



# SYRIAN MINISTRY OF ENERGY

PUBLIC ESTABLISHMENT FOR TRANSMISSION AND  
DISTRIBUTION OF ELECTRICITY (PETDE)

## SYRIA EMERGENCY ELECTRICITY PROJECT (SEEP)

### Annex B - Environmental and Social Management Plan for Substation Rehabilitation and Operation (ESMP - Substations)

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## LIST OF ACRONYMS & GLOSSARY

Acronym	Full Term	Brief Description
<b>AIS</b>	Air-Insulated Switchgear	Conventional switchgear using air as dielectric, typically outdoor at 230/400 kV and 66 kV substations.
<b>CESMP</b>	Construction Environmental and Social Management Plan	Contractor's project-specific ESMP for the construction phase.

<b>Acronym</b>	<b>Full Term</b>	<b>Brief Description</b>
<b>CHSS</b>	Community Health, Safety and Security	ESF/ESS4 domain covering risks to communities, including security.
<b>CLMP</b>	Contaminated Land Management Plan	Plan for screening, investigating, remediating and verifying legacy land contamination.
<b>E&amp;S</b>	Environmental and Social	Combined environmental and social aspects and risks.
<b>EHS</b>	Environment, Health and Safety	Integrated management of environmental, occupational health and safety issues.
<b>EPC</b>	Engineering, Procurement and Construction	Turnkey contractor responsible for design and construction.
<b>ERP</b>	Emergency Response Plan	SEEP emergency response framework (See Annex H)
<b>ESCP</b>	Environmental and Social Commitment Plan	Time-bound E&S commitments agreed between PETDE/GoS and the World Bank.
<b>ESF</b>	Environmental and Social Framework	World Bank framework comprising ESS1–ESS10.
<b>ESIA</b>	Environmental and Social Impact Assessment	Assessment of project E&S risks and impacts and required mitigation.
<b>ESMIP</b>	Environmental and Social Management Implementation Plan	ESIA framework (Chapter 26) for implementing ESMPs and monitoring.
<b>ESMP</b>	Environmental and Social Management Plan	Plan defining mitigation, monitoring, and institutional measures for E&S risks.
<b>ESS</b>	Environmental and Social Standard	The ten WB standards (ESS1 to ESS10).
<b>GBV</b>	Gender-Based Violence	Umbrella term including SEA and SH, addressed via CoCs, training and GM.
<b>GBV/SEA/SH</b>	Gender-Based Violence / Sexual Exploitation and Abuse / Sexual Harassment	Combined reference to GBV risks involving workers and communities.
<b>GIS</b>	Gas-Insulated Switchgear	Compact indoor switchgear using SF <sub>6</sub> or alternative gases.
<b>GM</b>	Grievance Mechanism	System for receiving, tracking and resolving complaints, including SEA/SH-sensitive channels.
<b>HMMP</b>	Hazardous Materials Management Plan	Plan for handling and disposal of hazardous materials (oils, SF <sub>6</sub> , chemicals, asbestos).
<b>KPI</b>	Key Performance Indicator	Quantitative indicator to measure ESMP performance.
<b>LRP</b>	Livelihood Restoration Plan	ESS5 instrument to restore livelihoods where economically affected.

Acronym	Full Term	Brief Description
<b>NGO</b>	Non-Governmental Organization	Civil society organization supporting engagement or GBV referrals.
<b>O&amp;M</b>	Operation and Maintenance	Routine operation and maintenance of transmission and substation assets.
<b>OESMP</b>	Operational Environmental and Social Management Plan	ESMP for the operational phase of rehabilitated assets.
<b>OHTL</b>	Overhead Transmission Line	High-voltage line on towers within existing corridors.
<b>PCB</b>	Polychlorinated Biphenyls	Legacy contaminant potentially present in older oils/equipment; strictly managed.
<b>PETDE</b>	Public Establishment for Transmission and Distribution of Electricity	SEEP implementing agency responsible for T&D assets.
<b>PMT</b>	Project Management Team	PETDE team managing day-to-day SEEP implementation.
<b>RP</b>	Resettlement Plan	ESS5 plan for physical/economic displacement.
<b>SEEP</b>	Syria Electricity Emergency Project	World Bank-financed project supporting grid rehabilitation.
<b>SEP</b>	Stakeholder Engagement Plan	ESS10 plan for engagement, disclosure and GMs.
<b>SEA/SH</b>	Sexual Exploitation and Abuse / Sexual Harassment	Specific GBV risks addressed through CoC, training and survivor-centered GM.
<b>SF<sub>6</sub></b>	Sulphur Hexafluoride	High-dielectric gas used in GIS; potent greenhouse gas.
<b>SRP</b>	Site-specific Remediation Plan	CLMP sub-plan defining remediation methods for contamination hotspots.
<b>SS</b>	Substation	High-voltage substation rehabilitated under SEEP (400/230 kV and 66 kV).
<b>TOR</b>	Terms of Reference	Document describing scope, tasks and deliverables.
<b>UXO</b>	Unexploded Ordnance	Munitions that failed to detonate and remain hazardous.
<b>UXO/ERW</b>	Unexploded Ordnance / Explosive Remnants of War	Combined reference to UXO and other explosive remnants from conflict.
<b>VT</b>	Voltage Transformer	Instrument transformer for metering/protection.
<b>WMP</b>	Waste Management Plan	Plan for managing all waste streams, including hazardous waste.

## 1. INTRODUCTION

This Environmental and Social Management Plan (ESMP) sets out the framework, measures and responsibilities for managing environmental and social (E&S) risks and impacts associated with the rehabilitation and operation of existing high-voltage substations under the Syria Electricity Emergency Project (SEEP).

The Substation ESMP is consistent with:

- The SEEP Environmental and Social Impact Assessment (ESIA), including Chapter 26 Environmental and Social Management Implementation Plan (ESMIP).
- The Environmental and Social Commitment Plan (ESCP) for SEEP.
- The World Bank Environmental and Social Framework (ESF), including ESS1 to ESS10.
- The World Bank Group General Environment, Health and Safety (EHS) Guidelines and the Electric Power Transmission and Distribution EHS Guidelines.
- Applicable Syrian laws and standards as summarized in the ESIA.

It is intended to be included in procurement documents and to guide all parties (Public Establishment for Transmission and Distribution of Electricity (PETDE), the Owner's Engineer (OE), Engineering, Procurement and Construction (EPC) contractors and subcontractors) in preparing and implementing project-specific Construction Environmental and Social Management Plans (CESMPs) and Operational Environmental and Social Management Plans (ESMPs) (OESMPs) for substation works.

The ESMP is generic at project level and covers construction and operation phases of substation rehabilitation. It does not replace contractor CESMPs or PETDE's OESMP; instead, it defines minimum requirements, measures, monitoring and institutional arrangements that must be reflected in those plans and in contractual obligations, in line with the ESIA ESMIP and the ESCP.

## 2. PROJECT SCOPE AND PHASES COVERED

This ESMP applies to all rehabilitation and associated activities at the eight substations included in SEEP:

- Al Hajar al Aswad
- Aleppo F
- Aleppo D
- Al Dahia
- Al Nashabieh
- Ottaya
- Orm al Soghra
- Sarakeb

Typical substation rehabilitation activities include, as relevant:

- Replacement or refurbishment of transformers, circuit breakers, disconnectors, instrument transformers and busbars.
- Rehabilitation or replacement of 230/400 kV and 66 kV switchgear (Air-Insulated Switchgear (AIS) or Gas-Insulated Switchgear (GIS)), control and protection systems and auxiliary services.
- Rehabilitation of control buildings, cable trenches, basements and foundations, including potential demolition of severely damaged structures.
- Repair or upgrade of fire detection and suppression systems, earthing systems, lighting, fencing and security systems (including CCTV).
- Civil works such as foundation repairs, bund construction and drainage improvements.
- Temporary laydown areas, storage of equipment and materials, and limited access improvements within existing premises.

Phases covered include:

- Pre-construction: detailed design, site investigations (including Contaminated Land Management Plan (CLMP) screening), Unexploded Ordnance / Explosive Remnants of War (UXO/ERW) clearance certificates from UNMAS, permitting, land access arrangements, contractor mobilization and preparation of CESMPs, training of all workers on ERW Chance-Finds Procedure.
- Construction: all substation rehabilitation and associated activities described above, including any temporary facilities and transport of equipment.
- Operation and maintenance (O&M): routine inspections, preventive and corrective maintenance, testing and commissioning, emergency repairs, and management of operational wastes and hazardous materials at substations.

Decommissioning is not planned under SEEP but is covered generically in the ESIA and ESMIP. If any substation component is fully decommissioned, PETDE will prepare a specific Decommissioning ESMP (D-ESMP) consistent with Chapter 26 in the ESIA.

### 3. APPLICABLE STANDARDS AND REFERENCE DOCUMENTS

The substation ESMP is aligned with the following:

- World Bank ESF and ESS1 to ESS10, as applicable to SEEP, including:
  - ESS1 Assessment and Management of E&S Risks and Impacts
  - ESS2 Labor and Working Conditions
  - ESS3 Resource Efficiency and Pollution Prevention and Management
  - ESS4 Community Health and Safety
  - ESS5 Land Acquisition, Restrictions on Land Use and Involuntary Resettlement
  - ESS6 Biodiversity Conservation and Sustainable Management of Living Natural Resources
  - ESS8 Cultural Heritage
  - ESS10 Stakeholder Engagement and Information Disclosure

- World Bank Group EHS Guidelines:
  - General EHS Guidelines
  - EHS Guidelines for Electric Power Transmission and Distribution.
- Syrian legal and regulatory framework, including:
  - Environmental Law and implementing regulations.
  - Decision No. 818/2013 on EIA and environmental permitting.
  - National standards on air quality, ambient noise, and wastewater discharge (as summarized in ESIA).
  - Others as relevant.
- Project E&S instruments:
  - SEEP ESIA, including substation-specific impact and mitigation tables (e.g., Tables 6-7 and 6-9) and topic chapters for climate, noise, water, land contamination, biodiversity, social and labor, as well as Chapter 26 (ESMIP) consolidated matrices and control plans.
  - Environmental and Social Commitment Plan (ESCP), which specifies time-bound E&S obligations for PETDE and contractors.
  - Stakeholder Engagement Plan (SEP), including community and worker Grievance Mechanisms (GMs) and Sexual Exploitation and Abuse / Sexual Harassment (SEA/SH)-sensitive reporting channels.
  - Labor Management Procedures (LMP), including worker GM and contractor management requirements.
  - Resettlement Plans (RPs) and/or Livelihood Restoration Plans (LRPs), where land use, encroachment or livelihood impacts at substations trigger ESS5, prepared in line with ESCP Action 5.1 and guided by Annex G.
  - Other project-level plans and annexes referenced in the ESIA/ESMIP, including the Occupational Health and Safety Plan (OHS Plan), Hazardous Materials & Waste Management Plan (HM/WMP), Traffic Management Plan (TMP), Cultural Heritage Management and Chance-Finds Procedure (CHMP/CFP), the Contaminated Land Management Plan (CLMP) where applicable, Emergency Preparedness and Response Plan (ERP), Security Management Plan (SMP) and SEA/SH Action Plan.

## 4. ESMP OBJECTIVES AND PRINCIPLES

### Objectives:

- Translate ESIA, ESMIP and ESCP commitments into clear, implementable requirements for substation rehabilitation and O&M.
- Ensure systematic identification, prevention, minimization and mitigation of E&S risks at substations, with particular emphasis on legacy land contamination, hazardous materials (oils, Sulphur Hexafluoride (SF<sub>6</sub>), Polychlorinated Biphenyls (PCB) risk, asbestos), indoor works, noise, UXO/ERW and community interfaces.
- Align contractor CESMPs and PETDE OESMP with World Bank ESF, WBG EHS Guidelines and Syrian requirements.
- Define Key Performance Indicators (KPIs), monitoring and reporting arrangements so that PETDE can demonstrate compliance to the World Bank and national authorities.

### Principles:

- Risk-based and proportional: controls are tailored to substation-specific risk levels and context.
- Prevention first: prioritize preventing impacts over minimization, restoration and compensation.
- Compliance with ESF and national law: adopt the more stringent requirement where there is a difference.
- Pollution prevention and resource efficiency: minimize waste, emissions, spills and resource use.
- Protection of workers and communities: ensure safe working conditions, safe substation environments and effective management of community and security risks.
- Non-discrimination and zero tolerance for SEA/SH and Gender-Based Violence (GBV).
- Meaningful engagement and accessible GMs for workers and communities, including SEA/SH-sensitive channels.

## 5. INSTITUTIONAL ARRANGEMENTS AND RESPONSIBILITIES

This section defines roles and responsibilities for ESMP implementation. Detailed terms of reference will be specified in project implementation documents and contracts.

### 5.1 PETDE / PROJECT MANAGEMENT TEAM (PMT)

PETDE, through the PMT, retains overall accountability for ESMP implementation and compliance for substation works. In addition to its broader SEEP responsibilities, PETDE/PMT will:

- Maintain a PMT with qualified E&S specialists (environment, social, OHS, GBV/SEA/SH focal point and stakeholder engagement) with specific experience in substation rehabilitation.
- Integrate this Substation ESMP and relevant ESMIP requirements into procurement/bidding documents and contracts for all substation packages.
- Review and approve substation-specific CESMPs and topic-specific sub-plans (including CLMP implementation measures, Hazardous Materials Management Plan (HMMP), WMP, TMP, ERP, Security Plan and SEA/SH Action Plan) before contractor mobilization.
- Supervise and monitor contractor E&S performance at substation sites and ensure corrective actions are implemented.
- Consolidate monitoring data, GM statistics and incident reports from substation packages and report to the World Bank as per ESCP commitments.
- Lead ESS5 screening for each substation and associated access, and, where impacts are identified, ensure preparation, approval and implementation of site-specific RP and/or LRP in accordance with the ESCP before commencement of the relevant works.
- Implement the SEP for substation works, including community and worker GMs (with SEA/SH-sensitive channels) that remain operational, confidential and accessible throughout construction and operation.
- Coordinate with relevant ministries, governorates, municipalities, environmental and labor authorities, mine action actors and security agencies on E&S issues related to substations.



## 5.2 OWNER'S ENGINEER (OE)

The Owner's Engineer (OE) acts as PETDE's representative on-site for technical and E&S supervision at substations and will:

- Ensure ESMP requirements are incorporated into contractor method statements, work permits and substation-specific work packs.
- Conduct regular E&S inspections, audits and monitoring at substations, including verification of:
  - OHS controls (hot works, confined spaces, LOTO, work at height, electrical safety).
  - Legacy contamination measures under CLMP and Site-specific Remediation Plans (SRPs).
  - Hazardous materials management (oils, SF<sub>6</sub>, chemicals, asbestos).
  - Community health and safety and security arrangements.
  - SEA/SH and GBV-related CoC implementation and training.
- Verify UXO/ERW procedures and clearances for any intrusive works in potentially contaminated parts of the substation footprint.
- Review contractor E&S reports and provide performance feedback to PETDE.
- Support PETDE in on-the-job capacity building, toolbox talks and lessons-learned sessions

## 5.3 EPC CONTRACTOR AND SUBCONTRACTORS

EPC contractors and their subcontractors have primary responsibility for day-to-day E&S management of substation works within their contract. They will:

- Prepare and implement contract-specific CESMPs for substations, consistent with this ESMP, the ESIA, ESMIP, ESCP and Terms of References (TORs) for CESMPs.
- Develop and implement topic-specific sub-plans at each substation, including at minimum:
  - OHS Plan (with method statements and permits for critical tasks).
  - Traffic Management Plan (TMP) for access to substations and heavy equipment moves.
  - CLMP implementation measures and SRPs where triggered.
  - WMP and HMMP (including procedures for oils, SF<sub>6</sub>, batteries, chemicals, asbestos).
  - Emergency Preparedness and Response Plan (ERP), including fire safety and spill response.
  - Security Management Plan where security personnel or measures are used.
  - SEA/SH Action Plan, including CoC, training, reporting and referral pathways.
- Support implementation of SEP at substation work fronts, including information disclosure, coordination with neighboring communities and facilitation of access to project GMs for workers and community members.
- Provide adequate E&S staffing (environmental officer, social/GBV focal point, OHS manager, community liaison officer) and resources at each substation cluster.
- Ensure all subcontractors and key suppliers comply with the ESMP, CESMP, CoC and relevant procedures.

- Maintain records (training, incidents, near misses, grievances, monitoring data) and report regularly to the OE and PETDE/PMT.
- Implement corrective actions and stop work where serious non-compliances or unsafe conditions exist.
- The Contractor is responsible for compensating all temporary damages (e.g., to crops, soil, minor assets) caused by its construction activities. This compensation must be made **using the official rates, forms, and procedures mandated and provided in writing by PETDE**. The cost of such compensation shall be included in the Contractor's bid. The Contractor is **not** responsible for compensating impacts identified and covered under PETDE's pre-existing Resettlement or Livelihood Restoration Plans

#### 5.4 OTHER STAKEHOLDERS AND AUTHORITIES

- **Governorates and municipalities:** facilitate permits, access arrangements, traffic and road-use coordination for substation works.
- **Environmental and labor authorities:** conduct inspections and enforce compliance with national environmental, health and labor regulations.
- **UNMAS:** undertake UXO/ERW survey and clearance, provide an ERW Chance-Finds Procedure and training on it, and advise on security risk management where required.
- **Local service providers and Non-Governmental Organizations (NGOs):** support stakeholder engagement, GBV/SEA/SH referral pathways and outreach to vulnerable groups as relevant to substation locations.
- **Ministry of Interior and Security Authorities (Police):** Responsible for responding to security incidents in accordance with the law. The Security Management Plan (SMP) to be developed by PETDE shall account for general coordination with such authorities and in cases of emergencies.
- **Security Contractors and/or Personnel:** shall abide by a **Code of Conduct (CoC)** developed for security personnel for the project and by the **Security Management Plan**.

#### 5.5 SUMMARY OF ESMP RESPONSIBILITIES

Clear allocation of responsibilities is essential for effective ESMP implementation and for maintaining compliance with lender requirements and national regulations. Table 5-1 below mirrors the Overhead Transmission Line (OHTL) ESMP and is adapted to substation rehabilitation and operation.

**Table 5-1. Summary of ESMP Responsibilities**

Function	Key ESMP Responsibilities	Phase	Accountable Entity
Overall ESMP oversight and coordination	<ul style="list-style-type: none"> <li>- Approve substation CESMPs and OESMP</li> <li>- Ensure ESMP requirements are included in substation procurement, contracts and budgets</li> <li>- Assign competent E&amp;S staff and resources</li> <li>- Chair regular E&amp;S performance reviews</li> <li>- Ensure timely reporting to the World Bank and national authorities</li> <li>- Approve and oversee implementation of corrective actions and ESMP updates</li> </ul>	All phases	PETDE / PMT
Site E&S supervision at substations	<ul style="list-style-type: none"> <li>- Review and clear contractor CESMPs and method statements before works</li> <li>- Conduct regular inspections and audits</li> <li>- Verify monitoring data and KPI reporting</li> <li>- Issue non-conformance notices and require corrective actions</li> <li>- Exercise stop-work authority for serious risks or non-compliances</li> <li>- Provide E&amp;S performance input to PETDE</li> </ul>	Construction (and major maintenance)	Owner's Engineer
Construction E&S management	<ul style="list-style-type: none"> <li>- Develop, maintain and implement substation CESMP and sub-plans</li> <li>- Integrate ESMP measures into work packs, permits and method statements</li> <li>- Provide induction and task-specific training</li> <li>- Implement daily E&amp;S controls, monitoring and record-keeping</li> <li>- Investigate incidents and near misses</li> <li>- Support worker and community GMs in line with SEP and ESCP</li> </ul>	Construction	EPC Contractors and Subcontractors
O&M E&S management	<ul style="list-style-type: none"> <li>- Maintain and implement PETDE's OESMP and O&amp;M procedures for substations</li> </ul>	Operation (and decommissioning, if applicable)	PETDE O&M Units with PETDE E&S support

Function	Key ESMP Responsibilities	Phase	Accountable Entity
	<ul style="list-style-type: none"> <li>- Integrate E&amp;S controls into routine and emergency maintenance</li> <li>- Manage operational monitoring (e.g., land contamination, hazardous materials, noise, waste, GM performance)</li> <li>- Train O&amp;M staff</li> <li>- Investigate incidents and implement corrective and preventive actions</li> </ul>		
Stakeholder Engagement and Grievance Mechanisms	<ul style="list-style-type: none"> <li>- Implement the SEP for substation works</li> <li>- Plan and deliver engagement with directly affected communities before and during works</li> <li>- Maintain community and worker GMs (including SEA/SH-sensitive channels)</li> <li>- Ensure timely response to grievances and feedback</li> <li>- Document engagement and GM performance</li> </ul>	All phases	PETDE Social Team / PMT and EPC Contractor

## **6. KEY ENVIRONMENTAL AND SOCIAL MANAGEMENT MEASURES FOR OHTL REHABILITATION**

This section summarizes key mitigation and management measures by topic. Detailed activity-level controls, KPIs and monitoring requirements are set out in the ESIA ESMIP and should be further elaborated in the CESMP and OESMP to be developed by the EPC Contractor and Operator respectively.

### **6.1 THEMATIC ESMP MATRIX (CONSTRUCTION AND OPERATION)**

The thematic ESMP matrix in Table 6-1 below consolidates the key environmental and social risks, mitigation measures, operational controls, and responsibilities relevant to substation rehabilitation. It summarizes the minimum requirements that EPC contractors and PETDE must implement across pre-construction, construction and operation phases, and should be reflected in contractor CESMPs, method statements, permits-to-work, and routine O&M procedures. The measures listed are consistent with the ESCP, ESIA Chapters 7-24, and the ESMIP in Chapter 26 of the ESIA.

**Table 6-1. Thematic ESMP Matrix (Construction and Operation)**

E&S Topic	Key Risks and Impacts (Substations)	Management / Action / Control Plans / Surveys	Phase	Responsible / Accountable	Key References
ESMS and planning	<ul style="list-style-type: none"> <li>- Fragmented E&amp;S management</li> <li>- Weak integration of ESMP into contracts</li> <li>- Inconsistent application across substations</li> </ul>	<ul style="list-style-type: none"> <li>- Integrate Substation ESMP in bidding documents and contracts</li> <li>- Require CESMP and OESMP consistent with ESIA, ESMIP and ESCP</li> <li>- Maintain project ESMS with clear procedures for document control and updates</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction</li> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT (lead)</li> <li>- OE (supervision)</li> <li>- EPC (implementation)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA Ch. 26</li> <li>- ESCP</li> </ul>
UXO/ERW and security	<ul style="list-style-type: none"> <li>- Residual UXO/ERW within or adjacent to substation yards</li> <li>- Security incidents affecting workers and communities</li> </ul>	<ul style="list-style-type: none"> <li>- No intrusive works (construction phase) before UXO/ERW clearance certificate by UNMAS</li> <li>- Triggering of ERW Chance-Finds Procedure in case of suspicious objects</li> <li>- Procedures for emergency repairs in potentially contaminated areas during operation (ERW Chance-Finds Procedure by UNMAS)</li> <li>- Enforce no-dig rules outside cleared areas</li> <li>- Abide by the SEEP Traffic Management Plan (TMP) in Annex E following its approval</li> <li>- Security risk assessment and security plan consistent with ESS4 and ESS2</li> <li>- Security personnel trained on CoC, SEA/SH, and use of force</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction</li> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT (risk management coordination)</li> <li>- Accredited UXO operators</li> <li>- EPC (site controls)</li> <li>- OE (verification)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA conflict/UXO sections</li> <li>- ESMIP UXO lines</li> <li>- ESCP security measures</li> <li>- TMP</li> </ul>
Land access, encroachments and livelihoods (ESS5)	<ul style="list-style-type: none"> <li>- Encroachments or informal use inside or immediately around substation fences</li> <li>- Damage to small structures, crops or business assets during works</li> </ul>	<ul style="list-style-type: none"> <li>- Implement any relevant RPs/LRPs where ESS5 is triggered</li> <li>- Avoid or minimize additional impacts through careful planning</li> <li>- Where minor damage occurs, apply agreed entitlement and compensation procedures</li> <li>- Maintain access to adjacent properties and provide alternative access where needed</li> <li>- Record and address related grievances through GM</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction</li> <li>- Construction</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT (ESS5 instruments)</li> <li>- EPC (avoid/minimize and record impacts)</li> <li>- OE (monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA social baseline</li> <li>- ESMP and ESMIP social control lines</li> </ul>
Legacy land contamination and hazardous materials (ESS3)	<ul style="list-style-type: none"> <li>- Legacy oil spills, contaminated soil, PCB risk in old equipment, asbestos-containing materials, SF<sub>6</sub> leaks</li> <li>- Risk of new spills during works</li> </ul>	<ul style="list-style-type: none"> <li>- Develop and implement CLMP for all SEEP substations, consolidating ESIA findings, identifying and mapping hotspots, defining any targeted additional investigation, and assessing risks to workers, communities and environmental receptors</li> <li>- Where CLMP risk assessment indicates the need for active remediation or engineered management, prepare and implement site-specific Soil/Groundwater Remediation Plans (SRPs) with defined cleanup/management criteria and verification sampling</li> <li>- Implement HMMP and WMP for transformer oils, SF<sub>6</sub>, PCB-suspect equipment and asbestos</li> <li>- Ensure secondary containment, bund integrity, drip trays and spill kits</li> <li>- Use qualified personnel for SF<sub>6</sub> handling</li> <li>- Use licensed facilities for hazardous waste</li> <li>- Include a contamination chance-finds procedure in Contractor CESMPs for unexpected contamination outside identified hotspots (stop-work, cordon, notify PETDE/PMT and OE, proportionate assessment and safe handling/disposal via C-HM/WMP).</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction (screening and planning)</li> <li>- Construction and Operation (implementation and monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE E&amp;S and technical units (CLMP, SRPs)</li> <li>- EPC (implementation during works)</li> <li>- PETDE O&amp;M (operational controls)</li> <li>- OE (oversight)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA sections on land contamination and hazardous materials</li> <li>- CLMP and site-specific SRPs (where required)</li> <li>- WMP</li> <li>- HMMP</li> <li>- ESMIP ESS3 lines</li> </ul>
Air quality, dust and indoor air	<ul style="list-style-type: none"> <li>- Dust from civil works</li> <li>- Exhausts from machinery and generators</li> <li>- Indoor air quality issues during demolition or painting in control buildings</li> </ul>	<ul style="list-style-type: none"> <li>- Implement dust suppression and housekeeping</li> <li>- Maintain equipment</li> <li>- Limit idling</li> <li>- Where generators are used, ensure proper positioning and maintenance</li> <li>- Ventilate indoor work areas</li> <li>- Use low-VOC paints where practicable</li> <li>- Comply with national and WBG EHS standards</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> </ul>	<ul style="list-style-type: none"> <li>- EPC (implementation)</li> <li>- OE (monitoring)</li> <li>- PETDE (oversight)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA climate and air quality chapters and ESMIP matrix</li> </ul>
Noise and vibration	<ul style="list-style-type: none"> <li>- Construction noise from demolition, concrete works, equipment</li> </ul>	<ul style="list-style-type: none"> <li>- Apply WBG and Syrian noise standards at sensitive receptors</li> <li>- Plan noisy activities within daytime hours</li> <li>- Use silencers and well-maintained equipment</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC (construction noise controls)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA noise chapter</li> <li>- ESMIP</li> </ul>

E&S Topic	Key Risks and Impacts (Substations)	Management / Action / Control Plans / Surveys	Phase	Responsible / Accountable	Key References
	<ul style="list-style-type: none"> <li>- Operational noise from transformers, fans or emergency generators</li> <li>- Nuisance to nearby receptors</li> </ul>	<ul style="list-style-type: none"> <li>- Provide temporary barriers where needed</li> <li>- Communicate schedule to nearby communities</li> <li>- Monitor noise at representative receptors if required by ESIA/ESMIP</li> </ul>		<ul style="list-style-type: none"> <li>- PETDE O&amp;M (operational noise management)</li> <li>- OE (monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>- National and WBG EHS noise limits</li> </ul>
Water, wastewater, drainage and soil protection	<ul style="list-style-type: none"> <li>- Runoff contamination from oils and concrete wash water</li> <li>- Blockage or alteration of drainage</li> <li>- Improper management of domestic and process wastewater at substations</li> </ul>	<ul style="list-style-type: none"> <li>- Maintain or improve drainage patterns</li> <li>- Design/rehabilitate oily-water separation and bunding</li> <li>- Designate lined concrete washout areas</li> <li>- Collect domestic wastewater to septic tanks or sewers consistent with ESIA and WBG guidelines</li> <li>- Prevent discharge of contaminated water to surface or groundwater</li> <li>- Emergency procedures for spills</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC (temporary controls)</li> <li>- PETDE (design and long-term drainage/wastewater management)</li> <li>- OE (verification)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA surface water/soil chapters</li> <li>- ESMIP water and soil matrices</li> <li>- Wastewater standards (see ESIA)</li> </ul>
Waste and materials management	<ul style="list-style-type: none"> <li>- Generation of construction waste, scrap metals, packaging, concrete rubble, hazardous wastes (oils, sf<sub>6</sub>, batteries, asbestos)</li> <li>- Risk of improper storage or disposal</li> </ul>	<ul style="list-style-type: none"> <li>- Implement WMP and HMMP</li> <li>- Segregate wastes</li> <li>- Maximize recycling of scrap metals</li> <li>- Store hazardous wastes in labeled, banded areas</li> <li>- Manage asbestos in accordance with good practice (survey, containment, PPE, licensed disposal where feasible)</li> <li>- Prohibit open burning and uncontrolled dumping</li> <li>- Maintain waste registers and disposal documentation</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC (during works)</li> <li>- PETDE O&amp;M (operational waste)</li> <li>- PETDE E&amp;S (oversight)</li> <li>- OE (monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA waste and hazardous materials sections</li> <li>- WMP</li> <li>- HMMP</li> <li>- ESMIP</li> </ul>
Occupational health and safety (OHS)	<ul style="list-style-type: none"> <li>- Electrical hazards (live parts, induced voltages)</li> <li>- Work at height</li> <li>- Confined spaces (cable trenches, basements)</li> <li>- Lifting operations</li> <li>- Hot works</li> <li>- Ergonomics</li> <li>- Heat stress</li> <li>- Exposure to hazardous substances</li> </ul>	<ul style="list-style-type: none"> <li>- OHS Plan aligned with ESS2 and EHS Guidelines</li> <li>- Job hazard analysis and method statements</li> <li>- Permit-to-work systems (LOTO, hot work, confined space, live-line constraints)</li> <li>- Appropriate PPE</li> <li>- Training and toolbox talks</li> <li>- Emergency response and first aid</li> <li>- Heat stress prevention measures</li> <li>- Coordination of switching and isolation with PETDE system operators</li> <li>- Incident and near-miss reporting and investigation</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC (construction OHS)</li> <li>- PETDE O&amp;M (operational OHS)</li> <li>- PETDE E&amp;S (oversight)</li> <li>- OE (monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA OHS analysis</li> <li>- LMP</li> <li>- ESMIP OHS lines</li> <li>- WBG EHS Guidelines</li> </ul>
Labor and working conditions; worker GM (ESS2)	<ul style="list-style-type: none"> <li>- Non-compliance with labor law and LMP</li> <li>- Unequal treatment</li> <li>- Poor accommodation (if any)</li> <li>- Weak worker GM</li> <li>- SEA/SH risks in workplace</li> </ul>	<ul style="list-style-type: none"> <li>- Apply LMP for all workers</li> <li>- Ensure written contracts and fair working conditions</li> <li>- Provide appropriate worker accommodation (if used) conforming to ess2 and national regulations</li> <li>- Implement worker GM</li> <li>- Enforce CoCs</li> <li>- Prohibit child and forced labor and implement age verification procedure</li> <li>- Site management procedures (to be added to Methods Statement)</li> <li>- Ensure PPE and training</li> <li>- Monitor subcontractors</li> <li>- Consult workers on ohs issues</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction</li> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT (LMP oversight)</li> <li>- EPC (implementation)</li> <li>- OE (verification)</li> </ul>	<ul style="list-style-type: none"> <li>- LMP</li> <li>- ESIA labor baseline</li> <li>- ESCP commitments</li> </ul>
Community health, safety and security (ESS4)	<ul style="list-style-type: none"> <li>- Increased traffic and accident risk</li> <li>- Unauthorized access to substation sites</li> <li>- Fire and explosion risks</li> <li>- Electromagnetic fields concerns</li> <li>- Security force behavior</li> <li>- Interactions with nearby residents or IDPs</li> </ul>	<ul style="list-style-type: none"> <li>- TMP for access and delivery routes</li> <li>- Traffic controls and driver training</li> <li>- Secure fencing and access control at substations</li> <li>- Signage and community awareness</li> <li>- Strict management of fuel and gas cylinders</li> <li>- Emergency response plans and drills</li> <li>- Coordinate with local authorities and communities</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC (traffic and temporary Community Health, Safety and Security (CHSS) controls)</li> <li>- PETDE (long-term CHSS and security)</li> <li>- OE (monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA CHSS analysis</li> <li>- ESMIP CHSS lines</li> <li>- SEP</li> <li>- Security Plan</li> </ul>

E&S Topic	Key Risks and Impacts (Substations)	Management / Action / Control Plans / Surveys	Phase	Responsible / Accountable	Key References
		<ul style="list-style-type: none"> <li>- Security personnel trained and operating under a clear security management plan and CoC</li> </ul>			
SEA/SH, GBV and VAC	<ul style="list-style-type: none"> <li>- Risks of SEA/SH and other GBV involving workers, security personnel or community members</li> <li>- Under-reporting of incidents</li> </ul>	<ul style="list-style-type: none"> <li>- Implement SEA/SH Action Plan</li> <li>- Require all workers and security personnel to sign and adhere to CoCs with explicit prohibitions on SEA/SH and VAC</li> <li>- Provide SEA/SH-sensitive GM channels</li> <li>- Train workers and managers</li> <li>- Coordinate with GBV service providers for referral pathways</li> <li>- Ensure survivor-centered, confidential response</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT (oversight and GM)</li> <li>- EPC and security providers (implementation)</li> <li>- OE (monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA social and GBV sections</li> <li>- SEP</li> <li>- LMP</li> <li>- ESCP</li> <li>- ESMIP GBV lines</li> </ul>
Cultural heritage and chance finds (ESS8)	<ul style="list-style-type: none"> <li>- Disturbance or damage to previously unknown archaeological or cultural property during excavation within substations or associated access</li> </ul>	<ul style="list-style-type: none"> <li>- Apply Chance Finds Procedure to all ground disturbance</li> <li>- Immediate stop-work and notification</li> <li>- Coordinate with heritage authorities</li> <li>- Protect finds until instructions are received</li> <li>- Train contractors on procedure</li> <li>- Record and report any finds</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction (training)</li> <li>- Construction</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT (procedure and authority liaison)</li> <li>- EPC (implementation)</li> <li>- OE (monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA cultural heritage chapter</li> <li>- ESMIP ESS8 lines</li> </ul>
Biodiversity and vegetation within substations (ESS6)	<ul style="list-style-type: none"> <li>- Limited due to disturbed nature of sites, but possible impacts on trees or vegetation providing ecosystem services or shade, and minor fauna using substation areas</li> </ul>	<ul style="list-style-type: none"> <li>- Maintain disturbance within existing footprints</li> <li>- avoid unnecessary removal of trees</li> <li>- reinstate disturbed areas</li> <li>- ensure waste and contaminants do not affect surrounding vegetation</li> <li>- manage lighting to avoid unnecessary light spill where relevant</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC (controls during works)</li> <li>- PETDE O&amp;M (ongoing management)</li> <li>- OE (monitoring)</li> </ul>	<ul style="list-style-type: none"> <li>- ESIA biodiversity sections for substation sites</li> <li>- ESMIP ESS6 lines</li> </ul>
Stakeholder engagement and GM (ESS10)	<ul style="list-style-type: none"> <li>- Insufficient information disclosure</li> <li>- Community concerns not addressed</li> <li>- Grievances ignored or delayed</li> </ul>	<ul style="list-style-type: none"> <li>- Implement SEP for substation communities</li> <li>- Disclose information on scope, schedule and expected impacts in accessible formats and timely manner</li> <li>- Publicize and maintain accessible GMs (including SEA/SH-sensitive pathways)</li> <li>- Keep records of engagement and grievances</li> <li>- Feedback on actions taken</li> <li>- Escalation procedures</li> </ul>	<ul style="list-style-type: none"> <li>- All phases</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT (lead)</li> <li>- EPC and OE (support at site level)</li> </ul>	<ul style="list-style-type: none"> <li>- SEP</li> <li>- ESCP</li> <li>- ESIA stakeholder engagement chapters</li> </ul>



## 6.2 IMPLEMENTATION SCHEDULE AND WORK PROGRAM

ESMP measures will be integrated into the project schedule and contractor method statements for all substation packages. As a minimum:

- Pre-construction:
  - Complete UXO/ERW non-technical and, where required, technical surveys and clearance for all substation work fronts (including excavations in yards, basements, foundations and cable trenches) before any intrusive works.
  - Finalize and approve contractor CESMPs and topic-specific plans (OHS, Traffic, Waste and Hazardous Materials, Emergency Response, SEA/SH Action Plan, Security Plan, CLMP implementation measures and any site-specific SRPs) prior to mobilization to each substation.
  - Undertake ESS5 screening for each substation and associated access, and, where triggered, prepare and approve RP/LRP instruments and implement compensation and/or livelihood assistance before start of works that affect assets, crops, informal uses or access.
  - Conduct CLMP screening (including visual inspection and targeted sampling) in areas with known or suspected legacy contamination (e.g. transformer bays, oil sumps, cable trenches, oily-water separators) and define any required SRPs before demolition or excavation.
  - Deliver core induction and role-specific training (including UXO/ERW awareness, OHS, CHSS, SEA/SH labor management, hazardous materials management such as SF<sub>6</sub> and oils, confined spaces and chance-finds) before workers are deployed to substation sites.
- Construction:
  - Sequence works so that ESMP controls at substations (site fencing and access control, traffic and access arrangements, drainage and bunding, temporary waste and hazardous materials storage, fire safety measures, signage and exclusion zones) are in place before starting higher-risk activities such as demolition, excavation, oil transfer, SF<sub>6</sub> handling or hot works.
  - Integrate ESMP actions and monitoring tasks into weekly and monthly construction planning, method statements and permits-to-work (including permits for live electrical environments, confined spaces, lifting operations and hot works).
  - Implement site reinstatement and any damage-compensation procedures promptly after completion of works at each substation, including restoration of surfaces, repair of drainage, removal of temporary facilities and confirmation that CLMP/SRP actions have been closed.
- Operation and maintenance:
  - Reflect relevant ESMP measures in the PETDE OESMP and O&M procedures for substations (for example: management of oils and SF<sub>6</sub>, surveillance of bunds and drainage, periodic land contamination checks where required, CHSS and security measures, worker and community GMs, and SEA/SH measures).
  - Plan periodic inspections, preventive maintenance and monitoring (including checks of hazardous materials storage, drainage and oily-water systems, fencing and access control, noise where relevant, and emergency preparedness) as part of the routine substation O&M work program.
  - Contractors will be required to demonstrate in their construction schedules and method statements how ESMP requirements, pre-construction gates and monitoring activities are sequenced and resourced for each substation.

### **6.3 MONITORING, KEY PERFORMANCE INDICATORS (KPIs) AND REPORTING**

Monitoring and KPIs for substation rehabilitation and operation will follow the logic of the OHTL ESMP, adapted to substation-specific risks. Table 6-2 summarizes key KPIs and associated monitoring requirements.

Table 6-2. Monitoring and KPIs for Substation Rehabilitation and Operation

Theme	KPI	Monitoring Method	Monitoring Frequency	Phase	Responsibility	Reporting
ESMP integration and CESMPs	<ul style="list-style-type: none"> <li>- 100% of substation contracts include ESMP requirements</li> <li>- 100% of EPC CESMPs approved before mobilization</li> </ul>	<ul style="list-style-type: none"> <li>- Contract review</li> <li>- CESMP approval records</li> </ul>	<ul style="list-style-type: none"> <li>- At CESMP approval (pre-mobilization)</li> <li>- Monthly follow-up during construction</li> </ul>	Pre-construction	<ul style="list-style-type: none"> <li>- PETDE/PMT</li> <li>- OE</li> <li>- EPC</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: status of CESMP implementation and non-conformances in monthly E&amp;S reports</li> <li>- PETDE/PMT: summary of ESMP implementation and key non-conformances in quarterly reports to WB</li> </ul>
UXO/ERW management	<ul style="list-style-type: none"> <li>- 100% of substations cleared for UXO/ERW risk with UNMAS certificate</li> <li>- 100% of intrusive works in medium/high-risk areas preceded by technical survey or clearance</li> <li>- 100% of workers trained on ERW Chance-Finds procedure prior to work</li> <li>- 0 UXO/ERW incidents</li> </ul>	<ul style="list-style-type: none"> <li>- Review of UXO/ERW assessments and clearance certificates</li> <li>- Incident log</li> <li>- Worker training records</li> </ul>	<ul style="list-style-type: none"> <li>- Before intrusive works in any new substation risk area</li> <li>- Quarterly consolidated summary during construction</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction</li> <li>- Construction</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE</li> <li>- EPC</li> <li>- accredited operators</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- EPC/UXO provider: clearance status and any incidents in monthly E&amp;S reports</li> <li>- PETDE/PMT: UXO/ERW summary in quarterly reports to WB; serious incidents reported within 48 hrs.</li> </ul>
Land access and ESS5	<ul style="list-style-type: none"> <li>- 100% of substation-related ESS5 impacts managed under RP/LRP where triggered</li> <li>- 0 unresolved ESS5-related grievances older than 60 days</li> </ul>	<ul style="list-style-type: none"> <li>- Review of ESS5 instruments</li> <li>- GM database (including land and livelihood cases)</li> <li>- site inspections</li> </ul>	<ul style="list-style-type: none"> <li>- Quarterly during construction at substations with land/economic impacts</li> <li>- Annually in operation, if any residual measures</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction</li> <li>- Construction</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT Social Team</li> <li>- OE</li> <li>- EPC</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: any crop/asset damage and related grievances in monthly E&amp;S reports</li> <li>- PETDE Social Team: RP/LRP implementation and grievance status in quarterly reports to WB</li> </ul>
Legacy land contamination and hazardous materials	<ul style="list-style-type: none"> <li>- 100% of substations screened under CLMP</li> <li>- 100% of identified hotspots addressed through SRPs</li> <li>- 0 uncontrolled off-site migration of contaminated soil</li> <li>- 0 major spills of oil or SF<sub>6</sub></li> </ul>	<ul style="list-style-type: none"> <li>- CLMP screening and lab results</li> <li>- SRPs and completion reports</li> <li>- Spill and incident records</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly during construction (visual checks, registers)</li> <li>- Per event (sampling, spills, removals)</li> <li>- Semi-annual in operation</li> </ul>	<ul style="list-style-type: none"> <li>- Pre-construction</li> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE E&amp;S</li> <li>- EPC</li> <li>- PETDE O&amp;M</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: contamination checks, hazardous materials register, spills and remediation actions in monthly E&amp;S reports</li> <li>- PETDE/PMT: summary of legacy contamination management, hazardous materials and any significant events in quarterly reports to WB</li> </ul>
Air quality and dust	<ul style="list-style-type: none"> <li>- No verified community complaints on uncontrolled dust</li> <li>- equipment emission controls maintained</li> </ul>	<ul style="list-style-type: none"> <li>- Site inspections</li> <li>- GM records</li> </ul>	<ul style="list-style-type: none"> <li>- Weekly during active demolition and excavation</li> <li>- Ad hoc if complaints received</li> </ul>	Construction	<ul style="list-style-type: none"> <li>- EPC</li> <li>- OE</li> <li>- PETDE/PMT</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: dust control measures, monitoring/complaints and responses in monthly E&amp;S reports</li> <li>- PETDE/PMT: highlight any persistent non-compliance or complaints in quarterly reports to WB</li> </ul>
Noise	<ul style="list-style-type: none"> <li>- Daytime noise at nearest receptors within national or WBG limits (as applicable)</li> <li>- No substantiated complaints on excessive night-time noise</li> </ul>	<ul style="list-style-type: none"> <li>- Spot noise measurements where required</li> <li>- GM records</li> </ul>	<ul style="list-style-type: none"> <li>- Baseline/verification at start of noisy activities (once per substation, unless conditions change)</li> <li>- Ad hoc where sensitive receptors or complaints</li> <li>- Annual spot checks in operation where relevant</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation (if relevant)</li> </ul>	<ul style="list-style-type: none"> <li>- EPC</li> <li>- PETDE/PMT</li> <li>- PETDE O&amp;M</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: noise monitoring and complaints/resolution in monthly E&amp;S reports (if triggered)</li> <li>- PETDE/PMT: any exceedances and complaint trends in quarterly reports to WB</li> </ul>
Water, drainage and wastewater	<ul style="list-style-type: none"> <li>- No uncontrolled discharge of contaminated water</li> </ul>	<ul style="list-style-type: none"> <li>- Visual inspections</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly checks of drainage, sumps,</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC</li> <li>- PETDE/PMT</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: drainage and oily-water system status, incidents and</li> </ul>

	<ul style="list-style-type: none"> <li>- drainage functioning</li> <li>- No evidence of soil erosion or ponding due to works</li> </ul>	<ul style="list-style-type: none"> <li>- Records of water management measures</li> </ul>	<ul style="list-style-type: none"> <li>- oil/water separators during construction</li> <li>- Per cleaning/pump-out event</li> <li>- Semi-annual in operation</li> </ul>		<ul style="list-style-type: none"> <li>- PETDE O&amp;M</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- tank/sump management in monthly E&amp;S reports</li> <li>- PETDE/PMT: key issues and incidents in quarterly reports to WB</li> </ul>
Waste and materials	<ul style="list-style-type: none"> <li>- 100% of hazardous waste stored and disposed of via controlled routes</li> <li>- Waste registers maintained</li> <li>- No uncontrolled dumping or burning</li> </ul>	<ul style="list-style-type: none"> <li>- Review of waste records</li> <li>- Site inspections</li> <li>- Disposal receipts</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly during construction (all substations)</li> <li>- Semi-annual in operation (including e-waste and scrap)</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC</li> <li>- PETDE/PMT</li> <li>- PETDE O&amp;M</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: waste volumes, segregation and destinations, including hazardous waste, in monthly E&amp;S reports</li> <li>- PETDE/PMT: consolidated waste and materials management (including e-waste and recyclers) in quarterly reports to WB</li> </ul>
OHS	<ul style="list-style-type: none"> <li>- Lost time injury frequency rate (LTIFR)</li> <li>- Total recordable incident rate (TRIR)</li> <li>- 100% workers receive OHS induction</li> <li>- All high-risk tasks under permit to work</li> <li>- 0 fatalities</li> </ul>	<ul style="list-style-type: none"> <li>- OHS statistics</li> <li>- Training records</li> <li>- Permit-to-work records</li> <li>- Incident investigations</li> </ul>	<ul style="list-style-type: none"> <li>- Daily/shift-level checks by supervisors</li> <li>- Monthly consolidated review of incidents and leading indicators</li> <li>- After any serious incident</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC</li> <li>- PETDE/PMT</li> <li>- PETDE O&amp;M</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: OHS performance (leading and lagging indicators, serious incidents) in monthly E&amp;S reports</li> <li>- PETDE/PMT: consolidated OHS metrics and serious incidents in quarterly reports to WB; serious incidents notified within 48 hrs.</li> </ul>
Labor and working conditions	<ul style="list-style-type: none"> <li>- 100% workers covered by LMP provisions</li> <li>- 100% have access to worker GM</li> <li>- No verified cases of child or forced labor</li> </ul>	<ul style="list-style-type: none"> <li>- Labor audits</li> <li>- GM logs</li> <li>- Worker interviews</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly review of worker GM and labor conditions</li> <li>- Quarterly review of contractor compliance with LMP</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT (Social/OHS focal points)</li> <li>- EPC</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: worker GM statistics, CoC enforcement, labor issues in monthly E&amp;S reports</li> <li>- PETDE Social/OHS focal points: LMP compliance and worker GM performance in quarterly reports to WB</li> </ul>
Community health, safety and security	<ul style="list-style-type: none"> <li>- Number of traffic or safety incidents involving the public</li> <li>- 100% of substations secured against unauthorized access</li> <li>- No serious security incidents involving use of force</li> </ul>	<ul style="list-style-type: none"> <li>- GM and incident logs</li> <li>- Site inspections</li> <li>- Review of security arrangements</li> </ul>	<ul style="list-style-type: none"> <li>- Monthly during construction (access, fencing, traffic, security)</li> <li>- After any major CHSS incident</li> <li>- At least annual checks in operation</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- EPC</li> <li>- PETDE</li> <li>- Security providers</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: CHSS controls and incidents (traffic, access, security) in monthly E&amp;S reports</li> <li>- PETDE/PMT: CHSS performance and any major incidents in quarterly reports to WB; major incidents notified within 48 hrs.</li> </ul>
SEA/SH and GBV	<ul style="list-style-type: none"> <li>- 100% of workers and security personnel sign and are trained on CoC</li> <li>- At least one GBV/SEA/SH awareness session per directly affected community before or at start of works, with refresher sessions at least every 6 months where works continue</li> <li>- All SEA/SH cases managed through survivor-centered GM and referral pathways</li> </ul>	<ul style="list-style-type: none"> <li>- Training and attendance records</li> <li>- CoC records</li> <li>- GM and incident logs (confidential, aggregated)</li> <li>- Review of referral pathways</li> </ul>	<ul style="list-style-type: none"> <li>- Quarterly (training coverage, GM function, referrals)</li> </ul>	<ul style="list-style-type: none"> <li>- Construction</li> <li>- Operation</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT GBV focal point</li> <li>- EPC</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: workforce CoC/SEA-SH training coverage and non-SEA/SH grievance stats in monthly E&amp;S reports</li> <li>- PETDE/PMT GBV Focal Point: aggregated GBV/SEA/SH and GM information (no PII) in quarterly reports to WB</li> </ul>
Stakeholder engagement and GM	<ul style="list-style-type: none"> <li>- Number of engagement activities conducted</li> <li>- ≥ 90% acknowledged within 48 hours</li> <li>- ≥ 90% of grievances resolved within 30 days</li> </ul>	<ul style="list-style-type: none"> <li>- SEP implementation records</li> <li>- GM database</li> </ul>	<ul style="list-style-type: none"> <li>- Quarterly during construction at each affected substation</li> <li>- Annually in operation (or more frequent where activities or issues arise)</li> </ul>	All phases	<ul style="list-style-type: none"> <li>- PETDE/PMT (Social Team)</li> <li>- EPC</li> <li>- OE</li> </ul>	<ul style="list-style-type: none"> <li>- EPC: meetings, notices, and community grievances (non-SEA/SH) in monthly E&amp;S reports</li> <li>- PETDE Social Team: SEP and GM implementation, including % grievances</li> </ul>

						acknowledged/resolved, in quarterly reports to WB
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Contractors will submit E&S monthly reports to the supervision consultant and PETDE. PETDE will consolidate and report to the World Bank in accordance with the ESCP (typically quarterly and annually, and after significant incidents).

## **7. TRAINING AND CAPACITY BUILDING**

Effective implementation of the Substation ESMP depends on targeted training and capacity building for PETDE, OE and EPC staff. This section complements the OHTL ESMP training provisions, with additional emphasis on substation-specific risks such as legacy contamination, SF<sub>6</sub>, PCB and indoor works.

The indicative training program in Table 7-1 will be refined and scheduled by PETDE/PMT in coordination with the OE and EPC contractors.

**Table 7-1. Indicative Training Program for Substation ESMP**

Target Group	Training Topic / Module	Objective / Key Content	Frequency / Timing	Responsible
PETDE/PMT and OE E&S staff	Overview of ESIA, ESMIP, ESCP and Substation ESMP	Ensure core team understands ESIA findings, ESMIP matrices, ESCP commitments and how the Substation ESMP aligns with OHTL ESMP and procurement	<ul style="list-style-type: none"> <li>- Once at project start</li> <li>- Refreshers as needed (e.g., annually)</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT with external ESF advisor, if needed</li> </ul>
PETDE substation O&M managers and engineers	Operational E&S management at substations	<ul style="list-style-type: none"> <li>- Integrate ESMP and OESMP into O&amp;M procedures</li> <li>- Manage land contamination, hazardous materials, OHS, CHSS, GM and GBV/SEA/SH considerations during operation</li> </ul>	<ul style="list-style-type: none"> <li>- Prior to handover of rehabilitated substations</li> <li>- Refreshers every 2 to 3 years</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT</li> <li>- OE</li> <li>- Specialized trainers</li> </ul>
EPC management and site supervisors	CESMP implementation and supervision	<ul style="list-style-type: none"> <li>- Clarify contractor obligations under ESMP, CESMP and sub-plans</li> <li>- Reporting, incident management, interface with OE and PETDE</li> </ul>	<ul style="list-style-type: none"> <li>- At contract inception</li> <li>- Annual refreshers</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT</li> <li>- OE</li> </ul>
EPC OHS staff and foremen	OHS management for substation works	<ul style="list-style-type: none"> <li>- Job hazard analysis</li> <li>- Permits to work</li> <li>- Work at height</li> <li>- Confined spaces</li> <li>- Lifting</li> <li>- Electrical safety</li> <li>- Heat stress</li> <li>- Incident investigation</li> </ul>	<ul style="list-style-type: none"> <li>- Before mobilization</li> <li>- Periodic toolbox talks (weekly or as needed)</li> </ul>	<ul style="list-style-type: none"> <li>- EPC HSE manager</li> <li>- OE support</li> </ul>
EPC environmental staff	Land contamination, CLMP and SRPs; waste and hazardous materials management	<ul style="list-style-type: none"> <li>- CLMP screening and sampling</li> <li>- Interpreting lab results</li> <li>- Implementing SRPs</li> <li>- Managing oils, SF<sub>6</sub>, PCB risk, asbestos and other hazardous materials</li> <li>- Waste segregation and documentation</li> </ul>	<ul style="list-style-type: none"> <li>- Before relevant works</li> <li>- Refresher when new SRPs or CLMP updates issued</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE E&amp;S</li> <li>- External specialist</li> <li>- EPC environmental officer</li> </ul>
All workers at substations	Induction on ESMP, OHS, CHSS, CoC and GM	<ul style="list-style-type: none"> <li>- Introduce key site rules, OHS requirements, SEA/SH and GBV prohibitions, GM access,</li> </ul>	<ul style="list-style-type: none"> <li>- At hiring and before entering site</li> </ul>	<ul style="list-style-type: none"> <li>- EPC</li> </ul>

Target Group	Training Topic / Module	Objective / Key Content	Frequency / Timing	Responsible
(including subcontractors)		UXO/ERW awareness (ERW Chance-Finds Procedure), traffic safety and emergency procedures	- Refresher toolbox talks at least monthly	- PETDE/PMT oversight
Security personnel	Security management and CoC; human rights and GBV	<ul style="list-style-type: none"> <li>- Principles of proportional use of force</li> <li>- Interaction with communities</li> <li>- Non-discrimination</li> <li>- SEA/SH and GBV prohibitions</li> <li>- Reporting of incidents</li> <li>- Relationship with GM</li> </ul>	<ul style="list-style-type: none"> <li>- Prior to deployment</li> <li>- Annual refreshers</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE</li> <li>- Security providers</li> <li>- GBV/SEA/SH focal point</li> </ul>
Community representatives (as relevant)	Project information and GM; SEA/SH awareness	<ul style="list-style-type: none"> <li>- Explain project scope, schedule, potential impacts, GM channels (including SEA/SH-sensitive options), and available GBV services</li> <li>- Support local understanding of worker CoC</li> </ul>	<ul style="list-style-type: none"> <li>- Before start of works at each substation</li> <li>- Refreshers where works extend several months</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE/PMT with EPC and OE support</li> <li>- NGO partners where available</li> </ul>



## 8. BUDGET AND RESOURCES

PETDE will ensure that adequate financial and human resources are allocated to implement this Substation ESMP, consistent with ESCP commitments and the approach used in the OHTL ESMP.

Costs associated with ESMP implementation will be integrated into:

- PETDE's project management and O&M budgets (e.g. E&S staff, monitoring, stakeholder engagement, GMS, CLMP implementation, OESMP updates).
- EPC contracts (e.g. CESMP implementation, site controls, monitoring, training, waste management, PPE, UXO/ERW clearance where allocated to contractors).

Table 8-1 sets out indicative budget cost categories for Substation ESMP implementation.

**Table 8-1. Budget Cost Categories for Substation ESMP Implementation**

Cost Category	Description	Indicative Responsibility for Funding	Notes
E&S staffing and supervision	<ul style="list-style-type: none"> <li>- PETDE/PMT E&amp;S team</li> <li>- OE E&amp;S supervision staff</li> <li>- Contractor E&amp;S officers and OHS personnel</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE (PMT, OE)</li> <li>- EPC (contractor staff)</li> </ul>	To be included in project management and contract overheads
ESMP-related training and capacity building	<ul style="list-style-type: none"> <li>- Development and delivery of ESMP, OHS, CLMP, GBV/SEA/SH, security and GM trainings</li> <li>- Materials and venues</li> </ul>	<ul style="list-style-type: none"> <li>- PETDE and EPC (shared)</li> </ul>	May use external trainers for specialized topics (e.g., GBV, CLMP)
UXO/ERW assessment and clearance	Risk assessments, technical surveys, clearance operations where required at substations	<ul style="list-style-type: none"> <li>- PETDE (with possible external funding)</li> <li>- EPC where contractually assigned</li> </ul>	<ul style="list-style-type: none"> <li>- Scope depends on site-specific risk</li> <li>- Informed by ESIA and security assessments</li> </ul>
CLMP implementation and remediation	Soil sampling, lab analysis, technical investigations, SRP implementation, verification sampling and close-out	<ul style="list-style-type: none"> <li>- PETDE (core CLMP and SRP design)</li> <li>- EPC (site implementation)</li> </ul>	Budget may be provisional and refined after screening results
Monitoring and surveys	Noise and air spot checks (if required), water and soil sampling, site inspections, OHS and GM data collection	<ul style="list-style-type: none"> <li>- PETDE</li> <li>- EPC</li> <li>- OE</li> </ul>	Frequency and scope per ESIA/ESMIP and contracts
Waste and hazardous materials management	<ul style="list-style-type: none"> <li>- Containers, labels, secondary containment</li> <li>- Hazardous waste transport and disposal fees</li> <li>- Asbestos and SF<sub>6</sub> specialized handling</li> </ul>	<ul style="list-style-type: none"> <li>- EPC during construction</li> <li>- PETDE during operation</li> </ul>	Costs depend on volumes and available licensed facilities
Stakeholder engagement and GMs	Community meetings, information materials, GM operation (including SEA/SH-sensitive options), translation and logistics	<ul style="list-style-type: none"> <li>- PETDE (lead)</li> <li>- EPC (support at site level)</li> </ul>	Integrated with SEP budget
SEA/SH and GBV mitigation	CoC implementation, GBV awareness sessions, survivor-centered response (including confidentiality and referrals)	<ul style="list-style-type: none"> <li>- PETDE and EPC (shared)</li> <li>- Possible support from partners</li> </ul>	May be integrated with training and GM budgets

Cost Category	Description	Indicative Responsibility for Funding	Notes
Security management	Security assessments, training, awareness raising for project workers equipment and any contracted security services that follow ESS4-aligned requirements	<ul style="list-style-type: none"> <li>- PETDE (overall)</li> <li>- EPC (site-specific arrangements)</li> </ul>	Integrated into broader security budget
External audits and evaluations	Independent E&S audits or evaluations of ESMP implementation for substations	PETDE	Timing per ESCP or WB request
Contingency	Allowance for unforeseen ESMP-related needs (e.g., additional remediation, community response measures)	PETDE	Typically a small percentage of E&S-related budget lines

## 9. ESMP REVIEW AND UPDATE

The Substation ESMP is a living document. PETDE will:

- Periodically review the ESMP to reflect changes in project design, schedule, site conditions or regulatory and ESF requirements, consistent with ESIA Chapter 26 on document control.
- Update the ESMP if monitoring results, incident investigations or GM data indicate that additional or revised measures are needed.
- Consult relevant stakeholders on substantive changes, as appropriate, and disclose updated versions in line with the SEP.
- Ensure that contract-specific CESMPs and PETDE's OESMP are updated accordingly, and that roles, responsibilities and budgets are adjusted to maintain compliance with the ESCP and World Bank ESF.