried out as part of the environmental and social assessment of individual sub-projects to be undertaken under the proposed project.

In addition to the above, screening criteria was developed to determine the level and extent of environmental and social assessment to be carried out for each individual sub-project. Generally, larger sub-projects with significant impacts will require full environmental and social assessment to be carried out, medium size sub-projects with less significant impacts will require environmental and social management plan (ESMP) to be prepared, whereas smaller sub-projects with insignificant impacts will require only mitigation checklists to be filled.

1.6.8. ESMF Compilation

During this task, the process and outcome of the tasks described above was compiled in the form of the present environmental and social management framework (ESMF). The structure of the ESMF is described in the section below.

1.7. ESMF Structure

Executive Summary: This provides a general summary of the ESMF contents and key findings, in a vocabulary that is easily understood by the public at large. It concisely covers all aspects of the report.

Chapter 1: Introduction. This Chapter describes the ESMF purpose, objectives, principles and methodology. This Chapter introduces the project proponents and provides other relevant information. The layout of ESMF is also described in it to facilitate its reading.

Chapter 2: Project Description. This Chapter provides a simplified description of the proposed Project. The project description includes background and purpose of the project, components of the project, and anticipated types of subprojects. This Chapter has been compiled on the basis of information obtained from DISCOs.

Chapter 3: Environmental and Social Management Requirements. This Chapter describes the relevant national/provincial environmental and social legal requirements as indicated in various legislation, regulations and guidelines relevant to the project and ESMF as well as the World Bank's ESF applicable to the project and its subprojects. The Chapter states how such requirements will be complied during various phases of the project.

Chapter 4: Environmental and Socio-Economic Characteristics. This Chapter covers the dimensions of the study area and review relevant physical, biological, land-use, and socioeconomic conditions. This Chapter has been compiled on the basis of baseline data collection described in **Section 1.6.3**.

Chapter 5: Impact Assessment. This Chapter describes the generic E&S impacts to be potentially caused by the proposed project along with the associated generic mitigation measures to address these impacts.

Chapter 6: Stakeholder Consultations. This Chapter summarizes the stakeholder engagement activities carried out so far in addition to presenting a summary of the stakeholder consultations carried out by DISCOs. Also, discussed in the Chapter are the consultations to be carried out during the environmental and social assessments of individual sub-projects.

Chapter 7: Environmental and Social Assessment. This Chapter describes the process for ensuring that environmental and social concerns are adequately assessed and addressed through institutional arrangements and procedures for identification, preparation, approval and implementation of subprojects. This Chapter also lists arrangements for disclosing subprojects information to comply with the Bank's Policy of Disclosure of Information.

Chapter 8: Institutional Framework. This Chapter outlines the existing and proposed institutional setup for DISCOs to manage the E&S aspects of the project.

Chapter 9: Grievance Redress Mechanism (GRM). This Chapter describes the GRM proposed for the project in order to address the complaints and grievances raised by project affected persons and other stakeholders.

Chapter 10: Cost of ESMF Implementation. This Chapter presents the estimated cost of ESMF implementation.

2. Project Description

This Chapter provides a simplified description of the overall EDEIP and an overview of the subprojects to be implemented by IAs. Further details will be provided in the subproject ESIAs and ESMPs.

2.1. EDEIP Objectives

The project development objectives are to improve electricity supply and operational efficiency in targeted areas of selected distribution companies and strengthen the capacity of power sector institutions to implement reforms. Following key indicators will be monitored for each selected DISCO to measure project's success in improving their performance and profitability:

- Reduction in number of interruptions
- Increase in maximum load in mega-watts (MW) handled
- Reduction in transmission and distribution (T&D) losses as percentage of units received
- Improvement in bill collection rate (without subsidies)
- Improvement in cash flow from operations to cover current liabilities.

The project will ensure that a reliable monitoring and reporting system is in place to ensure reliability of data.

2.2. Participating DISCOs

The proposed project will be implemented by three DISCOs namely PESCO, MEPCO, and HESCO. PESCO covers entire Khyber Pakhtunkhwa (KP) (except Tribal Districts, which have been merged with KP and are served by a separate DISCO). It has 3.0 million consumers and annual sales of 4.8 tera watt-hours (TWh). MEPCO serves 13 districts of southern Punjab and as of June 30, 2019 had 5.7 million connected consumers - highest among DISCOs. MEPCO is the second largest DISCO in terms of sales (16.3 TWh per annum) and area covered (105,505 square kilometers). HESCO is one of the two public sector distribution companies operating in Sindh. It has a consumer base of 0.9 million and annual sales of 2.2 TWh.

2.3. EDEIP Components

Pakistan has ten electricity distribution companies (DISCOs) (excluding privatized Karachi Electric). The DISCOs included in this proposed project have been selected, on the government's request, through a combination of qualifying criteria which included: readiness of the individual subprojects; capacity for project implementation; and getting a mix of projects representative of the problems in the sector, which would allow learning and scaling up.

The Project will help the DISCOs to modernize and improve their service delivery. In addition to strengthening the transmission and distribution network to ensure reliable supply of electricity by increasing the load carrying capacity under Component 1 of EDEIP, the Project will help improve service delivery and financial viability of the DISCOs by installing Aerial Bundled Cables (ABCs) in some of the high revenue/high loss feeders, implementing AMI for large consumers and by deploying SCADA and Distribution Management System (DMS), a backbone of Smart Grids and a standard for

modern utilities, under Component 2 of EDEIP. Component 2 will also enable the DISCOs to effectively use latest technology and information systems/IT infrastructure for improved operations, planning and management of the network; customer services; and other functions. Component 3 of the Project will help improve maintenance practices through the use of latest tools, equipment and training to enhance safety culture during construction, operations and maintenance activities; provide technical assistance for training, studies, preparation of manuals, pilot projects and support project implementation. Component 4 is to support Power Division/Government of Pakistan in implementing the sector reforms and improve sector governance. These components are further described in paras below.

2.3.1. Component 1: Improving Grid Reliability

This component will finance investments in Secondary Transmission and Grid (STG) and Energy Loss Reduction (ELR) programs of the DISCOs to improve reliability of electricity supply and reduce technical losses. The subprojects financed under this Component can be divided into following categories:

- New Grid Stations. Construction of new 132 kV grid stations and the associated transmission lines;
- Existing Grid Stations. Augmentation, extension, conversion, upgradation and rehabilitation of the existing grid stations and the associated transmission lines;
- Transmission Lines. Construction, rehabilitation and re-conductoring of 132kV (and below) transmission lines with low loss conductors e.g. high-tension low sag (HTLS); and
- Energy Loss Reduction. Expansion and rehabilitation of 33kV and 11kV feeders.

2.3.2. Component 2: Modernizing Operations and Management

This component will support modernization of the DISCOs' operations and management functions using latest equipment, technology and information systems. Major activities include:

- Automation and Information Systems. This entails upgradation deployment of information systems and ERP solutions. This will help improve planning, grid operations and customer services by providing access to and integrating modern information systems e.g., Incident Management System (IMS), feeder automation, transformer monitoring and protection systems, Geographic Information System (GIS), Customer Management System (CMS) and Enterprise Resource Planning (ERP). This will lead to deployment of SCADA[4] and Distribution Management Systems (DMS) during project implementation (subject to finalization of feasibility and required approvals) to integrate these information systems and to start the implementation of smart grids.
- Revenue Protection Program. It will comprise of installation of Aerial Bundled Cables (ABC), Advanced Metering Infrastructure (AMI), Transformer monitoring System, and other measures to pre-empt theft, reduce losses, improve recoveries, and better service delivery based on access to reliable and timely data.

[4] SCADA is a backbone of Smart Grids and a standard for modern utilities and is required by the Regulator and the Grid Code.

2.3.3. Component 3: Building Capacity & Technical Assistance

This component will help build capacity of the DISCOs with particular focus on:

- Improving operations and maintenance. This will cover procurement of tools, equipment, hardware, software, consulting and non-consulting services for improved operations and maintenance practices e.g., for live-line maintenance, upgrade repair workshops, inventory/asset management.;
- Training and capacity building. Conduct studies and assessments including preparation/updation of manuals, procedures and systems in particular for HR management, inventory management, procurement, financial management, customer services and safeguards and assist with their implementation and conduct training programs including workshops, seminars and post graduate degrees in relevant fields
- project implementation support including financing of: (a) consulting and other services; (b) individual experts/advisors and any incremental staff positions; (c) equipment and software; (d) financial, operational & technical audits; and (e) operating cost of Project Management Units (PMUs). Key activity will be hiring of Implementation & Management Support Consultants (IMSC) covering implementation of all project related activities including: procurement, contract administration, quality control, financial management, preparation/updation of feasibilities, designs and bidding documents as well as support in implementation of safeguard instruments.

2.3.4. Component 4: Reform Support

The purpose of the Component 4 is to support MoE - PDfulfill its policy mandate under the National Electricity Policy 2021, and implement power sector reforms. This component consists of two main subcomponents: a) supporting governance and institutional reforms; and b) supporting transition to wholesale electricity market through commencement of the Competitive Trading Bilateral Contract Market (CTBCM), as described in more details below:

a. *Supporting Governance and Institutional Reforms:* The PD is in the process of consolidating all policy related activities that are currently being conducted by different parts of the sector entities, into one centralized location that will be dedicated to supporting PD in development of policies, strategic plans, frameworks, monitoring, and other activities. Towards this end, PD[5] will collaborate with Power Planning and Monitoring Company (PPMC), a newly established entity as a result of PEPCO restructuring. PPMC's role will not involve any management of the DISCOs operation but will be focused primarily on the monitoring of the DISCOs performance, providing policy direction, conduct research and development, carry out strategic studies, sector assessments, analysis, audits, feasibilities for new technologies, etc., all with the aim of improving DISCOs processes and efficiency. With the reconstitution of new boards of DISCOs (part of PACE-I), they have been given more autonomy, at both, board, and management level, including HR functions. The GoP's (through PD) role is now to monitor their performance to improve their efficiency regarding technical and commercial losses in line with goals set in the CDMP. One of the first policy activity to be supported through this subcomponent is the development of the National

[5] According to the National Electricity Policy 2021, Ministry of Energy (Power Division) may designate any entity (or entities) to perform its policy mandate.

Electricity Plan (one of the PACE-II Prior Actions). This subcomponent will also finance procurement of software, including trainings, hardware, consulting services (individual experts/advisors as well as firms), research and development program (that would establish PPMC as a center of excellence), required to perform the core policy and strategic functions. See details in Annex 1.

b. *Supporting the Implementation of Competitive Trading Bilateral Contract Market (CTBCM):* The MoE -PD is also in the process of the implementation of electricity market reforms to transition from existing single-buyer market to a competitive wholesale market. The initial market design was approved by NEPRA in December 2020, and it is expected to commence operation in April 2022. The progress towards commencement is monitored through a Market Implementation & Monitoring Group, led by secretary PD and Chairman NEPRA. There are a number of activities already ongoing to accommodate this transition, including new Grid Code and new Commercial Code (both part of PACE-II prior actions). Furthermore, there are some key institutions that are in the process of being established and that will be supported through this subcomponent, such as Independent System Operator (ISO), Market Operator (MO), and Independent Auction Administrator (IAA). Towards this end, the PD will collaborate with Alternative Energy Development Board (AEDB)/Private Power Infrastructure Board (PPIB),[6] CPPA, and NTDC to implement this subcomponent. The support through this subcomponent will further finance procurement of tools, equipment, software, training and consultancies required for effective start-up of these three entities. The IAA will be a new entity responsible for running the competitive auctions for new capacity procurement / new contracts of DISCOs. It will be established as part (AEDB)/ (PPIB) restructuring. The establishment of the ISO and MO will involve organizational restructuring of NTDC and CPPA, whereby Market Operator (MO) function of CPPA-G and System Operator (SO) function of NTDC will be restructured into separate legal entities.

2.4. Description of Subprojects

This Section provides an indicative list the subprojects included under Component 1 of EDEIP.

PESCO

- 11-kilovolt (kV) capacitor banks
- Upgrading 132-kV bus bars at 20 grid stations
- Extension of four grid stations
- Augmentation of 12 grid stations
- Re-conductoring of four transmission lines with a total length of 49 kilometers (km)
- Installation/improvement of 130 high tension (HT) feeders
- Installation/improvement of low tension (LT) feeders

[6] The Cabinet has approved the proposal for a merger of AEDB and PPIB. While the amendments to the respective Acts still need to take place, the two companies have started operating under one Managing Director.

- Installation of transformer monitoring system
- Installation of 65,000 smart meters
- Aerial bundle cable (ABC) for 74 feeders (4,000 km).

MEPCO

- Construction of six new grid stations
- Installation/improvement of 70 HT feeders
- Installation of transformer monitoring system
- Installation of 126,632 smart meters

HESCO

- Construction of two new grid stations
- Conversion of a grid station
- Extension of a grid station
- Augmentation of a grid station
- Re-conductoring of a transmission line with a total length of 28 kilometers (km)
- Complete facility for AMI System for 30,000 AMR meters
- Installation of SCADA.

2.5. Project Implementation Schedule

According to the current schedule, the project is likely to be approved by end the current year and its implementation will continue till end of 2027.

2.6. Project Cost

The project total cost has been estimated to be United States Dollars (US $) 252.96 million. The estimated cost of improving grid reliability (component 1) is 78.85 million USD, for modernizing operations and management (component 2) is 65.63 million USD, for capacity building and technical assistance (component 3) is 54.64 million USD, for reform support (component 4) is 20.00 million USD, administration and other costs are 19.91 million USD, financing cost is 13.94 million USD and government of Pakistan share is 19.91 million USD.

3. Environmental and Social Management Requirements

This section describes the Bank safeguard policies and standards applicable to the project and its subprojects as well as relevant national and provincial environmental and social legal requirements as indicated in various legislation, regulations and guidelines relevant to the project and ESMF scope.

3.1. Institutional Frameworks

The national as well as provincial institutional framework for decision making and policy formulation for environmental and conservation aspects is briefly described below.

3.1.1. Ministry of Climate Change

After the 18th Amendment in the Constitution of Pakistan, the Environment Ministry was devolved to the provinces and a new Ministry of National Disaster Management was created. The Government of Pakistan renamed the Ministry of National Disaster Management in 2012 as the Ministry of Climate Change to deal with the threats posed by global warming and to protect environment in the country. The National Policy of Climate Change was also approved in the same year. The policy describes the following measures regarding environmental assessment:

- Take necessary measures to redesign administrative structures and procedures of Federal and Provincial EPAs and Planning and Development Division to integrate climate change concerns into Initial Environmental Examination (IEE) processes;
- Ensure that IEE/EIA and other mechanisms are strictly observed in all development projects, particularly infrastructure projects, by the concerned agencies.
- The ministry has now been dissolved and transformed into a division under National Disaster Management Authority that would implement the National Policy on Climate Change with coordination of provincial governments.

3.1.2. Pakistan Environmental Protection Council

The apex body, Pakistan Environment Protection Council (PEPC), was first constituted in 1984 under section 3 of the Pakistan Environmental Protection Ordinance (PEPO), 1983, with President of Pakistan as its Chairman. In 1994, an amendment was made in the Ordinance to provide for the Prime Minister or his nominee to be the head of the Council. The Council was reconstituted after enactment of the new law i.e., Pakistan Environmental Protection Act, 1997.

It is headed by the Prime Minister (Chief Executive) of Pakistan. The council is represented by trade and industry, leading no-governmental organizations (NGOs), educational intuitions, experts, journalists and concerned ministries.

The Council is responsible to a) coordinate and supervise enforcement of the provisions of Environmental Protection Act (discussed later in the Chapter; b) approve comprehensive national environmental policies and ensure their implementation within the framework of a national conservation strategy as may be approved by the Federal Government from time to time; c) approve the National Environmental Quality Standards; (d) provide guidelines for the protection and conservation of species, habitats, and biodiversity in general, and for the conservation of renewable and non-renewable resources; and (e) coordinate integration

of the principles and concerns of sustainable development into national development plans and policies.

3.1.3. Provincial Environmental Protection Councils

The provincial Environmental Protection Councils have been established in each province under the provincial Environmental Protection Acts. The Councils are headed by the respective Chief Minister or such other person as the Chief Minister may nominate in his/her behalf in the province. The functions of each Council are:

- To frame its own Rules of Procedure, co-ordinate and supervise the enforcement of the provisions of the Environmental Protection Act and other laws relating to the environment in the province;
- Approve comprehensive provincial environmental and sustainable development policies and ensure their implementation within the framework of a conservation strategy and sustainable development plan as may be approved by Government from time to time;
- Provide guidelines for the protection and conservation of species, habitats, and biodiversity in general, and for the conservation of renewable and non-renewable resources;
- Coordinate integration of the principles and concerns of sustainable development into socio-economic and development policies, plans and programs at the provincial, district and local levels;
- Deal with inter-provincial and federal-provincial issues, and liaise and coordinate with other Provinces through appropriate inter-provincial forums regarding formulation and implementation of standards and policies relating to environmental matters with an inter-provincial impact, provide guidelines for biosafety and for the use of genetically modified organisms; and,
- Assist the Federal Government or Federal Agency in implementation and or administration of various provision of United Nation Convention on Laws on Seas, 1980 (UNCLOS) in coastal waters of the province.

3.1.4. Pakistan Environmental Protection Agency

The Pakistan Environmental Protection Agency (Pak-EPA) headed by a Director General has wide ranging functions given under the Pakistan environmental Protection Act (PEPA) including preparation and co-ordination of national environmental policy for approval by the PEPC, administering and implementing the PEPA and preparation, establishment or revision of the National Environment Quality Standards (NEQS). The Pak-EPA also has the responsibility for reviewing and approving IEE and EIA reports for the following projects:

- Projects on federal land
- Military projects
- Projects involving trans-country or trans-province impacts

The responsibility for the review and approval of all other IEEs and EIAs was delegated to the relevant Provincial Environmental Protection Agencies. Vide notification dated 29 June, 2011 the Pakistan Environmental Protection Agency was assigned to the Capital Administration and Development Division under National Disaster Management Division.

3.1.5. Provincial Environment Protection Agencies

The provincial Environmental Protection Agencies have established under Pakistan Environmental Protection Act 1997. Each EPA is headed by its respective Director General who exercises powers delegated previously to him/her by the Pakistan Environmental Protection Agency and now by the provincial Environmental Departments. For the proposed project, KP EPA, Punjab EPA and Sindh EPA are the relevant regulatory agencies for the review and approval of IEE and EIA reports (see **Figure 3.1)**.

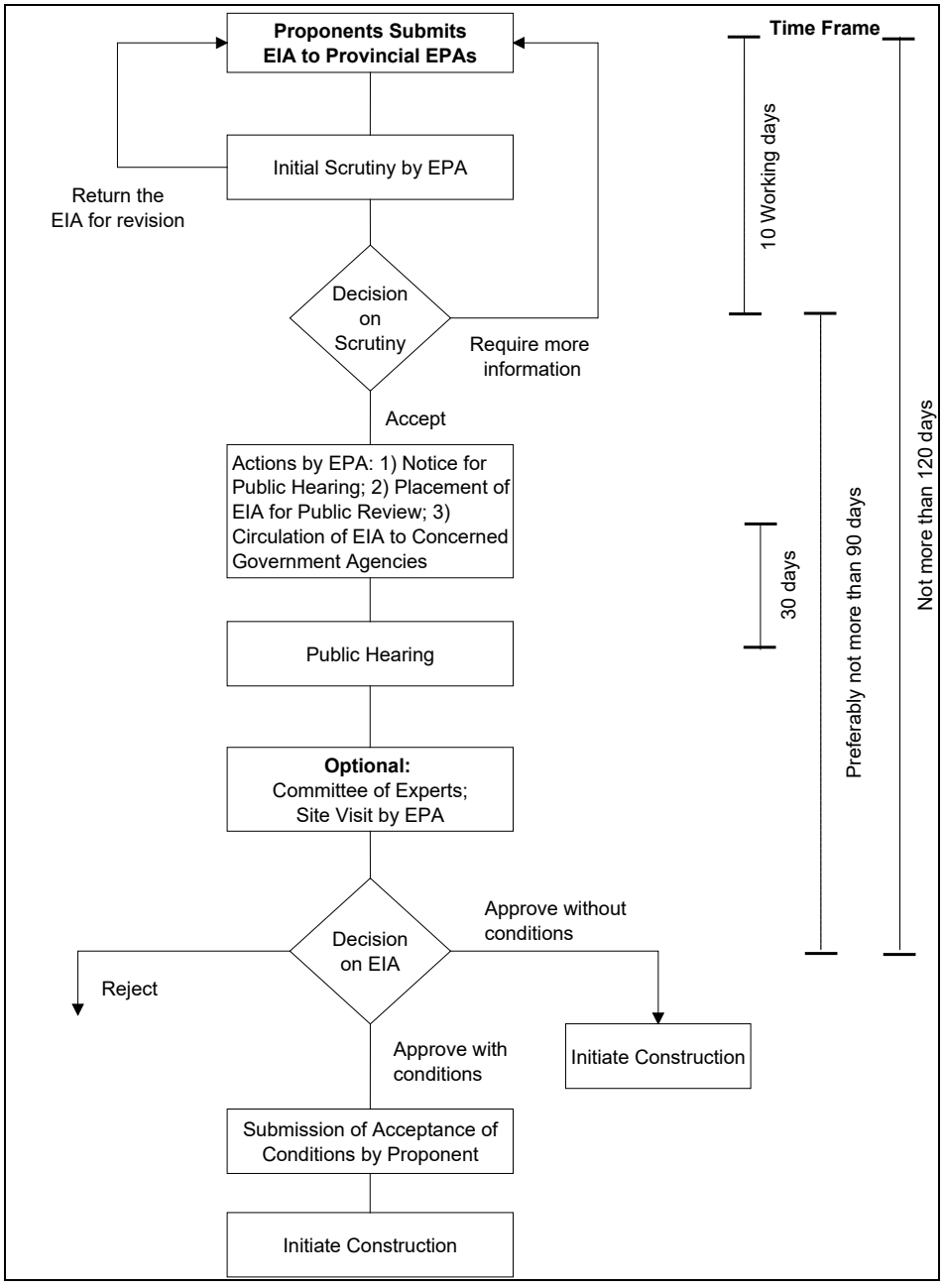

Figure 3-1: EIA Review and Approval Process

3.1.6. Revenue Department

The Board of Revenue was originally constituted under the provisions of West Pakistan Board of Revenue Act 1957, which on dissolution of one Unit in 1970 became the Board

of Revenue. Every province in Pakistan has Board of Revenue department. The Board of Revenue is the Controlling authority in all matters connected with the administration of Revenue collection including land taxes, land revenue, administration of land laws and maintenance of record of rights in land, management of state land, recovery of government dues, changes in administrative units/creation of new divisions, districts and tehsils, consolidation of holdings, acquisition of land for public purposes and for companies and disaster management and relief. In the field formation of revenue department, each division is headed by Divisional Commissioner, each district is headed by Deputy Commissioner and each tehsil is headed by Assistant Commissioner which is assisted by Tehsildars and Naib Tehsildars.

For EDEIP, the Revenue Departments of three provinces (i.e., Punjab, Sindh and KP) will be involved. The DISCOs in the respective provinces will request their respective Revenue Departments to acquire the land (if any) for the new grid stations and pay compensation to the affectees for the losses and affected structures. All the relevant rules and regulations of the revenue department will be implemented at the project.

3.1.7. Labor Departments

The Labor Department in the province is custodian of the guaranteed rights of the workers like; right to organize, right to collective bargaining, participation in the affair of the respective organization, health and safety, minimum wages, and compensation etc. The main functions of the Labor Department included (i) maintenance of industrial peace and harmony in the province (ii) settlement of industrial disputes through the process of reconciliation, arbitration and adjudication (iii) coordination with district labor and human resource boards, dissemination of labor market information and implementation of government policies in this regard (iv) adjudication of claims of compensation and cases of non-payment of wages (v) registration and de-registration of trade unions/federations (vi) audit and scrutiny of the annual returns/funds of trade unions and federations (vii) enforcement of labor welfare laws on factories, transport, railway, shops, commercial and industrial establishments (viii) coordination of government efforts combating the issue of child labor and bonded labor (ix) provision of training, information and advisory services to the industry for the improvement of health, safety and working environment of working conditions and environment and (x) compilation of statistical data on labor matters.

For EDEIP, the Labor Departments of Punjab, KP and Sindh will be involved. They will be responsible to look after the health and safety conditions of the workers, payment of minimum wages and compensations to the workers and provision of different trainings to the workers and advisory services to the DISCOs during construction phase of the project. DISCOs will be responsible to coordinate, implement legal framework of the labor department related to project and provide necessary data of labor engaged at the project to the labor department.

3.1.8. Women Development Departments

Women Development Department is the department of strategies, administration, schemes and formation of laws related to women, it is the responsibility of department to cover all the needful grounds regarding women without the discrimination of class, creed, religion, economic position. Women development department is working on the empowerment of women by providing them social, economic and legal assistance in all fields by running different projects and implementing pro women laws and providing awareness to develop self-esteem and confidence. The main functions of women development department are (i) legislation, policy formulation and sectoral planning for women development (ii)

transformation of the government into an organization that actively practices and promotes gender equality and women empowerment (iii) implementation of administrative and institutional reforms and departmental restructuring for promoting gender equality (iv) mainstreaming gender equality perspective across public policies, laws, programs, and projects by departments and agencies of the government with a focus on women empowerment (v) promotion, coordination and monitoring of execution of national and provincial policies and commitments on gender reforms and women development (vi) provision of technical support and expertise for gender mainstreaming in all departments of the government and its agencies (vii) building of partnership with line departments, non-governmental and civil society organizations to deliver on the rights and entitlement of women (viii) collaboration with legal, judicial, law enforcement and other relevant governmental and non-government agencies to facilitate women's access to formal legal and justice system.

In EDEIP, Women Development Departments of Punjab, Sindh and KP will be involved. DISCOs in their respective areas will ensure that all the rules and regulations regarding women development will be implemented and regular coordination with the women development departments will be maintained during the project execution.

3.2. Environmental Policies, Legislations, and Guidelines

The national and provincial policies, legislations and regulations relevant to the projects are listed in the **Table 3.1**.

Table 3-1: Legislations/Acts/Policies Related to Environmental and Social Aspects and their Relevance to the Project

	Act	Brief Coverage	Relevance to the Project
1.	National Conservation Strategy, 1992	Pakistan National Conservation Strategy (NCS), which was approved by the federal cabinet in March 1992, is the principal policy document on environmental issues in the Country. The NCS outlines the Country's primary approach towards encouraging sustainable development, conserving natural resources and improving efficiency in the use and management of resources. The NCS has 68 specific programs in 14 core areas in which policy intervention is considered crucial for the preservation of Pakistan's natural and physical environment.	The core areas that are relevant in the context of the proposed project are pollution prevention during construction, conserving biodiversity and supporting forestry and plantation.
2.	National Environmental Policy, 2005	In March 2005, Government of Pakistan (GoP) launched its National Environmental Policy, which provides a framework for addressing the environmental issues. Section 5 of the policy commits for integration of environment into development planning as instrument for achieving the objectives of National Environmental Policy. It also provides	Clause (b) of sub-section 5.1 states that environmental impact assessment related provisions in Environmental Protection Act, 1997, will be diligently enforced for all developmental projects.

	Act	Brief Coverage	Relevance to the Project
		broad guidelines to the Federal Government, Provincial Governments, Federally Administered Territories and Local Governments to address their environmental concerns and to ensure effective management of their environmental resources.	
3.	National Climate Change Policy, 2012	The National Climate Change Policy provides a framework for addressing the issues that Pakistan faces or will face in future due to the changing climate. In view of Pakistan's high vulnerability to the adverse impacts of climate change, in particular extreme events, adaptation effort is the focus of this policy document. The vulnerabilities of various sectors to climate change have been highlighted and appropriate adaptation measures spelled out. The policy covers measures to address issues in various sectors such as water, agriculture, forestry, coastal areas, biodiversity and other vulnerable ecosystems. Notwithstanding the fact that Pakistan's contribution to global Greenhouse Gas (GHG) emissions is very small, its role as a responsible member of the global community in combating climate change has been highlighted by giving due importance to mitigation efforts in sectors such as energy, forestry, agriculture and livestock. Furthermore, appropriate measures relating to disaster preparedness, capacity building, institutional strengthening; technology transfer; introduction of the climate change issue in higher education curriculum; ensuring environmental compliance through Initial Environmental Examinations (IEE) and Environment and Social Impact Assessment (ESIA) in the development process; addressing the issue of deforestation and illegal trade in timber; promoting Clean Development Mechanisms (CDM); and raising Pakistan's stance regarding climate change at various	The provisions of this policy relevant to the project will be reviewed and measures will be incorporated in the environmental assessment reports.

	Act	Brief Coverage	Relevance to the Project
		international forums, have also been incorporated as important components of the policy. The policy thus provides a comprehensive framework for the development of action plans for national efforts on adaptation and mitigation.	
4.	National Forest Policy 2015	The goal of this policy is Expansion of national coverage of forests, protected areas, natural habitats and green areas for restoration of ecological functions and maximizing economic benefits while meeting Pakistan's obligations to international agreements related to forests. The objectives of policy are presented below: i. Enhancing public awareness on economic, social, ecological and cultural values of forests ii. Implementing a national level mass afforestation program to expand and maintain forest coverage to meet international standards iii. Controlling deforestation through regulating movement of timber and inter-provincial trade of timber iv. Establishing and managing protected areas and networking through ecological corridors v. Reducing carbon footprints of energy and economic sector programs vi. Facilitating implementation of international conventions and agreements related to forestry, biodiversity and climate change vii. Promoting standardized and harmonized scientific planning of forests, research and education	During the implementation of the project if there will be cutting of trees then replantation will be ensured. Maintenance of ecological corridors and curb deforestation and promote conservation components of this policy shall be applicable.
5.	National Power Policy 2013	The vision of the policy is that Pakistan will develop the most efficient and consumer centric power generation, transmission, and distribution system that meets the needs of its population and boosts its economy in a sustainable and affordable manner.	The proposed project will improve the efficiency of grid stations and efficiency of distribution system in the areas of proposed distribution companies.

	Act	Brief Coverage	Relevance to the Project
		The goals of power policy are described below: (i) Build a power generation capacity that can meet Pakistan's energy needs in a sustainable manner. (ii) Create a culture of energy conservation and responsibility (iii) Ensure the generation of inexpensive and affordable electricity for domestic, commercial, and industrial use by using indigenous resources such as coal (Thar coal) and hydel. (iv) Minimize pilferage and adulteration in fuel supply (v) Promote world class efficiency in power generation (vi) Create a cutting-edge transmission network (vii) Minimize inefficiencies in the distribution system (viii) Minimize financial losses across the system (ix) Align the ministries involved in the energy sector and improve the governance of all related federal and provincial departments as well as regulators	
6.	Pakistan Labor Policy, 2010	The main objective of the Labor Policy, 2010 is the social and economic well-being of the labor of Pakistan. The Labor Policy, 2010 has following 4 parts: i. Legal Framework; ii. Advocacy: rights of workers and employers; iii. Skill development and employment; and iv. Manpower export.	The labor will be employed for construction of the proposed project. The provision of policy will apply to all the labor employed.
7.	Provincial Environmental Protection Acts	The provincial environmental protection acts are comprehensive legislation and provide the legislative framework for protection, conservation, rehabilitation and	The project will follow the requirements of provincial environmental protection acts. All the

	Act	Brief Coverage	Relevance to the Project
		improvement of the environment. The 'environment' has been defined in the Act as: (a) air, water and land; (b) all layers of the atmosphere; (c) all organic and inorganic matter and living organisms; (d) the ecosystem and ecological relationships; (e) buildings, structures, roads, facilities and works; (f) all social and economic conditions affecting community life; and (g) the interrelationships between any of the factors specified in sub-clauses 'a' to 'f'. The important points of the law are: • No proponent of a project shall commence construction or operation unless he has filed with the Agency an IEE or, where the project is likely to cause an adverse environmental effect, an EIA, and has obtained from the Agency approval in respect thereof • Prohibition of certain discharges or emissions; • Handling of hazardous substances • Prohibition of action adversely affecting environment • The Agency shall carry out or arrange environmental monitoring of all projects in respect of which it has approved an initial environmental examination or environmental impact assessment to determine whether the actual environmental impact exceeds the level predicted in the assessment and whether the conditions of the approval are being complied with. • The Agency shall from time to time require the person in charge of a project to furnish, within such period as may be specified, an environmental audit or environmental review report or environmental management plan containing a comprehensive appraisal of the environmental aspects of the project. • Environmental Quality Standards (EQS) for wastewater, air emissions and noise	environmental approvals will be obtained from the provincial EPAs. All efforts will be made to protect the environment and comply with environmental quality standards during the construction phase of the project.

	Act	Brief Coverage	Relevance to the Project
		• Provincial Government can issue notices and enforce them to protect the environment.	
8.	Provincial Environmental Protection Agencies, (Review of IEE and EIA) Regulations	These regulations set out: • Key policy and procedural requirements for filing an IEE and EIA; • The purpose of environmental assessment; • The goals of sustainable development; • The requirement that environmental assessment be integrated with feasibility studies; • The jurisdiction of the Federal and Provincial EPA's and Planning &Development (P&D) Departments; • The responsibilities of proponents; • Duties of responsible authorities; • Provides schedules of proposals that the project requires either IEE or an EIA; • The environmental screening process of the projects under schedule I, II and III; and • The procedure for the environmental approval for filing the case with the concerned EPA for the granting of the NOC.	The provisions of these regulations are applicable for environmental screening of the project, which implies that an EIA would be required for the proposed project. The process described in the regulation will be useful for distribution companies (i.e., PESCO, MEPCO and HESCO) to follow the procedure to file an EIA with their respective provincial environmental protection agencies and to understand its review process along with timelines to be followed
9.	Environmental Quality Standards	The Environmental protection agencies of Sindh and Punjab have their own environmental quality standards which were approved in 2015 and 2016 and are being followed by the projects in these provinces. Whereas the KP EPA follows the national environmental quality standards. Environmental quality standards are for: • Drinking Water; • Ambient Air; • Noise; • Industrial Gaseous Emissions; • Municipal and Liquid Industrial Effluents; • Motor vehicle exhaust • Treatment of Liquid and Bio-Medical Waste	All projects to be implemented in the provinces of Punjab, Sindh and KP must conform to their respective environmental quality standards during all the phases i.e., construction and operation.
10.	Provincial Wildlife	The provinces of Punjab, KP, and Sindh have their acts related to wildlife protection.	The provisions of these laws will be applicable

	Act	Brief Coverage	Relevance to the Project
	Protection, Preservation, Conservation and Management Acts	These acts are for the regulation of activities relating to protection, preservation, conservation and management of wildlife and protected areas in the provinces.	during the site selection for the new grid stations and updation of transmission lines in the areas of respective provinces.
11.	Land Acquisition Act (LAA), 1894	The primary law for acquisition of land for public purposes in Pakistan is the "Land Acquisition Act, 1894" (hereinafter referred as the Act). The land acquired under the Act vests in the province and it is only thereafter that the province may transfer it to someone else.	Though this law is relevant to the project, its covenants have been covered mainly in the resettlement policy framework, which is a companion document of this environmental and social framework (ESMF) report.
12.	Pakistan Penal Code, 1860	The Code deals with the offences where public or private property or human lives are affected due to intentional or accidental misconduct of an individual or organization. The Code also addresses control of noise, noxious emissions and disposal of effluents.	The provisions of the Penal Code, 1860 are applicable to the project in terms of penalties for effecting human lives and public property. It also addresses the control of noise, air emissions and effluent disposal.
13.	The Canal and Drainage Act, 1873	The Canal and Drainage Act 1873 (amended in 1952, 1965, 1968 and 1970) prohibits corruption or fouling of water in canals (defined to include channels, tube wells, reservoirs and watercourses), or obstruction of drainage.	This Act will be applicable to the physical works to be carried out during the proposed project.
14.	Explosives Act, 1884	It provides regulations for handling, storage, transportation and use of explosives.	Under the Explosives Act, the project contractors shall be bound by regulations on handling, transportation and using explosives during construction of proposed project.
15.	The Telegraph Act, 1885	The Telegraph Act (Section 11) confers powers to enter private lands and (Section 10) construct/maintain electric poles and lines without the need to acquire the land affected and paying compensation for it. However, the sub-section 10 (d) referred to	This Act makes a provision of installing poles/towers without acquiring any land. However, provision is there for temporary

	Act	Brief Coverage	Relevance to the Project
		avoid causing unnecessary damages to the affected land and associated assets. Finally, the Section 16 provides that if any such damage occurs, (i.e., damages to crops, irrigation facilities, land quality or land income). The proponent has to provide compensation for the damages.	acquisition of land during the construction period. As such, compensation is made for the loss of crop for a specific period.
16.	Electricity Act, 1910	The Act provides a legal basis for distribution of Power. It enables a licensee to conduct operations for supply of electricity and binds the license to payment of compensation in respect of any damages caused during the construction, operation and maintenance (O&M) of Power distribution facilities.	This act will be applicable if any damages occur during construction of the power facilities.
17.	Forest Act, 1927	The Forest Act, 1927 was largely based on previous Indian Forest Acts implemented under the British. The first and most famous was the Indian Forest Act of 1878. Both the 1878 act and the 1927 one sought to consolidate and reserve the areas having forest cover, or significant wildlife, to regulate movement and transit of forest produce, and duty leviable on timber and other forest produce. It also defines the procedure to be followed for declaring an area to be a Reserved Forest, a Protected Forest or a Village Forest. The said act has since been amended and replaced by the provincial Forest Acts, after forestry came into the provincial domain under the 18th amendment to the Constitution of Pakistan. However, the main applicable clauses still hold true in essence.	This Act will be relevant in case any part of the proposed intervention is located on a land previously prescribed as Forest Land by the provincial governments. In such cases, land acquisition will be governed under this Act, and the provincial department responsible for execution of T/L project, will need to negotiate with the provincial Forest department.
18.	Factories Act, 1934	The Factories Act, 1934 concerns regulation of labor in factories and addresses issues regarding labor, wages, working hours and health and safety. The Factories Act also briefly refers to environmental issues. Section 14 deals with the disposal of industrial wastewater and states that "effective arrangements shall be made in every factory for the disposal of wastes and effluents due to the manufacturing process carried on therein." The Factories Act states that "the Provincial	The provisions of this act related to labor and environmental issues will be applicable to the project

	Act	Brief Coverage	Relevance to the Project
		Government may make rules prescribing the arrangements to be made under sub-section (1) or requiring that the arrangements made in accordance with that sub-section shall be subject to the approval of such authority as may be prescribed. This allows provincial governments to establish rules for factories, whose operation exposes persons to "serious risk of bodily injury, poisoning, or disease."	
19.	Protection of Trees and Brushwood Act, 1949	The Protection of Trees and Brushwood Act, 1949 prohibits cutting or chopping of trees and brushwood without prior permission of the relevant department in the provincial government.	The proposed Project involves tree cutting. The related activities should only be undertaken under the tower footing. They should not clear trees or brushwood outside the acquired area.
20.	WAPDA Act, 1958	The WAPDA Act of 1958 is the other relevant legal framework, which permits "right of entry" for the purpose of construction - for instance, (i) survey of any land, erect pillars for the determination of intended lines of works, make borings and excavations and do all other acts which may be necessary for the preparation of any scheme; and (ii) pay or tender payment for all necessary damage to be done as aforesaid. The Act further states that "in case of dispute as to the sufficiency of the amount so paid or tendered, the dispute shall be referred to the Deputy Commissioner (DC) of the district whose decision shall be final.	The provisions of this act will be applicable in EDEIP during construction of transmission lines and grid stations.
21.	Cutting of Trees (Prohibition) Act, 1975	The Act was enforced in 1975 to place restrictions on cutting of trees in order to restrain unchecked trend of tree felling without replacement plantations.	This act will be applicable to the subject project where the cutting of tree will be involved.
22.	Employment of Children Act (ECA), 1991	Article 11(3) of the Constitution of Pakistan prohibits employment of children below the age of 14 years in any factory, mines or any other hazardous employment. In accordance with this Article, the Employment of Child Act (ECA) 1991 disallows the child labor in the country. The ECA states 8that no child shall be employed	The project proponent and their contractors shall be bound by the ECA to disallow any child labor at the project sites.

	Act	Brief Coverage	Relevance to the Project
		or permitted to work in any of the occupation set forth in the ECA (such as transport sector, railways, construction, and ports) or in any workshop wherein any of the processes defined in the Act is carried out. The processes defined in the Act include carpet weaving, biri (kind of a cigarette) making, cement manufacturing, textile, construction and others.	
23.	National Disaster Management Act, 2010	National Disaster Management Act, 2010 was passed by Parliament of Pakistan in 2010. The Act applies to whole Pakistan including tribal areas. The Act was passed in backdrop of 2010 Floods in Pakistan and strengthens disaster management system.	This act is applicable to the proposed project due to its location in mountainous areas of KP Province. The proposed project will require special consideration of disaster and risk management strategies as per the Act.
24.	The Protection against Harassment of Women at the Workplace Act, 2010	The Protection against Harassment of Women at the Workplace Act (2010) refers to sexual harassment at the workplace.	This Act will be applicable to the project if women are employed for the construction of the proposed project.
25.	Provincial Antiquities Acts	The Antiquity acts of Punjab, Sindh and KP are adopted from the Pakistan Antiquities Act of 1975 with a few minor changes. The Antiquities Act, 1975 (amended in 1990) states the following: • "Ancient" is any object that is at least 75 years old; • All accidental discoveries of artefacts must be reported to the Federal Department of Archaeology; • The Government is the owner of all buried antiquities discovered on any site, whether protected or otherwise; • All new construction within a distance of 200 feet from protected antiquities is forbidden; • No changes or repairs can be made to a protected monument, even if it is owned privately, without approval of the responsible authorities; and	The law will be applicable to the project mainly due to its two provisions: ▪ According to the law, any construction activity within 61 m or 200 ft. of protected antiquities, are prohibited. ▪ The provisions of this act would also be applicable, if any accidental archaeological discoveries may occur during the excavation works for the construction of proposed Project.

	Act	Brief Coverage	Relevance to the Project
		• The cultural heritage laws of Pakistan are uniformly applicable to all categories of sites regardless of their state of preservation and classification as monuments of national or world heritage.	
26.	Guideline for Solid Waste Management, 2005	Guidelines for Solid Waste Management (2005) are in draft form (Pak-EPA in cooperation with Japan International Corporate Agency and United Nations Development Program).	The provision of these guidelines is applicable for waste generation and management during construction works of the proposed electricity distribution efficiency improvement project.
27.	Building Codes of Pakistan (Seismic Provisions 2007)	The Pakistan Engineering Council (PEC) governs the application of Building Code of Pakistan (Seismic Provisions-2007). Prior to the start of construction, the proposed sub projects will take design approval from PEC to ensure compliance with seismic provision according to zones.	The project will take the design approval from PEC prior to construction to ensure compliance with seismic provisions according to zones. The requirements of the seismic zoning map shall be superseded if a site-specific hazard analysis, probabilistic, deterministic or both, is carried out for a building or structure.
28.	Sindh Occupational Health and Safety Act, 2017 and Punjab Occupational Health and Safety Act, 2019	These Acts address occupational safety and health conditions at all workplaces for the protection of persons at work against risk of injury arising out of the activities at work places and for the promotion of safe, healthy and decent working environment adapted to the physical, physiological and psychological needs of all persons at work	The provisions of this act for health and safety of workers during construction will be applicable to the project
29.	Khyber Pakhtunkhwa Worker's Compensation Act, 2013	An Act to provide for the payment by certain classes of employers to their workers or their legal heirs of compensation for injury or death by accident.	This act will be applicable to PESCO during their implementation of project in KP.

3.3. WB Environmental and Social Framework

As part of the project preparation, environmental and social assessments of proposed project will be carried out in accordance with the World Bank's Environmental and Social

Framework (ESF). The Environmental and Social Standards (ESSs) as embedded in the ESF are discussed below.

ESS1: Assessment and Management of Environmental and Social Risks and Impacts: This Standard sets out the borrower's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs). Its objectives include:

- To identify, evaluate and manage the environment and social risks and impacts of the project in a manner consistent with the ESSs.
- To adopt a mitigation hierarchy approach to:
  a. Anticipate and avoid risks and impacts;
  b. Where avoidance is not possible, minimize or reduce risks and impacts to acceptable levels;
  c. Once risks and impacts have been minimized or reduced, mitigate; and
  d. Where significant residual impacts remain, compensate for or offset them, where technically and financially3 feasible.
- To adopt differentiated measures so that adverse impacts do not fall disproportionately on the disadvantaged or vulnerable, and they are not disadvantaged in sharing development benefits and opportunities resulting from the project.
- To utilize national environmental and social institutions, systems, laws, regulations and procedures in the assessment, development and implementation of projects, whenever appropriate.
- To promote improved environmental and social performance, in ways which recognize and enhance Borrower capacity.

Relevance of the Standard for the Project:

The key project risks are related to the distribution system and mainly associated with routine occupational health and safety related to construction and rehabilitation of distribution network. These are related to working at height, electrical works and, use and disposal of hazardous materials such as transformer oils and possibility of PCBs in obsolete transformers and SF6. Such activities are normal and routine work for distribution companies globally for which known and reliable mechanisms, including both designs and procedures as well as safety precautions and practices, are expected to be sufficient to prevent accidents. With over 28,000 kms of 132 kV network which is increasing annually by about 450 kms, there is plenty of in-country experience to handle such activities. Some community health impact can be expected from low levels of electromagnetic force. Based upon such information, such impacts are not expected to be significant and adverse.

The environmental impacts are associated with construction waste and e-waste from the end of useful life of the project equipment, hardware and discarded computers; removal of vegetation and earthworks, construction activities; soil contamination; and disposal and/or reuse of old transformers and restrictions on land use. Given that the project will mainly involve work on low voltage transmission (132kV and below) and expansion and rehabilitation of 11kV feeders, the environmental risks and impacts are unlikely to be

significant and are expected to be reversible and site-specific without likelihood of impacts going beyond the actual footprint of the project. Therefore, there are no material threats to ecosystem services, natural habitats, biodiversity and living natural resources protection, conservation, maintenance and restoration of natural habitats and biodiversity. The project is expected to have a positive impact on climate change as it is expected to reduce CO_2 emissions by installing more efficient grid equipment.

The direct social impacts and risks are anticipated to be mainly related to Component-1. Under this component, the project may require small parcels of private land for new substations and associated structures. These are substations with small land requirements. Similarly, the extensions may also require small scale acquisition of private land. It is anticipated that the proposed rehabilitation works will generally be carried out within the areas of the existing facilities or networks and are unlikely to have significant adverse social impacts. The impact of the Component 2 is expected to be minor. Other social impacts and risks will be related to the limited labour influx, gender, community health and safety and distress of public/community due to disruption of utility services. Some of the activities proposed under Component-2 such as improvement of customer service, flexible, community-oriented approach in dealing with service delivery and payment collections etc. may have some social impacts related to vulnerable groups which will be identified during the preparation. These impacts will be assessed under ESIAs. The ESIAs will also include gender assessment to identify challenges in recruiting and retaining more women on technical jobs in the selected distribution companies. The project design will also devise strategies for zero tolerance for Gender based Violence (GBV) and Sexual Exploitation and Abuse (SEA)/Sexual Harassment (SH). The ESIA will identify the vulnerable and disadvantaged groups and assess impacts on them.

Environmental and Social management tools are being developed by IAs during project preparation. For projects with identified footprint and design completed, the management tools will include the ESIAs; RPs, and Environmental and Social Management Plans (ESMPs). For projects whose location, footprint and design will be finalized during implementation, ESMF (the present document) and RF have been prepared. These instruments have been prepared by IAs, consulted on, reviewed and cleared by the Bank, and disclosed in-country and on the Bank's system before appraisal. An ESCP has been prepared and will be agreed with the borrower based on the findings of the ESIAs, ESMPs, RPs/RF and the Bank's Environment and Social Due Diligence (ESDD) on SEP provisions, institutional arrangement for implementation, capacity building measures and the monitoring plan. The DISCOs will clearly spell out in the ESCP on payment of compensation for lands under transmission towers and use of private negotiations for determining the land rates for acquisition in case expropriation will be used.

Contractors will be required to develop OHS management plans, method statements and job hazards analyses. Such safeguard instruments will be approved by supervision engineers and the Bank's safeguard staff will provide oversight and guidance on OHS related issues. Learning from the past experiences, the it will be ensured that ESMF, ESIA and bidding documents have stringent contractual provisions that will enable supervision engineers to enforce compliance with OHS instruments. Both Supervision Engineers and contractors will have full time accredited OHS specialists/staff.

ESS2: Labor and Working Conditions. This Standard recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the

project fairly and providing safe and healthy working conditions. Its objectives include:

- To promote safety and health at work.
- To promote the fair treatment, nondiscrimination and equal opportunity of project workers.
- To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers, as appropriate.
- To prevent the use of all forms of forced labor and child labor.
- To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law.
- To provide project workers with accessible means to raise workplace concerns.

Relevance of the Standard for the Project:

The Project will involve different types of workers including (a) direct workers (DISCO employees); b) contracted workers engaged in construction works, locally hired unskilled laborers; consultancy services firms (for specific deliverables under the project; technical support to DICSOs during preparation and implementation of ESIAs, ESMPs, RPs etc.); and c) primary supply workers.

The Project has prepared Labor Management Procedures (LMP) consistent with the requirements of the World Bank's ESS2. The plan includes assessment of potential labor related risks, SEA/SH, overview of labor regulation, staff responsibility, policies and procedures, working age, contract terms and conditions, GRM and other requirements per ESS2. The DISCOs will ensue that contractor's labor camps have adequate living (properly ventilated living rooms, clean bathrooms and toilets, hygienically cooked food, etc.) and recreational facilities.

Keeping in view the small-scale nature of civil works, large number of labor is not expected to be hired. Pakistan has comprehensive labor laws covering the contract of employment, termination of contract, working time and rest time (working hours, paid leave, maternity leave and maternity protection, other leave entitlements), prevent child and forced labor, minimum age and protection of young workers, equality, pay issues, workers' representation in the enterprise, trade union and employers' association regulation and other aspects. In addition, Pakistan has also ratified more than 30 ILO labor conventions. However, some measures will be needed to enhance the DISCOs' implementation and supervision capacity of labor aspects mainly through supervision consultants. These measures are described in LMP.

General risks identified at the concept stage indicated that OHS risks associated with daily day-to-day operations of DISCO and less related specifically to project activities. Hence as a part of the project, operational capabilities of DISCOs in OHS will be enhanced through (i) reviewing OHS manuals with the intention of bringing them at par with the international best practices and acceptable OHS standards; (ii) imparting trainings to technical staff on OHS and use of modern and technically advance equipment to address key OHS issues; (iii) procuring and providing technical staff with safety tools and equipment to address specific OHS aspects; and (iv) if required, increase staff strength to adequately address OHS issues.

The Project will also put in place systems and measures for establishing and maintaining a safe working environment and the contractors will have to comply with stringent guidelines of project's OHS management system and their own management system. The system will include (i) OHS management plans and instruments (ii) hazard management instruments such as Job Hazards Analysis and works method statements with emphasis on potential hazards particularly related to electrocution and life-threatening works, (iii) training of workers and maintenance of training records, (iv) documentation and reporting of accidents and incidents, and (v) remedial and corrective measures. Periodic review of OHS policies and procedures will be made mandatory.

ESS3: Resource Efficiency and Pollution Prevention and Management. This Standard recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. This ESS sets out the requirements to address resource efficiency and pollution1 prevention and management throughout the project life cycle consistent with good international industry practice. Its objectives include:

- To promote the sustainable use of resources, including energy, water and raw materials.
- To avoid or minimize adverse impacts on human health and the environment by avoiding or minimizing pollution from project activities.
- To avoid or minimize project-related emissions of short and long-lived climate pollutants.
- To avoid or minimize generation of hazardous and non-hazardous waste.
- To minimize and manage the risks and impacts associated with pesticide use.

Relevance of the Standard for the Project:

This is an energy efficiency project, aimed at improving operational efficiencies of the three DISCOs. This will be done by reducing the aggregate technical and commercial losses in the network compared to base values to create more financially sustainable DISCOs that will rely less on state funds by improving receivables and reducing system losses. It will help to reduce GHG emissions as well as black carbon by installing new energy efficient electrical equipment according to the prevailing standards. This will be done by installing new circuit breakers with near zero SF6 leakage to replace ageing breakers and new transformers with zero oil leakage to replace aged and overloaded transformers through the rehabilitation and augmentation of substations. The project will help the DISCOs to calculate GHG reductions.

This project also seeks to improve the reliability and reduce energy theft in the DISCOs by deploying ABC in densely populated areas as it is more efficient and has higher reliability and less losses. The deployment of ABC's will contribute to reducing the risk of electrocutions by eliminating flying naked wires and connections. Furthermore, the project involves works on low voltage transmission lines which typically have low frequency of electromagnetic field emanating from power lines. The TL will also have buffer zones and adequate ground clearance in accordance with the international standards bringing EMF

exposure to within compliance limits.

DISCOs do not use pesticides to control vegetation. Utility companies in Pakistan have not procured a PCB transformer for over decades now. However, some of the old transformers replaced under project may contain PCBs. Hence as a precautionary principle, their handling, transportation and disposal will be addressed through provisions in ESIAs and ESMPs.

Technical evaluation will take into consideration load and no-load losses of transformers and other equipment to be procured for the most efficient and financially viable equipment in the network. The electrical equipment will conform to appropriate standards on protection from interference of electric and magnetic field.

ESIA and ESMPs will also address transportation, handling and storage, use and disposal of electrical equipment which may contain hazardous and non-hazardous chemicals.

ESS4: Community Health and Safety. This Standard recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable. Its objectives include:

- To anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and nonroutine circumstances.
- To promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams.
- To avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials.
- To have in place effective measures to address emergency events.
- To ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.

Relevance of the Standard for the Project:

Community health and safety risks associated with the project activities include exposure to EMF and hazardous substances, air quality, noise, any harm which might be caused to communities by the influx of outside workers and physical hazards from the TL on project sites and installation activities. These risks can also be related to SEA/SH, spread of different diseases like COVID-19 and other communicable diseases.

The ESMF has evaluated the risks and impacts of the project on health and safety of the communities during the project life cycle, and proposed mitigation measures in accordance with the mitigation hierarchy. Emergency response measures have been incorporated into the ESCP. Similarly, preparation of work methods statements, job hazards analysis as well as job safety analysis by the Contractor have been made part of ESCP.

The ESMF has also assessed exposure of communities to construction stage related traffic, accident, and health and safety issues. Further, all works and operations will be planned, designed and implemented to comply with the WBG EHS guidelines including i) General

and ii) on Power Transmission.

ESS5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement. This Standard recognizes that project-related land acquisition and restrictions on land use can have adverse impacts on communities and persons. Project-related land acquisition or restrictions on land use may cause physical displacement (relocation, loss of residential land or loss of shelter), economic displacement (loss of land, assets or access to assets, leading to loss of income sources or other means of livelihood), or both. The term "involuntary resettlement" refers to these impacts. Resettlement is considered involuntary when affected persons or communities do not have the right to refuse land acquisition or restrictions on land use that result in displacement.

Experience and research indicate that physical and economic displacement, if unmitigated, may give rise to severe economic, social and environmental risks: production systems may be dismantled; people face impoverishment if their productive resources or other income sources are lost; people may be relocated to environments where their productive skills are less applicable and the competition for resources greater; community institutions and social networks may be weakened; kin groups may be dispersed; and cultural identity, traditional authority, and the potential for mutual help may be diminished or lost. For these reasons, involuntary resettlement should be avoided. Where involuntary resettlement is unavoidable, it will be minimized and appropriate measures to mitigate adverse impacts on displaced persons (and on host communities receiving displaced persons) will be carefully planned and implemented. Its objectives include:

- To avoid involuntary resettlement or, when unavoidable, minimize involuntary resettlement by exploring project design alternatives.
- To avoid forced eviction.
- To mitigate unavoidable adverse social and economic impacts from land acquisition or restrictions on land use by: (a) providing timely compensation for loss of assets at replacement cost and (b) assisting displaced persons in their efforts to improve, or at least restore, their livelihoods and living standards, in real terms, to pre-displacement levels or to levels prevailing prior to the beginning of project implementation, whichever is higher.
- To improve living conditions of poor or vulnerable persons who are physically displaced, through provision of adequate housing, access to services and facilities, and security of tenure.
- To conceive and execute resettlement activities as sustainable development programs, providing sufficient investment resources to enable displaced persons to benefit directly from the project, as the nature of the project may warrant.
- To ensure that resettlement activities are planned and implemented with appropriate disclosure of information, meaningful consultation, and the informed participation of those affected.

Relevance of the Standard for the Project:

The project will have limited permanent land needs for construction/expansion of substations and temporary impacts for distribution network rehabilitation. Distribution line rehabilitation works will mostly follow the existing ROW and will generally have limited temporary impacts during cabling work. These will be assessed during preparation.

Under the project, small land areas will be required primarily for the construction of a few new proposed substations. These substations will need land ranging from 2 to 4 acres and their siting can be sufficiently flexible to use willing buyer-willing seller approach and to avoid/minimize encroachments. Similarly, for new TLs, DISCOs have a flexibility to shift the alignment to avoid/minimize encroachments. Therefore, the approach is going to be very flexible in terms of location and alignment of TLs. The extent of land acquisition and involuntary resettlement impacts will also be minimized for the construction of new substations through: (i) preferably using Government land (this is a practice which DISCOs are currently following and several proposed substations of MEPCO are already on government land); and (ii) design modifications, generally, land requirement for 132 kV substations is about 4 to 6 acres. In areas where availability of land is considered an issue, DISCOs will opt for Gas Insulated Substations (GIS) which require only 1-2 acres, half the size of the Air Insulated Substations (AIS). MEPCO is operating an unmanned substation in less than 1 acre. Some of these small substations and TLs are expected to be located in small districts which are not densely populated, e.g., MEPCO has shared some proposed sites which are not located in densely populated areas. In addition, the extensions and augmentations will be carried out within the existing premises having a boundary wall.

Therefore, the chances of encroachments are non-existent for extensions and augmentations.

As per the Telegraph Act of 1885 (the law governing the construction of transmission lines), the implementing agencies do not require acquisition of the land falling under towers. This has been a challenge and the landowners, at times, resist such use of their land. To address this issue, it has been agreed that the DISCOs (the implementing agencies for this project) will pay compensation for the land under towers. This is what the National Transmission and Dispatch Company (NTDC) in Pakistan has done for some transmission projects as 'good practice'.

Sub-projects will be screened for land acquisition and involuntary resettlement impacts. Willing Buyer-Willing Seller approach will be the first preference by DISCOs as these projects have small footprints and are expected to have multiple site options. In this case, DISCOs will inform the site owners about their right to decline without any consequences and will consider options where the sellers are willing to sell. As explained above, for new grid stations and ROW, these are small areas and DISCOs have a flexibility to shift the alignment or site to avoid or minimize the encroachments. Therefore, these issues do not appear to be significant at concept stage and involuntary land acquisition and displacement of encroachers is not expected.

Though willing-buyer-willing seller approach will be the first priority of DISCOs, there might be a possibility that this approach may not work for some subprojects with limited site options due to technical considerations and some encroachers may also be identified for displacement. Keeping this in view, implementing agencies have prepared an RF in accordance with ESS5 which has been consulted on, reviewed and cleared by the Bank, and disclosed in-country and on the Bank system before project appraisal.

ESS6: Biodiversity Conservation and Sustainable Management of Living Natural Resources. This Standard recognizes that protecting and conserving biodiversity and sustainably managing living natural resources are fundamental to sustainable development. Biodiversity is defined as the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species,

and of ecosystems. Biodiversity often underpins ecosystem services valued by humans. Impacts on biodiversity can therefore often adversely affect the delivery of ecosystem services. Its objectives include:

- To protect and conserve biodiversity and habitats.
- To apply the mitigation hierarchy[4] and the precautionary approach in the design and implementation of projects that could have an impact on biodiversity.
- To promote the sustainable management of living natural resources.
- To support livelihoods of local communities, including Indigenous Peoples, and inclusive economic development, through the adoption of practices that integrate conservation needs and development priorities.

Relevance of the Standard for the Project:

As mentioned above under ESS1, there are no material threats to protection, conservation, maintenance and restoration of natural habitats, biodiversity and living natural resources. While all projects are not known at this time, the project is expected to mainly be carried out in urban and peri urban areas only. The project is also not expected to have adverse impacts on ecosystem services as well as use of living natural resources as most of the project activities will be carried out within the existing substations and in already modified urban settings. However, some clearing of vegetation and felling of trees is expected for grid stations. Some felling and pruning of trees can be expected for vegetation below TLs or on the ROW of TLs. Furthermore, the borrower will not introduce any alien or non-native specifies of flora or fauna in the project area. Appropriate measures have been described in ESMF to reduce chances of accidental introduction of alien flora/fauna. Therefore, this ESS6 is not relevant to the project at concept stage.

ESS8: Cultural Heritage. ESS8 recognizes that cultural heritage provides continuity in tangible and intangible forms between the past, present and future. People identify with cultural heritage as a reflection and expression of their constantly evolving values, beliefs, knowledge and traditions. Cultural heritage, in its many manifestations, is important as a source of valuable scientific and historical information, as an economic and social asset for development, and as an integral part of people's cultural identity and practice. ESS8 sets out measures designed to protect cultural heritage throughout the project life cycle. This ESS sets out general provisions on risks and impacts to cultural heritage from project activities. ESS7 sets out additional requirements for cultural heritage in the context of Indigenous Peoples. ESS6 recognizes the social and cultural values of biodiversity. Provisions on Stakeholder Engagement and Information Disclosure are set out in ESS10. Its objectives include:

- To protect cultural heritage from the adverse impacts of project activities and support its preservation.
- To address cultural heritage as an integral aspect of sustainable development.
- To promote meaningful consultation with stakeholders regarding cultural heritage.
- To promote the equitable sharing of benefits from the use of cultural heritage.

Relevance of the Standard for the Project:

This standard is relevant to the project. While some of the districts have culturally significant sites, it is unknown at this stage if there will be any impacts on these sites due

to the project. The ESIAs to be prepared during the project implementation would, in any event, evaluate any direct or indirect impacts of project activities on these cultural assets or determine the presence of any others that may not be listed but could be of significance. Depending on the exact determination of the nature and scale of the project risks and impacts, mitigation measures or a plan will be prepared as part of the ESIA/ESMP and will be incorporated into the ESCP as required. Procedures for handling chance finds will be determined during the ESIA and made part of the ESMP to handle any such situations during project implementation.

ESS10: Stakeholder Engagement and Information Disclosure. This Standard recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation. Its objectives include:

- To establish a systematic approach to stakeholder engagement that will help Borrowers identify stakeholders and build and maintain a constructive relationship with them, in particular project-affected parties.
- To assess the level of stakeholder interest and support for the project and to enable stakeholders' views to be taken into account in project design and environmental and social performance.
- To promote and provide means for effective and inclusive engagement with project-affected parties throughout the project life cycle on issues that could potentially affect them.
- To ensure that appropriate project information on environmental and social risks and impacts is disclosed to stakeholders in a timely, understandable, accessible and appropriate manner and format.
- To provide project-affected parties with accessible and inclusive means to raise issues and grievances, and allow Borrowers to respond to and manage such grievances.

Relevance of the Standard for the Project:

Given the nature of project activities, various groups of stakeholders will be involved in the project design, implementation and decision-making. The identified stakeholders include Project Affected Persons (PAPs) and local surrounding communities; customers/electricity users across the areas of DISCOs' operations; local government departments; line departments including environment protection, agriculture, revenue, irrigation, social welfare, women development and labor; civil society organizations and NGOs operating locally in the project area.

Consultation and disclosure of information with stakeholders has been/will be a core element during both the planning and implementation stages of project.

The borrowers have developed a Stakeholder Engagement Plan (SEP) to ensure meaningful consultations during the project preparation which will also outline the Grievance Redress Mechanism (GRM). This GRM will build on the existing GRM and procedures established and operational in each DISCO.

4. Environmental and Socio-economic Characteristics of the Project Area

This Chapter provides an overview of the baseline conditions of the area covered by electricity networks of the IAs (ie, PESCO, MEPCO and HESCO). This overview has been prepared on the basis of secondary resources including previous environmental assessment reports and official websites of various government departments. More site-specific baseline conditions will need to be included in the subproject-specific ESIAs and ESMPs. This chapter deals with areas where physical interventions and impacts are expected.

4.1. Area Covered by PESCO

Peshawar Electric Supply Company (PESCO) is responsible for distribution of electricity in twenty-eight districts of Khyber Pakhtunkhwa (KP). These districts included Peshawar, Upper Chitral, Lower Chitral, Swat, Upper Kohistan, Lower Kohistan, Kolai Palas, Shangla, Battagram, Mansehra, Torghar, Upper Dir, Lower Dir, Malakand, Buner, Mardan, Charsadda, Swabi, Abbottabad, Haripur, Nowshera, Kohat, Hangu, Karak, Bannu, Laki Marwat, Tank and Dera Ismail Khan. PESCO is divided into eight circles[7] covering about 1,204,621 ha of land in total. The seven tribal agencies (districts) and six frontier regions are covered by Tribal Areas Electricity Supply Company (TESCO). The baseline conditions of KP areas under PESCO are explained in the below paragraphs. The map of PESCO operational areas is presented in **Figure 4.1**.

Khyber Pakhtunkhwa (KP) is the third largest province of Pakistan by population and the smallest province by area. The total area of KP province is 101, 741 square kilometers. The geographical location of KP is 34.0000^{o} North latitude and 71.3200^{o} East longitude[8]. It borders with Afghanistan in the north-west, Balochistan in the south, Punjab in the south-east, Gilgit Baltistan in the north-east and Azad Kashmir in the east. The total number of districts of KP are thirty-five and Peshawar is the capital of the province.

The terrain of the province is dominated by mountains. It is surrounded by the Hindukush Mountain range in the north-west. The Himalayas surround the province in the north-east. The east-west tending Safed Koh Cherat range forms its southern boundary. Tirich Mir rising 7690 m above the sea level is the highest point in the province. The Peshawar Valley is enclosed by the Malakand range on its northern side and by the Khyber hills on its western sides. The Kurram range encloses the Bannu basin in its north and the mountains cover the basin along the eastern and southern boundaries. The Dera Ismail Khan basin in the south of the province is separated from the Bannu basin by the Bhittani mountain range.

The relatively flat alluvial plains, with the best groundwater resources, are the hub of economic activity, mostly in the form of agriculture. Some parts of these plains are irrigated by one or more rivers crossing most of the plains. The whole province drains into the Indus River, with the exception of the Kunhar River which flows down the Kaghan Valley into the Jehlum River. The Indus River flows between the Swat and Mardan districts on the right bank and the districts of Kohistan, Mansehra and Abbottabad on the left bank. It flows through Tarbela Dam, the largest earth-filled dam on the planet. Most of the irrigation water in Khyber Pakhtunkhwa is supplied by the Kabul River (Warsak Dam) and Tarbela

[7] http://www.pesco.gov.pk/what_we_do.asp
[8] http://kp.gov.pk/page/quickviewofkhyberpakhtunkhwa

Dam, both of which are located in the province. Chashma Right Bank Canal (CRBC) also makes a significant contribution in terms of irrigation water supply.

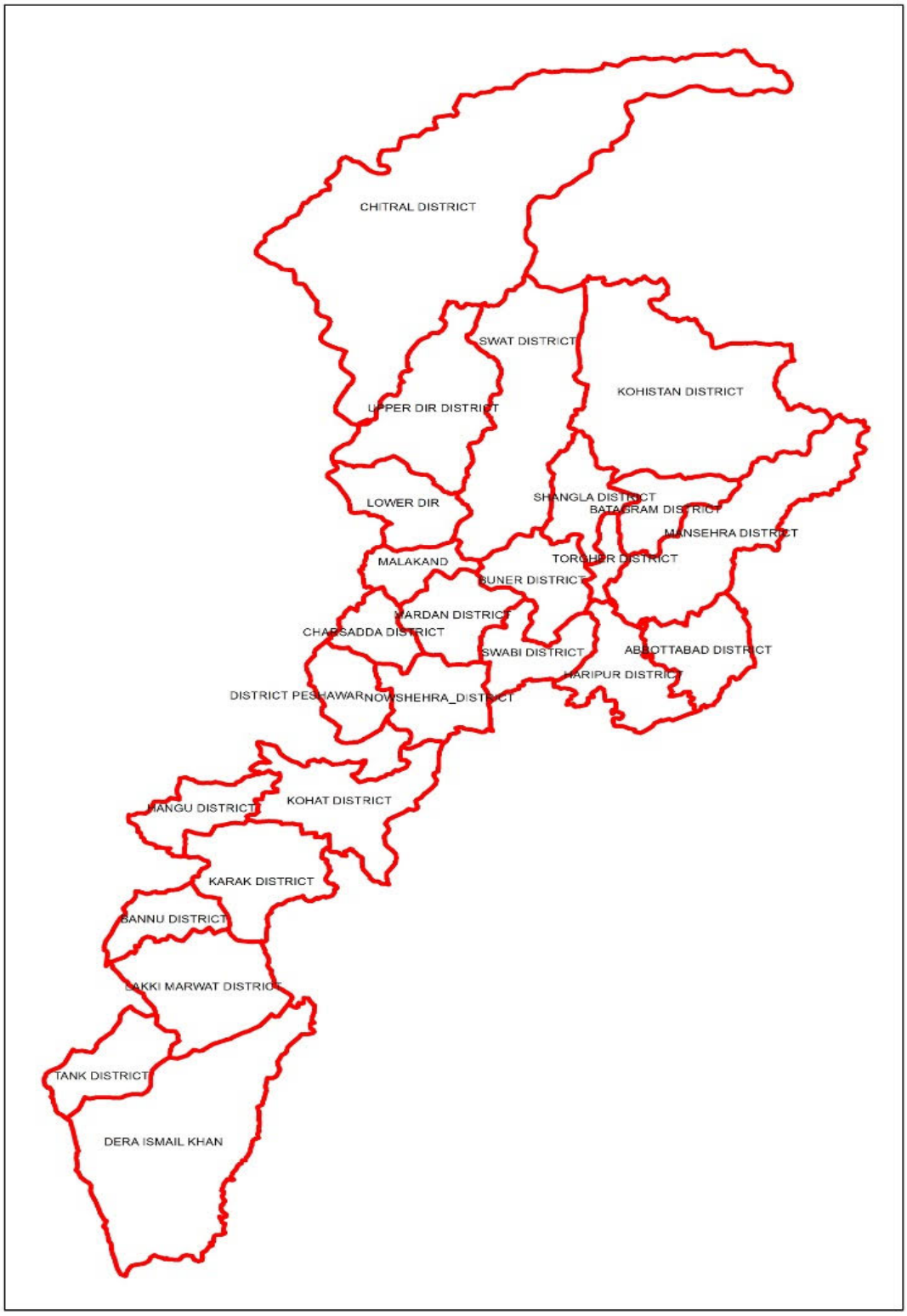

Figure 4-1: PESCO's Areas of Operation

The Khyber Pakhtunkhwa Province is located in the extreme northwest of the Indo-

Pakistani subcontinent where it merges with the Eurasian continent. This merging is the consequence of the collision of two tectonic plates: the Laurasian plate and the Greater Indian plate. The province can be subdivided into four broad geological units (i) Metamorphic and igneous rocks of the northern mountains; (ii) Mesozoic rocks of the southern and southwestern part;(iii) Tertiary rocks of the central and south-eastern part; and (iv) Upper Tertiary and Quaternary fill of the intermontane basins[9].

According to the seismic map of Pakistan, the Chitral area lies in Zone 4 which has ground acceleration of greater than 0.32 g and northern parts of the province mostly lie in zone 3 (moderate to severe damage) of the Earthquake Zones Classification of the Uniform Building Code of Pakistan[10]. The central and southern parts mostly lie in zone 2B (minor to moderate damage).

The climatic profile of the Khyber Pakhtunkhwa province is extremely diverse due to various altitudes and vegetation cover, mountain barriers and topography. Its climate varies from the dry and hot rocky zones in south to the cool and lavish green forests in the north. Six types of climatic profiles are recognized for the KP province.

Semi-arid subtropical continental lowland: The features included large plains, characterized by great annual and daily variations in temperature; maximum temperature about 41°C; minimum temperature from 4.5 °C; a few frosty days, generally low humidity; mainly late summer monsoon rains and rainfall between 80 and 500 millimeters (mm). The areas under this zone are Western zone of the Peshawar Valley, Bannu basin, Dera Ismail Khan basin

Sub-humid subtropical continental lowland: The features included rainfall of 500 to 1000 mm, increasing sharply towards the hills. At least two months per year are humid; winters are distinctly colder and summers cooler than climatic region above (semi-arid subtropical continental lowland). The areas under this zone are Buner area in Swat district, Talash and Adinzai Valleys in Dir district, part of Abbottabad district, and Nizampur area as well as the eastern part of the Peshawar Valley.

Humid subtropical continental highland: The features included mountainous areas, including the narrow intervening valleys. The maximum temperature occurs in June or July and is less than 38 °C; winters are cold, snowy and foggy; rainfall exceeds 1250 mm; late winter and summer rains are common. The areas included spurs of the outer Himalayas extending into Mansehra district.

Sub-humid subtropical continental highland: Does not greatly differ from the above region (humid subtropical continental highland), except for the rainfall, which ranges from 500 to 1250 mm. The areas included hills of Swat, Dir, Kohistan, Kohat and Karak districts.

Semi-arid subtropical continental highland: Similar to sub-humid subtropical continental highland, but the rainfall is less: 200 to 500 mm. The areas included Northern part of Swat and southern part of Chitral, as well as Kohat, Karak, Waziristan, Bajaur, Khyber districts.

Arid subtropical continental highland: Similar to the other subtropical continental highland regions except for the rainfall, which is less than 200 mm. The area included northern part of Chitral District.

Khyber Pakhtunkhwa has complicated and diverse hydrological conditions and different situations of water resources and water availability in different parts. In the south (Dera

[9] Hydrogeology and groundwater resources of north West Frontier Province Pakistan, 1988
[10] Building Code of Pakistan 2007

Ismail Khan, Tank, Lakki Marwat and Bannu) there is shortage of water, whereas the north, including Chitral, Upper Dir, Lower Dir, Swat, Shangla, and Kohistan, has abundant water resources. There are three sources of freshwater: precipitation; streams and rivers; and groundwater.

Air pollution is a rapidly growing environmental problem in Khyber Pakhtunkhwa, as in the rest of Pakistan. The major causes of worsening air quality in the urban areas are: increasing domestic and industrial power consumption which is met by coal; highly inefficient energy use; exponential growth in the number vehicles; increasing industrial activities by marble factories, brick kilns, sugar mills, and cement factories without adequate air emission control; and open air burning of solid waste, including plastic. The data presented in a study[11] shows very high concentrations of air pollutants in Peshawar; the levels of fine particle matter ($PM_{2.5}$), sulfur dioxide (SO_2) and nitrogen dioxide (NO_2) are respectively three times, two times and one and a half times higher than the World Health Organization (WHO) guidelines, while ozone (O_3) and carbon monoxide (CO) are within the guidelines.[12]

Noise pollution in the urban areas of the KP Province is a rapidly growing environmental hazard. Higher levels of noise pollution can have a range of health effects, including stress related mental health issues, heart disease, insomnia, cognitive impairment among children and annoyance. According to survey of Environmental Protection Agency of Khyber Pakhtunkhwa at various traffic junctions in Peshawar shows a very high noise level with an average value of 90 decibel (dB) to 100 dB which is well above the upper limit of 85 dB prescribed the WHO. The main sources of this urban noise pollution are: vehicles horns; and defective silencers of the two-stroke auto rickshaws.[13]

The wide range of geographical and climatic conditions of Khyber Pakhtunkhwa yields equally diverse ecosystems and sets of floral and faunal species. In terms of ecosystems, there are various types of forests, including meadows, rangelands (or pastures), and wetlands. The province hosts approximately 4500 species of plants, 100 mammal species, 466 bird species, 66 reptile species, 44 butterfly species and 118 fish species, and protected areas expand over 14% of the total provincial area. However, climate change---rise in temperature, changes in precipitation patterns, increase in floods and droughts---and heavy application of hazardous agrochemicals are adversely affecting ecosystems and biodiversity in Pakistan as well as in the province.

Forests cover approximately 20% (29%, if the alpine pastures are added) of the total land area of Khyber Pakhtunkhwa province. The country's most significant tract of west Himalayan temperate forests is located in Palas Valley of the province, which belongs to a Himalayan moist temperate coniferous forest ecosystem, extending over Abbottabad, Mansehra and Swat. The plant species in this region include the conifers, such as blue pine, spruce, yew, fir, birch and rhododendron. Mammals include the endangered snow leopard and blue sheep.

Other forest ecosystems of the province are: forest ecosystem of cold desert and snowfields in Hindu Kush Mountain region of Chitral; steppe pine forest ecosystem in the lower valleys of Chitral, Kohistan, and high elevation parts of Dir; alpine meadows of Kaghan Valley and eastern Hindu Kush Mountain Ranges in Swat and Kohistan; sub-Alpine scrub

[11] Cleaning Pakistan's Air Policy Options to Address the Cost of Outdoor Air Pollution, 2014
[12] Site specific information/data on air quality will be included in the subproject ESIAs/ESMPs as appropriate.
[13] Site specific information/data on noise will be included in the subproject ESIAs/ESMPs as appropriate.

and birch ecosystem in upper Swat and Kaghan valleys; dry temperate coniferous forest ecosystem of upper Kaghan in Mansehra district, Kalam in upper Swat and Dir district; subtropical pine forest ecosystem in Haripur, Abbottabad, Mansehra, Buner and Swat; dry subtropical semi evergreen scrub ecosystem on the foothills of Hindu Kush and Himalayan mountains in the districts of Haripur, Abbottabad, Mansehra, Buner, and Swat; and tropical thorn ecosystem in the southern districts.

There are four types of rangelands or pastures in the province: alpine pastures lying above 3,000 meters altitude and below the snowline, with forage productivity of 1,500 kg/ha; trans-Himalayan grazing lands at 2,300-3,300 m elevation, with forage productivity of 300-1,200 kg/ha; Himalayan Forest grazing lands in 1,000-2,000 m altitude, with forage productivity of 200-3,000 kg/ha; and arid/semi-arid grasslands at around 250 m elevation and having forage productivity of 400-500 kg/ha.

Khyber Pakhtunkhwa province has the richest diversity of flora and fauna in the country, owning to variety of its climatic zones. The tree species include conifer, Himalayan spruce, Indian pine, silver fir, cedar, pine nut, birch, Himalayan pistachio, horse chestnut, maple, Himalayan poplar, ash, walnut, oak, gum, babul, Indian olive, black locust, Indian rosewood, mulberry, Indian plum, and chinaberry. In addition to the timber tree species, there are various economic, medicinal and aromatic non-timber species, which produce wild fruits and vegetables, mushrooms, resins, gum, fibres, silk cocoons.

The high-altitude northern parts are home to: Himalayan ibex; markhor; snow leopard; Himalayan bear; Himalayan snowcock; and snow partridge. The alpine and sub-alpine regions of the province host species, such as Himalayan ibex, markhor, Western Tragopan and Monal pheasants. The moist and dry temperate forests in the districts of Chitral, Dir, Swat, Mansehra and Abbottabad provide habitats to species, such as Himalayan black bear, common leopard, grey goral, Koklass pheasant and Kalij pheasant. The lower reaches of Himalaya and Hindu Kush, where the sub-tropical scrub forests exist, provide habitat to rhesus macaque, urial, common leopard and birds like Chir pheasant, black partridge, Chukar partridge and See-see partridge. Notable species in the desert and thorn forests of the province include chinkara, cape hare, Afghan urial, grey wolf, sandgrouse and houbara bustard. Khyber Pakhtunkhwa holds the world's largest populations of Kashmir Markhor and western Tragopan pheasant and contains Endemic Birds Areas, as designated by the Birdlife International. The wetlands host numerous species of migratory water birds, including swans, geese, ducks, waders, falcons and cranes. demoiselle crane, Eurasian cranes, houbara bustard, Saker falcon, peregrine falcon, bar-headed goose, and red-crested pochard[14].

The number of Protected Areas[15] notified in Khyber Pakhtunkhwa includes 6 national parks, 3 wildlife sanctuaries, 38 game reserves, 90 community game reserves, 16 private game reserves, 2 wildlife refuges and 8 wildlife parks. The combined area of all the Protected Areas is 666,340.368 hectare (ha).

The total population[16] of Khyber Pakhtunkhwa was estimated to be 37.15 million in 2018-19, which is 17.1% of the national population. The province had an annual growth rate of 2.9% as compared to the national rate of 2.4% in 2017.The average household size in Khyber Pakhtunkhwa is 7.6 and 8.1 in urban and rural areas, respectively.

[14] ESMF, KP Irrigated Agriculture Improvement Project,2019
[15] http://kpwildlife.com.pk/pa.html, June 2021
[16] Bureau of Statistics, KP in Figures 2019

In 2017-18, the national literacy rates were 52% and 73% for women and men, respectively. The literacy rates in the province show greater disparity between genders: 39% for women and 73% for men. The rate is the second lowest in Khyber Pakhtunkhwa among the provinces. The Pakistan Education Statistics 2016-2017 estimated that among 51.53 million children in Pakistan between the ages of 5 and 16 years, 22.84 million children did not attend school. In primary to higher secondary level, 49% of girls are out of school as compared to 40% of the boys. In Khyber Pakhtunkhwa, 1.8 million children are out of school; considering that the population of the province is about 15% of national, proportionately more children appear to be schooled in the province. Among those out of school in Khyber Pakhtunkhwa, 64% of were girls and 36% boys. Some of the factors responsible for the slow progress in education include: (i) shortage of schools especially for girls and also in remote and far-flung areas; (ii) shortage and absenteeism of teachers; (iii) lack of qualified and trained teachers; (iv) missing facilities such as water, toilets and boundary walls; (v) weak supervision; and (vi) out-of-school factors such as conservative and tribal culture, insecurity and lawlessness, and poverty.

The health facilities are available to the people in the province. In 2018[17], 283 hospitals, 988 dispensaries, 100 rural health centers, 937 basic health units and 23 sub health centers were providing services to the people of KP.

The major crops in the province are wheat, maize, rice, sugarcane, gram, tobacco and barley. In 2018-19[18], the area under cultivation of wheat was 724000 ha, maize 468000 ha, rice 62000 ha, sugarcane 111000 ha, gram 29000 ha, tobacco 25000 ha and barley 21000 ha.

The livestock of KP included cattle, buffalos, sheep and goats. According to 2019 estimation, the population of cattle in the province was 6.67 million, buffalos were 2.67 million, sheep were 2 million and goats were 9.21 million.

The civilian labor force in the province was 7.72 million in 2017-18 which included 6.45 million male and 1.27 million female. Out of total reported labor force, 7.17 million is employed and 0.55 million labor force was unemployed.

4.2. Area Covered by MEPCO

Multan Electric Supply Company (MEPCO) is the largest power distribution company in the country operating exclusively in 13 administrative districts of Southern Punjab. The districts covered by MEPCO included Multan, Muzaffargarh, Layyah, Dera Ghazi Khan (DG Khan), Rajanpur, Lodhran, Bahawalpur, Rahim Yar Khan, Khanewal, Sahiwal, Pakpattan, Vehari and Bahawalnagar[19]. The baseline conditions of the areas covered by MEPCO are presented in below paragraphs. The map of MEPCO is presented in **Figure 4.2**.

Punjab is the most populous province of Pakistan and second largest province by area. The total area of Punjab province is 205,344 square kilometers[20].The geographical location of Punjab is 31.1704° North latitude and 72.7097° East longitude. Punjab borders with Khyber Pakhtunkhwa and federal area of Islamabad in the north, Azad Kashmir in the north-east, Indian Punjab and Rajasthan in the south-east, Sindh province in the south-west and Baluchistan and the former Federally Administered Tribal Areas (FATA) (now called

[17] Bureau of Statistics, KP in Figures 2019
[18] Bureau of Statistics, KP in Figures 2019
[19] http://www.mepco.com.pk/organization/history
[20] https://punjab.gov.pk/punjab_quick_stats

Tribal Districts) in the west. The total number of districts of Punjab are thirty-six and Lahore is the capital of the province. The power distribution companies other than MEPCO in the province are Lahore Electric Supply Company (LESCO), Faisalabad Electric Supply Company (FESCO), and Gujranwala Electric Power Company (GEPCO).

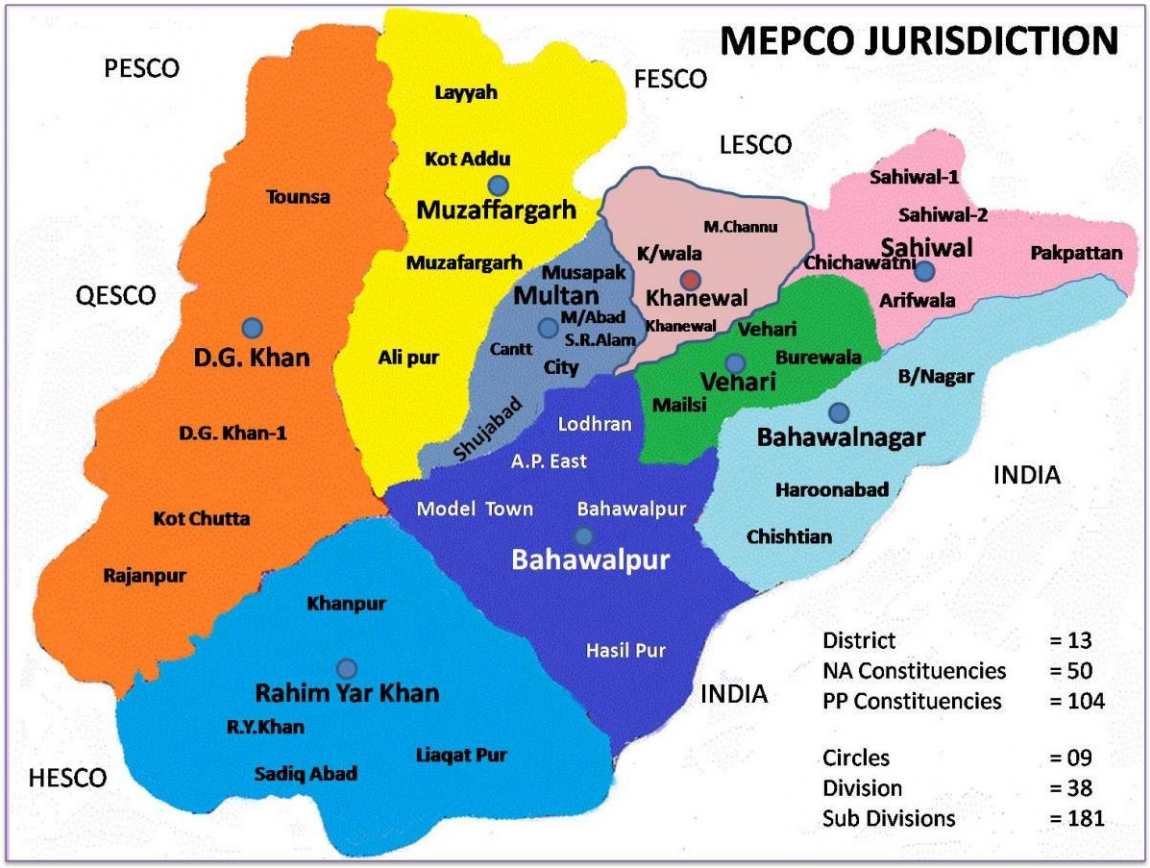

Figure 4-2: Map of MEPCO Area

Punjab's landscape mostly consists of fertile alluvial plains of the Indus River and its four major tributaries in Pakistan, the Jhelum, Chenab, Ravi, and Sutlej rivers which traverse Punjab north to south. The landscape is amongst the most heavily irrigated on earth and canals can be found throughout the province. Punjab also includes several mountainous regions, including the Sulaiman Mountains in the southwest part of the province, the Margalla Hills in the north near Islamabad, and the Salt Range which divides the most northerly portion of Punjab, the Pothohar Plateau, from the rest of the province. Sparse deserts can be found in southern Punjab near the border with Rajasthan and near the Sulaiman Range. Punjab also contains part of the Thal and Cholistan deserts. In the South, Punjab's elevation reaches 2,327 meters near the hill station of Fort Munro in Dera Ghazi Khan.

Punjab Province mostly comprises of plain areas lying in Indus Basin formation. Major portion of the Punjab Province falls in the Indus Plain, which geologically originated in Late Pleistocene period by deposition of sediments from the Himalayas into abyssal sea. In early days, the sediments were carried by two river systems, viz., Indus and Ganges. Later in the geological history, the Ganges River changed its course from westward to

eastward. The Indus River and its five major tributaries, viz., Jhelum, Chenab, Ravi, Bias and Sutlej, carved the deposits of the early river systems. The soils in Punjab generally range from loamy sand to sandy. In the south and south east, Cholistan reaches the Indian border whereas in the north it runs parallel to the southern part of the Punjab plains and river Sutlej making a common border with the Lodhran and Muzaffargarh districts. The region of South Punjab is divided into three main physical features i.e. (a) Riverine area, (b) plain area and (c) Desert area of Cholistan. The Riverine area of the district lies close on the river Sutlej which flows in the north along its boundary with Lodhran and Vehari districts. District Khushab is rich with mineral deposits and important ones are: Argillaceous Clay, Bentonite, Coal, Calcite, Dolomite, Fireclay, Gypsum, Limestone Ochers, Laterite, Marble, Bauxite, Iron ore, Rock Salt and Silica Sand. [21]

According to the seismic map of Pakistan, the districts of Punjab lie in Zone 2A and 2B. Zone 2A has ground acceleration of 0.08 to 0.16 g and zone 2B has 0.16 to 0.24 g. One city (Fort Abbas) lies in zone 1 which has ground acceleration of 0.05 to 0.08 g. Two cities (Murree and Kotli Sattian) lie in Zone 3 which has ground acceleration of 0.24 to 0.32 g of the earthquake zones classification of the uniform building code of Pakistan22

Most of the Punjab province lie in the lowland zone (semi-arid to arid) and some parts, north of Salt Ranges are included in highland zone (cool and humid). It has extreme climate with hot summer and cool to cold winter. It is positioned at the western tale end of tropical monsoon (summer rain bearing winds coming from Bay of Bengal) and at the eastern tale end of western depressions (winter cyclone system originating over Mediterranean Sea). Temperature ranges from -2°C to 45°C, but at times can reach 50°C (122°F) in summer and can touch down to -10°C in winter. Punjab has four major seasons; First is hot-dry weather, pre-monsoon (April to June) when temperature rises as high as 110°F and very less rain falls. Second is slightly less hot but humid monsoon season (July to September). Third is Cooler / mild and mostly dry weather (October to November). Fourth is cool to cold weather with light showers of rain from western disturbances (December to March) when temperature goes down as low as 40°F. Average rainfall annual ranges between 96cm sub-mountain region and 46cm in the plains. Most of the rain falls from summer monsoon system which enters in Punjab from north-east, so, north-eastern and northern parts receive more rain as the foothills of Himalayas and Potohar Plateau are much wetter. These areas got rainfall from western depressions and convectional currents too. Thunderstorms are common in north and north-west. Some northern mountainous parts also receive relief rainfall. The amount of precipitation keeps decreasing southwards where the extreme southern tip is the driest part of the province; the Cholistan Desert (a part of the great Thar Desert). This area receives much less rain and spells of high temperature. Extreme heat, dryness, dust storms and loo (hot and dry wind) are the main features of the southern arid parts of the province. [23]

The river Indus and its tributaries are the main surface water resources of the Punjab province. The length of Indus River in the country is about 2750 kilometers (km). The Indus River exhibits great season variations, with more than 80 percent of the total annual flow occurring during the summer months, peaking in June, July and August. The Indus River and its tributaries on an average bring about 154-million-acre foot (MAF) of water annually. This includes 144.9 MAF from three western rivers and 9.14 MAF from the

[21] ESMF, Punjab Human Capital Investment Project
[22] Building Code of Pakistan 2007
[23] A HISTORICAL ANALYSIS OF TEMPERATURE AND RAINFALL PATTERNS OF PUNJAB, PAKISTAN, Pakistan Geographical Review, Vol.74, No2, December. 2019, PP 74-89

eastern rivers. About 104.7 MAF is diverted for irrigation, 39.4 MAF flows to the sea and about 9.9 MAF is consumed by the system losses which includes seepage, evaporation and spills during floods.

Pakistan is the third-largest user of groundwater for irrigation in the world. The surface water supplies are sufficient to irrigate 27% of the area, whereas the remaining 73% is directly or indirectly irrigated using groundwater. The Punjab province uses more than 90% of the total groundwater abstraction. Currently, 1.2 million private tube wells are working in the country, out of which 85% are in Punjab, 6.4% are in Sindh, 3.8% are in Khyber-Pakhtunkhwa, and 4.8% are in Baluchistan. The total groundwater extraction in Pakistan is about 60 billion m3. The access to groundwater has helped farmers in securing food for the increasing population. However, unchecked groundwater exploitation has created severe environmental problems. These include rapidly falling groundwater levels in the irrigated areas and increased soil salinization problems. The groundwater levels in more than 50% of the irrigated areas of Punjab have dropped below 6 m, resulting in increased pumping cost and degraded groundwater quality. Despite hectic efforts, about 21% of the irrigated area is affected by different levels of salinity. [24]

The Punjab experiences periods of low visibility due to fog, mist and smog between November and February each year for an average of 10 to 25 days. In recent years, however, the situation is exacerbating as it causes a sensation of burning of eyes and foul smell. Data shows that this is a regional phenomenon, covering large areas of South Asia from Delhi to Faisalabad and beyond. Various studies have linked the recent worsening of air quality to the burning of rice stubbles in the Indian states of Punjab, Haryana and Uttar Pradesh. During 2016 alone, around 32 million tons of rice stubble were estimated to be burnt in Indian Punjab. Local sources of pollution, however, also had their own contribution to this situation.

Data on air quality[25] in the province is scant. Sporadic monitoring of air pollutants suggests that ambient air quality standards for particulate matter with size 2.5 micron ($PM_{2.5}$), oxides of Nitrogen (NOx) and Sulphur (SOx) are exceeded frequently. Industrial units both large and small, many of which use furnace oil high in Sulphur contents, burning of agricultural residual and municipal waste, and vehicular emissions are the main source of these pollutants. A wide range of small to medium-scale industries, including brick kilns and steel re-rolling mills make a much larger contribution as compared to the size of their economic activity due to the use of "waste" fuels such as old tires, paper, wood, and textile waste. At the micro level, air quality is further impaired by the widespread use of small diesel electric generators in commercial and residential areas in response to electricity outages.

Most of the area of South and central Punjab is agricultural in nature, which is a habitat of several floral species. Dalbergiasissoo (Shisham), Poplar, Kikar (Accacia arabica) are the most common trees, found in these areas. Common floral species with rooted vegetation and few different types of herbs, shrubs, and bushes are also present along canal and roads. The species like Prosopis cineraria, Salvedora olieodis and Capparis decidua are endangered species and present in the area.

Vast Indus flood plains have been cleared of natural vegetation to grow crops. Very little wildlife habitat has been left untouched. Only animals like the jackal, mongoose, jungle

[24] Groundwater Governance in Pakistan: From Colossal Development to Neglected Management, 27 October 2020
[25] Punjab Clean Air Action Plan, EPD, Government of Punjab

cat, civet cat, scaly anteater, desert cat and the wild hare occur in these areas. Hog deer is found in riverine tracts. The crop residues and wild growth support reasonable populations of black and grey partridges. Little vegetative cover, severity of climatic conditions and the great thrust of grazing animals on the deserts have left wild animals in a precarious position. Parts of Thal and Cholistan are now being irrigated, with the situation almost identical to that of the flood plains. Chinkara can still be found in average numbers in Cholistan, but rarely in Thal. The blackbuck, once plentiful in Cholistan has now been eliminated. However, efforts are being made to reintroduce them back into the country. A small number of blue bulls are found along the Pak-Indian border, and some parts of Cholistan. Grey partridge, species of sand grouse and the Indian courser are the main birds of the area. Peafowl occur in some areas in Cholistan.

The Indus dolphin, fishing cat, and smooth otter are found in the Indus River waters below the Chashma Barrage. The gavial has become extinct in Pakistan. Wild boar numbers have increased because of the immunity they enjoy in a Muslim society that forbids its consumption by humans. However, information about them is scanty. Information about carnivores in general is difficult to obtain because of their nocturnal mode of life and high mobility. [26]

The Province of Punjab, with an area of 50.96 million acres and meagre forestry resources over only 1.58 million acres in the public sector. The resources managed by the forest department include compact plantation i.e., Coniferous, Coniferous/Scrub Forests (80129 acres), Scrub Forests (679663 acres), Range Lands (241575.37 acres), Irrigated Plantations (440052.71 acres) and Riverine Forests (143343.33 acres).

The facilities managed by Punjab Forest, Wildlife and Fisheries department included 07 national parks, 36 wildlife sanctuaries, 23 game reserves, 07 zoological gardens, 13 wildlife parks and 01 safari zoo. [27]

In the administrative setup of Punjab, the province is divided in to divisions, districts and tehsils. There are 09 divisions, 36 districts and 143 tehsils in Punjab. The total population[28] of Punjab was estimated to be 101.019 million in 2017, which is 53% of the national population. The province had an annual growth rate of 2.13% as compared to the national rate of 2.4% in 2017. The main languages spoken in the province include Punjabi, Urdu and Saraiki and the dialects of Mewati and Potowari.

In 2017-18, the national literacy rates were 52% and 73% for women and men, respectively. The literacy rates in the province were 71.7 % for women and 77.7% for men. According to Pakistan Social and Living Standards Measurement (PSLM) survey[29], out of school children at National level is 32 percent in 2019- 20. Overall regional comparison shows that out of school children are higher in rural areas with 37 percent as compared to 22 percent in urban areas. Overall Punjab has the lowest out of School children with 24 percent while Balochistan has the highest out of school children with 47 percent.

The health facilities are available to the people in the province. In 2019[30], 389 hospitals, 1201 dispensaries, 319 rural health centers, 2510 basic health units, 17 T.B centers and 280 MCH centers were providing services to the people of Punjab.

[26] ESMF, Punjab Human Capital Investment Project
[27] https://fwf.punjab.gov.pk/overview
[28] Bureau of Statistics, Punjab in Figures 2020
[29] Key Findings Report Pakistan Social and Living Standards Measurement Survey 2019-20
[30] Bureau of Statistics, Punjab in Figures 2020

The major crops in the province are wheat, rice, sugarcane, cotton, gram, maize, jowar and bajra. In 2018-19[31], the area under cultivation of wheat was 6.49 million ha, rice 1.90 million ha, sugarcane 711000 ha, cotton 1.88 million ha, gram 856000 ha, maize 574000 ha, jowar 212000 ha, and bajra 428000 ha.

The livestock of Punjab included cattle, buffalos, sheep, goats, poultry, camels, horses, mules and donkeys. The population of cattle in the province was 13.2 million, buffalos were 16.01 million, sheep were 4.9 million, goats were 17.4 million, poultry were 481.6 million, camels were 0.2 million, horses were 0.1 million, mules were 73000 and donkeys were 1.99 million.

The civilian labor force in the province was 39.98 million in 2017-18 which included 28.76 million male and 11.22 million female. Out of total reported labor force, 37.60 million is employed and 2.39 million labor force was unemployed.

4.3. Area Covered by HESCO

Hyderabad Electric Supply Company (HESCO) operates in 13 districts of Sindh Province. These districts included Badin, Thatta, Sujawal, Tando Allah Yar, Tando Muhammad Khan, Sanghar, Matiari, Shaheed Benazir Abad (old Nawab shah), Jamshoro, Mirpurkhas, Umerkot, Tharparker, and Hyderabad. HESCO has administratively divided 13 districts of Sindh Province into 4 operation Circles, 15 operation Divisions and 67 operation Sub-divisions along with 6 construction divisions, and 5 maintenance divisions[32].The baseline conditions of the areas covered by HESCO are presented in below paragraphs. The map of HESCO is presented in **Figure 4.3**.

Sindh is the third largest province of Pakistan by area and second largest province by population after Punjab. The total area of Sindh Province is 140,914 square kilometers with a north south length of about 540 km and a breath of about 250 km. The geographical location of Sindh is 25.8943º North latitude and 68.5247º East longitude. The Balochistan province is on the west and Punjab to the north of Sindh. The Arabian Sea lies in the South while on east side, Sindh is bordered by the Indian states of Gujrat and Rajasthan.

Sindh can be divided into four distinct parts topographically[33]: Kirthar range on the west, a central alluvial plain bisected by the Indus River in the middle, a desert belt in the east and south-east, and the Indus delta in the south.

Kirthar Range: The Kirthar range consists of three parallel tiers of ridges, which run from north to south with varying width between 20 and 50 kilometers. The range consists of ascending series of ridges from east to west, which are about 1,200 to 2,400 meters high. The hills decrease in altitude from north to south. Towards the south, they spread out in width and form a Sindh Kohistan. The Kirthar range has little soil corner and is mostly dry and barren.

[31] Bureau of Statistics, Punjab in Figures 2020

[32] http://www.hesco.gov.pk/area_operation.asp#:~:text=To%20ensure%20uninterrupted%20supply%20of,and%205%20M%20%26%20T%20divisions.

[33] ESMF, Sindh Solar Energy Project, Government of Sindh 2018

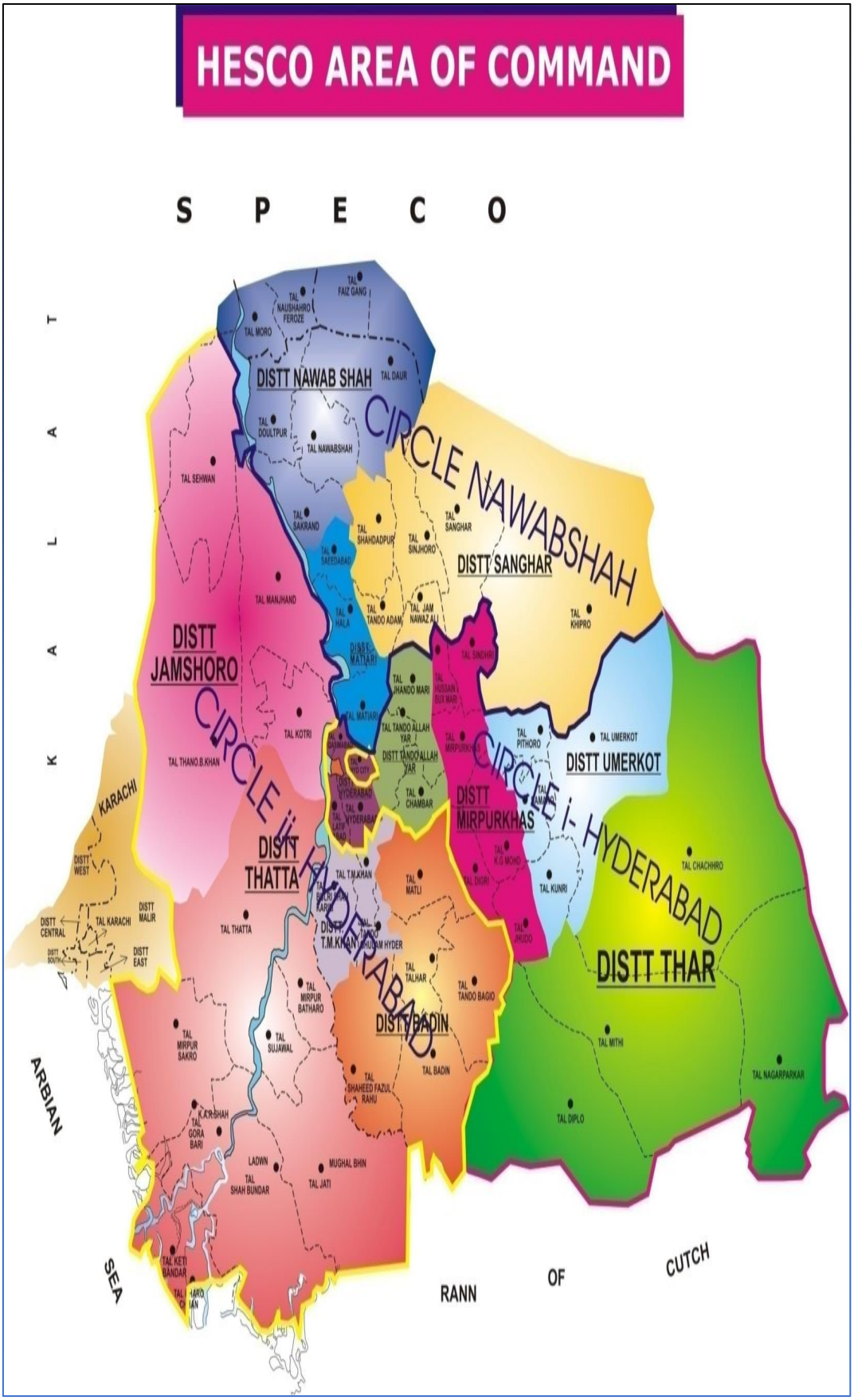

Figure 4-3: Map of HESCO Area

Central Alluvial Plain: The fertile central plain constitutes the valley of the Indus River. This plain is about 580 kilometers long and about 51,800 square kilometers in area and gradually slopes downward from north to south. It is a vast plain, around 100 meters high above sea level. The lower part of this plain, which starts from Hyderabad is predominantly covered with flood silt. There are a few limestone ridges in this plain. Some of them are near Rohri in Sukkur district commonly known as Rohri cuesta, which extends about 50 kilometers South of Rohri and has an average height of about 75 meters above sea level. Another such ridge is the Ganjo Takkar, a cuesta of limestone, which stretches southward from Hyderabad up to a distance of 25 kilometers. There are also a few depressions and lakes in this plain. According to the past tradition, the Central Alluvial Plain has been divided into three distinct zones: (i) Lar or Southern Sindh comprising the areas south of Hyderabad (ii) Wichalo or Central Sindh, the area lying immediately around Hyderabad and (iii) Siro, or Northern Sindh, comprising the area beyond Naushero Feroz and Sehwan.

Eastern Desert Belt: The eastern desert region includes low dunes and flats in the north, the Achhrro Thar (white sand desert) to the south and the Thar Desert in the southeast. Its major portion lies in India. In the north it extends up to Bahawalpur division of Punjab, where it is called Cholistan. With little rainfall and low water table, most of the area is a barren land with scattered stunted thorny bushes. In the extreme southeast corner of the desert is Nagar Parkar taluka of Tharparkar district. There is small hilly tract known as Karunjhar hills. These hills are about 20 kilometers in length from north to south and have height of about 300 meters. It consists of granite rocks, probably an outlying mass of the crystalline rocks of the Aravalli rang. The Aravalli series belongs to Archean system, which constitutes the oldest rocks of the earth crust.

Indus Delta: The distributaries of the Indus start spreading out near Thatta across the deltaic flood plain in the sea. The even surface is marked by a network of active and abandoned channels. At a high tide, a coastal strip of 10 to 40 kilometers wide is flooded.

The geology of Sindh is divisible in three main regions, the mountain ranges of Kirthar, Pab containing a chain of minor hills in the west and in east it is covered by the Thar Desert and part of Indian Platform where the main exposure is of Karunjhar Mountains, which is famous for Nagar Parker Granite. In the north Sindh is enquired by rocks of Laki range extending to Suleiman range and its southern most part is encircled by the Arabian Sea. The rocks exposed in this area belong to upper Cretaceous period and are recent in age. The sub-surface rocks are about 20,000 feet thick and belong to Cretaceous and Pre-Cretaceous periods. Mostly the rocks are of sedimentary origin of clastic and non-clastic nature and belong to marine, partly marine and fluviatile depositional environments. Basin wise Sindh lies in the lower Indus Basin and its main tectonic features are the platform and fore deep areas. Thick sequences of Pab sandstone of Upper Cretaceous Ranikot Group (Khadro, Bara, Lakhra) of Paleocene, Laki, Tiyon, and Khirthar of Eocene age, Nari Formation of Oligocene, Gaj Formation of Lower to Middle Miocene, Manchar of Upper Miocene to Pliocene, Dada Conglomerate of Pleistocene are present in various areas of Sindh. Limestone and sandstones are the most dominant sedimentary rocks in the area. Structurally Sindh generally contains gently folded anticlinal features trending in north-south direction.

The Thatta District geologically belongs to early Eocene Laki formation. The Laki formation is dominantly composed of cream colored white fossiliferous limestone of massive and nodular character with subordinate calcareous sandstone, shale and marl. Structurally the region belongs to Karachi Arc zone that comprises a series of about 200 km long and 50 km wide parallel to sub parallel, small, rounded dome shaped, anticline

hills with corresponding wide synclinal valleys and Piedmont plains. The elevation of the area varies from 350 m in the north to 75m in south. The main rivers of the area are Naing, Barran and Malirs. In addition to these rivers, the semi-arid region is characterized by a number of dry streams that dissects the eastern slope of Kirthar Range. The Rod Nadi is one of such consequent streams that has carved its channel through folded series of rocks.

In Tharparkar District, the area has a remarkable feature as it exhibits a variety of rocks from Pre-Cambrian basement rock to Tertiary sandstone and clays depicting a long tectonic history of the region. The desert to the south of Nagarparkar is believed to have grown over last 3,000 to 4,000 years, before that the region had more humid and tropical climate which favored growth of thick vegetation and habitation of wild animals such as and peacocks and deer. The presence of lignite coal in Thar coal field showed that a humid climate existed at the time. The eastward extension of desert condition was prevented by Aravalli Mountain range about 250 km from Nagarparkar where moisture bearing clouds of southwest monsoon precipitates. Since there are no hills across the direction of winds the south west monsoon just passes over Thar Desert. The Nagarparkar is surrounded on three sides by Rann of Kutch shelf which was a shallow arm of sea during Pleistocene which extended and locally submerged the sloping land. The Indus once flowed into it and is now silted up and forms an extensive and desolate salt marsh during dry period and tidal flat covered with little seawater during monsoon period. The River Indus and its banks are alluvial deposits of fine sands and non-plastic silts.

According to the seismic map of Pakistan, the districts of Sindh lie in Zone 2A and 2B. Zone 2A has ground acceleration of 0.08 to 0.16 g and zone 2B has 0.16 to 0.24 g. One city (Diplo) lies in zone 3 which has ground acceleration of 0.24 to 0.32 g of the earthquake zones classification of the uniform building code of Pakistan[34]. Most of the subprojects are likely to be located in zone 2A.

Large quantities of sediments are brought by Indus River and are deposited along the Indus River banks and especially in the deltaic zone. Further, hill torrents also bring silt and clay deposits in the lower reaches. These silts provide a highly fertile layer of soil to the region. The soils along the Indus River banks are silty and sandy loam. Outside the active flood plain, the soils are generally calcareous, loamy and silty clay. Most of the soils in the district of Thar are sandy. Moving sand dunes are also found in these districts. In Tharparkar area, the undulating flat plain is covered with variable soils mainly derived by erosion and residual weathering of the granites, granite gneisses and amphibolite's. While in the case of Dadu and Jamshoro, the soils in the plain near to subproject sites have homogenous porous structure, mainly silt and fine silt clayey, strongly calcareous with 18-20 percent lime content uniformly distributed in the profile. Small patches contain shallow or very shallow, strongly calcareous, gravely and stony loams. While the soils afford very sparse shrub and grass vegetation offering limited grazing, the rocky outcrop only has a water catchment value.

The climate of Sindh is arid and hot. According to classification made by United Nations Educational, Scientific and Cultural Organization (UNESCO), the region has been divided into three zones: Coastal: South of Thatta; Southern: from Thatta through Hyderabad to Nawab shah; and Northern: from Nawab shah to Jacobabad. In an average year, coastal region receives a maximum rainfall of 175-200mm. The coldest season extends from December to February when dominating influence is the eastern winds. Mean monthly temperature during winters varies from 20°C near the coast to 14°C in the north. Forests

[34] Building Code of Pakistan 2007

are very rare in south of Nawab shah. Mean daily temperature rises rapidly from February onwards to its peak in May and June, rather earlier in the south than in the north. Mean maximum temperature reaches about 24°C in May in the south and as high as 45°C in June in the north. The severity of the heat varies from year to year - the highest temperature ever recorded on the subcontinent was 53°C at Jacobabad. The average humidity is 40-60 percent in the Sindh. Monthly rate of evaporation in the irrigated areas varies from 76mm in the north to 114mm in the south. Rainfall for the three months is less than 25mm.Winds are rather variable, being transitional from the northeast to southwest as the season develops. Humidity is at its lowest generally below 40 percent, but increases as the sea breeze becomes dominant. Evaporation is correspondingly at its highest exceeding 25mm in rocky desert areas.

The Indus River is the major source of surface water in the province. There are canals drawn from the rivers and a number of wetlands also exist in the province. Sindh is one of the primary beneficiaries of the Indus Basin Irrigation System (IBIS). It has three major barrages on the Indus River that divert approximately 48 million-acre-foot (MAF or 59.0 billion cubic meters- BCM) of water annually to the 14 main canal commands in Sindh. These canal systems have an aggregate length of 21,445 km, which serve a gross command area (GCA) of 5.8 million ha. There are about 42,000 watercourses (tertiary channels), which have an aggregate length of about 120,000 Km. Around 78 percent of the area in Sindh province is underlain by saline groundwater, which is unsuitable for irrigation. Surface and sub-surface drainage systems are inadequate, resulting in much of the drainage effluent being either retained in the basin or disposed into rivers and canals. There are 13 existing surface drainage systems in Sindh, which serve a total area of over 2.5 million hectares and have an aggregate length of about 6,133 km. In addition, there are two sub-surface drainage systems, which serve an area of 0.04million ha. Due to inadequate drainage cover, nearly one-fifth of the canal command areas have been affected by water logging and salinity.

The available groundwater resource in Sindh is about 5-million-acre foot (MAF) and has ample potential for irrigation however, the use of groundwater is comparatively lesser (4.3 billion cubic meter) than surface water because of two primary reasons: firstly, most of the area is lying on saline or brackish water; secondly, canal command areas are being provided with surface irrigation supplies. The river Indus, having an influent behavior, loses water to the underlying aquifer, as it lies on a slight ridge, which slopes away in a lateral direction up to Larkana District. A part of the flow drains towards the desert in the east, whereas other flows towards the Kirthar Hills. During the harvest season of winter crops, the flow in the river below Sukkur Barrage becomes negligible, so the river starts receiving groundwater, especially from the left bank. Studies have revealed contamination of groundwater by a variety of contaminants in Sindh province. Some of the water bodies are severely deteriorated by microbial contamination; 53% of the area is affected by the calamitous outcomes of salinity and water-logging; excessive fluoride exceeding the World Health Organization (WHO) and local thresholds has been reported in Nagar Parkar area; and recent physiochemical analyses reveal elevated arsenic concentration in Matiari, Khairpur and Jamshoro districts. Multiple approaches in the past few decades have been employed to address the hydrogeochemical characterization and groundwater quality assessment for drinking and irrigation purposes. Categorically, the lower Indus plain comprises 14 cultivatable irrigation areas. The situation in the central Sindh, Rohri canal command area is vulnerable to surface and groundwater contamination which would

ultimately risk the potability and agricultural utilization of groundwater[35].

The air quality in most districts of Sindh is poor and unhealthy. According to World Bank Report[36], Outdoor air pollution is the third major environmental health risk factor in Sindh. In addition to its high economic cost, equivalent to more than 1.4 percent of the province's GDP, it results in more than nine thousand premature deaths in Sindh, principally among adults, and more than 200,000 disability adjusted life years (DALYs). These are the consequences of high concentrations of fine particulate matter (PM2.5) in urban areas, which are five to nine times higher than the levels recommended by recent World Health Organization (WHO) guidelines. Household air pollution is a severe environmental problem with higher incidence among rural households. More than 90 percent of rural households and about 15 percent of urban households in Sindh use wood/biomass fuels for cooking. The use of these fuels in the household environment causes air pollution levels that often are several times higher than outdoor air pollution in urban areas and cause substantial adverse health effects, particularly among adult women and young children, who tend to spend more time in household environments. The use of these fuels in unimproved stoves with no venting of smoke results in especially high exposure to damaging concentrations of air pollutants.

The Sindh province has a diverse habitat, which supports a large variety of animal from riverine forest to the desert ecosystem of Tharparkar, and from Kirthar mountains to the mangroves forest of Indus Delta. Most areas in Sindh are located on the border land of tropical and extra tropical regions with very little rainfall. The dominant flora of this arid zone consists of communities of deciduous and xerophytic trees and shrubs. Plants and trees with small leaves and thorny species are predominant. These include: Babul (Acacia nilotica), Nim (Azadirachta indica), Ber (Ziziphus vulgaris or jujube), Lai (Tamarix Orientalis), Kirrir (Capparis aphyla), and Kandi (Prosopis cineraria) and various species of mangroves (Aegiceras majus, Brugiera gymnorhiza, and Ceriops candolleana - Chauri/Kirari) and weeds in Indus Delta. Several types of water lilies are also found in waterlogged areas, surface drains, and on the periphery of lakes. In many places, the open water is dominated by submerged aquatic vegetation filling the whole water profile. The more common weeds and lilies include: Typha Angustala, Juncus articulatus, Scipus Littotalis, Phragetes Kark, and Nyasphaea Lutus.

Manchar Lake is one of the largest fresh water lakes in Pakistan, situated in Dadu district. It is a vast natural depression flanked by Kirthar range in the west, Lakhi hills in south and river Indus in the east. On the north eastern side is the protective embankment. The lake is fed by two canals, the Aral Wah and the Danister from the river Indus. The lake also collects water from numerous small streams in the Kirthar Mountains. The common large mammalian species are Asiatic jackal (Canis aureus), Red Fox (Vulpes vulpes), Jungle cat (Felis chaus), Small Indian mongoose (Herpestes javanicus), Grey mongoose (Herpestes edwardsi). While the small mammals include Five-striped Palm Squirrel (Funambulus pennant), and Indian Gerbil (Tatera indica). The Desert hare (Lepus nigricollis) and Long-eared Hedgehog (Hemiechinus collaris) are also reported in the area. Reptilian Species in the area include Indian Flapshell turtle (Lissemys punctata andersoni), Afghan Ground Agama (Trapelus megalonyx), Indian Garden Lizard (Calotes v. versicolor), Spotted Indian House Gecko (Hemidactylus brookii), Three fingered sand fish (Ophiomorus

[35] Hydrogeochemical Characterization and Suitability Assessment of Groundwater: A Case Study in Central Sindh, Pakistan.
[36] Sustainability and Poverty Alleviation Confronting Environmental Threats in Sindh, Pakistan

rathmai), Black Cobra (Naja). The amphibian species include Marbled Toad (Bufo stomaticus) and Skittering Frog (Euphlyctis c. cyanophlyctis). The avian species in the area include Little Grebe (Tachybaptus ruficollis), White Pelican (Pelecanus onocrotalus), Large Cormorant (Phalacrocorax carbo), Indian Pond Heron (Ardeola grayii), Large Egret (Egretta alba), Intermediate Egret (Egretta intermedia), Cattle Egret (Bubulcus ibis), Spoonbill (Platalea leucorodia), Yellow wattled Lapwing (Vanellus malabaricus) and House Bunting (Emberiza striolata).

The Thatta area has important habitat of mangroves, mudflats, coasts and provide habitat to species of mammals, birds, reptiles and amphibians. The key mammalian species in the Thatta District include Fishing Cat, Jungle Cat, Desert Cat, Small Indian Civet, Bengal Fox, Jackal, Wild Boar, Mongoose, Desert hare and Squirrel are reported in the area. In small mammals, nine species belonging to two orders and four families are reported. Many water birds, mainly larids and charadriids use the area during winter as staging, feeding and wintering ground. As many as 85 species of birds have been reported in the area[37]. Around 11 species of reptiles belonging to three orders and 10 families are reported which include five snakes, five lizards, one fresh water turtle. Three species of amphibians are reported in the area of which included two species of frogs and one toad.

Currently, there are a large number of wildlife protected areas in Sindh. Sindh Wildlife department (SWD) is the management authority of wildlife protected areas (including protected wetlands), game reserves and national parks. Apart from these protected areas, a number of wetlands are present in Sindh province, ten of which are declared wetlands of international importance (Ramsar Sites). As per Sindh Wildlife Protection Ordinance, the protected areas have been divided into the following three categories:

National Parks: Hunting and breaking of land for mining are prohibited in national parks, as are removing vegetation or polluting water flowing through the park. There is only one national park (Kirthar National Park) in Sindh province, which is located in Dadu and Jamshoro districts.

Wildlife Sanctuaries: Wildlife Sanctuaries are areas which are left as undisturbed breeding grounds for wildlife. Cultivation, grazing and residing is prohibited in the demarcated areas. Special permission is required for entrance of general public. However, in exceptional circumstances, these restrictions are relax-able for scientific purposes or betterment of the respective area at the discretion of the authority.

Game Reserves: Game reserves are designated as areas where hunting or shooting is not allowed except under special permits.

The protected areas declared by Sindh Wildlife Department (SWD) however contain pockets of lands where irrigation and cultivation are on-going since ages and even after the declaration of these areas as protected areas. There are proprietary issues as well as other legal issues pertaining to this aspect. Furthermore, the exact geographical boundaries of these protected areas are not very well defined on available maps, resulting in the approximation of these boundaries.

The total population[38] of Sindh was estimated to be 47.9 million in 2017 census. The average annual growth rate since the previous census in 1998 has been estimated to be 2.41percent. With 8.58 million households, the average household size in the province is 5.58 persons, according to the latest census. Over 52 percent of the Sindh residents live in

[37] World Wildlife Fund - WWF Ecological Assessment Report 2010-11
[38] http://www.pbscensus.gov.pk/

urban areas whereas the national average for urbanization is 36.4 percent. The main languages spoken in the province include Sindhi, Urdu, Pashto, Punjabi, Saraiki and Balochi.

In 2017-18, the national literacy rates were 52% and 73% for women and men, respectively. The literacy rates in the province were 49.9 % for women and 72.8 % for men[39]. According to PSLM survey[40], out of school children at National level is 32 percent in 2019- 20. Overall regional comparison shows that out of school children are higher in rural areas with 37 percent as compared to 22 percent in urban areas. The out of school children in Sindh are 44 %. 29 % children are out of school in urban areas and 58 % in rural areas of the province. This is very high number.

Sindh's population is mainly Muslim. Sindh is home to nearly all (93 percent) of Pakistan's Hindus, who form 8.41 percent of the province's population. The majority of Muslims are Sunni Hanafi followed by Shia. The non-Muslim communities include Hindus, Christians, and Zoroastrians. A large number of Hindus migrated to India after the independence of Pakistan in 1947 while Muslim refugees, Muhajirs, arrived from India.

Sindh has a rich heritage of traditional handicraft that has evolved over the centuries. Perhaps the most professed exposition of Sindhi culture is in the handicrafts of Hala, a town some 30 kilometres from Hyderabad. Hala's artisans manufacture high-quality and impressively priced wooden handicrafts, textiles, paintings, handmade paper products, and blue pottery. Lacquered wood works known as Jhandi, painting on wood, tiles, and pottery known as Kashi, hand woven textiles including khadi, susi, and ajraks are synonymous with Sindhi culture preserved in Hala's handicraft. The *ajrak* has existed in Sindh since the birth of its civilization. The color blue is predominantly used for *ajraks*. Sindh was traditionally a large producer of indigo and cotton cloth and both used to be exported to the Middle East. The ajrak is a mark of respect when it is given to an honored guest or friend.

A major part of population lives in rural areas and poverty is pervasive in rural Sindh. About 37 percent of the rural population lives below the poverty line, compared to 33 percent in Pakistan on an overall basis. Over 70 percent of the rural population is landless. Analysis of 2001 Pakistan Rural Household Survey data shows that rural households, including the landless, derive 56 percent of their income from agriculture, directly or indirectly. A typical poor household in rural Sindh has little assets or land, depends on wage income, and is significantly larger than the non-poor household in Sindh or even compared to the average poor household of Pakistan. The rural poor tend to be employed mostly as agriculture wage workers. Rural Sindh is highly dependent on public services with little role of the private sector. Thus, reforms to improve public service delivery and stimulate rural growth that raises agricultural and nonagricultural wages are fundamental for reducing poverty.

The Benazir Income Support Program (BISP) poverty assessment report reveals that the overall mean poverty score, which may vary between 0 and 100, is highest for Punjab (27.7), and lowest for Sindh (20.3). The corresponding scores for Khyber Pakhtunkhwa (KP) and Balochistan are higher than Sindh but lower than Punjab. A major part of population (over 60 percent) lives in rural areas and poverty is pervasive in rural Sindh.

The Sindh Department of Health currently has more than 14,000 Doctors 2,000 Nurses and over 12,000 paramedics serving all over the province. The province has two medical

[39] Sindh at a Glance, Pakistan Bureau of Statistics 2018
[40] Key Findings Report Pakistan Social and Living Standards Measurement Survey 2019-20

universities; one each at Karachi and Jamshoro, and three medical colleges; one each in Sukkur, Nawab Shah and Larkana, 12 Nursing School, 10 Midwifery Schools and 5 Public Health School for lady health visitors. The huge network of hospitals and health facilities include 6 teaching hospitals, 5 specialized institutions for chest, dermatological and mental illness, 11 district headquarters hospitals, 27 major hospitals located in the major cities, 44 Taluka hospitals, 99 Rural Health Centers in small towns, 738 basic health units in Union Councils, 305 dispensaries in larger Union Councils, 36 MCH Centers 12 maternity Homes and 39 centers for traditional medicine.

Gender discrimination has become an issue in Pakistan with many governments and non-government organizations working to resolve the issue. Other parts of Pakistan, women in Sindh commonly face problems in family law, discrimination at work place, discrimination in education, physical or psychological abuse, and social restrictions. In Sindhi culture, there are different norms, which become hurdles for women to get basic right like education, mobility, and freedom. Arranged forced marriages are still common and women commonly have no access to court for justice due to cultural hindrance. The literacy rate and school enrolment ratio of girls in province is very low, with girls remaining at home to complete domestic chores.

Honor killing are criminalized in Pakistani law, with punishment of 10-14 years in prison. However, each year, hundreds of women, girls and men are killed in the Country in the name of restoring the family's honor; there were 125 reported cases of honor killing, known as *karo kari* in Sindh, during 2016.[41] Marriages are sometimes arranged in order to settle disputes between different clans, particularly in rural areas.

Within the agriculture sector, there is unique relationship that exists between the women and nature. Women are pre-dominant in all the sub-sectors of agriculture namely farming, processing and distribution. The predominant role of women in agriculture has enabled most women farmers to become increasingly responsible for educational and other material needs of their wards, especially for female headed households.

Bonded labor is quite common in Sindh and according to recent estimates, 1.2 to 1.3 million people are engaged in bonded labor in the province. During the time that they are bonded, laborers and their families are kept in detention-like conditions. Often the wives and children of male laborers are also held in captivity.[42]

Sindh has a number of distinct vulnerable communities. These include the *Mohanas* (boat people) of Manchar Lake and the original Thari people who have a distinctive culture and lifestyle, conditioned to living in almost perpetual drought. These communities are generally poor and vulnerable. A majority, though not all, of these people are Hindus belonging to what are termed as the scheduled castes.

The total Scheduled Cast population in Sindh was around 300,000 as per the 1998 Census. Out of these, 93 percent were amongst the rural population of Sindh and out of this rural population, 87 percent were residing in the Tharparkar District. The Hindu Schedule Cast tribes in Sindh that may be termed as ethnic minorities are mainly Bheels, Kolhis, Oads and Meghwars. Some Muslim tribes of Tharparkar can also be considered as ethnic minorities, given that their culture and lifestyle is very similar to the Hindu tribes. The Bheels are mostly nomads, while the Kolhis and Meghwars (who migrate seasonally) are

41 Statistics taken from Human Rights Commission of Pakistan (http://hrcp-web.org/hrcpweb/campaigns/)

42 Source: Triple Bottom-Line – Sustainability Advocacy (http://www.tbl.com.pk/the-menace-of-bonded-labour-in-pakistans-agricultural-sector/)

engaged largely in non-farming work e.g., road construction and house building. Large numbers of women also work on construction sites. Women of these tribes are well known for their hard work and put in long hours of physical labor whether in Thar or outside.

A large number of archaeological, cultural, historical, and religious sites and buildings exist in the Sindh Province and many of them are protected under the Antiquities Act of 1975 and the Sindh Cultural Heritage (Preservation) Act of 1994. An estimated 341 sites are notified by the Sindh government under these acts.

5. Environmental and Social Impact Assessment

This Chapter assesses the generic impacts of the proposed project on the physical, biological and human environment of the project area. Also provided in the Chapter are the recommended generic mitigation measures to minimize if not eliminate the potentially adverse impacts. More specific impact assessment and the associated mitigation measures will be covered in the ESIAs and ESMPs of the proposed subprojects.

5.1. Design Phase Considerations (Components 1 and 2)

The decisions made at the design phase of any project can be quite far reaching. For the Components 1 and 2 of proposed project, the aspects which can be significant with respect to the environmental impacts include:

- Site selection for new grid stations
- Route selection for transmission lines
- Type of equipment.

These concerns associated with the design phase and the measures to avoid/minimize them are tabularized below in **Table 5.1**.

Table 5-1: Environmental and Social Aspects to be Included in Design

Impacts	Likely Causes for Proposed Project	Measures to be Incorporated in Project Design
Soil erosion	Poor site selection; unstable soils.	■ Areas having unstable soil will be avoided for the grid station sites and transmission line/HT feeder routes. ■ Canal and river banks will be avoided while placing the transmission line towers.
Soil and water contamination	Absence of appropriate waste (solid and liquid) disposal.	■ Appropriate waste disposal systems will be included in the design of the grid stations and associated facilities.
	Using transformers with PCB-containing oil.	■ The transformer procured during the proposed project will be PCB-free. ■ Leaked oil collection arrangement (such as a channel and a drain pit below the transformers) will be incorporated in the design of the transformer foundations at the grid stations.
Loss of natural vegetation and threat to wildlife	Routing the transmission lines through forested and wildlife-sensitive areas	■ Most of the works will be carried out either inside the existing grid stations or within communities/cultivation

Impacts	Likely Causes for Proposed Project	Measures to be Incorporated in Project Design
		fields where the natural habitat has long been modified. ■ Areas having precious/sensitive natural vegetation and wildlife resources will be avoided for the grid station sites and transmission line routes, where possible. ■ Protected areas (national parks, wildlife sanctuaries and game reserves) will be avoided while selecting the grid station sites and transmission line routes.
Resettlement Issues	Poor site selection; Poor route alignment	■ The new grid stations to be established as part of the proposed project will preferably be located in open areas, free of any existing structure. Government-owned land will be preferred. ■ The transmission line routes included in the proposed project will be selected avoiding settlements, buildings, other structures and cultivation, as far as possible, thus minimizing the resettlement issues.
Safety hazards and public health concerns	Poor site selection; Poor route alignment; Inappropriate equipment selection (such as PCB-containing transformers)	■ All safety precautions will be taken to minimize the safety hazards and risk of accidental electrocution. These will include double periphery walls at the grid stations and appropriate clearance (between the live wires/connectors and the buildings/structures/trees). ■ Transmission lines will not be routed through the settlements as far as possible. Appropriate clearance will be maintained all along the transmission lines and feeders. ■ Appropriate waste disposal systems will be included in the design of the grid stations. These include sewage disposal, and if required, treatment system (e.g., septic tank).

Impacts	Likely Causes for Proposed Project	Measures to be Incorporated in Project Design
		■ PCB-free transformers will be selected for the project. (This aspect is already included in the DISCOs' transformer specifications.)
Noise emissions	Poor equipment selection	■ The project equipment, particularly transformers to be installed at the grid stations will meet the noise standards (70dB(A) for industrial zones day and night; 45dB(A) night and 55 dB(A) daytime for residential areas).
Aesthetic value	Intrusion in the natural landscape	■ Tree plantation will be carried inside and at the periphery of the grid stations, without compromising the safety aspects (i.e., required clearances will be maintained). For this purpose, provision will be made in the site layout of the grid stations.

5.2. Potential Impacts during Construction and O&M Phases (Components 1 and 2)

An overview of the potential impacts and their respective mitigation measures for the construction and O&M phases of the interventions under Components 1 and 2 of the project is provided in **Table 5.2**. More detailed and subproject-specific impact assessment will be carried out as part of ESIAs and ESMPs.

Table 5-2: Potential Impacts and Generic Mitigation Measures

Potential Impacts	Generic Mitigation Measures
Construction Phase	
Soil Erosion and Degradation	• Cut and fill at the proposed grid station site will be carefully designed, and ideally should balance each other. The surplus soil, if any, will be disposed at places approved by the DISCOs. Such sites will be selected after surveying the area and ensuring that soil deposition will not have any significant impacts, such as loss of productive land, blocked access, natural vegetation and disturbance to drainage. • If necessary, fill material for grid station sites will be obtained from appropriate locations approved by DISCOs. Such locations will be selected after surveying the area and ensuring that soil extraction will not have any significant impacts, such as soil erosion, loss of natural vegetation and disturbance to drainage. • Where the use of cultivated land is unavoidable for obtaining the fill material, the top 30cm soil layer will be removed and

Potential Impacts	Generic Mitigation Measures
	stockpiled for redressing the land after removal of the borrow material. The excavation in such areas will be limited to 50cm depth. • The fill material will not be obtained from any cultivation fields or orchards, except where the land owner allows doing so. • Areas from where the fill material is obtained or surplus soil deposited, will be landscaped to minimize erosion and hazard for people and livestock. • Construction camp will be located in a stable and flat area, requiring minimal de-vegetation and leveling. The contractor(s) will obtain approval from the DISCOs for this purpose. • Embankments and excavated slopes will not be left untreated/unattended for long durations. Appropriate slope stabilization measures will be taken per the design (e.g., stone pitching). • Vehicular traffic on unpaved roads will be avoided as far as possible. Operation of vehicles and machinery close to the water channels, water reservoir will be minimized. • After the completion of the construction works, the transmission line routes, campsites and other construction sites will be completely restored. No debris, surplus construction material or any garbage will be left behind. • Photographic record will be maintained for pre-project, during-construction and post-construction condition of the sites (grid station, transmission line/feeder routes, camps and access roads). • Vehicles and equipment will not be repaired in the field. If unavoidable, impervious sheathing will be used to avoid soil and water contamination. • The domestic sewage from the construction camps will be connected to the city sewerage system. If such system is not available, appropriate treatment and disposal system, such as septic tanks and soaking pits, will be constructed having adequate capacity. The contractor(s) will submit to the DISCOs the plans for the camp layout and waste disposal system, and obtain approval. • Waste oils will be collected in drums and sold to the recycling contractors. • The inert recyclable waste from the site (such as card board, drums, broken/used parts, etc.) will be sold to recycling contractors. The hazardous waste will be kept separate and handled according to the nature of the waste. • Domestic solid waste from the construction camp will be disposed in a manner that does not cause soil contamination.

Potential Impacts	Generic Mitigation Measures
	The waste disposal plan submitted by the contractor(s) will also address the solid waste.
Air quality deterioration	■ Air quality analysis at the new grid station site will be conducted before mobilization of the construction crew, in order to establish baseline conditions of the ambient air quality at these locations. ■ Construction camps will be established at least 500 m from communities (except when such camps are established inside the grid stations). The contractor(s) will obtain DISCO's approval for this purpose, as mentioned earlier. ■ Construction machinery, generators and vehicles will be kept in good working condition and properly tuned, in order to minimize the exhaust emissions. ■ Fugitive dust emissions will be minimized by appropriate methods, such as spraying water on soil, where required and appropriate. The waste water from kitchen and washing area of the construction camp may be used for water spraying. ■ Project vehicles will avoid passing through the communities and cultivation fields as far as possible. If unavoidable, speed will be reduced to 15 km per hour to avoid excessive dust emissions. ■ While working within the communities for works such as transmission line laying, coordination with the communities will be maintained to minimize any detrimental impacts on the crops and settlements. ■ Ambient air quality analysis will be carried out at the grid station sites once every two months during the construction phase.
Surface Water and Groundwater Contamination	■ The groundwater quality analysis at each of the grid station sites (and campsites if established outside the grid stations) will be conducted before mobilization of the construction crew, in order to establish baseline conditions of the water quality at these locations. ■ Construction camp will not be located within 500 m of rivers and major canals (unless it is placed inside the grid station). Location will be finalized after obtaining DISCO's approval. ■ The contractor(s) will submit to the DISCOS the plans for the camp layout and waste disposal system, and obtain approval. ■ Groundwater quality analysis will be carried out at the grid station sites and campsites once a month during the construction phase.
Loss of Natural Vegetation and impacts on wildlife	■ Clearing of natural vegetation will be minimized as far as possible during the transmission line works. ■ Herbicides will not be used to clear vegetation along the transmission line route (or at other project locations).

Potential Impacts	Generic Mitigation Measures
	■ For each transmission line route, a tree cutting plan will be prepared and submitted to DISCOs for approval. A complete record will be maintained for any tree cutting or trimming. The record will include: the number, species, type, size, age, condition and photograph of the trees to be cut/trimmed. ■ The construction crew will be provided with LPG as cooking (and heating, if required) fuel. Use of fuel wood will not be allowed. ■ No fires will be allowed inside the forest. ■ Construction camps will not be established inside the forested area. ■ Tree plantation plan will be developed and implemented at each of the grid stations included in the proposed project. Provisions will be made for tree plantation while designing the layout of the grid stations. This will compensate any tree cutting in the non-forest area along the transmission lines. Indigenous tree species will be selected for plantation; Eucalyptus trees will not be used in any case. ■ Garbage will not be left in the open. ■ The project staff will not be allowed to indulge in any hunting or trapping activities.
Land Acquisition and Asset Loss[43]	■ The new grid station will preferably be established on a government land. Otherwise, land will be outright procured from the owner on a willing-seller-willing-buyer basis. In case that is not possible, land will be acquired on a market price or replacement cost basis in accordance with the Land Acquisition Act and the WB standard for involuntary resettlement. ■ Appropriate compensation will be paid to the landowner for the land under the transmission line tower to be erected as part of the proposed project. ■ Compensation will be paid for the crops damaged during the construction activities. The compensation will be paid to the cultivator, and absence of the land title will not be a bar to receiving the compensation. ■ Complete record will be maintained for the determination and payment of the compensation. ■ It will be ensured that the land under the 132-kV and 66-kV transmission line tower remains available for cultivation. ■ Operation of project vehicles and construction machinery outside the RoW will be avoided. Attempts will be made to use existing tracks/roads to access the transmission line corridor/tower locations. In case new access routes are

[43] Resettlement issues are addressed in detail in RF, which is presented under a separate cover.

Potential Impacts	Generic Mitigation Measures
	necessary, the cultivated land will be avoided as far as possible. Damage to crops will be compensated. ■ Tubular poles will be used where necessary, instead of conventional transmission line towers, in the urban area as appropriate ■ The transmission line route will be aligned along the existing roads/RoW as far as possible. ■ Grievance redressal mechanism will be put in place to address the community complaints. ■ A Resettlement Framework (RF) has been prepared to address the involuntary resettlement, including land requirement, the damaged crops, caused by the project activities. The RF includes an entitlement framework that defines criteria to determine compensation of each type of resettlement impact such as land acquisition and loss of assets. Other aspects covered in the RF include institutional and implementation framework, the monitoring and documentation systems and the grievance redressal mechanism.
Damage to Irrigation Network and public infrastructure	■ Operation of construction machinery and project vehicles will be avoided close to the canals and water courses. ■ Any damage caused by the project activities will be completely repaired. ■ Damage to the existing infrastructure will be minimized if not avoided altogether through astute planning. ■ All damaged infrastructure will be restored to original or better condition.
Blocked Access	■ In case of the blockage of the existing routes, alternate routes will be identified in consultation with the affected communities. ■ The contractor will prepare and implement a traffic management plan to minimize impacts on the local routes.
Noise and Vibration	■ It will be ensured that the noise levels measured at the communities near the project sites are kept within the acceptable limits (70 dB(A) for industrial zones day and night; 45 dB(A) night and 55 dB(A) daytime for residential areas). ■ Noise levels will be measured at the key locations described above. If the noise levels are found to be more than the prescribed limits, appropriate measures will be undertaken by the construction team such as rescheduling the works, using quieter equipment and/or erecting barriers to protect the communities from excessive noise. ■ Vehicular traffic through the communities will be avoided as far as possible. Project routes will be authorized by the DISCOs.

Potential Impacts	Generic Mitigation Measures
	■ Vehicle speeds will be kept low, and horns will not be used while passing through or near the communities. ■ Vehicles will have exhaust silencers to minimize noise generation. ■ Nighttime traffic will be avoided near the communities, as far as possible. ■ Movement of all project vehicles and personnel will be restricted to within work areas, to avoid noise disturbance. ■ Working hours for construction activities within the communities will be limited to between 8 am and 6pm (between 6 am and 8 pm during the summers). ■ Liaison with the community will be maintained. Grievance redressal mechanism will be put in place to address the community complaints, as stated earlier.
Safety Hazards (occupational health and safety)	• The contractor will prepare and implement occupational and community health and safety (OCHS) plan, in accordance with the WB ESF, World Bank Group's Environment, Health and Safety Guidelines as well as World Health Organization (WHO) Guidelines, ILO Code of Practice and any internationally recognized OHS standard such as ISO 45001 or US OSHA 29 CFR 1926 or any standard specifically mentioned in the bidding documents. The Plan will include applicable safety standards and protocols, requirements of job hazard analysis, training requirements, documentation and reporting mechanism. OCHS plan must cover the following areas: ◦ Objectives ◦ Scope of work ◦ HSE Management Structure ◦ OCHS Enforcement Structure ◦ Regulatory Compliances and Conformance Standards ◦ Hazards Identification and Risks assessments ◦ Hazard Register and Risk Matrix ◦ HSE Procedures and supporting documents ◦ Key Performance Indicators ◦ Trainings and Inductions ◦ Incident and Accident Reporting ◦ Internal Review and Audits • The construction sites will have protective fencing to avoid any unauthorized entry. • The project drivers will be trained for defensive driving skills. • Vehicular speeds near/within communities will be kept low to minimize safety hazards.

Potential Impacts	Generic Mitigation Measures
	• Construction camp sites will be located at least 500 m away from the nearest community. Camp site will be selected with DISCO's approval • Firefighting equipment will be made available at the camps. • The camp staff will be provided OCHS training. • All safety precautions will be taken to transport, handle and store hazardous substances, such as fuel. • Liaison with the community will be maintained. In particular, the nearby communities will be informed before commencing the testing commissioning of the system. Protective fencing will be used where appropriate/possible. Awareness raising program will be implemented to educate the communities regarding the hazards associated with the transmission lines, feeders and other electrical systems/equipment. Warning signs will be used at the appropriate locations.
Public Health Issues	■ The construction camps will have septic tanks and soaking pits of adequate size. ■ Camps will be at least 500 m from any groundwater wells used by the community. ■ The construction camps will have appropriate solid waste disposal mechanism ■ The construction camps and site offices will have first-aid kits. ■ The construction crew will be provided awareness for the transmissible diseases (such as HIV/AIDS, hepatitis B and C). ■ Guidelines for gender based violence (GBV) and violence against children (VAC) will be implemented ■ Compliance with GoP Guidelines on Covid-19
Influx of Labor	■ Limit the siting of any temporary facilities within the boundaries of the worksites as far as possible; ■ Use of non-wood fuel for cooking and heating; ■ Code of conduct (CoC) for workers and employees will be enforced for the protection of local communities, gender-based violence, other social issues, flora and fauna and a ban on tree cutting and hunting. Any violation of the COC would lead to strict punishment including termination of employment; ■ Awareness among workers will be created on proper sanitation and hygiene practices to endorse proper health; ■ Good housekeeping practices will be maintained at project site(s);

Potential Impacts	Generic Mitigation Measures
	▪ Adequate personal hygiene facilities will be provided in good condition with adequate supply of clean water; ▪ Arrangements will be made to treat the affected workers on time to control the movement of vectors diseases; ▪ Workers and surrounding communities will be sensitized on awareness and prevention of HIV/AIDS and STI through training, awareness campaigns and workshops; ▪ Free HIV/AIDS and STI screening and provided for site workers ▪ counselling sessions will be held to made the workers award of the risks of HIV/AIDs and STI; ▪ An employees will be terminated, who continues misconduct or lack of care, carry out duties amateurishly or inattentively, fail to conform to provisions of the contract, or persist in any conduct which is harmful to safety, health, or the protection of the environment; ▪ The use of drugs and alcohol will not be allowed at the work/construction site; ▪ Carrying weapons into the workplace premises will be prohibited; ▪ Site security arrangements will be listed as an item in the Bill of Quantities (BoQs) to avoid any delays; which may cause due to security issues; ▪ The contractor will create awareness of construction crew to sensitize them about security situation in the project area, in coordination with private/public security agencies; ▪ Appropriate fencing, security check points, gates and security guards will be provided at the construction sites to ensure the security of equipment, machinery and materials, as well as to secure the safety of site staff; ▪ The Contractor will ensure that good relations are maintained with local communities and their leaders to help reduce the risk of vandalism and theft; ▪ To avoid conflicts with local people on employment matters, it is recommended to the contractor to employ the locals in skilled, semi-skilled, and unskilled work. This will reduce pressure on resources such as residential and health facilities; ▪ The contractor will proactively manage the potential impacts from labor influx and potential cultural conflicts

Potential Impacts	Generic Mitigation Measures
	between local communities and workers, which include following: ■ Construction camps will be built in the designated areas, located minimum 500m away from the village settlements; ■ The Contractor's monthly training program will cover topics related to respectful attitude while interacting with the local communities; ■ Inclusion of COC obligations and the applicable legislation in the contracts of all employees and workers with the provision of sanctions and penalties in case of violations; ■ World Bank Guidelines on Influx of labor[44] will be used for further guidance.
Gender Issues	■ The routes/places used by the women will be avoided as far as possible. If unavoidable, alternate routes to be identified for the communities, if required, especially along routes frequented by women folk, such as route to the local well or water source. ■ Camp sites for construction will be 500 m away from the nearest community, as recommended earlier. ■ Construction crew will avoid in entering villages and settlements. ■ Communities will be informed and consulted before commencing works inside or near the communities. ■ Strict code of conduct will be maintained by the construction crew. Local norms will be respected. ■ Staff will receive training on the prevention of SEA/SH, ■ integrating provision related to SEA/SH in bidding document, ■ workers requiring to sign Code of Conducts (CoC) prepared by the Contractors and reviewed and approved by PMU, ■ preparation of SEA/SH plans as a part of the E&S management instruments which will be prepared based on these frameworks during implementation, ■ including a SEA/SH specialist as a part consultant organization and ■ identification and mapping of the service providers.
Child labor	■ the provisions of the Child Labor Act will still be made part of the construction contracts

[44] http://pubdocs.worldbank.org/en/863471511809509053/ESS2-FactSheet-WB-ESF.pdf

Potential Impacts	Generic Mitigation Measures
Resistance from community	■ stakeholder consultation and engagement to be carried out on an on-going basis ■ GRM to be established ■ Community awareness to be enhanced for project activities such as ABC works and their importance ■ Community liaison to be maintained throughout the various phases of the project
Impacts on Sites of Historical, Cultural, Archeological or Religious Significance	■ The site(s) for the new grid station(s) will be selected at a safe distance from any known historical or cultural building or site. ■ In case of discovery of any sites or artifacts of historical, cultural, archeological or religious significance, the work will be stopped at that site. ■ The provincial and federal archeological departments will be notified immediately, and their advice will be sought before resumption of the construction activities at such sites. ■ The existing graveyards will not be damaged. The construction work close to the graveyards will be carried out after informing/consulting the relevant communities.
Operation Phase Impacts	
Soil and water Contamination	■ The grid stations will have appropriate solid waste collection and disposal arrangements. ■ The grid stations will have appropriate sewage handling system. The grid stations' sewage collection system will be connected to the Municipality operated sewerage system, if available. Otherwise, grid stations will have their own septic tanks and soakage pits. ■ Waste oils and chemicals will be disposed in accordance with their respective Material Safety Data Sheet (MSDS). MSDS will be made available at the grid stations and maintenance workshops. ■ Non-toxic recyclable waste (such as cardboard) will be given away for recycling. ■ Toxic waste will be stored separately, and incinerated at an appropriate double chamber incinerator. ■ Grid stations will have channels and drainage pits to collect any leaked oil from the transformers in the grid stations. This oil will be sent back to the workshop for recycling. ■ Any soil contaminated by the oil/chemical spillage will be removed and disposed of appropriately in accordance with the MSDS of the spilled oil/chemical.
Safety hazards	■ DISCOs will implement the Safety Code prepared by NEPRA. ■ The O&M staff will be provided essential protective gears and equipment.

Potential Impacts	Generic Mitigation Measures
	■ The O&M staff will be provided safety training. Refresher courses will be arranged on regular basis. ■ Firefighting equipment will be made available at the grid stations. ■ The Emergency Response Plan (ERP), prepared by DISCOs, will be made available at each grid station. Its salient points will be displayed at prominent places within each grid station. The O&M staff will be given training on the ERP. The Environmental and Social Cell (ESC) will review the ERP and with respect to the environmental and social considerations, and recommend changes if needed. The ERP will include procedure to inform the nearby communities in case of fire in the grid stations. ■ The communities near the grid stations and transmission lines will be educated on the risk of electrocution, and how to avoid accidents. ■ Appropriate signage on safety precautions will be installed at the key locations. ■ The trees under the transmission lines will be regularly trimmed in order to maintain 8 m clearance.
Public Health Concerns	■ Inappropriate solid waste and sewage disposal from grid stations and their residential areas ■ Leakage of PCB-containing transformer oil ■ Electromagnetic (EM) radiation caused by the high tension transmission lines. ■ Compliance with GoP Guidelines on Covid-19
Loss of agriculture	■ Damage to the crops will be avoided during the transmission line patrolling. ■ Any damage during the repair and maintenance activities will be compensated. ■ Liaison with the nearby communities will be maintained in this regard. ■ The grievance redressal mechanism will be maintained on continuous basis.
Noise generation	■ Appropriate equipment selection will forestall any concerns associated with noise. ■ Noise measurements will be carried out at the outer fence of the grid stations, in order to ensure that the noise levels are within acceptable limits. If found beyond these limits at any stage, appropriate measures will be taken, such replacing the noisy equipment, and/or erecting noise barrier along the grid station outer periphery. ■ Liaison with the nearby communities will be maintained in this regard.

Potential Impacts	Generic Mitigation Measures
	■ The grievance redressal mechanism will be maintained on continuous basis.
Gender Issues	■ Gender mainstreaming will be encouraged in DISCOs. Employment opportunities will be created for women. Women friendly work environment will be established within DISCO facilities (e.g., separate toilets, system to address sexual harassment).

5.3. Potential Impacts of Activities under Components 3 and 4

No physical interventions are proposed under the Components 3 and 4 of the Project, hence there are no direct environmental and or social impacts of these activities. However, certain activities such as conducting studies, preparing feasibilities and formulating plans can potentially have downstream environmental and social impacts. While precise details of many of these activities will be worked out during the project implementation, an initial assessment has been carried out as described in **Table 5.3** below.

Table 5-3: Potential Impacts and Generic Mitigation Measures of Activities under Components 3 and 4

Potential Impacts/Aspects/Issues	Generic Mitigation/Management Measures
• Labor issues associated with PIU and its consultants (whether individuals or firms) • E&S implications of National Electricity Plan implementation • Downstream environmental, social and resettlement impacts of Plan implementation, feasibilities, studies, analyses, and R&D activities • E&S implications of functioning of Center of Excellence	• PIU will carry out initial screening of activities under Components 3 and 4 to determine E&S aspects with more clarity and then finalize proposed actions. Broad screening methodology is already presented in Section 7.2 of this document. This can be further refined to tailor it to the Component 4 activities during the project implementation. • PIU will conduct a high level E&S assessment of the National Electricity Plan focusing policy and institutional dimensions. The ToR of this assessment will be prepared during the project implementation and shared with the Bank. • PIU will ensure that E&S aspects are seamlessly integrated in National Electricity Plan, in line with the National Electricity Policy that covers these aspects. The consultations to be carried out while formulating the Plan will also cover the E&S aspects. • PIU will ensure inclusion and integration of E&S aspects in consultancies, feasibilities, studies and analyses where relevant. The ToRs for these tasks will incorporate the E&S aspects adequately; these ToRs will be shared with the Bank before awarding the contracts for these assignments. • PIU will ensure inclusion of E&S aspects in capacity building initiatives, where needed and relevant. For this purpose, the ToR to be prepared for the capacity building will have necessary section of E&S aspects relevant to

Potential Impacts/Aspects/Issues	Generic Mitigation/Management Measures
	the topic of the capacity building. ToR will be shared with the Bank before initiating the procurement process. • PIU will ensure inclusion and integration of E&S aspects in R&D activities where applicable and relevant. For this purpose, the ToR to be prepared for the R&D activities will have necessary section of E&S aspects relevant to the topic. ToR will be shared with the Bank before initiating the procurement process. • PIU will ensure inclusion and integration of E&S aspects in the scope, ToR, and standard operating procedure (SOP) of the Center of Excellence • PIU will ensure inclusion of E&S aspects in all procurements where applicable • PIU will ensure inclusion and integration of E&S aspects in standards and systems as appropriate and applicable • PIU will ensure inclusion and integration of E&S aspects in frameworks, tools and systems for DISCOs, where applicable and relevant. • PIU will engage consultants (both individual as well as consulting firms) to conduct various tasks including feasibilities, analyses, assessments and studies. Contracts of these consultancies will follow the labor and OHS rules and guidelines as detailed in the Labor Management Procedures (LMP) prepared for EDEIP.

6. Stakeholder Consultations

This section describes the stakeholder consultations carried out during the ESMF preparation. It also provides the consultations framework for future projects.

6.1. Stakeholder Engagement Plan

As described in Section 3.3, the project has prepared a Stakeholder Engagement Plan (SEP) to describe objectives, process and outcome of the stakeholder engagement already carried out during the project preparation and to be carried out during the project implementation – in accordance with the WB ESS 10. The key aspects of the SEP are summarized below.

ESS10 requires that borrowers engage with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a timeframe that enables meaningful consultations with stakeholders on project design. The nature, scope and frequency of stakeholder engagement have to be proportionate to the nature and scale of the project and its potential risks and impacts.

The overall objective of the SEP is to define a program for stakeholder engagement, including public information disclosure and consultation, throughout the entire project cycle. The SEP outlines the ways in which the project team will communicate with stakeholders and includes a mechanism by which people can raise concerns, provide feedback, or make complaints about the project and any activities related to the project. The involvement of the local population is essential to the success of the project in order to ensure smooth collaboration between project staff and local communities and to minimize and mitigate environmental and social risks related to the proposed project activities.

6.1.1. Stakeholder Identification and Analysis

For meaningful and substantive engagement, it is necessary to determine who the stakeholders are and understand their needs and expectations for engagement, as well as their priorities and objectives in relation to the Project. This information will then be used to tailor engagement to each type of stakeholder. As part of this process, it is particularly important to understand how each stakeholder may be affected – or perceives they may be affected – so that engagement can be modified accordingly.

Project stakeholders are defined as individuals, groups or other entities who:

- are impacted or likely to be impacted directly or indirectly, positively or adversely, by the Project (also known as ‘affected parties’); and
- may have an interest in the Project (‘interested parties’). They include individuals or groups whose interests may be affected by the Project and who have the potential to influence the Project outcomes in any way.

Cooperation and negotiation with the stakeholders throughout the Project development often also require the identification of persons within the groups who act as legitimate representatives of their respective stakeholder group, i.e. the individuals who have been entrusted by their fellow group members with advocating the groups’ interests in the process of engagement with the Project. Community representatives may provide helpful insight into the local settings and act as main conduits for dissemination of the Project-related information and as a primary communication/liaison link between the Project and targeted communities and their established networks. Verification of stakeholder representatives (i.e. the process of confirming that they are legitimate and genuine advocates of the community they represent) remains an important

task in establishing contact with the community stakeholders. Legitimacy of the community representatives can be verified by talking informally to a random sample of community members and heeding their views on who can be representing their interests in the most effective way.

6.1.2. Methodology

The project intends to utilize various methods of engagement that will be used as part of its continuous interaction with project stakeholders. For the engagement process to be effective and meaningful, a range of various techniques need to be applied that are specifically tailored to the identified stakeholder groups. In accordance with best practice approaches, the project will apply the following principles for stakeholder engagement:

- ***Openness and life-cycle approach***: public consultations for the project(s) will be arranged during the whole life-cycle, carried out in an open manner, free of external manipulation, interference, coercion or intimidation;
- ***Informed participation and feedback***: information will be provided to and widely distributed among all stakeholders in an appropriate format; opportunities are provided for communicating stakeholders' feedback, for analyzing and addressing comments and concerns;
- ***Inclusiveness and sensitivity***: stakeholder identification is undertaken to support better communication and build effective relationships. The participation process for the projects is inclusive. All stakeholders at all times encouraged to be involved in the consultation process. Equal access to information is provided to all stakeholders. Sensitivity to stakeholders' needs is the key principle underlying the selection of engagement methods. Special attention is given to vulnerable groups, in particular women, internally displaced persons (IDPs) if any in KP, persons with disabilities, youth, elderly and the cultural sensitivities of diverse ethnic and religious minority groups and those living in remote or inaccessible areas.

The three categories of stakeholders as per the ESS10 are outlined below.

- **Affected Parties** – persons, groups and other entities within the Project Area of Influence (PAI) that are directly influenced (actually or potentially) by the project and/or have been identified as most susceptible to change associated with the project, and who need to be closely engaged in identifying impacts and their significance, as well as in decision-making on mitigation and management measures;
- **Other Interested Parties** – individuals/groups/entities that may not experience direct impacts from the Project but who consider or perceive their interests as being affected by the project and/or who could affect the project and the process of its implementation in some way; and
- **Vulnerable Groups** – persons who may be disproportionately impacted or further disadvantaged by the project(s) as compared with any other groups due to their vulnerable status[45], and that may require special engagement efforts to ensure their equal representation in the consultation and decision-making process associated with the project.

[45]Vulnerable status may stem from an individual's or group's race, national, ethnic or social origin, color, gender, language, religion, political or other opinion, property, age, culture, literacy, sickness, physical or mental disability, poverty or economic disadvantage, and dependence on unique natural resources.

6.2. Summary of Consultations

The consultations carried out by the IAs during the project preparation are summarized below.

Table 6-1: Summary of Consultations – MoE

The several discussions and meetings were held with the MoE - PDover the past few months to design Component 4 and support PD to implement power sector reforms that started under PACE1. Meetings were held with Secretary Power and other officials including Additional Secretary and Joint Secretary of the MoE as well as officials of relevant entities including CPPA-G, PPIB and PPMC. On November 2, 2021 a meeting was held with a Joint Secretary in the Ministry of Energy to discuss the project scope, environmental and social risks, possible impacts and mitigation measures. Institutional arrangements and GRM procedures under EDEIP and the implementation of the National Electricity Policy 2021. The proposed activities are in line with National Electricity Policy 2021 to support MoE fulfil its policy mandate under the National Electricity Policy 2021, and implement power sector reforms focusing on two priority areas of the government. These are: a) supporting governance and institutional reforms; and b) supporting transition to wholesale electricity market through commencement of the Competitive Trading Bilateral Contract Market (CTBCM).

Table 6-2: Summary of Consultations - PESCO

Stakeholders Comments and Suggestions	PESCO's Response
The environmental impact that you identified included terrestrial habitat alteration, tree cutting and impact on wildlife. Have you done an assessment that how many number of trees will be cut and what is program of replantation?	When we cut one tree, we replant three trees. It is our policy. In this project we have selected those location where no tree cutting will be involved.
Are there any excavation activities involved in this project? If yes then how will you dispose the spoil material?	We shall work at the existing facilities of grid stations. The locations where the capacity of transformer is small, we are going to install large capacity transformer or along with that we shall install another transfer. The foundation pads for these transformers are already established. No major new construction or excavation will be involved in this project.
Will you involve third party for monitoring of air and noise pollution during construction phase?	It will be considered during environmental and social impact assessment studies and if there will be any. sensitive locations near the construction sites, the project may engage a third party for environmental monitoring. During our consultations with grid station staff and communities living near the grid stations, we asked people about their views regarding noise pollution during work at grid station or during installation of new equipment. They explained that there is no such problem of noise due to

Stakeholders Comments and Suggestions	PESCO's Response
	construction at the grid station. The Working gang was also consulted and they explained that they carry out activities during off peak hours so that there should be minimum or no disturbance to the communities.
Which hazardous material will be used at this project?	There is no such use of hazardous material in this project. The only hazardous material is transformer oil. The highly contaminated oil has been excluded/banned from the system and we have included in the bidding document that the mineral oil will be provided for the transformers which will be PCB free. The transformer oil comes in large drums and these drums are reused.
The grid station where the improvements will be done, the old wires will be changed. What is plan for safe disposal of those wires?	The conductors which we are going to replace will be collected from the site and will be brought to the main store. We have a disposal directorate. They auction this material and vendors bid for the material.
The electricity bills are going up and availability of electricity is short. There is frustration among the masses. Will there be any impact of this project on electricity bills?	We are going to install ABC cable and bare conductors will be replaced. The commercial losses and technical losses will be controlled. There will be an impact on electricity bills as well.
What will be impact of this project on load shedding?	We are going to upgrade the system so that load shedding could be reduced.
In the hilly areas of Swat there are two hazards which hinder the supply of electricity. One is flood while the other is strong winds. The electric transformers which you have installed near river Swat or in other flood areas, will you also change these transformers in those areas? Have you done any survey in this regard?	We are currently dealing with the large transmission lines (132 kV). The transmission line which you mentioned is 11 kV distribution line. We have a separate directorate to deal with these lines and its issues.
Is there any specific package under this project for education and health institutions? Will there be any provision of dedicated transmission lines to these institutions?	There are formations which are defined as sensitive and are exempted from the load shedding in the areas under PESCO. Only in case of major faults, there will be load shedding. Educational institutes and hospitals are included in those sensitive formations.
The transformers are very heavy how will you transport these transformers to hilly areas like	We construct the grid at those locations where a proper access road would be available. The equipment is very precious and we do not plan activities in locations where access is not possible.

Stakeholders Comments and Suggestions	PESCO's Response
Malakand division and Hazara division where the load capacity of bridges is less?	There is a committee which selects the site for construction of grid station.
Currently you will work on large transmission line, is there any plan to upgrade the small transmission lines which transmit power to villages?	We are also working on feeders and expansion work is also in progress.
During construction activities there will be disruption in power supply. Is there any alternate plan for those areas so that the people should not suffer?	In case of long load shedding, we issue a schedule and share with the public. Our repair and construction activities are normally carried out in off peak hours. We shall arrange alternate transformers for continuous power supply.
In Charsadda, there is load shedding of 10-12 hours. The Bacha Khan University Charsadda is located in a security risk area. Is there any provision of dedicated line for the university in the project?	The feeders of Charsadda area are included in the project. Load shedding shall be controlled with this upgradation. There is no provision of a. dedicated line for the Bacha Khan University in the project.
The tree cutting should be avoided. The wildlife is disturbed due to cutting of trees.	We have noted your point and will incorporate it in the relevant safeguard documents.
It is explained that trees will be replanted with 1:3. There are forest trees which take years to grow. If we replant two to three trees as an alternate of large grown trees. Will it be a good alternate?	We are going to upgrade existing grids and no tree cutting will be involved in it.
The labor who will be working on the project and expired as a result of an accident during the construction activities. What are provisions in the project for such labor?	The ten standards of WB are above the national law. Labor management procedures will be prepared and all labor issues will be covered in this document. Special clauses will be added in the contract. The contractor will implement those measures and the DISCO will monitor the implementation.
When the transformer of an area in Lower Dir becomes out of order, the people of community arrange the repair by themselves. There should be mechanism that in case of damage there should be provision of alternate transformer to that community so that there should be no disruption of power.	We have noted your comments.

Stakeholders Comments and Suggestions	PESCO's Response
The themes on which WWF is working, we can provide you technical input on those themes/aspects. We can tell PESCO about the type of trees in different areas of KP, damage on tress, alternate plantation, impact on wildlife and impact of climate change.	We shall coordinate with WWF.
If the project requires an input from WWF, we can provide our input in written form. We can visit the sites and also can conduct meetings.	PESCO will consult with WWF and seek their guidance through the life of the project.
The stakeholders were willing to provide help in areas of disaster management, community engagement and advocacy.	PESCO appreciates this support and will benefit from relevant stakeholder expertise.
The stakeholders were willing to participate in workshops/trainings arranged by the project.	PESCO will arrange trainings and involve stakeholders on environmental and social issues

Table 6-3: Summary of Consultations -MEPCO

Stakeholders Comments and Suggestions	MEPCO's Response
The environmental and social impacts of the project need to be considered on vegetation/trees, impact on settlements, on cultural heritage and other things which will come in the right of way of the line. If there are existing trees/plantation, how many numbers of trees/plants we can protect, how many numbers of trees will be replanted and what will be impact on health of local people and on the environment.	We shall incorporate these suggestions in the environmental and social management assessments being prepared for the project.
Whenever there will be construction of new transmission lines and new grid stations, there will be positive social impacts on the local people. People will be financially strong. New job opportunities will be created. New factories can be established with the reliable and continuous power transmission and people of the areas will get more jobs and earn livelihood. There will be improvement in agriculture. The areas where canal water is not available people can install new tube wells with this power and can irrigate their fields. The electromagnetic field is harmful for birds and plants and it is also harmful for human	We are thankful that you highlighted both positive and negative impacts of the project. The project will comply with the World Bank Group environmental health and safety guidelines/WHO recognized standards on electric and magnetic fields through design considerations

Stakeholders Comments and Suggestions	MEPCO's Response
health. These are reported in various studies. There are negative impacts of these Transmission lines which include depression, aesthetic harm, noise and danger for air traffic.	
You will develop the grid station and the transmission line which will pass through the land, is there any legal mechanism that will be followed by MEPCO for land acquisition or payment of compensation?	Regarding land, MEPCO tries to construct grid station on the government land. The government land is transferred to the department through a system by the board of revenue. We do not acquire the land for erection of tower or transmission line route. As per our policy, only compensation of losses is paid to the affectees. There are 10 standards of the WB and standard 5 deals the land acquisition, compensation payment and restrictions on land use. Under standard 5, there is compensation for the land which is under the tower even if it is not acquired. The losses in the form of crop or restrictions will also be paid/compensated. The engagement of the WB with MEPCO is based on the understanding that the compensation will be paid of the transmission line towers and losses. It is a requirement of WB that the compensation payment process will be completed before the start of any civil works at site.
These days the focus of the government is to produce electricity from solar. The people who are producing electricity from solar and that is included in the grid through reverse metering system. Is there any mechanism in MEPCO to give incentive or promotion to such producers or community?	There is an already established mechanism in the department to purchase electricity from the community which is produced through solar system.
Is it compulsory that the constructions will be carried out at the sites which are specified in this workshop or have you considered alternate sites as well? Because in some cases the sites are located in areas which are very busy or commercial and their negative impacts override positive impacts. Please consider option of alternate site selection.	These sites are only the identified ones and not compulsory. That site is selected where minimum environmental and social issues are involved. The selection process is carried out by a committee of eight people. People from different allied sections are included in the committee. Two to three alternative sites are studied and the most feasible one is selected. The sites which we are selecting should be away from the population and should have an independent entry and exit. The grid sites should be near the already passing transmission line. Our grid station sites are within 500-1000 m of the line. Only at one site this distance is more.
Please consider the electromagnetic impacts and address those impacts.	It will be considered during the environmental and social assessment studies.
It is mentioned that the trees will be cut and new trees will be planted in other areas. When one mature tree is cut down that absorb the 48	The clearance of trees and structures under the transmission line is necessary and cannot be avoided. The RoW (i.e.,30 m) should be clear from

Stakeholders Comments and Suggestions	MEPCO's Response
pounds of carbon dioxide from the atmosphere and new planted tree takes time to absorb carbon dioxide. It is a good initiative but there should be other ways to protect the flora of the area which will be impacted by the transmission lines.	vegetation. We cannot replant tree under the transmission line and other areas are selected for that purpose. The type of tree is selected keeping in the view the area. we are aware of this issue and exploring to plant the new trees. A tree plantation plan for the project will be prepared and will ensure that the plantation ratio should be from 1:5 to 1:15 normally. The number of replanted saplings is more. We will ensure that the sapling should be planted before the cutting of the tree so that there should not be more imbalance in carbon sequestration.
With the transmission efficiency, if we focus on solar power then we could reduce the tree cutting and it will be environment friendly. The developed countries are also adopting solar power now a days	The transmission lines would be required in any case whether the power comes from hydro, solar or wind. The basic infrastructure is critically required.
The areas from where the transmission line passes, the value of land is reduced underneath these transmission line. You did not acquire that land and only compensation for crop losses is paid. The permanent value of land is reduced. There should be policy to compensate land owners as the value of land is reducing permanently	We agree that the value of the. land which is under the transmission line is decreased, whereas in other projects, like roads the value of land is increased. The process/system is now changing. This will be addressed in the RF.
For plantation of new trees, if you engage community then it will be successful. The community will look after the trees. If there is any such policy please explain.	Regarding tree plantation ownership, we plant trees at the grid station site and maintenance of the trees is made responsibility of the contractor for minimum two years and its cost is included in the BOQ. For plantation in the schools which will be located near the construction sites, we suggest that the teachers and students will be involved and fruit trees will be in their ownership. They will look after the trees and eat the fruit as well. School management committees should be engaged in this.
The involvement of school children in planting trees will be very helpful.	It is very good suggestion and shall be considered
You know the route of transmission line and know that the trees will be cut from these areas. It is suggested that you involve the community at the beginning and start planting the trees so that when you cut the trees from the route, the replanted trees will be grown and will take their place.	It is very good suggestion and shall be considered
Public consultation is required to resolve the issue of affected people. In tree plantation, involve the district management (DCs) and	One solution could be that the underground cables should be installed. It could be a possibility in the. near future. However, for this project the

Stakeholders Comments and Suggestions	MEPCO's Response
they will bound the government departments to carry out the plantation. Is there any technique available to reduce the impact of electromagnetic waves?	transmission lines will be constructed overhead. No other option is currently available in Pakistan.
How can we handle the losses which occur due to the rains and how can we ensure the safety of the houses from where the transmission line passes?	Our safety cell will provide awareness to the people about the electric wires. They should keep distance from TLs in the rainy season.
Few years back, one project started drilling in the riverine belt of Multan area and there was a rumor in the area that this drilling is being carried out for exploration of oil and other minerals. People who were aware of the project, they started purchasing land in that area to earn profit. Similarly, it is known fact that the value of land which is under tower and transmission line is reduced so the people will start selling their land before the start of the project. Is there any strategy/policy by MEPCO to curtail such practices?	We are bound to inform the community about the proposed project. The community should be aware of the development. If we do not consult with the people and provide them information then we are violating guidelines of the EPA and WB. Our transmission lines pass through mostly unpopulated areas and there are no negative impacts on land and land-based assets. The reduction in value of land could be in the commercial areas which are very few.
Sign small ventures with the organizations working in social sector for organizing and conducting consultations with the communities.	This suggestion will be considered.
The labour department suggested that they can help MEPCO in planting trees through the factories. The number of trees to be planted can be assigned to the factories keeping in view the size of factory.	It is good suggestion. MEPCO shall involve labour department during the implementation stage of the project.
Create WhatsApp group of the stakeholders and share your work progress in the group.	It is good suggestion. We shall look into it.
An implementation mechanism will be developed for the project and different departments will be part of it. It is suggested that after finalization of mechanism, MEPCO should provide trainings to the people of those departments.	We shall incorporate this suggestion.
Make a portal of the project and provide awareness to the people. People should use that portal to launch their complaint.	We shall consider this suggestion
All the communities are not educated and cannot use portal. The mechanism should be simple. The project should share a phone number with the communities to launch the complaints.	It is our practice that whenever we go in the field, we share our number with the communities.

Stakeholders Comments and Suggestions	MEPCO's Response
The complaints received by MEPCO from communities always remained very common like tripping of unit, load shedding etc. Instead of a centralized grievance redressal system you should form small units in different areas to resolve the grievances of people at the spot. It will be helpful.	We shall consider this suggestion

Table 6-4: Summary of Consultations - HESCO

Stakeholders Comments and Suggestions	HESCO's Response
With reference to environment and social commitment plan, can you please tell us which plan do you have which will be implemented at gross root level to minimize the environmental risks?	Environmental and Social Management Framework and environmental and social management plans will be prepared and implemented.
The environmental and social risks identified are: the impact on crops, livestock, on overall environment, and impact on communities. A detailed environmental and social assessment should be carried out before launching the project. The communities which will be affected by the project should be involved in the project.	Environmental impact assessment study which will be submitted to the provincial environmental regulatory agency and World Bank for approval shall cover the aspects like population in the right of way, relocation, birds and wildlife sanctuaries. We do not disturb environment such as if there is a wetland, we do not erect tower in that location. It is our principle and we find alternate location. Your suggestions and points are valid and will be taken care in the report.
Will the documents like environmental and social risk management framework will be implemented later in true letter and spirit? The history tells us that HESCO has not put in place an effective grievance redressal system for its customers. How the grievance mechanism as per standards of the world bank would be put in place to address the grievances of its customers.	As far as the project is concerned, we conducted this workshop to get feedback from the participants. We established the grievance redressal committee at HESCO level in which members from the communities and local management were part of the committee. For this project, a three-tier grievance redressal mechanism has been designed to provide a time bound, early, transparent and fair resolution for affected persons and other stakeholder's grievances regarding environmental and social management of each sub project.
HESCO has to take care of their organizational staff who will try to send wrong messages to the	HESCO will ensure that only the authorized person will conduct the consultations with the

Stakeholders Comments and Suggestions	HESCO's Response
community through the community as HESCO is going to engage with some communities first time on this project . It is a big risk and should be taken care during the implementation of the project.	affected communities and ensure that the message to the communities should be clear and easily understandable.
Depute or identify focal persons at the cluster level or colonial level who should bring the grievances of the community/customers to HESCO and at central level and those grievances should be timely addressed in a dignified manner. It is learnt whoever comes at your grievances desk they are merely addressed. If you appoint citizens or your customers as focal persons of grievances that may effectively address the customers concerns.	A three-tier GRM has been designed to provide a time-bound, early, transparent and fair resolution for APs' and other stakeholders' grievances regarding E&S management of each subproject. All complaints received verbally or in writing will be properly documented and recorded in the Complaint Management Register(s). In addition, an easy-to-access web-based system will be developed to receive the complaints. If the complaint cannot be resolved at these three tiers, the complainant will have a choice to lodge his/her complaint at the related court of law. Currently in HESCO, there are different systems in place. We are available for the public on 24 hr. basis. Every sub division has complaint center. Similarly at division level, sector level and headquarter level also has complaint centers. If the complaint of a person is not resolved and he again contacts us we resolve the complaint from the headquarter. System is already in place but due to unawareness, all people did not know about it. We have advertised the complaint numbers of HESCO in newspapers.
HESCO should have one desk or counter in its office or regional centers where the customers/consumers note down their grievances and those grievances must be addressed.	PMU will discuss with management and decide how to proceed.
There is provision of grievance redressal committee in your social and environmental impacts framework documents. That committee should be actively engaged and they should regularly meet. The departments face different consequences during implementation of project due to weak GRC. This should be taken care during implementation of project.	It will be addressed during the implementation of the project

Stakeholders Comments and Suggestions	HESCO's Response
A survey to identify environmental and social risks related to HESCO operations should be conducted in the areas where the project is going to be implemented so that those risks should be covered in the project	Environmental and social studies will be conducted in the project areas and environmental and social management plans will be prepared to address the E&S risks during the implementation stage of the project.
How will we ensure the strong input from the stakeholders at the gross root level? How can we ensure strong coordination between stakeholders and gross root level communities?	We have noted all your suggestions and will address them in the environmental and social safeguard documents.
To mitigate environmental and social risks, the safety sign boards and direction lines can be installed and awareness can be provided to communities about the hazards associated with the transmission lines.	The system which is existing is 40-50 years old and new system will be updated one. All the safety measures will be kept in considerations during the erection of towers, transmission lines and upgradation of grid stations.
When we talk about new construction, can we say that there will be difference in construction activities in rural and urban areas. Will the transmission line go underground in urban areas?	No. We do not have an underground system. All the existing systems are overhead. The clearance from the ground will be done in a proper manner with safety protocols.
Can you please tell us under which circumstances this environmental impact assessment is being planned away? Is it under PEPA 1997 or under Sindh Environmental Protection Act 2014? Under section 17 of SEPA2014, if a project is launched in Sindh, the professional of Sindh EPA and academic institutions should be taken in consideration for carrying out this exercise and other condition is of WB.	This consultation which HESCO is conducting is in response to the requirements of the Provincial Act as well as the WB requirement. HESCO conducted the consultations earlier and will keep on doing so in future as and when needed in response to provincial law and WB requirements. The HESCO plans to conduct environmental and social assessment in response to provincial act as well as the WB requirement. This consultation is part of the process. The project and HESCO is going to meet the requirements of provincial law as well as the WB. The stakeholder engagement plan will be prepared for the project which will not only report on consultations carried out so far but will also give a road map for future consultations during different phases of the project.
What is level of understanding of the community about environmental and social risks? The technical terms need to be presented in a very simple form to the community. The questions during focus group discussion should be based on level of understanding of the community.	HESCO will ensure that the consultations with the communities would be meaningful and all the environmental and social issues will be discussed in easy language.

Stakeholders Comments and Suggestions	HESCO's Response
There will be housing, forestry, and industries in the areas of operation of HESCO. All the issues need to be discussed separately with the community and in easy language.	
There are some serious issues which need to be taken care during the project. If they are not addressed in the beginning, then many problems related to health and safety, environment and social will erupt out. Educational institutions can have meetings with HESCO as and when required and also can offer their services for baseline studies and impact assessment for the project.	HESCO will consider this suggestion
If you need any help, Institute of Environmental Engineering Mehran University is open for you to provide services. We have capacity/facility of analysis of water. All kind of analysis could be done here. If there will be any issue of solid waste management and consultations, we can provide our services to guide the project teams.	This is very much appreciated and valuable. The project and HESCO will try its best to utilize available facility and available expertise of your institution.
SIDA is extensively engaged with the communities and can provide you services in the areas where your activities will be carried out. You will not be able to establish a large social setup. We are already registered government organization and we will help you in implementation.	The HESCO's environmental and social cell will coordinate with SIDA and should seek their help if required.
There should be a centralized system in HESCO where all information should be available. The benefit of it will be that the recoveries, losses and maintenance challenges will be solved. If you will include GIS component (mapping) in it, then it will be easy to identify losses in a specific area by marking it on a map.	Your suggestion is very valid.
There are different tools available to engage with the community. For example, arrange orientation workshop, focus group discussion, seminars, and conferences. Sustainable Actions to Access Financial Capital Opportunities (SAFCO) Support Foundation can help the project in	HESCO shall consider this suggestion

Stakeholders Comments and Suggestions	HESCO's Response
organizing consultations in the areas where the organization is working.	
It is a suggestion that the stakeholder forum should be formed. SIDA can share the document with HESCO which explains that how the communities and stakeholders were engaged by SIDA .	We will review the SIDA Consultation document and consider the recommendations that can be adopted as a good practice.
SAFCO Support Foundation suggested that the HESCO should call an introductory meeting of the institutions/NGOs working in the target area of HESCO. In this way, HESCO will be able to know about their areas of work and level of expertise and will engage them in future based on their expertise. They will be able to know about their issues of those areas	We have noted your suggestion. The consultations with the stakeholders will continue through the project life to ensure stakeholder feedback is collected and relevant recommendations are considered.
Development of an application which should contain data of different stages of the project.	This will be discussed with the management for the development of the overall project database.
WAPDA and Irrigation departments are engineering organizations. The training should be provided to engineering staff on environmental and social aspects. It will help them in understanding the importance of environmental and social aspects.	A training program for the staff has been included in the ESMF and will be implemented by the project.
Mehran University of Engineering and Technology has capacity to provide trainings in the field of health and safety and can offer services to HESCO	HESCO shall consider this option
Trainings should be arranged on environmental and social practices with special focus on risk management.	A training program is proposed in the ESMF
Can you please share the environmental impact assessment and ESMP of the project? What will be the mechanism of addressing persistent non compliances by the contractor?	We are in the process of preparing these documents and when completed will be shared with the stakeholders
The establishment of a working group on environmental and social framework will be helpful. The project should identify most	HESCO shall consider this suggestion

Stakeholders Comments and Suggestions	HESCO's Response
relevant departments which could contribute on environmental and social aspects.	
Grievance redress committee will be developed for this project. A similar type of committee was developed for SIDA. We can share those documents which explained the formation and working of committee with the HESCO	HESCO will consider this information if it is shared with the project PMU.
Roshan Pakistan app like system should be introduced. HESCO should develop such app and it should be user friendly.	We have noted this suggestion

6.3. Future Consultations

Stakeholder engagement and consultations are on-going activities and will continue to be carried during the project construction and O&M phases. An indicative framework is presented below listing these consultations.

Table 6-5: Consultation Framework

Description	Target Stakeholders	Timing	Responsibility
Higher level meetings on: • Information on implementation of NEP through the project • Policy level environmental and social considerations, capacity and scope of work	• Policy makers and influencers	As needed during the project implementation	Focal point at the MoE
• Stakeholder consultations as part of the preparation of each subproject-specific ESMPs and RPs	• Affected communities • Secondary stakeholders	During preparation of each ESMP/RP	ESMP/RP Consultants
• Public awareness campaigns/ scoping sessions to share the ESMPs and RPs with the communities and other stakeholders. • Location: various places in project area	• Communities within subproject area, general public; and line departments/ agencies.	During the preparation of ESMP; to be continued thereafter	PMU/ ESMP Consultants
• Consultations with the communities during each ESMP and RP implementation • Location: various places in project area	• Communities at/around subproject area	Before commencement of subproject activities.	PMU and ESMP Consultants
• Establishment of GRM and GRCs • Location: various places in project area	• Communities at/around subproject area	Before commencement of subproject activities.	PMU and ESMP Consultants
• Grievance redress • Location: various places in project area	• PMU staff; consultants; relevant	Subproject implementation Stage	PMU and ESMP Consultants

Description	Target Stakeholders	Timing	Responsibility
	line departments; and communities.		
• Informal consultations and discussions. • Location: various places in project area	• Communities at/around subproject area	Subproject implementation Stage	PMU and ESMP Consultants; contractor
• Consultations with the communities during internal monitoring • Location: various places in project area	• Communities at/around subproject area	Construction Stage	PMU and ESMP Consultants
• Consultations with the Communities during the Independent Monitoring • Location: various places in project area	• Communities at/around subproject area	Construction Stage	M&EC
• Consultation workshops to review ESMF/ESMPs/RPs implementation, any outstanding issues and grievances, views and concerns of communities; and actions needed to address them. • Location: site offices in project area.	• Communities at/around subproject area; relevant line department; relevant NGOs	Six-monthly during implementation phase	PMU and ESMP Consultants
• Consultations with the communities during the site visits by the World Bank Review Missions. • Location: various places in project area.	• PMU; Communities at/around subproject area	Construction/ Operation Stage	PMU; WB Mission

6.4. Disclosure Requirements

The present ESMF and other E&S documents including RF and SEP as well as Urdu translation of their executive summaries will be disclosed at the website of each IA. The ESIA and RP prepared during the project implementation will be disclosed in a similar manner.

7. Environmental and Social Management

This chapter describes the step-by-step methodology to be followed for carrying out the environmental and social assessment studies for proposed subprojects to be implemented under Components 1 and 2 of the project and the preparation of ESIAs, and implementation of the ESMPs.

7.1. Sequence of Proposed Activities

The sequence of various activities to be followed during the preparation of ESIAs and ESMPs of the proposed subprojects and their implementation are given in **Table 7.1**. Detailed guidelines for carrying out these activities are described in the subsequent sections.

Table 7-1: Sequence of Proposed Activities for E&S Framework

Step	Activity	Description of the Activity	Timing/Status	Responsibility
1	Screening	Screening of the proposed subprojects to assess the ESIA/ESMP requirements	Project preparation	DISCOs
2	E&S Considerations in Project Design & Analysis of Alternatives	Environmental and social aspects will be considered during the analysis of various project alternatives and designs	During detailed design and E&S studies	Design consultants and E&S Consultants (to be hired by DISCOs)
3	E&S Studies –	Primary baseline environmental data of the project influence area (covering physical, chemical, biological and socioeconomic environment) will be collected Assessment of impacts and their significance Preparation of ESMP Preparation of RP/ARP (in case of resettlement impacts)	During project implementation	E&S Consultants
4	Consultations and Disclosure	Consultations with the stakeholders (including affected communities) during to E&S studies and	During E&S studies	E&S Consultants and DISCOs

Step	Activity	Description of the Activity	Timing/Status	Responsibility
		after completion of draft ESIA. Disclosure of the ESIA, ESMP and RP (including translated summaries) on DISCO's website	After completion of E&S studies	
5	Submission of ESIA and RP for -EPA and WB clearance	Submission of E&S documents along with necessary fees to Sindh EPA, and arranging a public hearing for EPA	After Completion of ESIA – Prior to construction	DISCOs and their Environmental Staff
6	Environmental conditions for Bidding Documents	Preparation of environmental specification for bidding documents, including preparation of BOQs and inclusion of ESMP in the bidding documents.	Prior to bidding	DISCOs and their Environmental Staff
7	Implementation of ESMP	Contractors will develop site-specific construction-ESMPs and will implement them Regular monitoring of compliance by the Construction supervision consultant and DISCOs.	During Construction	Contractor DISCOs and their Environmental Staff Construction Supervision Consultant

7.2. Step 1: Screening

Environmental and social screening activities will be carried out for the proposed subprojects by reviewing the project details and site visits.

Project Screening Criteria

Once a subproject is identified, a reconnaissance site visit will be carried out. The purpose of this visit will be to initiate the environmental and social assessment of the project, to assess the baseline conditions of the area, to identify the key environmental resources and social features of the area, to identify any environmental and or social sensitivity of the area, and to determine presence of any environmental and or social hotspots in the area. A checklist will be filled for each subproject based upon the findings and observations of the reconnaissance visit. A sample checklist is provided in **Annex A**.

The next step would be to screen each subproject based upon the checklist filled as described above and to categorize the subproject in accordance with the criteria defined in **Table 7.2**.

Table 7-2: Screening Criteria for Environmental and Social Impacts

Full ESIA Required Resettlement Plan (RP) Required	IEE/ESMP Required; ARP required in case of Resettlement Impacts	Mitigation Checklist Required
Subprojects: having significant irreversible and widespread impacts (such as establishment of a new grid station); OR involving significant degradation of forestry of sensitive natural habitat; OR requiring an EIA according to national regulations.	Projects potentially causing low to moderate level of negative but reversible and localized impacts (such as extension or augmentation of an existing grid station with no new land requirement).	Projects having only minor impacts
Subproject causing involuntary resettlement of 200 or more people (RP would be required)	Subproject causing involuntary resettlement of less than 200 people (ARP would be required)	

If the screening process concludes that the project is likely to have significant and or irreversible negative environmental and or social impacts, an ESIA will need to be carried out, as shown in **Table 7.2**. In addition, a RP will also need to be prepared in case the project is likely to cause resettlement impacts. If the screening process concludes that the project is likely to have low to moderate level of negative impacts, an Environmental and Social Management Plan (ESMP) will be prepared prior to initiating the subproject. In case the subproject is likely to cause resettlement impacts, a RP will also be prepared. For all other subprojects potentially causing low level of environmental and or social impacts, the only assessment required will be the screening carried out with the help of the checklist mentioned earlier.

Detailed E&S studies are to be carried out for the proposed subprojects. Terms of references (ToR) for the proposed ESIA studies have been prepared and presented in **Annex B**, while the ToR for preparing an ESMP is presented in **Annex C**. ESIAs and ESMPs of the proposed subprojects will be prepared following these ToRs.

Anti-Encroachment Drive (AED). Subprojects located in areas where AED has been or is being carried out will be excluded from the project.

7.3. Step 2: E&S Considerations in Subproject Design and Analysis of Alternatives

Environmental and social issues will be mainstreamed into the Project design through a detailed analysis of alternatives of the subproject location, alignment, design, technology, and construction approach. The primary objective of the 'analysis of alternatives' is to identify the location/design/technology for a particular subproject that would generate the least adverse

impact and maximize the positive impacts/benefits.

7.4. Step 3: E&S Studies

7.4.1. Baseline Data Collection

Influence area for each subproject will be identified covering areas likely to be directly or indirectly affected by the subproject construction and operation.

Baseline environmental data of the subproject influence area (covering physical, chemical, biological, and socioeconomic environment) will be collected through a review of secondary literature and primary data collection/survey. Primary data collection will be carried out for assessment of land form and land use, ambient air and noise quality, surface water and groundwater quality, wildlife habitats, forests and other ecological conditions in the subproject influence area. Primary surveys will also be carried out to establish the baseline socioeconomic conditions of the communities in the subproject area. Details of surveys to be carried out are given in the ESIA ToR (**Annex B**).

7.4.2. Impact Assessment

Based on the initial assessment, potential impacts and risks of the proposed subprojects have been identified and presented in previous **Chapter 5**.

A detailed characterization and assessment of these impacts will be carried out in the respective subproject specific ESIA/ESMP. In addition, the impacts of the proposed subprojects on the environmental and social components will be identified through consultation with experts and the local community. The impacts will be analyzed and graded qualitatively (e.g. high, medium, low) in order to identify the major impacts. Potential impacts will be predicted using the professional judgment of the multi-disciplinary team members based on baseline information collected and any modeling studies if required. The impact assessment will also consider both cumulative and induced impacts of the subprojects.

7.4.3. Environmental and Social Management Plan

ESMPs will be prepared in order to address all the identified potential environmental and social impacts and risks following the principles of the mitigation hierarchy. To the extent feasible, all potential impacts and risks will be avoided through design changes, and if avoidance is not possible – measures will be taken to minimize the magnitude of the impact. Mitigation measures will be proposed for all the significant impacts. If the residual impacts are still significant even after applying the mitigation measures, compensation measures will be proposed. Further, enhancement measures will be proposed for increasing the benefits of positive impacts. A sample mitigation plan, as a guideline, is prepared and presented in **Table 7.3** to address the impacts during construction and operation stages. Based on these guidelines, a detailed ESMP will be prepared as part of the subproject ESIA or as a standalone document as determined through the screening process discussed in **Section 7.2**.

An environmental monitoring plan will also be prepared in the ESMP to monitor the effectiveness of the mitigation measures and compliance with the environmental standards. A template for this plan is provided in **Annex D**.

Table 7-3: Sample Mitigation Plan

Impact	Mitigation Measures	Responsible for Implementation	Responsible for Supervision
1. Loss of natural vegetation and trees due to land clearing under project footprints	Compensation to be paid to tree owners Plantation of trees in the grid station	DISCOs, Contractor	CSC DISCOs
2. Acquisition of private land for the construction of project facilities	Adequate compensation and resettlement assistance for affected households as per the entitlement matrix	DISCOs	DISCOs
3. Loss of livelihood due to the permanent acquisition of agricultural lands	Adequate compensation and implementation of income and livelihood restoration plan	DISCOs	DISCOs
4. Impact on residential structures, and wood and fruit trees	Adequate compensation and resettlement assistance for affected households as per the entitlement matrix	DISCOs	DISCOs
5. Employment generation for the local community	The hiring of local people during construction works	Contractor	DISCOs
6. Generation of spoils (excess excavation) and their disposal	Transport and disposal of spoils and designated disposal sites Proper dumping and adequate compaction to avoid dust and release back to the river Landscaping of the disposal areas after completion of works	Contractor	DISCOs CSC
7. Generation of construction waste including hazardous waste	Containers of adequate size and numbers in place for collection of various types of wastes (metal, rubbers, used fuels, batteries, etc.) Procurement of services of a waste management contractor for transport and treatment of recyclable and hazardous waste	Contractor	DISCOs CSC
8. Generation of solid waste from worker's campsites and offices	Segregation of solid waste into kitchen waste (organics), paper and plastic (recyclable) and garbage (non-recyclable) Placement of containers of adequate size and numbers Organic waste will be treated through in-vessel composters and the manure will be given to the local communities	Contractor	DISCOs CSC

Impact	Mitigation Measures	Responsible for Implementation	Responsible for Supervision
	Recyclable waste will be compressed through bailers and use services of the waste management contractor Disposal of the garbage at the waste disposal site developed for the project.		
9. Wastewater discharges from the construction camps, sites, and batching plants	Construction of wastewater treatment facilities at the campsite (e.g., septic tank and soak pit) and at the worksites (sedimentation tanks for batching plants and discharges from tunnels; and site drainage)	Contractor	DISCOs CSC
10. The potential risk of soil pollution by construction works	Storage of fuels and chemical in contained facilities Availability of spill kits for immediate cleanup of any oil spills	Contractor	DISCOs CSC
11. Increased traffic on the local roads	Traffic Management Plan (e.g., avoiding school hours, following sped limits, hiring licensed drivers, etc.) including awareness-raising and safety measures	Contractor	DISCOs CSC
12. Air and noise pollution from construction and traffic	Compliance with NEQS on vehicle and machinery emissions, and ambient noise	Contractor	DISCOs CSC
13. Impacts from increased human activities on flora and fauna	Use of non-wood fuel for cooking and heating; Code of conduct for workers and employees' protection of flora and fauna Awareness-raising to workers on the protection of flora and fauna	Contractor	DISCOs CSC
14. Occupational health and safety (OHS) issues	Prepare and implement OHS management plan (see **Annex E** for a template for an OHS Plan outline) (the Plan will be prepared in accordance with the WB ESF, World Bank Group's Environment, Health and Safety Guidelines as well as World Health Organization (WHO) Guidelines, ILO Code of Practice and any internationally recognized OHS standard such as ISO 45001 or US OSHA 29 CFR 1926 or any standard specifically mentioned in the bidding documents); Conduct a 'job hazard analysis at the new construction site to identify potential hazards that may arise from the proposed	Contractor	DISCOs CSC

Impact	Mitigation Measures	Responsible for Implementation	Responsible for Supervision
	works or working conditions to the project workers and implement necessary control measures. Use of relevant personal protection equipment at all times Regular training program for workers on occupational health safety (monthly training and daily toolbox talks) Incident investigation and reporting Availability of fire-fighting, ambulance, medical and rescue facilities at the site for implementation of an emergency response plan; Implementation of GoP guidelines for protection against Covid-19		
15. Safety hazards due to increased traffic especially for children and elderly people, electrocution risk	Traffic Management Plan (e.g. avoiding school hours, following sped limits, hiring licensed drivers, etc.) including awareness-raising and safety measures. Safety signage; Awareness raising of communities	Contractor	DISCOs CSC
16. Community exposure to work hazards	Barricade the work areas with hard fencing to prevent the entry of community in the construction areas. Placing of adequate signboards and flagmen to divert the community away from the construction works.	Contractor	DISCOs CSC
17. Dust from vehicular movement on local roads and construction activities	Frequent sprinkling of water on the local roads and worksites to control dust emissions	Contractor	DISCOs CSC
18. Impacts from the influx of labor from the outside areas	A construction camp will be built with all adequate facilities (safe drinking water and sanitation, kitchen, rest areas, recreation) The Contractor will establish a mechanism to collect the complaints from the workers and address those complaints by the approved GRM plan	Contractor	DISCOs CSC
19. Possible cultural conflicts between communities and workers and health impacts, including	The contractor's code of conduct shall cover the program to promote awareness to the construction workers on respecting the local community, avoiding gender-based	Contractor	DISCOs CSC

Impact	Mitigation Measures	Responsible for Implementation	Responsible for Supervision
women's privacy and access, and gender-based violence	violence, and the risk of spreading sexually transmitted diseases. The Contractor's monthly training program will cover topics related to Code of Conduct such as sexual harassment particularly towards women and children, violence, including sexual and/or gender-based violence and respectful attitude while interacting with the local community. Staff will receive training on the prevention of SEA/SH, integrating provision related to SEA/SH in bidding document, workers requiring to sign Code of Conducts (CoC) prepared by the Contractors and reviewed and approved by PMU, preparation of SEA/SH plans as a part of the E&S management instruments which will be prepared based on these frameworks during implementation, including a SEA/SH specialist as a part consultant organization and identification and mapping of the service providers.		
20. Risk of child labor	No hiring of workers less than 18 years of age	Contractor	DISCOs CSC
21. Impact on women and girls' privacy due to the presence of construction labor	Measures to protect the privacy of women and girls by the contractor, sub-contractors and service providers	Contractor	DISCOs CSC
22. Generation of solid waste (including some hazardous waste) from the grid station and staff colony	Implement a solid waste management plan	DISCOs	
23. Community health and safety of the DISCO staff and family living in the colony	Maintenance of water supply, sanitation and drainage facilities in the residential colony.	DISCOs	

Impact	Mitigation Measures	Responsible for Implementation	Responsible for Supervision
24. Impacts from electric and magnetic fields from transmission lines on community health and safety	Will comply with WBG EHSGs/WHO recognized standards on EMF through design considerations	DISCOs	
25. Workers' health and safety during routine operation and maintenance	Implementation of OHS plan	DISCOs	
26. Protection against Covid-19	Implementation of GoP guidelines for protection against Covid-19	DISCOs	

7.4.4. Preparation RP

In case any subproject would potentially cause resettlement impacts, RP would be prepared in accordance with the criteria and procedure described in RF.

7.5. Step 4: Stakeholder Consultations and Disclosure

Stakeholder consultations will be carried out to help identify opportunities and risks, improve subproject design and implementation, and increase subproject ownership and sustainability. Stakeholder consultations will be carried out during all phases of the project, in accordance with the requirements and guidelines provided in SEP.

The stakeholders of the Project have been classified into the following two categories:

- Primary Stakeholders: include people, groups, institutions that either have a direct influence on the project or are directly impacted (positively or adversely) by the project and its activities. These stakeholders include district-governments that are involved in project implementation, local communities, civil society organizations, private landowners, and poor non-titled persons/households.
- Secondary stakeholders: are those that have a bearing on the project and its activities by virtue of their being closely linked or associated with the primary stakeholders and due to the influence, they have on the primary stakeholder groups. These stakeholders include all relevant government institutions such as EPA, Local Government, National Transmission and Dispatch Company (NTDC), and non-government organizations.

Stakeholder consultations will be carried out during the preparation of the safeguard instruments to obtain their feedback and address their concerns.

The ESIA/ESMP and RP of each subproject will be disclosed on the DISCOs website and also on the World Bank website. The Executive Summary of the ESIAs, ESMPs, and RPs will be translated into Urdu and will be disclosed on the DISCOs website. Hard copies of the Executive Summary reports of Urdu/local languages will also be made available in the relevant local government offices.

7.6. Step 5: Submission of ESIA and RP for EPA and World Bank Clearance

ESIA and RP for each subproject will be submitted to World Bank and EPA for clearance and approval before initiating any construction works. In addition, the proposed subprojects require various approvals from the relevant government departments during implementations. These requirements are summarized in **Table 7.4**.

Table 7-4: Environmental Approvals and Permits Required during Project Implementation

	Details of Approval and Permits	Issuing Authority	Requirements	Responsible Agency	Timing
1	**Clearance of ESIA and RP**	World Bank	Submission of ESIA and RP	DISCOs	Prior to Construction of the project
2	**Environmental Approval** for the overall construction of the Project	EPA	Submission of ESIA	DISCOs	Prior to Construction of the Project
3	**Environmental Approval** for establishing crusher plants (if applicable)	EPA	Submission of IEE Application	Contractor	During the construction phase
		Forest Department	Submission of Request	Contractor	During the construction phase
		Industries Department	Submission of Request with layout and location maps	Contractor	During the construction phase
		Mines and Mineral Department	Submission of Request	Contractor	During the construction phase
4	**Permit** for storage of blasting material (if applicable)	Deputy Commissioner of District	Submission of a request with the location map of the explosive store	Contractor	During the construction phase
5	**Permit** for the transport of blasting material (if applicable)	Chief Inspector of Explosives	Submission of a request along with type and quantities of explosives, explosive store location information and a recommendation letter from the Employer	Contractor	During the construction phase

	Details of Approval and Permits	Issuing Authority	Requirements	Responsible Agency	Timing
6	**Permit** for cutting of forest trees	Forest Department	Submission of a request	DISCOs	During the construction phase
7	**Permit** for the use of quarry and excavated material	Mines and Mineral Department	Submission of a request with the location map of the quarry area and estimated quantity of required material	DISCOs will sign the lease agreement and handover it to the contractor	During the construction phase
8	Batching Plant	EPA	NOC is not required for establishing a batching plant, but the project has to inform EPA about the facility with a surety that all mitigation measures to control pollution will be adopted.	Contractor	During the construction phase
9	**Environmental Approval** for the operation of the Project	EPA	Submission of a compliance report on the implementation of conditions and recommendations given in the Environmental Approval for construction.	DISCOs	After completion of the Construction and prior to operation

7.7. Step 6: Environmental and Social Requirements in Bidding Documents

DISCOs will include the following Environmental, Social, Health and Safety (ESHS) Conditions in the bidding documents to ensure all the mitigation measures proposed in the ESMPs are effectively implemented:

- Past performance of the Contractor on ESHS aspects including sexual exploitation and abuse and gender-based violence;
- ESHS Staff with the Contractor;
- Performance Security;
- Mitigation measures to address construction impacts (as given in ESIA/ESMP);
- Payments for implementation of ESHS measures;
- Code of conduct of Contractor's Personnel;

- Management Strategies and Implementation Plans (MSIP) to manage the ESHS Risks.

Each of the above conditions is elaborated in **Table 7.5**.

Table 7-5: ESHS Conditions in the Bidding Documents

Condition	Rationale for inclusion of this Condition in the Contract	Specifications to be included in Bidding Documents	Responsibility	
			Bidders	DISCOs
1. Past performance of the Contractor on ESHS is one of the eligibility criteria for the shortlisting process	The contractor's past performance on compliance with ESHS is an indicator of the contractor's commitment and capability for implementation of the ESMP	Record of past performance; The Bidder shall "declare any civil work contracts that have been suspended or terminated and/or performance security called by an employer for reasons related to the non-compliance of any environmental, or social (including sexual exploitation and abuse (SEA) and gender-based violence (GBV) or health or safety requirements or safeguard in the past five years".	Bidder to make the Declaration	DISCOs to use this information to seek further information or clarifications in carrying out its due diligence
2. Contractor shall propose ESHS Specialists in his team	The Contractor's staff should include ESHS specialists who would be responsible for the implementation of all mitigation measures on ESHS risks and compliance with ESMP	The Bidder shall propose Environmental, Social, Health and Safety (ESHS) Specialists as the Contractor's Key Personnel at the Site. The Bidder shall provide details of the proposed ESHS specialists including academic qualifications and work experience. The ESHS Specialists should have a minimum bachelor's degree in engineering or a master's degree in	The bidder to submit the CVs of proposed ESHS Specialist(s)	DISCOs will review and approve

Condition	Rationale for inclusion of this Condition in the Contract	Specifications to be included in Bidding Documents	Responsibility	
			Bidders	DISCOs
		sciences related to environmental management. The Specialists should have 5 years of experience working on monitoring and managing ESHS risks related to similar projects.		
3. Contractor shall submit ESHS Performance Security for compliance with ESHS obligations	The Contractor should have a financial implication if he could not comply with ESHS requirements. Hence performance security will be collected from the contractor	The Bidder shall submit the ESHS Performance Security in the form of a "demand guarantee" in the amount of one percent of the Contract Amount.	The bidder will submit a Performance Security	
4. Implement Mitigation Measures to Address Construction-Related Impacts given in ESMP	The mitigation measures to address potential ESHS risks and impacts should be included in the bidding documents. The contractor shall be made responsible for the implementation of the mitigation measures through the necessary conditions in the contract.	DISCOs will include the ESMP in the General Specifications of the Bidding Document, and the reference to this document will be provided in the Conditions of the Contract as follows: • The Contractor shall implement the mitigation and monitoring measures given in the ESMP to address ESHS risks associated with the construction works. The Consultant shall refer to the ESIA of the Project, which is available on the		PMU will include this condition in the bidding document

Condition	Rationale for inclusion of this Condition in the Contract	Specifications to be included in Bidding Documents	Responsibility	
			Bidders	DISCOs
		DISCOs' websites for further guidance. • The Contractor shall comply with the World Bank Group's General Environmental Health and Safety Guidelines. Such specifications or conditions should be (i) written clearly in simple terms; (ii) unambiguous to avoid any misinterpretation; (iii) acted upon by the bidder without requiring inputs/actions of other parties; (iv) clearly described if it is to be priced as a standalone item or part of delivering other items of the work; (v) practicable and outcome oriented: i.e., specify the end results as opposed to the method of achieving it.		
5. Payments for implementation of ESHS Mitigation and Monitoring Measures	BOQs on ESHS implementation are included in the Bidding Documents	Generally, the cost of delivering ESHS, particularly the OHS requirements shall be a subsidiary obligation of the Contractor covered under the prices quoted for other Bill of Quantity items. No separate payments will be made for the	Bidder will quote for the ESHS Management. OHS, CHS and environmental aspects should be costed separately.	DISCOs will include this in the general specifications of the bid document

Condition	Rationale for inclusion of this Condition in the Contract	Specifications to be included in Bidding Documents	Responsibility	
			Bidders	DISCOs
		implementation of OHS requirements. However, the budget will be allotted for the implementation of other ESHS aspects such as waste management, spoil site development, environmental monitoring, etc.		
6. Code of Conduct for all site personnel including Contractor's and DISCOs' Personnel	All workers hired by the Contractor should sign a code of conduct to ensure compliance with ESHS obligations of the Contract	The Bidder shall submit the Code of Conduct that will apply to the Contractor's employees and subcontractors. The Code of Conduct will state that the workers will comply with the following ESHS requirements: • Wearing of Personal Protective Equipment (PPE's) in the workplace at all times • Non-discrimination in dealing with the local community by race, ethnicity, gender, religion, disability, sexual orientation, gender identity, social, or health status • Respectful attitude while interacting with the local community • Prohibit sexual harassment particularly	Bidder shall submit code of Conduct with the bid documents	DISCO will include worker's code of conduct in the general conditions of the bidding document

Condition	Rationale for inclusion of this Condition in the Contract	Specifications to be included in Bidding Documents	Responsibility	
			Bidders	DISCOs
		towards women and children • Prohibit violence, including sexual and/ or gender-based violence • Respecting the reasonable work instructions • Protection and Proposer use of the property		
7. Contractor's Management Strategies and Implementation Plans (MSIP) to manage the ESHS Risk	The Contractor proposal should include his understanding of the ESHS requirements of the project and the proposed strategies to manage the ESHS risks	The Bidder shall submit Management Strategies and Implementation Plans (MSIP) to manage the following key ESHS risks: • Strategy for the protection of workers and community from the construction-related hazards inside the terminal • Pollution prevention (wastewater, air and noise emissions) and management • A waste management plan for proper collection and disposal of waste • Traffic management plan to ensure the safety of local communities from construction traffic • Hazardous material management plan safe storage and handling	The bidder will submit MSIP along with the Bid Documents	

Condition	Rationale for inclusion of this Condition in the Contract	Specifications to be included in Bidding Documents	Responsibility	
			Bidders	DISCOs
		• Strategy to address labor influx impacts on the local communities • Gender-based violence and sexual exploitation and abuse prevention and response action plan • Emergency response plan and early warning system The Contractor shall be subsequently required to submit (before mobilization) Contractor's Environment and Social Management Plan (C-ESMP) by the above strategies and Condition 4 of this Table.		

7.8. Step 7: Implementation of ESMPs of Subprojects

The steps to be followed during the construction stage of subprojects for effective implementation of ESMP are described in this section.

7.8.1. Contractor's Construction Environmental Action Plan

As a requirement under the bidding documents, the Contractors will need to submit a Construction Environmental and Social Management Plan (C-ESMP) prior to their mobilization for PMU approval. Submission and approval of this plan by CSC/PMU will be one of the conditions for the contractor to be able to start site mobilization. This plan will consist of the following site-specific management plans that will be prepared in compliance with the requirements of the bidding documents, ESMP and World Bank EHS guidelines:

- C-OHS Management Plan
- Waste management plan
- Wastewater discharges management plan
- Air and noise emissions management plan
- Hazardous material management and spill control plan

- Water supply and sanitation management at the worksites and workers' accommodations
- Management of labor influx and facilities for the foreign workers
- Labor recruitment procedures and labor management
- Traffic management plan
- Training plan for ESHS risks including HIV/AIDS, sexual exploitation and abuse, and gender-based violence
- Emergency Response Plan
- Grievance Redress Mechanism
- Demobilization plan after completion of works

In addition, the Contractor will need to submit a Job Safety/Hazard Analysis at the beginning of construction works at each new site addressing the measures associated with various hazards at the work sites. These reports will be reviewed and approved by the DISCOS after ensuring the mitigation measures proposed in the analysis are in place at the work sites.

7.8.2. Compliance Monitoring and Reporting

Environmental and Social staff of the Contractor are responsible for implementing the ESMP, while the environmental and social specialists of the Construction Supervision Consultant and DISCOS will be responsible for the overall monitoring of the EMSPs throughout the Project implementation.

Compliance monitoring comprises of on-site inspection of the construction activities to verify that measures identified in the ESMP and that are included in the clauses for contractors are being implemented. This type of monitoring is similar to the normal technical supervision tasks ensuring that the Contractor is achieving the required standards and quality of work.

The following reports will be prepared on the implementation of ESMP:

- Monthly environmental monitoring reports by the Contractor on the status of implementation of environmental, social, health and safety aspects, and
- Quarterly environmental monitoring reports by the PMU on the status of implementation of environmental, social, health and safety aspects

The topics to be covered in these reports are summarized below:

- Environmental incidents or non-compliance with contract requirements
- Health and safety incidents, accidents, injuries and all fealties that require treatments
- Inspection of Workers accommodation (including worker welfare facilities such as toilets in work areas, cold drinking water for workers during summers, and other similar facilities); Workers and community grievances
- Training conducted and their content;
- Environmental issues encountered and how they were mitigated and
- Compliance status on ESMP requirements.

8. Project Institutional Framework

This Chapter describes the institutional framework for the management of the overall project particularly its environmental and social aspects.

8.1. Institutional Arrangements for Environmental and Social Management within DISCOs

DISCOS will be responsible for the overall management, supervision, and execution of the project through the Project Management Unit (PMU). A full-time Project Director (PD) will be appointed to head the PMU. See **Figure 8.1** for the PMU organogram.

The overall responsibility of environmental performance, including ESMP implementation, will rest with the PMU. Each DISCO has an existing Environmental and Social Safeguard Cell (ESSC), which needs to be fully staffed for the management of environmental and social impacts of the project. DISCOS will depute these specialists to PMU to ensure the effective implementation of ESMF and ESMPs (and also RF and RP). In addition, PMU will also hire independent ESIA consultants for the preparation of safeguard instruments for the proposed subprojects.

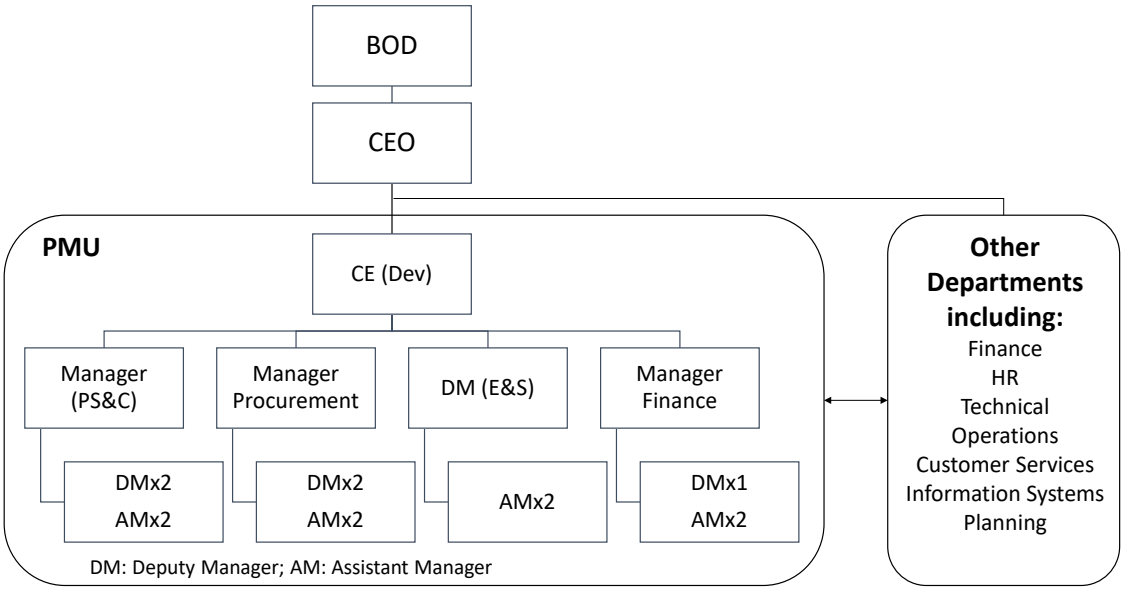

Figure 8-1: Institutional Arrangements for PMUs in each DISCO

Details of environmental and social staff associated with various consultants and contractors that may be engaged under the project are summarized below.

- **Environmental and Social Staff in PMU.** The Environmental and Social Safeguard Cell (ESSC) of PMU includes the following staff:
  - A Deputy Manager, Environmental and Social
  - two Assistant Managers (one environment, and one social)
  - The staff will assist the PMU on issues related to environmental and social management and oversee the independent ESIA Consultants. The Construction Supervision

Consultant (CSC) and contractors will compile quarterly monitoring reports on ESMP compliance, to be sent to the Project Director and also shared with the World Bank, throughout the construction period.

- **Independent ESIA Consultants.** PMU will procure services of independent consultants for preparation of ESIA of the projects including preparation of RP.
- **Project Implementation Consultants (and/or Construction Supervision Consultants)**: The Project Implementation Consultant will be responsible for (i) carrying out feasibility studies and detailed engineering designs of the projects, and (ii) construction supervision of these projects. The consultants will have adequate environmental, social, health and safety specialists to implement the environmental and social management plans of the ESMP.
- **Project Management Consultant (PMC**): The PMC team will consist of an environmental specialist and a social specialist. They will support the PMU staff in carrying out their responsibilities.
- **Contractors:** Construction contractors will also have adequate environmental, health and safety specialists to implement the environmental and social management plans of the ESMP.
- **Monitoring and Evaluation Consultants (M&E Consultants).** The PMU will also engage an independent organization to carry out third-party environmental and social monitoring during project implementation.

The roles and responsibilities of PMU's environmental and social staff and consultants for environmental and social management of the Project are given in **Table 8.1**.

Table 8-1: Roles and Responsibilities in Environmental and Social Management

Organizations	Responsibilities
PMU	• Ensure that all project activities are well-managed and coordinated. • Recruitment of consultants for ESIA studies; and approval of ESIA by the EPA and WB • Procurement of works and goods. • Payment of compensation to the project affected households
E&S Staff within PMU	• Reviewing consultants' deliverables related to environmental and social assessment, reviewing bid documents for inclusion of ESMP measures, supervising construction activities, producing periodic monitoring reports, • Supervising CSC for the implementation of ESMP including mitigation measures and implementation of C-ESMP • Carry out direct monitoring of key aspects such as COHS, GRM • Closely coordinate with other concerned agencies, local governments, and communities to support the implementation of ESMP
ESIA Consultants	• Carrying out ESIA studies in compliance with the EPA and World Bank guidelines following the ESMF • Prepare ESIA and RP
Project Implement Consultants / Construction Supervision Consultants	• Prepare feasibility studies and detailed engineering designs for projects • Supervise civil works, ensuring compliance with all design parameters including quality requirements and ESMP implementation • Prepare monthly reports and submit to PMU • PIC/CSC will have dedicated environmental and social staff

Organizations	Responsibilities
Project Management Consultant	• Support the E&S staff of PMU in carrying out their responsibilities • Review of ESIA reports prepared by ESIA Consultants • Ensuring inclusion of ESMP in bidding documents • Providing training on ESMP principles and requirements to CSC, contractors, DISCOS field staff, and others as needed to ensure effective implementation of ESMP
Contractor	• Prepare C-ESMP with site-specific mitigation measures. • implementation of mitigation and monitoring measures proposed in the ESMP • Each contractor will recruit an Environmental, Health, and Safety Manager, who will be responsible for implementing the contractors' environmental, health and safety responsibilities, and liaising with government agencies. S/he will have adequate environmental, social, health, and safety staff.
M&E Consultant	• Independent monitoring of the implementation of ESMPs and RPs • External Monitoring and evaluation.

8.2. Implementation Arrangements for Component 4

The PD of the MoE will be the implementing entity and principal accounting authority for Component 4 of EDEIP. A joint secretary will serve as a project director of the PIU and will be supported by budget officer(s) from within Power Division to oversee financial management aspect. It will oversee execution of planned activities and will collaborate with relevant entities as described in **Figure 8.2** below for their effective execution. On the policy aspect, Power Planning and Monitoring Company (PPMC) will support MoE, whereas PPIB/AEDB will be responsible to carry out the work related to the IAA. The setting up of the ISMO will involve NTDC and CPPA-G, who is currently serving the role of the market operator. A Project Steering Committee (PSC) is proposed to provide a high-level oversight, strategic guidance and facilitate coordination between relevant entities and departments for smooth implementation of Component 4 of EDEIP in particular and overall project implementation in general. PSC would be chaired by Secretary Energy with Member Energy Planning Commission, CEOs of PITC, DISCOs and PPMC and representatives of NEPRA and Privatization Commission as its members. The PSC composition is fit for purpose and other members can be co-opted on the need basis. The PD of PIU in MOE will be secretary to the PSC. MoE-PD will designate a focal point on the E&S to coordinate and ensure implementation of the E&S aspects.

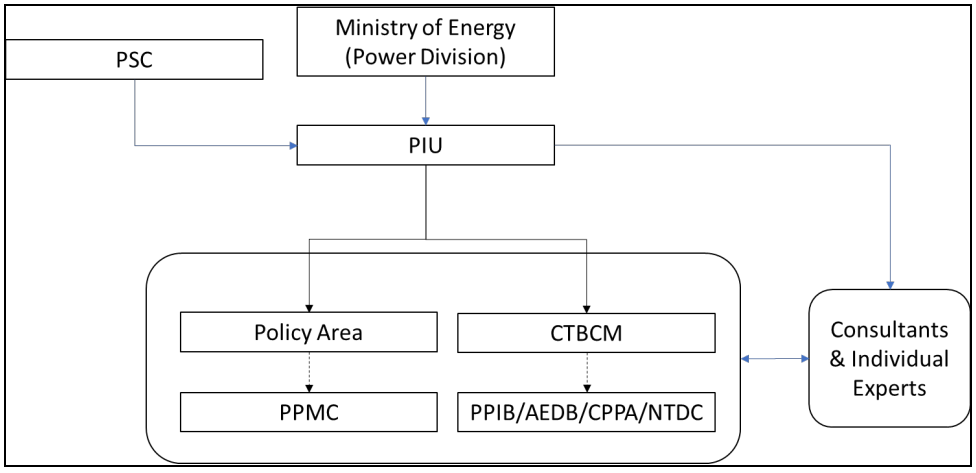

Figure 8-2: Institutional Arrangements for Component 4

8.3. Capacity Building and Training

Training will be conducted for all the project staff including engineers and relevant stakeholders during initial stages of the project to sensitize them on the management of environmental and social issues, and to build the requisite capacities.

The proposed training plan is given in **Table 8.2**; it will be reviewed and finalized during the project-specific ESIAs. DISCOs' independent ESIA consultants and CSC will deliver the training programs. At the construction site, CSC will take the lead in implementing the capacity building plan, though the contractors will also be responsible for conducting training for their own staff and workers. The various aspects that are covered under the capacity building will include general environmental and social awareness, key environmental and social sensitivities of the area, key environmental and social impacts of the project, ESMP requirements, WB ESF requirements, OHS aspects, and waste disposal. **Table 8.2** provides a summary of various aspects of environmental and social training to be conducted at the construction sites/stage. PMUs may revise the plan during the project implementation as required.

Table 8-2: Environmental and Social Training Programs

Contents	Participants	Trainer	Schedule
General environmental and socio-economic awareness; Environmental and social sensitivity of the project influence area; COHS aspects and key COHS risks; Social and cultural values of the area; WB ESF requirements; national/provincial regulatory requirements	The selected managerial staff of PMU and DISCOS including their consultants	Independent ESIA Consultants	Before the start of the project activities. (To be repeated as needed.)
General environmental and socio-economic awareness; Environmental and social sensitivity of the project influence area; ESIA findings, ESMP; RP; Mitigation measures; Community issues; GRM; COHS aspects	DISCOS personnel who will in charge of construction as well as O&M and the Engineers from the local contractors	CSC E&S Staff	During project implementation (To be repeated as needed.)
E&S issues associated with the construction works ESMP requirements of the contractors; Workers health and safety; WB ESF requirements; GRM; COHS aspects	Construction crew	Contractors EHS Staff	Prior to the start of the construction activities and during the construction activities (To be repeated as needed.)
E&S monitoring and supervision; COHS aspects	CSC E&S staff	CSC/ESU	Prior to the start of the construction activities and during the construction activities (To be repeated as needed.)
COHS aspects	Construction crew	Contractors EHS Staff	Prior to the start of the construction activities and during the construction activities (To be repeated as needed.)

Contents	Participants	Trainer	Schedule
Gender sensitivity	All project personnel	CSC E&S Staff	Before the start of the project activities. (To be repeated as needed.)
GRM	Community members	CSC E&S Staff	Before the start of the site activities. (To be repeated as needed.)
Housekeeping, hygiene, waste management and disposal	Camp crew	Contractors EHS Staff	Prior to the camp establishment (To be repeated as needed.)
Management of waste oils and chemicals in accordance with MSDS	Construction workers	Contractors EHS Staff	Prior to the start of the construction activities and during the construction activities (To be repeated as needed.)
Safe and defensive driving practices	Project drivers	Contractors EHS Staff	Prior to the start of the construction activities and during the construction activities (To be repeated as needed.)

8.4. Institutional Enhancement

The institutional strengthening and enhancement will be considered during the project implementation based upon the complexity of subprojects and the environmental and social setting and the associated risks and impacts of the proposed activities. This aspect will be further assessed and covered under the subproject ESIAs and ESMPs. In particular, OHS related capacities that already exist in DISCOs in their respective Safety Departments need to be assessed and their linkage with the ESUs need to be established for a better coordination and enhanced compliance with the relevant safety codes. The Safety Departments are already in the process of adopting and implementing the Safety Code prepared by NEPRA; this effort will be assessed during the proposed project and the need of any additional training/capacity enhancement will be determined and actions taken as appropriate.

9. Grievance Redress Mechanism

9.1. Project GRM for DISCOs

A project-specific grievance redress mechanism (GRM) will be established to receive, evaluate, and facilitate the resolution of affected parties' concerns, complaints, and grievances about the environmental and social performance of the Project.

A three-tier GRM has been designed to provide a time-bound, early, transparent and fair resolution for APs' and other stakeholders' grievances regarding E&S management of each subproject. All complaints received verbally or in writing will be properly documented and recorded in the Complaint Management Register(s). In addition, an easy-to-access web-based system will be developed to receive the complaints. If the complaint cannot be resolved at these three tiers, the complaint will have a choice to lodge his/her complaint at the related court of law. The GRM for the project is outlined below.

First Tier of GRM. The first tier of GRM will be established at the field level and will offer the fastest and most accessible mechanism for resolution of grievances at the local level. A local level Grievance Redress Committee (GRC) will be formed for this purpose headed by the ESU Manager, with membership from Land Acquisition Collector and other relevant staff of Revenue Department (when resettlement activities are in progress), contractors' representatives, consultants' representatives, representatives of other relevant departments, and two members from the Affected Persons (APs). At this tier, the designated E&S staff of PMU site office will make attempt to resolve the complaints within two to 10 working days, depending on the nature of grievance. The ESU Manager (or his/her nominee) will convene the meetings of local GRC and conduct proceedings informally to reach an amicable settlement between the parties within 10 days of receiving a complaint (verbally or in writing) from an affected person or his/her representative. The proceeding of the GRC meetings will be recorded in writing, and copies will be provided to the parties involved. Grievances will be documented with personal details (name, address, date of complaint, and nature of the complaint) will be included unless anonymity is requested. A tracking number will be assigned to each complaint/grievance. Should the grievance remain unresolved or the AP is not satisfied with the decision, the grievance can be lodged with the project level grievance redress committee, led by the head of PMU.

Second Tier of GRM. The E&S staff in PMU will refer the unresolved issues or grievances (with written documentation) to the second tier of GRM, the PMU level GRC. The PMU level GRC will be established by each DISCO and will consist of the following persons: (i) the head of PMU will act as head of the GRC; (ii) a representative from DISCO senior management; (iii) Manager/Deputy Manager of ESU; (iv) representative of DC office (where relevant); (v) representative of PIC/CSC; (vi) Chief Resident Engineer of the CSC (on-call); (vii) representative of relevant government offices (on-call); and (viii) two to three representatives of respective project-affected people (on-call). A hearing can be called with the GRC, if necessary, where the AP(s) can present details of his/her/their concern/grievance. The GRC will meet as necessary when there are grievances to be addressed. The GRC will suggest corrective measures at the field level and assign clear responsibilities for implementing its decision within 25 working days, depending on the nature of the grievance. If complainant is still dissatisfied with the decision, the existence of the GRC/GRM shall not impede the complainant's access to the government's administrative or judicial remedies.

Third Tier of GRM: In the event that a grievance cannot be resolved directly by the second tier GRC or if complainant is dissatisfied with the decision of GRC, the affected people can

seek alternative redress through the CEO or Board of Directors of DISCOs, district administration, the Secretary Energy and Power Department or higher-level administrative authorities, the Pakistan Citizen Portal or the court of law, as appropriate.

Monitoring and reporting. The monitoring reports of RP and ESMP implementation will include the following aspects pertaining to progress on grievances: (i) number of cases registered, level of jurisdiction (first, second, third tiers), number of hearings held, decisions made, status of pending cases; and (ii) lists of cases in process and already decided upon, may be prepared with details such as name with copy of NIC, complaint number, date of application, date of hearing, decisions, remarks, actions taken to resolve issue(s), and status of grievance (i.e., open, pending, closed).

World Bank's Grievance Redress Mechanisms: Communities and individuals who believe that they are adversely affected by a World Bank (WB) supported project may submit complaints to existing project-level grievance redress mechanisms or the WB's Grievance Redress Service (GRS). The GRS ensures that complaints received are promptly reviewed in order to address project-related concerns. Project affected communities and individuals may submit their complaint to the WB's independent Inspection Panel which determines whether harm occurred, or could occur, as a result of WB non-compliance with its policies and procedures. Complaints may be submitted at any time after concerns have been brought directly to the World Bank's attention, and Bank Management has been given an opportunity to respond. For information on how to submit complaints to the World Bank's corporate Grievance Redress Service (GRS), please visit http://www.worldbank.org/en/projects-operations/products-and-services/grievance-redress-service. For information on how to submit complaints to the World Bank Inspection Panel, please visit www.inspectionpanel.org.

9.2. Proposed GRM for Construction Workers

The GRM discussed in **Section 9.1** would address the grievances/complaints lodged by the project affected persons and other local stakeholders. However, according to the lessons learned in various project contexts, there is also a need to establish a separate GRM to deal exclusively with those complaints that involve workers employed by the Contractors for construction activities. Such grievances may involve wage rates and unpaid overtime works; irregular and partial payments; lack / inadequacy of living accommodations; lack of clean drinking water and sanitation facilities; lack of medical care in emergencies; lack of protection against gender-based violence (GBV) by labor suppliers, supervisors, and others who also deal with workers.

The GRCs dealing with labor grievances / complaints will have members who are directly and indirectly associated with the construction works. The GRC will include a PMU official who is in charge at the worksite as the convener, resident engineer of the CSC, a workers' representative, and the contractor's representative. The convener will designate an official to receive the complaints and ensure the complainant does not lose his/her job and is not intimidated into withdrawing the complaint before the formal hearing.

To ensure impartiality and transparency, hearings on complaints will be held in a non-threatening environment and will remain open to all other workers on the site when appropriate. The GRCs will record the (i) details of the complaints; (ii) reasons that led to acceptance or rejection of the individual cases, as well as the number of accepted and rejected cases; and (iii) decisions agreed with the complainants. PMU will keep records of all resolved and unresolved complaints and grievances and make them available for review as and when asked for by the World Bank and other interested entities/persons.

9.3. GRM for Ministry of Energy

For general complaints MoE has a complaint cell and provides an online option to file available on its website: http://www.mowp.gov.pk/frmDetails.aspx. The MoE will also nominate a focal point in the PIU to manage the complaint mechanism under EDEIP.

Further, the Pakistan Citizens Portal may also be used to file a grievance in instances where the public is not aware of an alternate grievance recourse mechanism. Headed by the Prime Minister's Performance Delivery Unit (PMDU), Pakistan Citizen's Portal is an online integrated GRM which connects all government organizations at the federal and provincial level through a mobile application. Available on both Android and iOS, PCP is used for lodging complaints against any government department or functionary, seeking guidance/information regarding government procedures and to provide suggestions to the government for the resolution of any issue pertaining to the interest of the general public. User Guidelines Manual for PCP is available in both Urdu and English. As of 1 November 2021, the PCP had 3019275 million registered users in the country. A total of 281,4630 complaints were registered and 2664254 complaints were resolved. Despite being a robust GRM, PCP's utility to the project's disadvantaged and vulnerable stakeholders is limited due to low female coverage and because of it being a mobile app-based platform which cannot be accessed by persons with no access to mobile phones, with low ICT literacy, or those living in areas with no network connectivity.

10. Budget for ESMF Implementation

This Chapter presents the cost of ESMF implementation that includes E&S training to be conducted by PMU and various E&S studies to be commissioned by DISCOs during the project implementation.

10.1. Cost of Training

The E&S training to be conducted during the proposed project have been discussed in **Section 8.2**. The estimated cost of these training are presented below.

Table 10-1: Estimated Cost of Environmental and Social Training

Contents	Estimated Cost for each DISCO (PKR)	Notes
General environmental and socio-economic awareness; Environmental and social sensitivity of the project influence area; Social and cultural values of the area; WB ESF requirements; national/provincial regulatory requirements	500,000	PKR 100,000 per session x five sessions.
General environmental and socio-economic awareness; Environmental and social sensitivity of the project influence area; ESIA findings, ESMP; RP; Mitigation measures; Community issues; GRM	500,000	PKR 100,000 per session x five sessions.
E&S issues associated with the construction works ESMP requirements of the contractors; Workers health and safety; WB ESF requirements; GRM	0	Included in the contractor's cost
E&S monitoring and supervision	0	Included in the CSC cost
COHS aspects	0	Included in the contractor's cost
Gender sensitivity	0	Included in the CSC cost
GRM	0	Included in the CSC cost
Housekeeping, hygiene, waste disposal	0	Included in the contractor's cost
Safe and defensive driving practices	0	Included in the contractor's cost
Total	**1,000,000**	
Cost for three DISCOs	**3,000,000**	

10.2. Cost of Preparing ESIAs and RPs

The requirement and procedure for conducting various E&S studies (ESIAs, ESMPs, RPs) has been discussed in Chapter 7. The estimated cost of conducting these studies by each DISCO

is presented below.

Table 10-2: Estimated Cost of Conducting E&S Studies

Contents	Estimated Cost for each DISCO (PKR)	Notes/Basis
ESIA	5,000,000	Expert Judgment
ESMP	2,500,000	
RP	5,000,000	
Others	2,000,000	
Total	**14,500,000**	
Cost for three DISCOs	**43,500,000**	

10.3. Total Cost of ESMF Implementation

The total cost of ESMF implementation is presented below.

Table 10-3: Total Estimated Cost of ESMF Implementation

Contents	Estimated Cost for each DISCO (PKR)	Notes/Basis
E&S Training	1,000,000	See Table 10.1
E&S Studies	14,500,000	See Table 10.2
Miscellaneous and Unforeseen Costs	5,000,000	-
Total	**20,500,000**	
Cost for three DISCOs	**61,500,000**	
	About USD 366,071	**1 USD = PKR 168**

Annex A: Sample Checklist of Likely Environmental and Social Impacts of Subprojects

This Form is to be used by the PMUs to determine the type of further assessment to be carried out for each subproject. This checklist may need to be customized, and approval obtained from the Bank for the revised checklist.

Name of Subproject:

Number of Subproject:

Proposing Agency:

Subproject Location:

Subproject Objective:

Infrastructure to be Rehabilitated:

Estimated Cost:

Proposed Date of Commencement of Work:

Technical Drawing/Specifications Reviewed (circle answer): Yes __ No __

Further Assessment Needs: Full ESIA to be carried out for the subproject if one or more aspects in the following table are assessed under 'Significant/Large' category. An ESMP to be prepared for the subproject if one or more aspects in the following table are assessed under 'Moderate/Medium' category. No further assessment would be needed if most of the aspects in the following table are assessed under 'None' or Minor/Small' category.

I. Subproject Related Issues

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant / Large	Mitigation Measures/Further Actions
A.	**Zoning and Land Use Planning**					
1	Will the subproject affect land use zoning and planning or conflict with prevalent land use patterns?					

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant / Large	Mitigation Measures/Further Actions
2	Will the subproject involve significant land disturbance or site clearance?					
3	Will the subproject land be subject to potential encroachment by urban or industrial use or located in an area intended for urban or industrial development?					
B	Utilities and Facilities					
4	Will the subproject require the setting up of ancillary facilities?					
5	Will the subproject make significant demands on utilities and services?					
6	Will the subproject require significant levels of accommodation or service amenities to support the workforce during construction (e.g., contractor will need more than 20 workers)?					
C	Water and Soil Contamination					
7	Will the subproject require large amounts of raw materials or construction materials?					
8	Will the subproject generate large amounts of residual wastes, construction material waste or cause soil erosion?					

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant / Large	Mitigation Measures/Further Actions
9	Will the subproject result in potential soil or water contamination (e.g., from oil, grease and fuel from equipment yards)?					
10	Will the subproject lead to contamination of ground and surface waters by herbicides for vegetation control and chemicals (e.g., calcium chloride) for dust control?					
11	Will the subproject lead to an increase in suspended sediments in streams affected by road cut erosion, decline in water quality and increased sedimentation downstream?					
12	Will the subproject involve the use of chemicals or solvents?					
13	Will the subproject lead to the destruction of vegetation and soil in the right-of-way, borrow pits, waste dumps, and equipment yards?					
14	Will the subproject lead to the creation of stagnant water bodies in borrow pits, quarries, etc., encouraging for mosquito breeding and other disease vectors?					
D.	**Noise and Air Pollution Hazardous Substances**					
15	Will the subproject increase the levels of harmful air emissions?					

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant / Large	Mitigation Measures/Further Actions
16	Will the subproject increase ambient noise levels?					
17	Will the subproject involve the storage, handling or transport of hazardous substances?					
E.	**Fauna and Flora**					
18	Will the subproject involve the disturbance or modification of existing drainage channels (rivers, canals) or surface water bodies (wetlands, marshes)?					
19	Will the subproject lead to the destruction or damage of terrestrial or aquatic ecosystems or endangered species directly or by induced development?					
20	Will the subproject lead to the disruption/destruction of wildlife through interruption of migratory routes, disturbance of wildlife habitats, and noise-related problems?					
F.	**Destruction/Disruption of Land and Vegetation**					
21	Will the subproject lead to unplanned use of the infrastructure being developed?					
22	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?					

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant / Large	Mitigation Measures/Further Actions
23	Will the subproject lead to the interruption of subsoil and overland drainage patterns (in areas of cuts and fills)?					
24	Will the subproject lead to landslides, slumps, slips and other mass movements in road cuts?					
25.	Will the subproject lead to erosion of lands receiving concentrated outflow carried by covered or open drains?					
26	Will the subproject lead to long-term or semi-permanent destruction of soils in cleared areas not suited for agriculture?					
27	Will the subproject lead to health hazards and interference of plant growth adjacent to roads by dust raised and blown by vehicles?					
G.	**Cultural Property**					
28	Will the subproject have an impact on archaeological or historical sites, including historic urban areas?					
29	Will the subproject have an impact on religious monuments, structures and/or cemeteries?					
30	Have Chance Finds procedures been prepared for use in the subproject?					

	ISSUES	None	Minor/ Small	Moderate/ Medium	Significant / Large	Mitigation Measures/Further Actions
H.	**Expropriation and Social Disturbance**					
31	Will the subproject involve land expropriation or demolition of existing structures?					
32	Will the subproject lead to induced settlements by workers and others causing social and economic disruption?					
33	Will the subproject lead to environmental and social disturbance by construction camps?					

II. Site Related Issues

	Issues	Yes	No	Don't Know	Mitigation Measures
1	Does the subproject require land acquisition? [Note: Fill in the land acquisition form if YES]				
2	Will the subproject negatively impact livelihoods [Note: Describe separately if YES]				
3	Is the sub project located on land with contested ownership?				
4	Is the sub project located in an area with security problems				
5	Is the sub projected located on land reclaimed from floods (the ownership here may be contested)				

	Issues	Yes	No	Don't Know	Mitigation Measures
6	Is the subproject located in an area with designated natural reserves?				
7	Is the subproject located in an area with unique natural features?				
8	Is the subproject located in an area with endangered or conservation-worthy ecosystems, fauna or flora?				
9	Is the subproject located in an area falling within 500 meters of national forests, protected areas, wilderness areas, wetlands, biodiversity, critical habitats, or sites of historical or cultural importance?				
10	Is the subproject located in an area which would create a barrier for the movement of conservation-worthy wildlife or livestock?				
11	Is the subproject located close to groundwater sources, surface water bodies, water courses or wetlands?				
12	Is the subproject located in an area with designated cultural properties such as archaeological, historical and/or religious sites?				
13	Is the subproject in an area with religious monuments, structures and/or cemeteries?				
14	Is the project located in an area from where people have been displaced?				
15	Is the project located in an area where IDPs are temporarily settled?				

	Issues	Yes	No	Don't Know	Mitigation Measures
16	Is the project in a politically sensitive area?				
17	Is the subproject in a polluted or contaminated area?				
18	Is the subproject located in an area of high visual and landscape quality?				
19	Is the subproject located in an area susceptible to landslides or erosion?				
20	Is the subproject located in an area of seismic faults?				
21	Is the subproject located in a densely populated area?				
22	Is the subproject located on prime agricultural land?				
23	Is the subproject located in an area of tourist importance?				
24	Is the subproject located near a waste dump?				
25	Does the subproject have access to potable water?				
26	Is the subproject located far (1-2 kms) from accessible roads?				
27	Is the subproject located in an area with a wastewater network?				
28	Is the subproject located in the urban plan of the city?				
29	Is the subproject located outside the land use plan?				

Signed by Safeguard Focal Person: _____

Title: _____

Date: _____

Signed by Project Manager: Name: _____

Title: _____

Date: _____

Screening Questions for Involuntary Resettlement

Involuntary Resettlement Impact screening questionnaire.				
Probable IR/IP Impacts	**Yes**	**No**	**Not Known**	**Remarks**
Involuntary Acquisition of Land and Resettlement Impacts				
1. Will there be land acquisition?				
2. Is the site for land acquisition and ownership status and current usage of land to be acquired known?				
3. Will easement be utilized within an existing Right of Way (ROW)?				
4. Will there be loss of shelter and residential land due to land acquisition or due to clearance of existing right of way?				
5. Will there be loss of agricultural and other productive assets due to land acquisition or due to clearance of existing right of way?				
6. Will there be losses of crops, trees, and fixed assets due to land acquisition or due to clearance of existing right of way?				
7. Will there be loss of businesses or enterprises due to land acquisition or due to clearance of existing right of way?				
8. Will there be loss of income sources and means of livelihoods due to land acquisition or due to clearance of existing right of way?				
9. Will people lose access to natural resources, communal facilities and services due to involuntary restriction of land use or on access to legally designated parks/protected areas IA?				
10. Will access to land and resources owned communally or by the state be restricted?				
Information on Affected Persons:				
Any estimate of the likely number of persons that will be displaced by the Project? [ ] No [ ] Yes If yes, approximately how many? _____ _____				
Are any of them poor, female-heads of households, or vulnerable to poverty risks? [ ] No [ ] Yes				
Are any displaced persons from indigenous or ethnic minority groups? [ ] No [ ] Yes				

Note: The project team may attach additional information on the project, as necessary.

Annex B: ESIA ToR

Terms of Reference (Discussion Draft)
Environmental and Social Impact Assessment (ESIA)
Electricity Distribution Efficiency Improvement Project (EDEIP)

1) Project Overview

The proposed Electricity Distribution Efficiency Improvement Project (EDEIP) will finance DISCOs' traditional investment program including (i) installation of new 132 kV substations; (ii) augmentation, extension, conversion and rehabilitation of the existing substations; (iii) construction, rehabilitation and re-conductoring of transmission lines; (iv) installation of Aerial Bundled Cables (ABC) in high loss feeders; (v) expansion & rehabilitation of 11kV feeders. Component 2 of the project will focus on interventions to transform DISCOs to improve their operation performance and financial profitability. It will include but not limited to DMS in MEPCO, transformer monitoring in MEPCO and PESCO, Automated Metering Infrastructure (AMI), tools and equipment for improved operation and maintenance (O&M) and safety and automation of business processes through ERP and information systems. Component 3 will be for institutional strengthening and management support for effective implementation of the project.

2) Subproject Description

This Section provides an indicative list the subprojects included under Component 1 of EDEIP.

PESCO

- 11-kilovolt (kV) capacitor banks
- Upgrading 132-kV bus bars at 20 grid stations
- Extension of four grid stations
- Augmentation of 12 grid stations
- Re-conductoring of four transmission lines with a total length of 49 kilometers (km)
- Installation/improvement of 130 high tension (HT) feeders
- Installation/improvement of low tension (LT) feeders
- Installation of transformer monitoring system
- Installation of 65,000 smart meters
- Aerial bundle cable (ABC) for 74 feeders (4,000 km).

MEPCO

- Construction of six new grid stations
- Installation/improvement of 70 HT feeders
- Installation of transformer monitoring system
- Installation of 126,632 smart meters

HESCO

- Construction of two new grid stations
- Conversion of a grid station
- Extension of a grid station
- Augmentation of a grid station
- Re-conductoring of a transmission line with a total length of 28 kilometers (km)
- Complete facility for AMI System for 30,000 AMR meters
- Installation of SCADA.

3) Potential Environmental and Social Issues

The proposed project's risks and impacts will mainly be associated with the occupational health and safety (OHS) issues such as working at heights, exposure to live wires and use and disposal of hazardous materials such as transformer oils and possibility of Polychlorinated Biphenyl (PCBs) in obsolete transformers and sulfur hexafluoride (SF6). In addition, project will also potentially cause construction related impacts such as air contamination from machinery/vehicular exhaust and dust generation, soil and water contamination from affluent releases and wastewater from construction site and offices/camps and clearance of natural vegetation and felling of trees.

The proposed social risks and impacts including involuntary resettlement caused by land acquisition and restrictions of access by people to designated parks and protected areas; physical and economic displacement; livelihood impacts disruption of access to health and education facilities; influx of labor, health and safety risks for construction workers as well as nearby communities, and additional vehicular traffic on the local roads and gender impacts including gender differences and disparities that may affect the success of the sub-project.

4) Environment and Social Impact Assessment

The overall objective of the ESIA is to provide input to the project design to enhance the benefit of the sub-project and to eliminate, avoid or mitigate the adverse environmental and social impacts that may result from the investment, and to establish the basis for environmental and social monitoring and evaluation through consultation with different stakeholders.

The consultants will assess the both positive and negative environmental and social impacts and risks of the proposed intervention by using qualitative and quantitative data. Particular attention should be paid to the impacts to, where applicable, ambient water and air quality as the result of the project's construction and operation; noise generated by powered mechanical equipment (PME) employed during the construction phase; habitat and species impacts/loss in the project areas and areas of influence at all stages of the project; ecosystem fragmentation; presence of equipment or material, soil heaps, and borrow pits during the construction phase; potential loss of trees and vegetation during construction and operations; solid waste, spoil, sludge and wastewater generation linked with construction and operation activities; resource efficiency use and cost saving requirements during construction and operations; physical cultural resources and the potential impacts on such resources; and health and safety impacts associated with working on or near live electrical equipment/wires, from improper handling and storage of construction materials as well as accidents occurring with the operation of moving equipment and with trucks moving on-site.

The consultants will assess potential social impacts may arise due to land acquisition and

resettlement; induced secondary development during construction in the surrounding areas; potential damage or loss of agricultural land as well as crop damage by construction and operations and maintenance activities; potential permanent and temporary impacts on livelihood including due to resettlement, during construction and operation and maintenance activities; perception of risk among the population residing in areas close to the sub-project installations; changes to demographics including increased or decreased use of social services and/or existing infrastructure, land use, water resources, economic and cultural resources as appropriate; labor influx; gender and vulnerability related impacts; expected land use changes in the sub-project areas and areas of influence in the medium to long term; increased gender based violence, especially during construction; and conflict between construction workers and area inhabitants or local people.

The ESIA consultants will work with DISCO to carry out the tasks described below.

4.1. Review the Project details

Review the proposed project and its geographic, ecological, social, and temporal context, including any offsite investments that may be required. Identify the need for any resettlement plans[46].

Define the Impact Area and the **Corridor of Influence** of the project on the basis of the project scope and extent. The definition of area of influence should include all project components and its ancillary aspects, such as power transmission corridors, access roads, borrow and disposal areas, and construction camps, as well as unplanned developments induced by the project. [47]

4.2.Review of Institutional Arrangements

Carry out assessment of the institutional arrangements and capacity building needs related to environment, health, safety and social aspects within the DISCO. In particular, the occupational health and safety (OHS) practices during construction as well as operation and Maintenance (O&M) phases will be studied. Formulate recommendations for capacity enhancement based upon above assessment.

4.3.Review of the Legislative and Regulatory Framework

Review the policy, legal, and administrative framework within which the ESIA is carried out. Review the national and provincial environmental requirements. Indicate relevant international environmental agreements to which the country is a party. Also review the WB Environmental and Social Framework (ESF) as well as Environmental and Social Standards (ESS) and their triggering status for the Project and state the actions taken/planned in response to each ESS triggered.

4.4.Scoping

Scoping is the first step of the ESIA and will help in identifying the significant issues relating to the proposed actions and of determining the scope of the issues to be addressed in the ESIA. The key tasks include: i) carry out reconnaissance field visit(s); ii) hold initial stakeholder consultations; iii) identify the key aspects to be studied during the detailed ESIA, iv) consultation on ESIA ToRs with the stakeholders; v) prepare work plan for the subsequent ESIA tasks; and vi) prepare the Scoping Statement compiling the process and outcome of the scoping tasks described above.

[46] Separate Resettlement Plans (RPs) will be prepared for the project under a separate ToR.
[47] Please refer to the WB Environmental and Social Framework (ESF) for a complete definition of Corridor of Impact.

Review the definition of Area of Impact and the **Corridor of Influence** and revise if necessary.

4.5.Analysis of Alternatives

Systematically compare feasible alternatives to the proposed project site, technology, design, and operation--including the "without project" situation--in terms of their potential environmental and social impacts; the feasibility of mitigating these impacts; their capital and recurrent costs; their suitability under local conditions; and their institutional, training, and monitoring requirements. For each of the alternatives, quantify the environmental and social impacts to the extent possible, and attaches economic values where feasible. State the basis for selecting the particular project design proposed and justifies recommended emission levels and approaches to pollution prevention and abatement.

4.6.Detailed Baselines Studies and Analysis

Assess the dimensions of the study area and review relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commencement. Study current and proposed development activities within the project area but not directly connected to the project. Also analyze the trends in the key environmental and social parameters of the area. Data should be relevant to decisions about project location, design, and operation.

Collect secondary and primary data on the following aspects:

Physical Environment. Physiography, climate, geology and seismology, soils, hydrology, groundwater, flooding, water quality, air quality, noise, and others.

Biological Environment. Forests; natural vegetation i.e. trees, shrubs, herbs, scrub, grasses, medicinal plants, and others; fauna i.e. mammals, birds including migratory birds, reptiles, amphibians, insects, fish and red listed species; biodiversity including carrying capacity; protected and non-protected areas including hunting, poaching, illegal fishing; wetlands; fish; benthic flora and fauna; and others.

Social Environment. Population and demography; socioeconomic characterization of the population household size, age, gender (existing country gender diagnostics; country-wide and region-specific data violence against women; data and/or information on cultural practices vis-à-vis women (early marriage, physical practices); existing services available from gender-based violence (GBV) Services Providers, quality, accessibility and gaps), ethnicity, language, literacy/education; social organizations and dynamics and types of vulnerability; health and education levels; access to basic services and facilities such as healthcare, education, drinking water and sanitation etc.; income and occupation; assets; sources of livelihood (particularly for women); land use and natural resources including agriculture, livestock, grazing, forestry; land tenure system; occupations structure; household income and expenditure; economic activities e.g. quarrying of minerals, tourism, fisheries, trade, services; social infrastructure and services including education, health, communications, others; vehicular traffic particularly used for commercial activities; access, law and order and security situation; community organizations; vulnerable groups and poverty situation; gender aspects; recreation areas/potential; cultural heritage; archaeology; objects of special interest, e.g. graveyards and monuments; and others.

4.7.Stakeholder Consultations

The identification of stakeholders potentially affected by the proposed project/subproject should take into account the different project stages:

- planning and design
- construction or rehabilitation period

- operation
- emergency situations.

The ESIA consultants will work closely with DISCO to identify the PAPs and other relevant stakeholders. The consultant will work with the DISCO in coordinating the ESIA consultations with relevant project affected persons, groups and other stakeholders. The consultants will lead the consultations with groups likely to be affected by the proposed project and with local NGOs on the environmental and social impacts and proposed mitigation measures and monitoring plans of the proposed project identified in the ESIA. The consultant will prepare records of these consultations. The draft ESIA should also be available in a public place accessible to affected groups and local NGOs.

These consultations with affected groups will be held in a culturally appropriate way so that they are meaningful to those being consulted. Relevant materials will be provided to these groups in a timely manner prior to consultations and in a form and language that is understandable and accessible to the groups being consulted.

There may be different stakeholder groups at different stages of the project. It should also be understood that the stakeholders may not all be proximal to the project, and this should be included in the assessment and stakeholder mapping. The Stakeholder Engagement Plan (SEP) should be prepared to identify relevant stakeholder groups and clarify how communication will be undertaken.

Continuing the consultation process initiated during scoping phase, hold following two additional rounds of consultations separately with both men and women through a combination of qualitative interviews and focus groups discussions involving project affected persons, community representatives; vulnerable groups; and any other groups identified as directly or indirectly impacted to determine their concerns and expectations in relation to the sub-project.

- During ESIA study. Conduct interagency and consultation meetings, including consultations for obtaining the informed views of the affected people, local nongovernmental organizations (NGOs) and other stakeholders. Hold consultative workshops at the site, in District HQs and with PAPs in the project corridor of influence.
- Hold consultations after preparing draft ESIA report (during Public Hearing) – with grass-root as well as institutional stakeholders.

4.8.Impact Assessment

Predict and assess the project's likely positive and negative impacts, in quantitative terms to the extent possible, associated with Project site, design, technology, construction, and operation. Determine various characteristics of the potential impacts including spatial extent (local, regional, global), nature (direct/indirect), temporal extent (temporary, permanent), reversibility, severity, and sensitivity of receptors. Based on this, characterize the significance of each impact. Identify mitigation measures and any residual negative impacts that cannot be mitigated, and also the significance of the residual impacts. Assess the Project with reference to the national regulatory requirements (e.g. National Environmental Quality Standards, Sindh Environmental Quality Standards) and WB ESS.

The focus for assessment of environmental and social risks and impacts will include but not limited to the following (as appropriate/applicable):

- Potential changes in land form and land use

- Potential impacts on air quality
- Potential impacts on water resources (availability, quality)
- Potential impacts on soil (erosion, contamination, subsidence)
- Potential impacts on flora and fauna, biodiversity, wetlands, national parks and other protected areas
- Potential impacts on physical cultural resources including mosques, graveyards, tombs, monuments, and others
- Land acquisition and resettlement
- Induced secondary development during construction in the surrounding areas
- Potential damage or loss of agricultural land as well as crop damage by construction and operations and maintenance activities.
- Potential permanent and temporary impacts on livelihood including due to resettlement, during construction and operation and maintenance activities etc.
- Perception of risk among the population residing in areas close to the Grid and Transmission infrastructure.
- An assessment of changes to demographics including increased or decreased use of social services and/or existing infrastructure, land use and land use plans, water resources, economic and cultural resources as appropriate
- Labor influx
- Gender and vulnerability related impacts
- Expected land use changes in the project areas and areas of influence in the medium to long term.

Potential social risks

The consultant should also assess potential social risks including but not restricted to the following:

- A comprehensive assessment on Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) risks in the light of World Bank requirements
- Conflict between construction workers and area inhabitants or local people.
- Law and order and security situation
- Risks related to the COVID pandemic.

Explore opportunities for environmental enhancement and provide their cost of implementation.

4.9.Environmental and Social Management Plan (ESMP)

Prepare ESMP complete with mitigation plan, compliance monitoring plan, effects monitoring plan and construction camp management plan including labor influx management plan, SEA/SH action plan (prevention and mitigation actions, awareness raising strategy targeting workers and communities, identification of GBV services providers and response protocol, SEA/SH reporting and allegation procedures, accountability and response framework), gender management plan, SOPs in the light of govt instructions, World Health Organization (WHO), World Bank for management of risks related to COVID-`9, institutional arrangements for implementation and monitoring, training needs, documentation and communication protocol,

grievance redress mechanism, cost of implementing ESMP, and mechanism to integrate ESMP with the Project (e.g., through contractual clauses).

Environmental and social management plan should be prepared in such a way that the maximum items in mitigation and monitoring plan can be later incorporated in the bidding document as part of the Bill of Quantities (BoQ).

The ESMP should follow the WBG EHS, Labor Influx, and SEA/SH Guidelines. The suggested and indicative contents of the ESIA reports (separate report for each subproject) is given in Annex 1. The OHS requirements both for construction and O&M phases will be specifically included in the ESMP.

5) Applicable Environmental and Social Legislation and Standards

The ESIA will be carried out on the basis of the following legislations and standards:

- Sindh Environmental Protection Act
- Land Acquisition Act 1894 (LAA 1894) with its successive amendments
- WAPDA Act, 1958;
- Telegraph Act 1885 amended 2014
- Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
- Environmental and Social Standard 2: Labor and Working Conditions
- Environmental and Social Standard 3: Resource Efficiency and Pollution Prevention and Management
- Environmental and Social Standard 4: Community Health and Safety
- Environmental and Social Standard 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- Environmental and Social Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
-
-
- Environmental and Social Standard 8: Cultural Heritage
- Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure.

6) Team Composition and Skills required for ESIA preparation:

The core ESIA team will comprise the following key specialists:

- Environment Specialist
- Occupational Health and Safety Specialist
- Social Development Specialist
- Gender Specialist.

The Environment Specialist will lead the ESIA and associated ESMP preparation and have overall responsibility for the task. Each specialist will have a relevant university degree in Environmental and social sciences and preferably a postgraduate degree, 10-15 years of experience in similar types of assignments and a track record of experience in their area of specialization like preparation of and contribution to ESIAs and ESMPs. A GIS specialist will also be engaged as required.

The Gender Specialist will hold a degree in social sciences/gender studies and have at least 10 years of experience of working on gender issues including Gender-Based Violence (GBV) and Sexual Exploitation and Abuse (SEA). S/He will assist the Team Leader in carrying out the gender survey, analysis and consultations with women and female headed households.

7) Deliverables, Outputs and Time Line:

T

he Consultant is expected to submit the following deliverables:

- Stakeholder Engagement Plan (SEP): The report should reflect stakeholder identification, analysis, mapping and findings from the institutional stakeholders and project affected persons both men and women. The first draft should be delivered eight weeks after signing of the contract;
- Draft ESIA/ESMP Report: This will be circulated for comments and relevant issues raised will incorporated into revised version. This will be delivered 12 weeks after submission of the SEP.
- Conducting final consultation and preparing report. This should be undertaken in a week after submission of draft report.
- Final ESIA/ESMP Report: The final report should include a concise Executive Summary and should have all annexes and bibliography and the dissemination/disclosure plan. This will be delivered two weeks after conducting the final consultation.

SAMPLE TABLE OF CONTENTS OF ESIA

ABBREVIATIONS AND GLOSSARY

Executive Summary
Concisely discusses significant findings and recommended actions including summary Table of ESMP.

1. Introduction

1.1 Overview

1.2 Background of the project

1.3 Objective of ESIA

1.4 Approach to work

1.5 Project Impact Area and Corridor of Influence

1.6 Composition of study team

2. Legal and administrative framework

2.1 GoP/ Sindh requirements (legislation; guidelines and rules; policies; international treaties signed by Pakistan; national and provincial authorities; environmental procedures), their applicability, and compliance status for the Project.

2.2 World Bank requirements (ESF and ESS; and WBG Environmental Health and Safety guidelines) and their triggering and compliance status for the Project.

3. Project description

3.1 Need and purpose of project

3.2 Project location

3.3 Salient features

3.4 The project description that includes a technical description and schedule of the planned development stages, typically:

- Layout, equipment details
- Transmission line alignment
- Construction activities
- O&M activities
- OHS system and practices

The project description should include details of both the construction stages and the operation mode of the subproject.

3.6 Construction machinery, materials and other supplies (including estimated numbers/quantities)

3.7 Waste generation and disposal (including estimated quantities)

3.8 Manpower requirements

3.9 Operation and maintenance (supplies; waste generation and management; manpower requirements; others).

4. Baseline description/analysis

4.1 Study area

4.2 Physical environment (physiography; climate; geology and seismology; soils; hydrology; groundwater; flooding; geomorphology; water quality; air quality; noise; others). Develop the necessary cartography to demonstrate the spatial linkage with the project's area of influence.

4.3 Biological environment (flora including natural vegetation, planted trees, medicinal plants, different habitat types, red list species (including the conservation status); fauna including mammals, birds including migratory birds, reptiles, amphibians, insects, fish and red listed species; biodiversity including carrying capacity; protected and non-protected areas including hunting, poaching, illegal fishing; wetlands; and fisheries including benthic flora and fauna). Develop the necessary cartography to demonstrate the spatial linkage with the project's area of influence.

4.4 Social and economic environment (population and demography; socioeconomic characterization of the population household size, age, gender, ethnicity, language, literacy/education; social organizations and dynamics and types of vulnerability; health and education levels; access to basic services and facilities such as healthcare, education, drinking water and sanitation etc.; income and occupation; assets; sources of livelihood (particularly for women);land use and natural resources including agriculture, livestock, grazing, forestry; land tenure system; occupations structure; income and expenditure; economic activities e.g. quarrying, tourism, fisheries, trade, services; social infrastructure and services including education, health, communications, others; access, law and order and security situation; community organizations; vulnerable groups and poverty situation; gender aspects; recreation areas/potential and others).

4.5 Cultural aspects (cultural heritage; archaeology; and other objects of special interest, e.g. graveyards, monuments).

4.6 Identification of environmental and social hotspots based on the baseline analysis.

5. Project alternatives

5.1 Without project alternative

5.2 Site selection

5.3 Technology options

5.4 Routing options (where applicable)

6. Public Consultation and Information Disclosure

6.1 Scoping sessions

6.2 Focused group discussions

6.3 Public consultations

6.4 Information disclosure

7. Environmental and Social Impact Assessment

7.1 Impacts on Physical Environment

7.2 Impacts on Biological Environment

7.3 Impacts on People.

8. Environmental and Social Management Plan (ESMP):

The plan will include the measures to mitigate the adverse social impacts and to enhance project benefits through modifying the project design. This can include but not limited to the following:

8.1 Institutional arrangements including roles and responsibilities and capacity available
8.2 Mitigation
- 8.2.1 Measures to enhance benefits and positive impacts.
- 8.2.2 Measures to mitigate negative impacts.
- 8.2.3 Arrangements for managing potential social risks.
- 8.2.4 Suggestions to improve the project design.

8.3 Gender and Vulnerability Management plan
8.4 Labor influx management plan
8.5 SEA/SH Action Plan
8.6 Consultation and Information Disclosure Plan in project implementation and operation.
8.7 Health and Safety Plan
8.8 Monitoring Plan including documentation and reporting
8.9 Project level grievance redress mechanism.
8.10 ESMP Cost Estimates.

9. References

Annexes

An indicative list of annexes is given below.

Annex-I: Resettlement Action Plan Terms of Reference

Annex-II: Consultation with Male PAPs

Annex-III: Consultation with Female PAPs

Annex-IV: Meetings Held with Key Stakeholders

Annex C: ESMP ToR

Terms of Reference (Discussion Draft)
Environmental and Social Management Plan (ESMP)
Electricity Distribution Efficiency Improvement Project (EDEIP)

Project Overview

The proposed Electricity Distribution Efficiency Improvement Project (EDEIP) will finance DISCOs' traditional investment program including (i) installation of new 132 kV substations; (ii) augmentation, extension, conversion and rehabilitation of the existing substations; (iii) construction, rehabilitation and re-conductoring of transmission lines; (iv) installation of Aerial Bundled Cables (ABC) in high loss feeders; (v) expansion & rehabilitation of 11kV feeders. Component 2 of the project will focus on interventions to transform DISCOs to improve their operation performance and financial profitability. It will include but not limited to DMS in MEPCO, transformer monitoring in MEPCO and PESCO, Automated Metering Infrastructure (AMI), tools and equipment for improved operation and maintenance (O&M) and safety and automation of business processes through ERP and information systems. Component 3 will be for institutional strengthening and management support for effective implementation of the project.

Subproject Description (project not requiring any new land acquisition, e.g., grid station extension or augmentation)

- Conversion of 66 kV Grid stations (x 6)
- Transmission lines for the above grid stations (x 6)
- New transmission line (x 1)
- AMI (30,000 Meters)
- ABC (137 Feeders having 4,247Km LT Lines)

Potential Environmental and Social Issues

The proposed project's risks and impacts will mainly be associated with the occupational health and safety (OHS) issues such as working at heights, exposure to live wires and use and disposal of hazardous materials such as transformer oils and possibility of Polychlorinated Biphenyl (PCBs) in obsolete transformers and sulfur hexafluoride (SF6). In addition, project will also potentially cause construction related impacts such as air contamination from machinery/vehicular exhaust and dust generation, soil and water contamination from affluent releases and wastewater from construction site and offices/camps, clearance of natural vegetation and felling of trees, influx of labor, health and safety risks for construction workers as well as nearby communities, and additional vehicular traffic on the local roads.

Environment and Social Management Plan

To achieve the broad aim of ensuring safeguards' analysis, the consultants will undertake the task described below.

Review the Project details

Review the proposed project and its geographic, ecological, social, and temporal context, including any offsite investments that may be required.

Define the Impact Area and the **Corridor of Influence** of the project on the basis of the project scope and extent. The definition of area of influence should include all project components and its ancillary aspects, such as power transmission corridors, access roads, borrow and disposal areas, and construction camps, as well as unplanned developments induced by the project.

Carry out assessment of the institutional arrangements and capacity building needs related to environment, health, safety and social aspects within the DISCO. In particular, the occupational health and safety (OHS) practices during construction as well as operation and Maintenance (O&M) phases will be studied.

Review of the Legislative and Regulatory Framework

Review the policy, legal, and administrative framework within which the ESMP is being prepared. Review the national and provincial environmental requirements. Indicate relevant international environmental agreements to which the country is a party. Also review the WB Environmental and Social Framework (ESF) as well as Environmental and Social Standards (ESS) and their triggering status for the Project and state the actions taken/planned in response to each ESS triggered.

Scoping

Scoping is the first step of the assessment and will help in identifying the significant issues relating to the proposed actions and of determining the scope of the issues to be addressed in the ESMP. The key tasks include: i) carry out reconnaissance field visit(s); ii) hold initial stakeholder consultations; iii) identify the key aspects to be studied during the assessment, iv) prepare work plan for the subsequent tasks; and v) prepare the Scoping Statement compiling the process and outcome of the scoping tasks described above.

Review the definition of Area of Impact and the **Corridor of Influence** and revise if necessary.

Baselines Overview

Assess the dimensions of the study area and review relevant physical, biological, and socioeconomic conditions, including any changes anticipated before the project commencement. Study current and proposed development activities within the project area but not directly connected to the project. Also analyze the trends in the key environmental and social parameters of the area. Data should be relevant to decisions about project location, design, and operation.

Collect secondary and primary data on the following aspects:

Physical Environment. Physiography, climate, geology and seismology, soils, hydrology, groundwater, flooding, water quality, air quality, noise, and others.

Biological Environment. Forests; natural vegetation i.e. trees, shrubs, herbs, scrub, grasses, medicinal plants, and others; fauna i.e. mammals, birds including migratory birds, and red listed species; protected and non-protected areas including hunting, poaching, illegal fishing; wetlands; fish; benthic flora and fauna; and others.

Social Environment. Population and demography; land tenure system; occupations structure; household income and expenditure; economic activities; land use and natural resources; social infrastructure and services including education, health, communications; vehicular traffic particularly used for commercial activities; access, law and order and security situation; community organizations; vulnerable groups and poverty situation; gender aspects (existing country gender diagnostics; country-wide and region-specific data violence against women; data and/or information on cultural practices vis-à-vis women (early marriage, physical practices); existing services available from GBV Services Providers, quality, accessibility and gaps); recreation areas/potential; cultural heritage; law and order and security situation; assessment of COVID-19 pandemic situation in project areas; archaeology; objects of special interest, e.g. graveyards and monuments; and others.

Stakeholder Consultations

The identification of stakeholders potentially affected by the proposed project/subproject should take into account the different project stages:

- planning and design
- construction or rehabilitation period
- operation
- emergency situations.

There may be different stakeholder groups at different stages of the project. It should also be understood that the stakeholders may not all be proximal to the project, and this should be included in the assessment and stakeholder mapping. The Stakeholder Engagement Plan (SEP) should be prepared to identify relevant stakeholder groups and clarify how communication will be undertaken.

Continuing the consultation process initiated during scoping phase, hold following two additional rounds of consultations.

- During ESMP study. Conduct interagency and consultation meetings, including consultations for obtaining the informed views of the affected people, local nongovernmental organizations (NGOs) and other stakeholders. Hold consultative workshops at the site, in District HQs, and Peshawar.
- Hold consultations after preparing draft ESMP report – with grass-root as well as institutional stakeholders.

Impact Assessment

Predict and assess the project's likely positive and negative impacts, in quantitative terms to the extent possible, associated with Project site, design, technology, construction, and operation. Determine various characteristics of the potential impacts including spatial extent (local, regional, global), nature (direct/indirect), temporal extent (temporary, permanent), reversibility, severity, and sensitivity of receptors. Based on this, characterize the significance of each impact. Identify mitigation measures and any residual negative impacts that cannot be mitigated, and also the

significance of the residual impacts. Assess the Project with reference to the national regulatory requirements (e.g. National Environmental Quality Standards, Punjab and Khyber Pakhtunkhwa Environmental Quality Standards) and WB ESS.

Explore opportunities for environmental enhancement and provide their cost of implementation.

Environmental and Social Management Plan (ESMP)

Prepare ESMP complete with mitigation plan, compliance monitoring plan, effects monitoring plan and construction camp management plan including labor influx management plan, gender management plan, SEA/SH action plan (prevention and mitigation actions, awareness raising strategy targeting workers and communities, identification of GBV services providers and response protocol, SEA/SH reporting and allegation procedures, accountability and response framework), SOPs in the light of govt instructions, World Health Organization (WHO), World Bank for management of risks related to COVID-19, institutional arrangements for implementation and monitoring, training needs, documentation and communication protocol, grievance redress mechanism, cost of implementing ESMP, and mechanism to integrate ESMP with the Project (e.g., through contractual clauses).

Environmental and social management plan should be prepared in such a way that the maximum items in mitigation and monitoring plan can be later incorporated in the bidding document as part of the "Bill of Quantities" (BoQ).

The ESMP should follow the WBG EHS, Labor Influx, SEA/SH Guidelines. The suggested and indicative contents of the ESMP is given in Annex 1. The OHS requirements both for construction and O&M phases will be specifically included in the ESMP.

Applicable Environmental and Social Legislation and Standards

The following legislation and ESSs will be applicable for the project:

- Sindh Environmental Protection Acts
- Environmental and Social Standard 1: Assessment and Management of Environmental and Social Risks and Impacts
- Environmental and Social Standard 2: Labor and Working Conditions
- Environmental and Social Standard 3: Resource Efficiency and Pollution Prevention and Management
- Environmental and Social Standard 4: Community Health and Safety
- Environmental and Social Standard 5: Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
- Environmental and Social Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- Environmental and Social Standard 8: Cultural Heritage
- Environmental and Social Standard 10: Stakeholder Engagement and Information Disclosure.

SAMPLE TABLE OF CONTENTS OF ESMP

ABBREVIATIONS AND GLOSSARY

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Concisely discusses significant findings and recommended actions including summary Table of ESMP.

1. Introduction

1.1 Overview

1.2 Background of the project

1.3 Objective of ESMP

1.4 Approach to work

1.5 Project Impact Area and Corridor of Influence

1.6 Composition of study team

2. Legal and administrative framework

2.1 GoP/ KP/Punjab requirements (legislation; guidelines and rules; policies; international treaties signed by Pakistan; national and provincial authorities; environmental procedures), their applicability, and compliance status for the Project.

2.2 World Bank requirements (ESF and ESS; and WBG Environmental Health and Safety guidelines) and their triggering and compliance status for the Project.

3. Project description

3.1 Need and purpose of project

3.2 Project location

3.3 Salient features

3.4 The project description that includes a technical description and schedule of the planned development stages, typically:

- Layout, equipment details
- Transmission line alignment
- Construction activities
- O&M activities
- OHS system and practices

The project description should include details of both the construction stages and the operation mode of the subproject.

3.6 Construction machinery, materials and other supplies (including estimated numbers/quantities)

3.7 Waste generation and disposal (including estimated quantities)

3.8 Manpower requirements

3.9 Operation and maintenance (supplies; waste generation and management; manpower requirements; others).

4. Baseline description/analysis

Brief description of the area of influence and environmental and social baseline conditions derived from ESIA.

4.6 Identification of environmental and social hotspots based on the baseline analysis.

5. Public Consultation and Information Disclosure

5.1 Scoping sessions

5.2 Focused group discussions

5.3 Public consultations

5.4 Information disclosure

6. Assessment of Potential Adverse Environmental and Social Impacts

6.1 Methods and techniques used in assessing and analyzing the environmental and social impacts of the proposed sub-project.

6.2 Discussion of the potentially significant adverse environmental and social impacts of the proposed sub-project.

7. Environmental and Social Management Plan (ESMP)

The plan will include the measures to mitigate the adverse social impacts and to enhance project benefits through modifying the project design. This can include but not limited to the following:

6.1 Mitigation
- 6.1.1 Measures to enhance benefits and positive impacts.
- 6.1.2 Measures to mitigate negative impacts.
- 6.1.3 Arrangements for managing potential social risks.
- 6.1.4 Suggestions to improve the project design.

6.2 Institutional Arrangement including roles and responsibilities and capacity available
6.3 Gender and Vulnerability Management plan
6.4 Labour influx management plan
6.5 SEA/SH Action Plan
6.6 Consultation and Information Disclosure Plan in project implementation and operation.
6.7 Health and Safety Plan
6.8 Monitoring Plan including documentation and reporting
6.9 Project level grievance redress mechanism.
6.10 ESMP Cost Estimates.

Annex D: Sample Monitoring Plan

Parameter	Means of Monitoring	Frequency	Responsible for Implementation	Responsible for Supervision
During Construction				
Top Soil	Visual inspection on stripping, storage and reuse of topsoil	Monthly	Contractor	CSC, PMU
Erosion	Visual inspection of erosion prevention measures and occurrence of erosion	Monthly	Contractor	CSC, PMU
Operation of quarry sites	Visual inspection of quarry sites	Monthly	Contractor	CSC, PMU
Surface water quality	Sampling and analysis of river water quality and wastewater discharges for the parameters given in NEQS	Quarterly	Contractor	CSC, PMU
	Spot measurements of pH, conductivity, turbidity. Visual inspection on presence of petroleum products.	Monthly	Contractor	CSC, PMU
Air Quality (dust, smoke)	Visual inspection to ensure good standard equipment is in use and dust suppression measures (spraying of	Weekly	Contractor	CSC, PMU

Parameter	Means of Monitoring	Frequency	Responsible for Implementation	Responsible for Supervision
	waters) are in place.			
	Visual inspection to ensure dust suppression work plan is being implemented	Weekly	Contractor	CSC, PMU
Spoil Disposal	Visual inspection to ensure that spoil disposal is done at the designated site	Monthly	Contractor	CSC, PMU
Waste management	Visual inspection that solid waste generated from construction camps, offices and construction sites is disposed at designated locations/sites	Monthly	Contractor	CSC, PMU
Spills from hydrocarbon and chemical storage	Visual inspection for leaks and spills at material storage sites and construction yards	Weekly	Contractor	CSC, PMU

Annex E: Sample Occupational Health and Safety Plan Outline

1. INTRODUCTION

1.1 Introduction of the Project

2 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT PLAN

2.1 Purpose

2.2 Scope

2.3 Objectives and Targets

2.4 Working together for Success

2.5 OHSMP Management and Maintenance

2.6 OHSMP Documents Hierarchy

2.7 Policies

2.7.1 Human Rights Policy

2.7.2 HSE Policy

2.7.3 Alcohol and Drug Policy

2.7.4 Business Conduct and Ethics Code

2.7.5 OHS Management System Expectations

3 OHS Management System Processes

- PR01: Induction Process
- PR02: Job Hazard Analysis
- PR03: Meetings
- PR04: Personnel Competency and Training
- PR05: Short Service Worker Program (with tools for assessment)
- PR06: Reward and Recognition
- PR07: Disciplinary Process
- PR08: Permit to Work Process
- PR09: Work Observation Process
- PR10: Critical Risk Protocols
- PR11: Personal Protective Equipment (PPE)
- PR12: Incident Investigation
- PR13: Measurement - Leading and Lagging Indicators

- PR14: Pandemic Action Plan (COVID-19)
- PR15: OHS Compliance Audit
- PR16: Emergency Response Plan
- PR17: Inspections
- PR18: Personal Risk Assessment (new)
- PR19: Risk Management

4 Standard Operating Procedures (SOP), Work Instructions and Forms

- SOP 01: Explosives – Storage, Transport and use
- SOP 02: Work at Height
- SOP 03: Excavation
- SOP 04: Mobile Equipment
- SOP 05: Barricading and signs
- SOP 06: Safe Driving
- SOP 07: Cell Phone Use
- SOP 08: Drilling and Blasting
- SOP 09: Haulage
- SOP 10: Traffic Interface Planning
- SOP11: Severe Weather

5. Project Organization

5.1 DISCO Organogram

5.2 HSE Organogram

5.3 Roles and responsibilities

5.3.1 Project Director:

5.3.2 ESU Manager

5.3.3 ESU Personnel

5.3.4 OHS Staff

5.3.5 Site Supervisors

5.3.6 Workers

6. Key Performance Indicators

7. Incident and Accident Reporting

8. Internal Review and Audit System