



ELMED Etudes SARL

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Tunisia-Italy Power Interconnector Project

Environmental and Social Impact Assessment (ESIA)

Executive summary – Part 2

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ELMED

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1. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

1.1 Introduction

The objectives of the ESMP are to:

- Describe the committed construction, operation and decommissioning management measures to be implemented as outlined in the ESIA;
- Describe specific additional measures required to implement construction-related good practice, World Bank Group requirements and national legislation;
- Identify the roles and responsibilities of the environmental and social management organisation of the Project;
- Communicate environmental and social expectations and requirements within the Project team.

The ESMP refers to the planned works of the Elmed project financed by the World Bank, which comprise all activities in Tunisia, both marine and terrestrial. All works in Italy are considered as Associated Facilities and are therefore not included in the scope of the present document.

1.2 Project development

The following ESF-compliant action plans have been developed for the project:

- SEP: Stakeholder Engagement Plan.
- BMP: Biodiversity Management plan
- SEA/SH: Sexual Exploitation and Abuse and Sexual Harassment Prevention and Response Action Plan
- LMP: Labor Management Procedure
- ESCP: Environmental and Social Commitment Plan

1.3 Pre-construction and construction phase

For such a high risk infrastructural project as ELMED, it is usually a good practice for the Borrower, as a part of the ESMP, to provide the overarching guidance, requirements and permits needed during civil works. The Contractor will then prepare site/route-specific or work-specific plans, based on the guidance provided in the ESMP to that end. These will include but not limited to the OHS Plan, Sediment and Erosion Management Plan, Waste Management Plan, Community HS Plan, Supply Chain Management Plan, Water Management Plan, Emergency response plan and a Traffic management plan.

The Construction Contractor will prepare the following mitigation and management plans, to be approved by STEG:

Environmental management plans

- Dust management plan
- Noise management plan
- Silt management plan
- Soil management plan
- Waste management plan
- Storage management plan
- Transport and traffic management plan
- Water management plan
- Contractor BMP

Social management plans

- Community Health and Safety Plan
- Labor Influx Plan

- Stakeholder Engagement Plan
- Community grievance mechanism
- Traffic and Transport Plan
- Labor grievance mechanism
- Occupational health and safety plan
- Construction workers' accommodation plan
- Cultural heritage chance finds procedure
- Human Resource Plan and Local Employment Policy
- Supply Chain Management Plan (including relevant Code of Conduct for Project Workers)
- CSR Policy

Emergency action plans

- Spill prevention plan
- Ground contamination action plan
- Emergency preparedness and response plan

1.4 Operation phase

For the operation phase of the project STEG will prepare the following mitigation and management plans:

Environmental management plans

- Waste management plan
- Hazardous materials management plan
- Water management plan
- Operations BMP

Social management plans

- Labor management plan
- Labor grievance mechanism
- Occupational health and safety plan
- Stakeholder Engagement Plan
- Community grievance mechanism
- CSR Policy
- Community Health and Safety Plan

Emergency action plans

- Spill prevention plan
- Emergency preparedness and response plan

1.5 Decommissioning phase

Activities in the decommissioning phase will be akin to those related to the construction phase: consequently the plans to prepare and their responsibilities will be the same.

1.6 Monitoring

Responsibilities for monitoring are as follows.

STEG will be responsible for:

- Preparing a detailed monitoring plan as terms of reference for the monitoring contractor;
- Selecting the monitoring contractor, based on its experience in monitoring activities and the capability of performing all the required activities;
- Analyzing monitoring data;

- Take prompt action in the case that monitoring indicates the occurrence of critical environmental or social issues;
- Prepare monitoring reports on an annual basis and transmit them to the World Bank.

The monitoring contractor will be responsible for:

- Proper execution of monitoring activities, in compliance with terms of reference;
- Drafting of monitoring reports, with contents and schedule as defined in terms of reference;
- Upload all monitoring data in a database, to be developed by the contractor;
- Promptly inform STEG of any environmental and social problems highlighted by monitoring activities, such as contamination, parameters beyond threshold values, anomalies, etc.

1.7 Company Organization and Role Responsibilities

1.7.1 Employer (STEG)

The employer will assume overall responsibility for implementing conditions dictated by the ESMP during construction and operation, and provide appropriate staff, financial resources, equipment and support systems to implement the ESMP effectively. STEG will ensure that its staff has the right skillset and dedication and that contractors and suppliers understand their obligation to comply with the requirements set out in the ESMP through various means, including mandatory staff inductions and contract conditions that are consistent with the commitments of the ESMP.

STEG is responsible for ensuring a suitably competent and experienced team will implement ESMP responsibilities for the Project, either if the positions are filled within existing STEG staff or specifically for the Project. Senior positions will have their environmental and social responsibilities and accountabilities clearly outlined. These descriptions will form part of the contractual obligations for each senior position, with specific accountabilities and responsibilities communicated through the Project Manager.

Project Manager

The Project Manager will have overall responsibility for occupational health and safety, environmental management and social performance, including the management of community relations and resettlement aspects of the Project and for ensuring the effective implementation of STEG policies, programs and procedures. The dedicated, on-site ESPIU will support the Project Manager to manage and monitor safety, health, and environmental issues associated with Project activities. In addition, is required to inform the Bank of any serious injuries or fatalities within 48 hours of its occurrence.

Environmental and Social Project Implementation Unit (ESPIU)

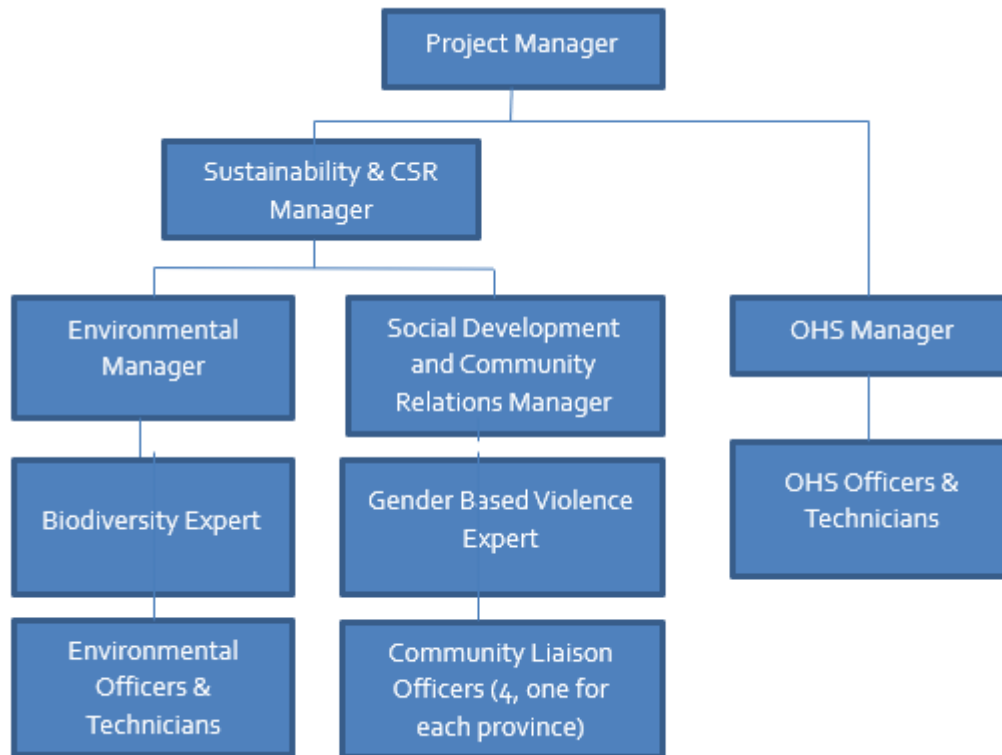
The ESPIU should be set-up at least one year before the beginning of construction works and will follow ESMP procedures during the construction and operation phases of the project. At minimum, it will comprise a team of professionals hired on long-term basis (at least one-year contracts) who will have the following responsibilities:

- Establish and maintain appropriate management systems and monitoring programs described in the ESMP are implemented to comply with legal obligations, ESIA commitments, and environmental and social international standard requirements such as the World Bank's ESS.
- Review environmental and social data and submit reports regarding progress of implementation, effectiveness of environmental and social management measures and monitoring data, and relevant environmental information and data required by regulators, including reporting to the appropriate regulatory authorities on significant reportable incidences as per regulations.
- Monitor the environmental and social compliance and performance of Project activities (including of contractors, vendors and suppliers) with the requirements of this ESMP and supporting management plans and procedures. Recommend appropriate actions or modifications as required for non-conformances within and continual improvement of the management system.
- Train STEG personnel and contractors as appropriate on Project environmental and social issues and provide relevant environmental and social induction.

- Design and implement restoration / rehabilitation of disturbed areas and oversee RAP implementation.
- Establish, train and ensure readiness of the emergency response teams.
- Provide technical environmental and social support to construction and operations as necessary; and
- Proactively consult and engage with relevant government authorities, communities and other stakeholders - including dissemination of Project updates and regular, meaningful, inclusive and participatory consultations with affected communities.
- Establish and maintain a stakeholder database.

The department managers (Environmental, Social and OHS managers) will report directly to the head of the ESPIU, the Sustainability and CSR Manager on site, who will be part of the Project’s management team. The ESPIU is responsible for the day-to-day implementation and continuous improvement of the environmental components of the ESMP including rehabilitation activities, compliance monitoring and reporting.

The organizational structure of STEG’s ESPIU (long-term assignment staff) is shown in the below diagram:



ESPIU External Specialists

When required, STEG will appoint external Environmental, Social and OHS specialists (e.g. human rights specialist, biodiversity specialists) to assist with the implementation of the commitments made in this ESMP and associated policies, procedures and management plans for the Project. Independent audits of the Project will be conducted regularly (e.g. every year during operations – or more frequently if deemed necessary) to assess compliance and conformance with safety, health, environmental and social requirements, procedures, and management plans.

ESPIU Contractors, Suppliers and Vendors

Contractors, suppliers, and vendors to the Project will be contractually required to comply with the various commitments of STEG policies, procedures, and management plans (including this document). In the event of non-conformance (e.g., identified during an environment, community relations and / or OHS department inspection or audit), the contractor, supplier, or vendor will be required to take corrective action according to the requirements of the relevant department. Resolution of non-conformance will be conducted according to the terms of the contract.

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1.7.2 Construction contractor

The Construction Contractor will be responsible for complying with all relevant national and international legislation and adhere to all mitigation measures specified in this ESMP. Before the commencement of construction works, the Construction Contractor will be required to develop the individual plans within the ESMP and ensure their implementation. The Construction Contractor will prepare and develop an Implementation Plan for the ESMP, including an implementation schedule.

During construction, the Construction Contractor will assume overall responsibility for implementing and monitoring the ESMP. In addition, to comply with the World Bank's ESF, the implementer will be responsible for complying with the Project's ESCP.

The Construction Contractor's organization must have sufficient, adequate, and competent resources to fulfil the environmental and social requirements established in this ESMP and supporting documentation.

The Construction Contractor is responsible for the ongoing management of potential environmental and social impacts of all contract activities, regardless of whether the Contractor or Sub-contractors undertake them. All Subcontractors must meet all the indicated requirements.

1.7.3 Sub-contractors

All Sub-contractors must meet all requirements in relation to the Contractor's discharge of their responsibilities in terms of ongoing management of potential environmental and social impacts of all contract activities.

1.8 Capacity development and training

Effective environmental and social management is based on a collaborative approach involving shared responsibilities among stakeholders. In this context, the successful implementation of the ESMP is encouraged through an institutional support and capacity building program.

During construction, the Construction Contractor will develop and implement an HSE Training Plan outlining training requirements, topics, and areas of capacity building, courses, and staff requiring training. The Contractor will also identify the knowledge and skills necessary for implementation of the ESMP and associated management plans.

The Construction Contractor will ensure that all workers have been inducted and regularly monitor the implementation of occupational health and safety requirements. The Client's representative should audit that all requirements are met. Where occupational health and safety requirements are not being implemented relevant workers will immediately be trained and instructed to implement these requirements.

During operation, STEG will be responsible for developing and implementing an HSE Training Plan for its employers, outlining training requirements, topics, and areas of capacity building, courses, and staff requiring training.

In both phases (construction and operation) all personnel involved in the management and implementation of ESMP will be adequately trained. Training records will be maintained to provide evidence for auditing/inspection purposes.

Communities' awareness and training

Experience gained from transmission line projects reveals that some inhabitants still construct various structures within the RoW and that accidents with locals may occur. The risk of accidents could be reduced by offering training and informative material adapted to local communities. Communities could also play an active role in supervision and environmental and social monitoring since they live near the OHL. Training, which targets local communities, will therefore reduce line-related risks and allow for community-level involvement in monitoring, including bird mortality, nesting, and carcass management.

1.9 Auditing of the ESMP

STEG will designate adequate technical staff to review regularly the ESMP to assess its effectiveness and relevance. The review of the ESMP will include analysis of the data collection and analysis of data, monitoring reports, incident reports, non-compliances, corrective actions implemented, complaints/grievances and feedback from stakeholders, consultation meeting minutes and training records to evaluate the effectiveness of ESMP procedures.

1.10 Non-conformance and Corrective Action Procedure

During construction and operation, the Construction Contractor and Employer, respectively, will implement a non-conformance and corrective action process to record issues reported by internal and external stakeholders.

The procedure for addressing non-conformance and corrective actions will include:

- A Non-Conformance Report (NCR) to record any environmental incident and work that has not been carried out in accordance with the ESMP and/or sub-plans;
- A Corrective Action Report (CAR) where a deficiency is identified because of monitoring, inspection, surveillance and valid complaints.

					
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2. ENVIRONMENTAL AND SOCIAL MITIGATION MEASURES

The proposed environmental and social measures to reduce and mitigate the Project's impacts during the project development, preconstruction, construction, operation and maintenance, and decommissioning phases are summarized in the following tables.

For each potential impact, the proposed management measures are described, together with parties responsible for their implementation.

Whereas key biodiversity management measures for flora and fauna are included in this ESMP, more detailed management measures are outlined in the draft Biodiversity Management Plan (BMP).

It is noted that measures proposed for the decommissioning phase should be considered merely conceptual, given the uncertainty regarding when and how decommissioning will take place.

2.1 Project development

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Stakeholder Engagement and Human Rights (including SEA – Sexual Exploitation and Abuse and SH – Sexual Harassment)	<ul style="list-style-type: none"> Stakeholders and local communities not meaningfully consulted and informed of the project impacts and benefits Protests and disruptions form potential affected persons (PAPs) Failure to obtain community acceptance of the project Lack of transparency with the public; non-ability of individuals and civic groups to participate in public life; lack of freedom of information and Control of corruption (transparency/participation in public life); gaps in facilitating citizen engagement; lack of participation in public life. 	<ul style="list-style-type: none"> Faulty or incomplete implementation of the SEP Absence of consultation with project affected persons (PAP) and local authorities 	<ul style="list-style-type: none"> Development and implement an ESS10-compliant Project Stakeholder Engagement Plan (SEP) Development and Implementation of SEA SH plan Implementation of the SEP and conduct of meaningful engagement with local and affected stakeholders Conduct of a stakeholder mapping exercise to identify PAPs and vulnerable groups Development of a stakeholder database Revision and updating of Project social baseline Provision of information on employment opportunities that will be offered by the project Development and Implementation of Grievance Redress Mechanism Hiring and training of Community Liaison Officers (CLOs) 	During design phase [STEG]	<ul style="list-style-type: none"> Absence of complaints from stakeholders (local communities, NGOs and authorities) Record keeping of stakeholder and community meetings 	<ul style="list-style-type: none"> Development of SEP budgeted in World Bank's TA Project SEP Execution Plan: \$ 30,000 Implementation of SEP throughout Project Development, Implementation and Operation Phases: \$ 120,000 Development of SEA SH plan budgeted in World Bank's TA Project SEA SH Execution Plan: \$ 30,000 Implementation of SEA SH plan: \$ 100,000
Land Acquisition, Restrictions to Land Use and Involuntary Resettlement	<ul style="list-style-type: none"> Risk of non-identification of PAPs Gaps in Entitlement Framework (focus on legal compliance/ informal settlers) Lack of focus/gaps in livelihood restoration Unmitigated social conflicts Absence of social license to operate and community support Lack of compensation for physical/economic displacement 	<ul style="list-style-type: none"> Incorrect design of the OHL Line route designed without consultation with stakeholders (authorities, local communities, NGOs, etc.) 	<ul style="list-style-type: none"> Develop and implement an ESS5-compliant Resettlement Action Plan (RAP) based on the Resettlement Framework (RF) Identify actual impacts and PAPs (landowners/users, land use, valuation, etc.) Effective participation of local stakeholders and PAPs and authorities in the entire process 	RAP is to be developed at least six months before the start of the construction phase [STEG]	<ul style="list-style-type: none"> All PAPs, including informal settlers, are consulted and compensated before the commencement of construction works Absence of complaints from stakeholders and PAPs RAP adopted before construction works commencement 	Development of Resettlement Framework budgeted in TA Project Development of RAP, including LRP: \$ 90,000



Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Terrestrial biodiversity	<ul style="list-style-type: none"> Impacts on habitats/species of conservation concern (forest, shrub, wetlands, IBA/RAMSAR, flora and fauna) Disturbance and loss of natural habitats Increase of mortality for species (flora, birds, bats, and other taxa) 	<ul style="list-style-type: none"> Incorrect design of the OHL Missing information on critical habitats and vulnerable species Line route designed without any consultation with stakeholders (authorities, local communities, NGOs, etc.) 	<ul style="list-style-type: none"> Prepare a Birds and Bats Survey Methodology and validate with stakeholders prior to implementation Implement the Birds and Bats Survey in order to identify critical natural habitats/species and sites with high risk of mortality for birds and bats Conduct a monitoring survey for birds, bats and other critical species within the OHL corridor and near the existing power transmission line Definition of adequate mitigation measures for habitats/critical species Ensure that the exact position (pylons and lines) is optimal in terms of reducing collision impacts. Collisions over 4.5 km of the Lebna critical habitat area and 12 km of the Bir Drassen flyway are however highly probable To the extent possible, the line route should follow existing infrastructure whenever possible (e.g. existing roads, other lines) Final tower configuration should give priority to horizontal configuration without earth wires It is recommended to lower the height of the lines in the Lebna area. The reason for this is that the single-plane approach increases the visibility of the lines while reducing the vertical space taken up by the lines Select the most effective line markers to minimize risks of collision For the critical habitat of Lobna wetland, (4.5km), and Bir Drassen (12km), it 	<p>During design phase [Design Contractor / STEG]</p>	Monitoring	<p>Monitoring costs included in Environmental Monitoring Plan.</p> <p>Design measures and team included in project design costs</p> <p>Costs of implementing mitigation measures to be confirmed during detailed design (cost of anti-collision devices, etc.)</p>

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<p>is recommended to install a disc type valve at a regular distance of ±10m along the conductive wire, over a distance about 4.5 km for Lobna and 12 km for Bir Drassen. For the Lobna area, it is considered essential that the line marking device includes night lighting given the high risk of waterfowl collision</p> <ul style="list-style-type: none"> • Use anti-perch devices where applicable • Anti-collision devices should be as a minimum included over 12 kms crossing migratory paths and 9 km to account for birds moving across wetlands • A quantitative birds and bats collision study should be conducted during detailed design to further inform final mitigation measures and residual risks • In case the study anticipates a high residual impact, a no net loss / net gain strategy should be developed to comply with the requirements of ESS 6 			
Terrestrial biodiversity	<ul style="list-style-type: none"> • Impacts on habitats/species of conservation concern (forest, shrub, wetlands, IBA/RAMSAR, flora and fauna) • Disturbance and loss of natural habitats • Increase of mortality for species (flora, birds, bats, and other taxa) 	<ul style="list-style-type: none"> • Incorrect design of the OHL • Missing information on critical habitats and vulnerable species • Line route designed without any consultation with stakeholders (authorities, local communities, NGOs, etc.) 	<ul style="list-style-type: none"> • Biodiversity surveys that will inform a Final BMP • Preparation of the final BMP including full CHA 	Reflected in Project design and implemented prior to the commencement of civil works [Design Contractor / STEG]	Biodiversity Surveys completed Final BMP including full CHA available, reviewed, and cleared by the Bank	<ul style="list-style-type: none"> • Birds, bats and other taxa surveys in the OHL area of influence: USD 150,000 • Quantitative Collision Risk Assessment: USD 100,000 • Final BMP and full CHA: USD 50,000

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
EMF	Increase in general public exposure to EMF	Converter stations, OHL, terrestrial underground cables	Project layout definition and siting of new facilities aimed at ensuring that no direct impact on sensitive receptors occur: CS and OHL siting, cable route definition mostly on existing roads	Measure incorporated into the Project design [Design Contractor / STEG]	Monitoring	Included in project design cost
Landscape	Visual impacts and changes of landscape features	Converter station, OHL Construction works (removal of vegetation)	<ul style="list-style-type: none"> Project layout definition and siting of new facilities aimed at ensuring that no direct impact on sensitive receptors occur. Design restoration of pre-construction conditions as much as possible (e.g. re-vegetation) in temporary construction yards and construction areas 	Measure incorporated into the Project design [Design Contractor / STEG]	-	Included in project design cost
Vegetation	<ul style="list-style-type: none"> Loss of natural vegetation 	Construction works (removal of vegetation)	Design restoration of pre-construction conditions as much as possible (e.g. re-vegetation) in temporary construction yards and construction areas	Measure incorporated into the Project design [Design Contractor / STEG]	-	Included in project design cost
Soil and Groundwater	Potential soil/groundwater contamination	Accidental fuel or hazardous materials spills	Design for: <ul style="list-style-type: none"> Rainwater tank De-oiling tank Civil discharges connected to the public sewerage 	Measure incorporated into the Project design [Design Contractor / STEG]	-	Included in project design cost
Marine biological environment	<ul style="list-style-type: none"> Disturbance of benthic habitats Disturbance of pelagic environment 	<ul style="list-style-type: none"> Marine cables' landfall construction Marine cable laying in the nearshore (up to 40m depth) Marine cable laying in deep waters 	<ul style="list-style-type: none"> HDD will be used for the construction of the marine cables' landfall, avoiding direct interferences with the coastal environments and related habitats Beach areas will be restored as needed following construction Cable burying techniques will prioritize ploughing and jetting techniques Trenching techniques will be used as a last resort and only if technically needed; a technical justification will be required to adopt this technique 	Measure incorporated into the Project design [STEG]	Monitoring	Included in project cost



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Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Marine biodiversity	<ul style="list-style-type: none"> Disturbance of benthic habitats Disturbance of pelagic environment 	<ul style="list-style-type: none"> Marine cables' landfall construction Marine cable laying in the nearshore (up to 40m depth) Marine cable laying in deep waters 	<ul style="list-style-type: none"> Biodiversity surveys that will inform a Final BMP Preparation of the final BMP including full CHA 	Reflected in Project design and implemented prior to the commencement of civil works [Design Contractor / STEG]	Biodiversity Surveys completed Final BMP including full CHA available, reviewed, and cleared by the Bank	Marine Biodiversity surveys: USD 150,000 Final BMP and full CHA: USD 50,000
Marine biodiversity	<ul style="list-style-type: none"> Disturbance of benthic habitats Disturbance of pelagic environment 	Marine cables laying operations	<ul style="list-style-type: none"> Nearshore and offshore surveys as per monitoring plan to further describe benthic habitats Project route study to avoid sensitive habitats to be informed by additional biodiversity surveys 	Measure incorporated into the Project design [STEG]	Survey reports	Included in monitoring cost
Subtotal						USD 870 000

2.2 Pre-construction and construction phase

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Air quality	Increase in atmospheric concentration of Particulate Matter induced by dust diffuse emissions	<ul style="list-style-type: none"> Excavation, levelling, compacting and gravelling of the construction site, access road and construction yard; Aggregate material handling/stockpiling at the construction site, access road and construction yard; Wind action on exposed surfaces; Vehicle transit on unpaved construction areas. Land clearing activities, levelling, excavation, grading for the installation of towers' foundations and the needed access roads. 	<ul style="list-style-type: none"> Watering unpaved surfaces to reduce wheel generated dust Vehicle speed limited to 40 km/h, reduced to 15-20 km/h on the construction site, to minimize dust generated by the transit of vehicles Covering/humidifying of materials that can be transported by wind (e.g. topsoil, aggregate) where possible; this measure allow to abate by 90% dust resuspension caused by winds on active stockpiles (WRAP Fugitive Dust Handbook). All stockpile materials with high risk to produce airborne dust will be covered, in particular during windy periods. 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<ul style="list-style-type: none"> Monitoring Inspections by the Contractor of access roads and construction sites for excessive nuisance due to dust. Contractor shall maintain records of complaints on dust, and follow-up with corrective measures 	\$ 1,500 x 40 months = \$ 60,000
	Increase in atmospheric concentration of macro pollutants (primarily NOx and CO) induced by vehicles and machinery exhaust emissions	<ul style="list-style-type: none"> Heavy equipment (e.g. bulldozers, graders, rollers,) and engine-driven machinery (e.g. drilling machines, pumps etc.) involved in the construction activities; Exhaust emissions from light and heavy-duty vehicles travelling to and from the construction sites (induced traffic emissions). 	<ul style="list-style-type: none"> Use of best available technologies for equipment and machinery; Regular maintenance and inspection of machinery performed in accordance with manufacturer instructions; Vehicles and machinery will be turned off when not in use 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<ul style="list-style-type: none"> Monitoring Inspections by the Contractor of all equipment and machinery used during construction. Contractor shall maintain records of complaints on air quality, and follow-up with corrective measures 	Included in the construction contract
Noise	Increase in background noise levels due to construction equipment and machinery	Use of heavy equipment and machinery during civil works	<ul style="list-style-type: none"> Switch off equipment when not in use; Limit noise activities to the least noise –sensitive time of the day; Location of noise equipment as far as practicable from nearby receptors Regular maintenance of equipment and machinery in order to ensure noise emissions in accordance with technical specifications All major construction plant and equipment will comply with international noise emission limits Transportation activities and the delivery of construction materials during working hours Notify local community/public located within 500 m from the worksites before starting noise activities (residents must be informed at least 24 hours in advance) 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<ul style="list-style-type: none"> Inspections by the Contractor of construction areas for excessive noise nuisance. Contractor shall maintain records of complaints on noise and follow-up with corrective measures Noise level within standard fixed by local authority and by International Standards Maintenance logbook of vehicle and machinery 	Included in the construction contract

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<ul style="list-style-type: none"> Vehicle movements shall be limited to a speed limit of 30 km/h 			
Geology, geomorphology and soil	<ul style="list-style-type: none"> Potential soil and subsoil contamination 	<ul style="list-style-type: none"> Leaks from the use of construction machinery and storage of fuel refueling activities Discharge of wastewater Inadequate management of solid waste Accidental spills of hazardous and non-hazardous material Drilling fluids (bentonite sludge) and cuttings associated to HDD operation Excavation activities Inadequate management of excavated materials 	<ul style="list-style-type: none"> Operational procedure to prevent and manage potential soil and subsoil contamination Excavated soil management procedures Providing emergency response kits Use the best available technologies for the equipment and machineries Periodic maintenance of the equipment Contaminated soil should be stripped and stored on suitable impermeable surfaces Waste management procedure (segregation of hazardous and non-hazardous waste; Implement a construction equipment/material inventory management system; Ensure regular surveillance of any spillage on nearby proprieties: land filling must be restricted within the boundary of project's activities (HDD site, CS area and locations of towers foundations) Drilling and drilling mud management procedures 	<ul style="list-style-type: none"> Development prior to, and implementation during, construction phase Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Inspections by the Contractor Hazardous materials management plans approved by STEG prior to initiation of Construction phase. Soil surface/volume contaminated (target=0) Rate of treated contaminated soil (target=100% of stripped and stored volume) 	\$ 5,000
	<ul style="list-style-type: none"> Overconsumption of materials 	<ul style="list-style-type: none"> Anarchic exploitation of quarries and deposits of materials 	<ul style="list-style-type: none"> Materials will be sourced only from government approved quarries The Contractor will prepare an ESMP for the management enclosure of quarries 	<ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Government permit issue to STEG and the Contractor 	Part of the contract
	<ul style="list-style-type: none"> Potential soil disturbance and degradation 	<ul style="list-style-type: none"> Land clearing and vegetation removal in worksites and under the line corridor Machinery operations and movement of vehicles during the construction Excavation activities 	<ul style="list-style-type: none"> Excavated topsoil will be stored in a dedicated topsoil storage site When construction work is over, topsoil will be reinstated at the construction site. Excavations with appropriate slopes to keep the excavation face safe. Temporary construction yards will be restored Restoration of compacted soils by tilling. Conduct specific survey on the OHL corridor to avoid areas with high risk of erosion/landslide Anti-erosion actions (corrective measures) on areas affected by erosion. 	<ul style="list-style-type: none"> Development prior to, and implementation during, construction phase Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Soil surface affected (compacted, eroded) Topsoil stored and brought back to its original site Rate of treated compacted soil Excess spoil and soil covered with topsoil and revegetated Number of operations on eroded areas 	\$ 20,000

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
	<ul style="list-style-type: none"> Land take 	<ul style="list-style-type: none"> Construction yards Construction of access roads Temporary worksites Land clearing and excavation activities 	<ul style="list-style-type: none"> Preliminary assessment of construction sites to be used by the Contractor Optimization/reducing of construction site number (i.e using the Mlaâbi site as a construction site) Adequate site restoration after construction activities are completed 	<ul style="list-style-type: none"> Development prior to, and implementation during, construction phase Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Number of used construction sites 	\$ 30,000
Freshwater Resources (Surface and Groundwater)	<ul style="list-style-type: none"> Potential groundwater contamination Alteration of groundwater 	<ul style="list-style-type: none"> Leaks from the use of construction machinery and storage of fuel Refueling activities Discharge of wastewater Inadequate management of solid waste Accidental spills of hazardous and non-hazardous material Drilling fluids (bentonite sludge) and cuttings associated to HDD operation Excavation activities Inadequate management of excavated materials 	<ul style="list-style-type: none"> Operational procedure to prevent and manage potential soil and subsoil contamination: <ul style="list-style-type: none"> Waste management procedures Excavated soil management procedures Drilling and drilling mud management procedures Providing emergency response kits Use the best available technologies for the equipment and machineries Periodic maintenance of the equipment Contaminated soil should be stripped and stored on suitable impermeable surfaces Ensure regular surveillance of any spillage on nearby proprieties: land filling must be restricted within the boundary of project's activities (HDD site, CS area and locations of towers foundations) Preliminary assessment of construction sites to be used by the Contractor (minimum distance to keep from watercourses and reservoirs) 	<ul style="list-style-type: none"> Development prior to, and implementation during, construction phase Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Inspections by the Contractor Hazardous materials management plans approved by STEG prior to initiation of Construction phase. No pollution detected All contaminated materials adequately stored No complaints from stakeholders (local communities, NGOs and authorities) 	\$ 5,000
	<ul style="list-style-type: none"> Lowering of groundwater level Lack of water for the other users 	<ul style="list-style-type: none"> Overconsumption of water for construction 	<ul style="list-style-type: none"> To mitigate the impacts on other water user groups and groundwater pollution, the Contractor will prepare an ESMP that we also ensure efficiency in the use of water for construction. Specifically, water that be used for construction will be extracted from surface water only 	<ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Quantities of water extracted from surface water bodies 	Part of the contract
Biodiversity – Terrestrial section	<ul style="list-style-type: none"> Loss of natural vegetation and disturbance and loss of natural habitats (habitat fragmentation) Disturbance and loss of fauna Introduction of invasive species 	<ul style="list-style-type: none"> Corridor vegetation cutting and clearing for the installation of towers and OHL Filling, levelling and grading of land Towers construction: tower foundations, tower assembly and erection, attachment of the conductors and improvement of access roads. 	<ul style="list-style-type: none"> Prior to the construction phase, a Construction BMP will be prepared to identify the distribution of species (fauna and flora) with conservation concern within the OHL corridor in line with the draft BMP 	<ul style="list-style-type: none"> Development prior to, and implementation during, construction phase Development: Construction Contractor 	<ul style="list-style-type: none"> Compliance with BAP guidelines Area of vegetation lost/disturbed Number of complaints from stakeholders (local authorities, AAO, ATVS) 	BMP: \$ 30,000 Flora/fauna inventory included in Environmental and Social

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
	<ul style="list-style-type: none"> Impact on ecosystem service (species with high value and providing services for local community or for carbon sequestration/regulation of water flow/erosion prevention and maintenance) Lighting and Biodiversity: The issue of artificial light from vehicles, machines and light bulbs at camps raises a potential biodiversity issue in terms of migratory birds and bats. Artificial lighting is known to present a risk to bat foraging success and calls for a lighting strategy and use of suitable (eg. yellow band with lighting, avoidance of UV lighting). Similar considerations may apply to the sub-stations and their operation. 	<ul style="list-style-type: none"> Earth movement, aggregate material handling, excavation, mechanical works and vehicle movements Use of engine driven vehicles and machinery (i.e. excavators, bulldozers, side booms, trucks, cars): injuring and crushing plants within the corridor Construction yards Construction of access roads 	<ul style="list-style-type: none"> The Contractor must integrate the results/recommendations of the BMP to ensure the protection of natural habitats and species Consult with the competent authorities (Ministry of Agriculture and Forest Department DGF, APAL) prior to any vegetation removal and clearing) to obtain needed permits, as applicable Undertake an additional flora/fauna inventory during wet season to verify if there are any protected species within the project's area, in particular for "<i>Leopoldia maritima</i>" (considered as vulnerable VU by IUCN) and the "<i>Thorectes puncticollis</i>" (considered as EN by IUCN) around the HDD construction sites Provide training for workers on biodiversity value and need to avoid any disturbing or destroying flora and fauna Conserve the connectivity and integrity of existing natural water channels to reduce impact of vegetation removal on herpetofauna, invertebrates and other speices Avoid construction activities during breeding/nesting season in forested areas and near IBA/RAMSAR sites Avoid complete clearing of the RoW and protect trees located adjacent to the construction sites Demarcate the boundaries of construction areas (CS, towers, HDD, HVDC, access roads) and vegetation disturbance will be limited to within the boundaries and train workers to remain within demarcated construction sites Vehicle movements shall be limited to a speed limit of 20 km/h in forest areas and near wetlands sites Integrate natural topographical features into the project construction plans to conserve the natural topography of the construction areas Use existing roads as far of possible to reach the construction sites and restrict movement of construction 	<ul style="list-style-type: none"> Approval and control: STEG <p>Monitoring activities:</p> <ul style="list-style-type: none"> Development: Monitoring Contractor Approval and control: STEG 		<p>Monitoring Plan costs</p> <p>Lighting strategy: \$ 5,000</p>



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Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<p>vehicles (heavy machines) strictly to pre-designated routes</p> <ul style="list-style-type: none"> • Ensure an adequate management of spoil and soil to prevent any damage outside the construction areas • Offset the loss of any natural vegetation removed along RoW of the OHL and near the CS and along the access roads used during construction phase • At the end of construction, all disturbed areas and used roads must be restored • Reduce external soil supply (from other regions) to avoid any introduction of invasive species • Avoid night time activities in natural habitats • Noise mitigation/management measures (see above) • Limiting of vehicles speed, preventing possible wildlife-vehicles collisions 			
Biodiversity Avifauna	– Habitat (breeding and nesting) alteration and disturbance	<ul style="list-style-type: none"> • Removal of vegetation, trampling and clearing of RoW of the OHL line. These activities will lead to the alteration of natural habitat used by birds for feeding and roosting. • Removal of trees and shrubs • Construction of tower foundations • Dust and waste generated by heavy machines and vehicles • Noise generation due to the operation of vehicle and machinery • Potential oil/fuel spill 	<ul style="list-style-type: none"> • Monitoring of bird mortality (collision and electrocution): conduct a field survey of bird mortality on the existing power transmission lines in Cap Bon region to identify areas with high risk for birds. This survey will help the Contractor to optimize the design of OHL line and avoid passing through these high-risk areas. A qualified ornithologist will be involved with the design team. The monitoring should cover all the area to be crossed by the OHL line and around the existing power transmission lines, it will also allow to: <ul style="list-style-type: none"> ➢ Identification of priority sites (IBA and RAMSAR sites near the OHL corridor and used by birds) and avifauna species, such as <i>Neophron percnopterus</i> (Egyptian vulture, EN), <i>Falco cherrug</i> (Saker Falcon, EN), <i>Falco vespertinus</i> (Red-footed Falcon, VU) and other considered highly vulnerable due to the risks of collision and electrocution due to the presence of power transmission lines. Other bird 	<p>Development prior to construction phase</p> <ul style="list-style-type: none"> • Development: Monitoring Contractor • Approval and control: STEG 	<ul style="list-style-type: none"> • Compliance with BAP guidelines • All disturbed areas are completely repaired 	<p>Survey: \$ 15,000</p> <p>Monitoring costs included in Environmental and Social Monitoring Plan costs</p>

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<p>species are likely to have their feeding and/or nesting sites disturbed due to construction activities, such as <i>Oxyura leucocephala</i> (White-headed Duck, EN), <i>Marmaronetta angustirostris</i> (Marbled Teal, VU) and other water birds.</p> <ul style="list-style-type: none"> ➢ Awareness and training plans for workers with the participation of DGF department and AAO (NGO) ➢ Implementation of monitoring activities during construction works • Consult stakeholders and local community to collect information on bird incidents or hits and areas with high risk of mortality should be identified • Before establishing the final design of the OHL, bird-use areas (breeding, nesting, etc) should be reported to guide appropriate routing of the OHL and its roads access • Clearance of vegetation should be minimized, in particular for OHL sections crossing areas occupied by forest and shrub (nera Beni Ayech, between Grombalia and Jebel Ressas) • Keep existing vegetation in the RoW as floral species present in the region will never reach the conductor • The Contractor should integrate bat protection during the design of the OHL ligne and towers should be placed away from wetlands and any water points • Waste management procedure to avoid/reduce any waste accumulation on construction site • Switching off engines not in use to reduce noise duration and intensity 			
Biodiversity - Bats	<ul style="list-style-type: none"> • Habitat alteration and disturbance • Loss of habitat for bats 	<ul style="list-style-type: none"> • Removal of vegetation, trampling and clearing of RoW of the OHL line. These activities will lead to the alteration of natural habitat used by bats for feeding and roosting. • Removal of trees and shrubs used by foliage roosting bats. • Construction of tower foundations 	<ul style="list-style-type: none"> • Assessing potential species that may be present on the RoW of the OHL line (field survey) to verify the absence of some bat species along the construction areas, such as <i>Myotis capaccinii</i> (VU), <i>Miniopterus schreibersii</i> (VU), <i>Rhinolophus blasii</i> (LC), etc. (in particular near mountain 	<p>Development prior to, and implementation during, construction phase</p> <ul style="list-style-type: none"> • Development: STEG • Approval and control: STEG 	<ul style="list-style-type: none"> • Compliance with BAP guidelines • All disturbed areas are completely repaired 	<p>Flora/fauna inventory included in Environmental and Social Monitoring Plan costs</p>

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
		<ul style="list-style-type: none"> Dust and waste generated by heavy machines and vehicles Noise generation due to the operation of vehicle and machinery Potential oil/fuel spill 	<ul style="list-style-type: none"> areas Beni Ayech, Djebel Ressas and Zaghouane) Use of existing roads as far as possible to reduce any disturbance for bat habitats by vegetation removal Clearance of vegetation should be minimized, in particular for OHL sections crossing areas occupied by forest and shrub (nera Beni Ayech, between Grombalia and Jebel Ressas) Given the small foundation footprint of towers, minimize the length/volume of woody vegetation clearance Keep existing vegetation in the RoW as floral species present in the region will never reach the conductor The Contractor should integrate bat protection during the design of the OHL line and towers should be placed away from wetlands and any water points Waste management procedure to avoid/reduce any waste accumulation on construction site Switching off engines not in use to reduce noise duration and intensity 			All other costs included in project costs.
Landscape	<ul style="list-style-type: none"> Visual disturbance and physical changes of the landscape features due to the construction sites and activities 	<ul style="list-style-type: none"> Land clearance and removal of existing vegetation Earthmoving, levelling, excavation and back-filling activities Land clearing activities, levelling, excavation, grading for the installation of towers' foundations and the needed access roads Vehicle transit and transportation activities Temporary presence of active worksites with storage of materials and equipment 	<ul style="list-style-type: none"> Rehabilitate disturbed areas around construction sites in order to restrict extended periods of exposed soil Restore temporary worksites immediately after construction (e.g. once construction operations of a tower are completed and before moving on to the next tower the previous tower construction site should be restored and all generated materials and waste removed). Maintain construction sites in orderly condition and do not distribute material over many sites before usage Planting of screening trees around Converter Station areas 	Development prior to, and implementation during, construction phase <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Inspections by the Contractor All affected areas are restored after construction activities No complaints from stakeholders (local communities, NGOs and authorities) 	\$ 30,000
Marine biodiversity - General	<ul style="list-style-type: none"> Displacement of species Removal of benthic species 	<ul style="list-style-type: none"> Seabed disturbance Potential contaminant release from sediment Underwater noise and disturbance from vessel and installation activity 	<ul style="list-style-type: none"> Use HDD for the construction of the marine cables' landfall, avoiding direct interferences with the coastal environments and related habitats Cable burying techniques will prioritize ploughing and jetting techniques 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<ul style="list-style-type: none"> Approval of STEG on cable route Approval of STEG on cable laying techniques to be used 	Included in the construction contract

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<ul style="list-style-type: none"> Trenching techniques will be used as a last resort and only if technically needed; a technical justification will be required to adopt this technique Plan works to avoid periods of migration of sensitive species Reduce residence time of vessels and related equipment in marine waters 		<ul style="list-style-type: none"> Approval of STEG on action plan presented by contractor Number of inspections carried out by STEG on the implementation of the action plan Average residence time of vessels and related equipment in marine waters kept to a minimum 	
Marine biodiversity - <i>Posidonia oceanica</i> and <i>Cymodocea nodosa</i>	<ul style="list-style-type: none"> Uprooting Increased sedimentation Establishment of <i>Caulerpa sp.</i> in <i>P. Oceanica</i> habitats (Kelibia, Tunisia) 	<ul style="list-style-type: none"> Seabed disturbance 	<ul style="list-style-type: none"> Use HDD for the construction of the marine cables' landfall, avoiding direct interferences with the coastal environments and related habitats Cable burying techniques will prioritize ploughing and jetting techniques Trenching techniques will be used as a last resort and only if technically needed; a technical justification will be required to adopt this technique. Plan works to avoid growth period of <i>Caulerpa sp.</i> (Kelibia, Tunisia) 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<ul style="list-style-type: none"> Seagrass surface area affected Real-time turbidity measurements Density of <i>Caulerpa sp.</i> (Kelibia, Tunisia) 	Included in the construction contract
Marine biodiversity - Actinopterygii and Chondrichthyes	<ul style="list-style-type: none"> Increased turbidity Suspension of contaminants Alteration of sediments Displacement of species due to noise and overall disturbance during cable laying activities 	<ul style="list-style-type: none"> Seabed disturbance Vessel and installation machinery 	<ul style="list-style-type: none"> Use HDD for the construction of the marine cables' landfall, avoiding direct interferences with the coastal environments and related habitats Cable burying techniques will prioritize ploughing and jetting techniques Trenching techniques will be used as a last resort and only if technically needed; a technical justification will be required to adopt this technique. Plan works to avoid periods of migration of sensitive species Reduce residence time of vessels and related equipment in marine waters 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<ul style="list-style-type: none"> Real-time turbidity measurements Real-time measurement of contamination in the water column Real-time measurement of increases of temperature Average residence time of vessels and related equipment in marine waters kept to a minimum 	Included in the construction contract
Marine biodiversity - Aves	<ul style="list-style-type: none"> Avoidance of area of works 	<ul style="list-style-type: none"> Noise generated by vessels Noise generated by marine cable installation operations 	<ul style="list-style-type: none"> Reduce residence time of vessels and related equipment in marine waters 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<ul style="list-style-type: none"> Average residence time of vessels and related equipment in marine waters kept to a minimum 	Included in the construction contract
Marine biodiversity - Bivalvia and Anthozoa	<ul style="list-style-type: none"> Increased turbidity Suspension of contaminants Alteration of sediments 	<ul style="list-style-type: none"> Seabed disturbance 	<ul style="list-style-type: none"> Use HDD for the construction of the marine cables' landfall, avoiding direct interferences with the coastal environments and related habitats 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor 	<ul style="list-style-type: none"> Real-time turbidity measurements 	Included in the construction contract

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
	<ul style="list-style-type: none"> Dislodging of species in the cable burial site 		<ul style="list-style-type: none"> Cable burying techniques will prioritize ploughing and jetting techniques Trenching techniques will be used as a last resort and only if technically needed; a technical justification will be required to adopt this technique. 	<ul style="list-style-type: none"> Control: STEG 	<ul style="list-style-type: none"> Real-time measurement of contamination in the water column Real-time measurement of increases of temperature Number of species dislodged in the cable burial site 	
Marine biodiversity - Reptilia	<ul style="list-style-type: none"> Increased turbidity Avoidance of area of works Accidental collision with cable laying vessels 	<ul style="list-style-type: none"> Seabed disturbance Underwater noise and disturbance from vessel and installation activity 	<ul style="list-style-type: none"> Observers on board of ship Use the ploughing technique on the remaining route for cable laying in deep waters therefore minimizing sediment disturbance and suspension. Reduce residence time of vessels and related equipment in marine waters 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<ul style="list-style-type: none"> Hiring of MMO Real-time turbidity measurements Average residence time of vessels and related equipment in marine waters kept to a minimum 	\$ 2,000 x 4,5 months = 9,000 USD
Marine biodiversity - Mammalia (Cetaceans)	<ul style="list-style-type: none"> Avoidance of area of works Accidental collision with cable laying vessels 	<ul style="list-style-type: none"> Underwater noise and disturbance from vessel and installation activity 	<ul style="list-style-type: none"> MMOs during construction Reduce residence time of vessels and related equipment in marine waters 	Throughout construction phase <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<ul style="list-style-type: none"> Hiring of MMO Average residence time of vessels and related equipment in marine waters kept to a minimum 	\$ 2,000 x 4,5 months = 9000 USD
Land Acquisition, Restrictions to Land Use and Involuntary Resettlement	<ul style="list-style-type: none"> Permanent impacts related to the OHL, linked to the (i) economic displacement of farmers within the RoW of the OHL (with or without legal compliance such as farmers on state-owned land), due to loss of agricultural land for the bases of the pylons and/or restriction of access to farming; (ii) restriction of access to use of land below the OHL for construction purposes (aerial easements). Potential permanent impacts related to the converter station and substation sites: <ul style="list-style-type: none"> - <u>CS Mlaabi</u>: Potential economic impacts on the workers (max. 5-6 workers) of the private agricultural company (Errouki), currently conducting fodder cultivation and cattle raising. - <u>Grombalia Substation</u>: This substation will be the subject of a specific ESIA and part of the project components covered by the RAP prepared and 	<ul style="list-style-type: none"> Corridor vegetation cutting and clearing for the installation of towers (OHL) Earth movements Construction yards Construction of access roads Exclusion/safety zone along RoW 	<ul style="list-style-type: none"> Clearance and vegetation removal activities are to be restricted to the minimum area Full implementation of the RAP before the commencement of civil works Monitoring and updating the RAP/LRP: socio-economic baseline that screens and identifies PAPs, additional assistance for severely affected persons/ vulnerable groups, compensation at replacement value, reinstatement after construction etc. The borrower to ensure full compensation is paid to PAPs in compliance with the RF and RAP before the commencement of civil works. 	Development before, and implementation during construction phase <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG	<ul style="list-style-type: none"> All PAPs fully compensated Absence of non-compliance reports Number of complaints received from stakeholders Number of public grievances 	Included in the cost budgeted in the Resettlement Framework and to be updated in the RAP

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
	<p>implemented before the commencement of works.</p> <ul style="list-style-type: none"> Temporary losses/agricultural damage: linked to access to the bases of the pylons, installation of the pylons and the pulling of the cables. This will cause a loss of mainly agricultural and less important commercial sources of income. Impacts on structures are limited but possible but not identified at this stage. 					
Archaeological and cultural heritage	<ul style="list-style-type: none"> Potential disturbance or destruction of archaeological sites and/or objects. 	Civil works in general: site preparation, excavations and earthworks	<ul style="list-style-type: none"> Develop and implement a chance find procedure. Training of workers about the value of historical and cultural heritage For the OHL consult with INP experts before choosing the final location of towers and access roads. 	<p>Development prior to, and implementation during, construction phase</p> <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Disturbance of archaeological sites and/or objects. Number of complaints received from stakeholders (authorities and civil society) 	\$ 10,000
Community health and safety	<ul style="list-style-type: none"> Risk of accidents and physical injuries involving residents from increased road traffic Trespass by unauthorized persons into construction work areas with consequent risk of accidents / injury and/or loss of livestock (e.g. local herders) 	<ul style="list-style-type: none"> Construction activities Worksites 	<ul style="list-style-type: none"> Require all Contractors and Subcontractors to comply with relevant STEG's health and safety requirements Prepare and implement an ESS2 and ESS4-compliant Community Health and Safety Plan Prepare and implement a Traffic and Transport Plan prior to the start of any transport activity to ensure that the transport process is properly and adequately managed Ensure that work sites are fenced off and that signs are posted around work faces and construction sites to inform people of the risks associated with trespassing Fluorescent strips to delimit other areas of the construction site prohibited to the public Installation of panels indicating and informing local population about the progress of the work Undertake a program of stakeholder engagement and consultation to raise awareness among local communities of the risks of trespassing on sites, the meaning of signs and the dangers of playing on or near equipment or entering fenced areas 	<p>Development prior to and implementation during, construction phase</p> <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Community Health and Safety Plan approved by STEG before starting of works Training records Records of accidents Records of complaints 	Community Health and Safety Plan: \$ 70,000

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
	<ul style="list-style-type: none"> Increased stress-related disturbances (noise, dust, light, and air pollution). 	<ul style="list-style-type: none"> Construction activities Transportation and traffic 	<ul style="list-style-type: none"> Notify landowners along the line route about the construction schedule and activities. 		<ul style="list-style-type: none"> Community Health and Safety Plan approved by STEG before starting of works Training records Records of work accidents 	
	<ul style="list-style-type: none"> Potential health risks due to limitations to access local healthcare facilities. 	<ul style="list-style-type: none"> Presence of the construction workforce The provision of health care for the workforce (both primary and secondary, i.e. hospital care) has the potential to affect access to health care for communities (due to competition for resources) with the potential for worsening health outcomes Low quality of the local public transportation services and limited healthcare facilities. 	<ul style="list-style-type: none"> Emergency Response Plan (ERP), taking into account access to health care, major incidences, multiple casualty events and pandemics. 		<ul style="list-style-type: none"> Distributional accident data Grievances related to community health and safety in grievance log reports Number of Education and Awareness trainings on safety risks of entering construction areas (for both workers and local communities) Capacity/need assessment of equipment and personnel of hospitals and emergency health facilities. Number of interactions, agreements entered with suitable healthcare facilities. 	
	<ul style="list-style-type: none"> Sexual Exploitation and Abuse/sexual harassment (SEA-SH) of seasonal workers and migrants 	<ul style="list-style-type: none"> Presence of Project workforce from outside the Project area 	<ul style="list-style-type: none"> Develop and implement a Code of Conduct for Project Workers throughout the Supply Chain; Implement the SEA-SH Action Plan Development of training and awareness-raising activities on SEA-SH; Development of grievance mechanism for seasonal workers and migrants Prepare a Supply Chain Management Plan and ensure that contractors implement it Take all necessary precautions and make proactive and thorough investigations to ensure the origin and sourcing of equipment, components, materials and other supplies used in the construction of the converter stations, the underground line and the OHL so that they are not manufactured and supplied by firms (or subcontractors) 		<ul style="list-style-type: none"> Contractors complying with STEG's code of conduct; Number of awareness-raising activities; Number of workers participating to awareness-raising activities; Number of allegations or complaints from grievance mechanism. 	

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<p>that do not comply with the policies and standards of the donors</p> <ul style="list-style-type: none"> • Categorically prohibit and ban (i) the abusive employment of children or vulnerable persons and (ii) the practice of forced labor, human trafficking and slavery in line with the LMP 			
<p>Labor influx</p>	<ul style="list-style-type: none"> • The influx of project workers (and/or in-migration of opportunists) could lead to impacts on the health, safety and security of the community, such as risky diseases, inappropriate conduct, as well as SEA-SH risks for women form the local communities. • There are H&S and social risks related to worker accommodation / worker camps for project workers, including labor influx and in-migration • Pressure on local infrastructure (e.g housing, health) from influx of project workers, including inflation in the cost of housing and food 	<ul style="list-style-type: none"> • Influx of project workers • Arrival of opportunistic In-migrants 	<ul style="list-style-type: none"> • Prepare and implement an Influx Management Plan in accordance with the World Bank Good Practice Note - "Assessing the Risk of Adverse Impacts on Communities from Project-related Labor Influx, June 2021" • Monitor for influx and associated impacts (e.g. inflation, social conflict) in accordance with the Influx Management Plan • Carry out culturally appropriate engagement with local communities to raise awareness of SEA-SH risks, including via separate women-only engagement forums • Establish, communicate and implement a Project Hiring Policy, maximizing local employment to minimize the risk of uncontrolled influx / in-migration and ensure that contractors abide by this policy • To address the risk of an increase in prostitution and teenage pregnancies, • carry out regular awareness-raising in the local communities of the project • Contractor to induce workers to the Code of Conduct and strictly enforce the Code of Conduct to prevent unwanted behavior • Carry out regular training of contract workers on key social risks and issues, including SEA-SH • Prohibit access by unauthorized personnel into the worker camps and work areas • Carry out periodic sensitization forums for employees on ethics, morals, general good behavior and the need for the project to co-exist with the neighbors, in line with the Project Code of Conduct 	<p>Development prior to, and implementation during, construction phase</p> <ul style="list-style-type: none"> • Implementation: STEG (direct workers); Contractor (contracted workers); • Primary Suppliers (primary supply workers) • Control: STEG 	<ul style="list-style-type: none"> • Demographic change in local communities • Incidence of STDs and teenage pregnancies • Incidence of crime • Number of grievances • Incidence of social issues (eg SEA-SH, crime) • Monitoring cost of basic goods and services 	<p>Influx Management Plan: \$ 70,000</p>



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Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<ul style="list-style-type: none"> Establish a Project Accommodation Strategy and determine whether a camp-based or a distributed (community-based) accommodation approach will be followed Engage with the communities on whether camp or distributed accommodation approach is preferable. If a camp-based strategy is followed, engage with the communities on the best siting for the camps If a camp-based strategy is adopted, prepare and implement a Worker Accommodation Plan in accordance with the applicable content of the IFC/EBRD publication entitled: "Workers' accommodation: processes and standards - A guidance note (2010) Inform all non-local temporary workers of the duration of contract and the expectation that they will leave the area when contract expires 			
Occupational Health and Safety (OHS)	<ul style="list-style-type: none"> Working on construction sites involves generic H&S risks for workers, as it increases the risk of injury or death from accidents Discrimination and sexual violence or harassment within workers Risks of exposure to chemicals and electromagnetic fields 	<ul style="list-style-type: none"> Inadequate H&S risks assessment and prevention; Inadequate maintenance of tools and machinery; Inadequate PPE or incorrect use of PPE; Workers' potential misconduct and discriminatory/discriminating behavior; Lack of skills/experience of workers. 	<ul style="list-style-type: none"> Prepare an ESS2-compliant Occupational Health and Safety Plan (OHSP), and ensure contractors adopt and implement the provisions of the OHSP Prepare an Emergency Preparedness and Response Plan that takes into account a series of organizational, operational and preventive measures in case of an emergency Require all Contractors and Subcontractors to comply with relevant STEG's health and safety requirements. Deliver OHS trainings to direct and indirect workers; Implement trainings or awareness-raising activities on human rights and discrimination; Monitor discrimination, sexual violence or harassment within the SC; Use machinery and tools compliant with national standards; Regularly maintain Project machinery and tools; 	<p>Development prior to, and implementation during, construction phase</p> <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Submission of OHS Plan Submission of Emergency Preparedness and Response Plan Number of workers attending OHS training; Hours of OHS training/worker Rate of contractors' compliance with STEG's OHS procedures; Number of trainings or awareness activities on human rights and discrimination; Number of complaints regarding discrimination and sexual harassment within SC; Number of trainings on pesticides hygiene; Number of injuries at work; Number of injuries with absence; Number of casualties; 	OHS Plan: \$ 65,000



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Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<ul style="list-style-type: none"> • Only allow trained or supervised workers to operate the machinery and tools; • Provide workers involved in the development or expansion of the conversion station with certified PPE; • Only allow workers with experience or technical skills to perform activities on electrical systems or cables; • Appoint supervisors monitoring the compliance with OHS procedures during activities on electrical systems or cables; • Before starting excavation activities, carefully map the position of other underground service cables; • Implement an Electromagnetic Fields Safety Program; • Provide workers with personal exposure monitoring equipment and shielding materials; • Train workers on hygiene practices concerning pesticides and provide adequate PPE; • Analyze PCB levels around the existing conversion station and provide adequate PPE. • Prepare a Framework H&S Plan for Workers and Communities • Require Contractors to prepare a H&S Plan for Workers and Impacted Communities that meets the requirements of the STEG Plan and addresses issues including: • Implement measures to prevent the spread of HIV/AIDS (e.g. through the provision of free condoms to workers), and other communicable diseases such as Covid-19 • Ensure compliance with ESS2 and Tunisian OHS legislation • Carry out periodic sensitization forums for employees on ethics, morals, general good behaviors and the need for the project to co-exist with the neighbors • Adopt a Project Code of Conduct that covers key issues such as SEA-SH and related issues 		<ul style="list-style-type: none"> • Number of tools/machineries that have been maintained in the last three months; • Number of workers provided with PPE adequate to their tasks; • Number of OHS supervisors; • PCB levels around conversion stations; • Power of electromagnetic fields in work areas. 	



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Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<ul style="list-style-type: none"> • Equipment of the camps with sanitary facilities, septic tank, bins, dumpsters, etc. • Installation in the camps of a rest area and a canteen equipped to be able to heat up food; • Development of awareness-raising activities on sexual harassment for workers along SC 			
Employment, Income and LWC	<ul style="list-style-type: none"> • Unfair working conditions (including unfair treatment, discrimination, including gender-based discrimination (e.g. unequal pay, SEA-SH), discrimination against vulnerable workers, child and forced labor, non-observance of basic rights such as freedom of association and collective bargaining) • Corruption, lack of ethics and integrity, on the part off contractors and primary suppliers • Unrealized opportunities for local employment (e.g. failure to give priority for unskilled work to local community members) • Unrealized opportunities to train local workers (e.g. key vocational skills, good OHS practices) • Failure to provide local communities with timely information on work opportunities and requirements 	<ul style="list-style-type: none"> • Use of contractors and primary suppliers (workers engaged through third parties) • High unemployment rate and skills gap in the local project areas • Prevalence of irregular employment and unfair terms of employment in the Project's Area of Influence 	<ul style="list-style-type: none"> • Adopt a Human Resources Plan, in line with the Project Hiring Policy • Staff grievance policies and mechanisms for complaints about unfair treatment, unfair working conditions or sexual harassment • Implementation of the Labor management procedure (LMP) and contractor LMPs (C-LMP) (Contractors and Primary Suppliers) • Implement the Code of Conduct • The Project contractor will develop and implement a transparent recruitment process and communicate the same through the project area via leaders and via the CLOs to manage expectations and opportunistic influx • Priority for unskilled employment will be given to the local community to minimize in-migration • Maximize local employment opportunities and provide training and upskilling 	Throughout construction phase <ul style="list-style-type: none"> • Implementation: STEG (direct workers); Contractor (contracted workers); • Primary Suppliers (primary supply workers) • Control: STEG 	<ul style="list-style-type: none"> • Number and reports of STEG's activities related to pre-engagement, background screening and ongoing due diligence of construction contractors and primary suppliers, including evidence of labor-related remediation. • Number of individual contracts of employment issued in accordance with national law's and WB's ESF requirements • Number of toolboxes talks on labor law issues and the number of grievance mechanism during construction. • Number of complaints filed in the grievance mechanism regarding discrimination, sexual harassment or working conditions; • Number of awareness-raising activities regarding sexual harassment; • Number of workers participating to awareness-raising activities. • Number of individual training registers • Grievances related to fishing activities in grievance log reports 	\$ 65,000



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Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Infrastructures and Public Services	<ul style="list-style-type: none"> Increased traffic and disturbance of traffic flow Possible damage to infrastructure during construction activities; Temporary limitation in access to health facilities; Increased pressure and potential disruption to local utilities for households reliant on local services (e.g., electricity, water, waste); Temporary disruptions to local utilities. 	<ul style="list-style-type: none"> Worksites in general (CS, OHL, terrestrial cables); HVDC underground cables route along existing roads; Establishment of temporary, construction-associated facilities Unreliable water supply, inadequate waste separation and treatment facilities and high rates of waste production in the Project's footprint.; Maintenance of underground cables. 	<ul style="list-style-type: none"> Adopt and implement a Corporate Social Responsibility (CSR) policy, with specific commitment to avoid, minimize, mitigate, offset and/or compensate all Project's potential adverse impacts on Infrastructures, Utilities and Services. Implement the Project Stakeholder Engagement Plan Waste management plan Grievance Policy and Procedure Prepare and implement a Transport and traffic management plan Notify landowners along the line route about the construction schedule and activities Geophysical survey to ascertain the presence of utilities services along terrestrial cable Engagement with utilities with underground cables or pipes along STEG's cables lines; Development of grievance mechanism regarding disruption to utilities caused by Project activities 	<ul style="list-style-type: none"> Development prior to, and implementation during, construction phase Development: STEG and Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Transport and traffic management plan approved by STEG before starting of works Number of focused consultations with specific stakeholders whose livelihood activities are located close to construction activities Reinstatement (km) of roads damaged as a result of the movement of project vehicles or construction activities Capacity assessment of local utilities companies before construction phase Number of consultations with utilities companies Grievances related to infrastructures and public services in grievance log reports 	\$ 55,000
Subtotal						USD 553 000

2.3 Operation phase

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Geology, geomorphology and soil	Potential soil and subsoil contamination in the converter station area	<ul style="list-style-type: none"> Equipment and maintenance activities in the CS area Accidental spillage of transformer oil from CS site Surface runoff from spillage site Maintenance equipment Inadequate management of waste 	<ul style="list-style-type: none"> Waste management procedures Maintenance protocols Providing emergency response kits Site specific Emergency Response Plan prepared for soil clean-up and decontamination Presence of a rainwater management system at the CS Periodic maintenance of the equipment and ensure proper spill control and management at site and along the OHL line Monitor and detect any contamination on soil 	Project lifetime/ STEG	<ul style="list-style-type: none"> Plans to be adopted prior to beginning of operation phase. Visual inspections during operation phase Soil contaminated (target=0) Rate of treated contaminated soil Number of complaints received from stakeholders (authorities and civil society) 	\$ 3,000 x year
Freshwater Resources (Surface and Groundwater)	<ul style="list-style-type: none"> Potential groundwater contamination Alteration of groundwater 	<ul style="list-style-type: none"> Equipment and maintenance activities in the CS area Accidental leakage and spillage of fuel and chemical stored that can contaminate the surface water body and wetlands located in the proximity Failure of the rain waters and oily water drainage and management system of CS 	<ul style="list-style-type: none"> Waste management procedures Maintenance protocols Providing emergency response kits Site specific Emergency Response Plan prepared for soil clean-up and decontamination Presence of a rainwater management system at the CS Periodic maintenance of the equipment and ensure proper spill control and management at site and along the OHL line Monitor and detect any contamination on soil 	Project lifetime/ STEG	<ul style="list-style-type: none"> Plans to be adopted prior to beginning of operation phase. Visual inspections during operation phase Soil contaminated (target=0) Rate of treated contaminated soil Number of complaints received from stakeholders (authorities and civil society) 	
Air quality	<ul style="list-style-type: none"> Increase in atmospheric concentration of macro pollutants (NOx and COx) Potential fugitive emissions of SF6 	<ul style="list-style-type: none"> Vehicles employed for maintenance activities during operation phase Operation of transmission line and CS station (insulator for electrical switching equipment, cables, transformers, etc.) 	<ul style="list-style-type: none"> Maintain all vehicles and equipment If SF6 is to be used, equipment with low leakage rate must be used as a priority Provide training for maintenance staff on good maintenance practices to prevent SF6 leakage 	Project lifetime/ STEG	<ul style="list-style-type: none"> Emissions monitoring Visual inspections during operation phase 	\$ 2,000 x year
Noise	<ul style="list-style-type: none"> Increase of noise level due to the operation of CS Increase of noise due to the operation of OHL line 	<ul style="list-style-type: none"> Operation of the transformer units and the cooler systems, which are the key noise emission; Wind effect, in case of strong winds Corona effect due to the electrical discharges during the OHL operation 	<ul style="list-style-type: none"> Planting and maintaining trees surrounding the CS to reduce noise for human and ecological receptors Conduct noise monitoring/inspection in case of complaints from communities 	Project lifetime/ STEG	<ul style="list-style-type: none"> Noise level is within standard fixed by local authority and by WBG standards Absence of complaints from local residents 	\$ 2,000 x year
Biodiversity (flora-fauna)	Loss/disturbance of vegetation and habitat due to routine clearance of RoW	<ul style="list-style-type: none"> Vegetation maintenance activities on RoW Accidental leakage and spillage of fuel or chemical stored from electrical equipment 	<ul style="list-style-type: none"> No chemical products to be used during vegetation maintenance under the RoW 	Project lifetime/ STEG	Visual inspections during operation phase	-

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Biodiversity-Bird	<ul style="list-style-type: none"> Habitat fragmentation Increase of mortality of birds by collision or electrocution 	<ul style="list-style-type: none"> Presence of the OHL transmission line considered as a physical barrier and potential disruption of the aerial habitat along the RoW Accidental leakage and spillage of fuel and chemical stored from electrical equipment 	<ul style="list-style-type: none"> Bird diverters should be installed in places considered as bird-use or with high risk of collision Conduct an annual monitoring of avifauna Assessment of mitigation measure effectiveness and plan for no net loss/net gain compensation activities if applicable Conducting regular revisions of measures taken to protect birds Monitoring of birds perching, in particular for raptors species, after construction of the transmission line in order to identify "high birds perching" areas Install "raptor roost deterrents or anti-roosting devices" (pole cap/cone, bird spider, bird spikes) to reduce the electrocution risk Increase the visibility of the OHL line by installing line markers: aerial spheres (using different colors, with light to increase visibility at night, to be placed in the center of the span), spirals and bird flight diverters (reduce the line vibration and increase visibility); suspended devices, tree wires to prevent collision and electrocution of birds Provide bird nesting platforms on some pillars Add insulation to poles and wires in order to reduce any risk of electrocution of birds Restrict maintenance activities to the daily time Vehicle movements shall be limited to a speed limit of 20 km/h in forest areas and near wetlands sites 	Project lifetime/ STEG	<ul style="list-style-type: none"> Visual inspections during operation phase Compliance with the requirements of the BAP plan No mortality of birds No nest destroyed during maintenance operations 	<p>Markers, diverters and other mitigation measures included in the cost of the project.</p> <p>Monitoring costs are detailed in Environmental Monitoring Plan</p> <p>Cost of compensation measures for no net loss/net gain, to be confirmed as applicable</p>
Biodiversity-Bat	<ul style="list-style-type: none"> Habitat alteration and disturbance Increase of Bat mortality (collision and electrocution) 	<ul style="list-style-type: none"> Vegetation maintenance activities on RoW Vehicle movement during maintenance activities Accidental leakage and spillage of fuel and chemical stored from electrical equipment 	<ul style="list-style-type: none"> Maintenance activities should be planned outside breeding season for most resident species including bats Vehicle movements shall be limited to a speed limit of 20 km/h in forest areas and near wetlands sites 	Project lifetime/ STEG	<ul style="list-style-type: none"> Visual inspections during operation phase Compliance with the requirements of the BAP plan No mortality registered 	
Occupational Health and Safety (OHS)	There will be some generic risks to workers health and safety from working on operational sites, as it increases the risk to injury or death due to accidents	Maintenance and operation activities	<ul style="list-style-type: none"> Prepare an OHSP and adopt and implement its recommendations/provisions of the OHSP. Training specific to plant and site Carry out regular audits Install signs on transmission towers with information on public safety risks and emergency contact information in Arabic and French. 	Project lifetime/ STEG	<ul style="list-style-type: none"> Training records Records of work accidents 	\$ 25,000
Economy, Employment and LWC	<ul style="list-style-type: none"> Unfair working conditions (including fair treatment, non-discrimination, vulnerable workers, gender pay gaps and sexual harassment, child and juvenile labor, freedom of 	<ul style="list-style-type: none"> Use of contractors and primary suppliers (workers engaged through third parties) Worksites High unemployment rate 	<ul style="list-style-type: none"> Human Resources Policy and Procedures Staff grievance policies and mechanisms for complaints about unfair treatment or unfair working conditions Worker Code of Conduct 	Project lifetime/ STEG	<ul style="list-style-type: none"> Number and reports of STEG's activities related to pre-engagement, background screening and ongoing due diligence of contractors and primary suppliers, including 	Operation budget



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Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
	<ul style="list-style-type: none"> association and collective bargaining) Corruption, ethics, integrity, sustainability of contractors and primary suppliers 		<ul style="list-style-type: none"> Labor management procedures (Contractors and Primary Suppliers) Code of Ethics 		<ul style="list-style-type: none"> evidence of labor-related remediations. Number of individual contracts of employment issued in accordance with national law's and WB's ESF requirements Number of toolbox talks on labor law issues and the number of grievance mechanism during construction. 	
Community Health, Safety, and Security	<ul style="list-style-type: none"> Safety risk to the local communities once the project is operational Risks of electrocution 	<ul style="list-style-type: none"> Converter stations High voltage Lines Local communities' concerns over safety issues associated with the project once it is operational, which could affect community wellbeing and their perception of the safety of the project. 	<ul style="list-style-type: none"> Grievance Policy and Procedure Corporate Social Responsibility (CSR) policy Community education program on safety to alleviate concerns. STEG operational policies and procedures (safety)Installation of warning and awareness panels against the dangers of high voltage at the various sites and along the transmission line 	Project lifetime/ STEG	<ul style="list-style-type: none"> Number of panels Number of education and awareness interactions on safety risks related to the project during the operational phase Number of grievances related to safety risks in grievance log reports 	\$ 35,000
Subtotal						USD 95 000

2.4 Decommissioning phase

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Air quality	Increase in atmospheric concentration of Particulate Matter induced by dust diffuse emissions	<ul style="list-style-type: none"> • Excavation, levelling, compacting and gravelling of the construction site, access road and construction yard; • Aggregate material handling/stockpiling at the construction site, access road and construction yard; • Wind action on exposed surfaces; • Vehicle transit on unpaved construction areas. • Land clearing activities, levelling, excavation, grading for the installation of towers' foundations and the needed access roads. 	<ul style="list-style-type: none"> • Watering unpaved surfaces to reduce wheel generated dust • Vehicle speed limited to 40 km/h, reduced to 15-20 km/h on the construction site, to minimize dust generated by the transit of vehicles • Covering/humidifying of materials that can be transported by wind (e.g. topsoil, aggregate) where possible; this measure allow to abate by 90% dust resuspension caused by winds on active stockpiles (WRAP Fugitive Dust Handbook). • All stockpile materials with high risk to produce airborne dust will be covered, in particular during windy periods. 	Throughout decommissioning phase <ul style="list-style-type: none"> • Implementation: Contractor • Control: STEG 	<ul style="list-style-type: none"> • Monitoring by the Contractor of access roads and decommissioning sites for excessive nuisance due to dust. • Contractor shall maintain records of complaints on dust, and follow-up with corrective measures 	15,000 USD
	Increase in atmospheric concentration of macro pollutants (primarily NOx and CO) induced by vehicles and machinery exhaust emissions	<ul style="list-style-type: none"> • Heavy equipment (e.g. bulldozers, graders, rollers,) and engine-driven machinery (e.g. drilling machines, pumps etc.) involved in the decommissioning activities; • Exhaust emissions from light and heavy-duty vehicles travelling to and from the construction sites (induced traffic emissions). 	<ul style="list-style-type: none"> • Use of best available technologies for equipment and machinery; • Regular maintenance and inspection of machinery performed in accordance with manufacturer instructions; • Vehicles and machinery will be turned off when not in use 	Throughout decommissioning phase <ul style="list-style-type: none"> • Implementation: Contractor • Control: STEG 	<ul style="list-style-type: none"> • Monitoring by the Contractor of all equipment and machinery used during decommissioning. • Contractor shall maintain records of complaints on air quality, and follow-up with corrective measures 	Included in the decommissioning contract
Noise	Increase in background noise levels due to construction equipment and machinery	Use of heavy equipment and machinery during civil works	<ul style="list-style-type: none"> • Switch off equipment when not in use; • Limit noise activities to the least noise – sensitive time of the day; • Location of noise equipment as far as practicable from nearby receptors • Regular maintenance of equipment and machinery in order to ensure noise emissions in accordance with technical specifications • All major construction plant and equipment will comply with international noise emission limits • Transportation activities and the delivery of construction materials during working hours • Notify local community/public located within 500 m from the worksites before starting noise activities (residents must be informed at least 24 hours in advance) • Vehicle movements shall be limited to a speed limit of 30 km/h 	Throughout decommissioning phase <ul style="list-style-type: none"> • Implementation: Contractor • Control: STEG 	<ul style="list-style-type: none"> • Inspections by the Contractor of construction areas for excessive noise nuisance. • Contractor shall maintain records of complaints on noise and follow-up with corrective measures • Noise level within standard fixed by local authority and by WBG standards • Maintenance log book of vehicle and machinery 	Included in the decommissioning contract

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Geology, geomorphology and soil	<ul style="list-style-type: none"> Potential soil and subsoil contamination 	<ul style="list-style-type: none"> Leaks from the use of construction machinery and storage of fuel refueling activities Discharge of wastewater Inadequate management of solid waste Accidental spills of hazardous and non-hazardous material Excavation activities Inadequate management of excavated materials 	<ul style="list-style-type: none"> Operational procedure to prevent and manage potential soil and subsoil contamination Excavated soil management procedures Providing emergency response kits Use the best available technologies for the equipment and machineries Periodic maintenance of the equipment Contaminated soil should be stripped and stored on suitable impermeable surfaces Waste management procedure (segregation of hazardous and non-hazardous waste; Implement a construction equipment/material inventory management system; Ensure regular surveillance of any spillage on nearby proprieties: land filling must be restricted within the boundary of project's activities 	<ul style="list-style-type: none"> Development prior to, and implementation during, decommissioning phase Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Inspections by the Contractor Hazardous materials management plans approved by STEG prior to initiation of Construction phase. Soil surface/volume contaminated (target=0) Rate of treated contaminated soil (target=100% of stripped and stored volume) 	5000 USD
	<ul style="list-style-type: none"> Potential soil disturbance and degradation 	<ul style="list-style-type: none"> Land clearing and vegetation removal in worksites and under the line corridor Machinery operations and movement of vehicles during the construction Excavation activities 	<ul style="list-style-type: none"> Excavated topsoil will be stored in a dedicated topsoil storage site When construction work is over, topsoil will be reinstated at the construction site. Excavations with appropriate slopes to keep the excavation face safe. Temporary construction yards will be restored Restoration of compacted soils by tilling. 	<ul style="list-style-type: none"> Development prior to, and implementation during, decommissioning phase Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Soil surface affected (compacted, eroded) Topsoil stored and brought back to its original site Rate of treated compacted soil Excess spoil and soil covered with topsoil and revegetated Number of operations on eroded areas 	20000 USD
	<ul style="list-style-type: none"> Landtake 	<ul style="list-style-type: none"> Construction yards Construction of access roads Temporary worksites Land clearing and excavation activities 	<ul style="list-style-type: none"> Preliminary assessment of construction sites to be used by the Contractor Optimization/reducing of construction site number Adequate site restoration after construction activities are completed 	<ul style="list-style-type: none"> Development prior to, and implementation during, decommissioning phase Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Number of used construction sites 	30000 USD
Freshwater Resources (Surface and Groundwater)	<ul style="list-style-type: none"> Potential groundwater contamination Alteration of groundwater 	<ul style="list-style-type: none"> Leaks from the use of construction machinery and storage of fuel Refueling activities Discharge of wastewater Inadequate management of solid waste Accidental spills of hazardous and non-hazardous material Excavation activities 	<ul style="list-style-type: none"> Operational procedure to prevent and manage potential soil and subsoil contamination: Waste management procedures Excavated soil management procedures Providing emergency response kits Use the best available technologies for the equipment and machineries Periodic maintenance of the equipment 	<ul style="list-style-type: none"> Development prior to, and implementation during, decommissioning phase Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Inspections by the Contractor Hazardous materials management plans approved by STEG prior to initiation of Construction phase. No pollution detected All contaminated materials adequately stored 	5000 USD

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
		<ul style="list-style-type: none"> Inadequate management of excavated materials 	<ul style="list-style-type: none"> Contaminated soil should be stripped and stored on suitable impermeable surfaces Ensure regular surveillance of any spillage on nearby properties Preliminary assessment of construction sites to be used by the Contractor (minimum distance to keep from watercourses and reservoirs) 		<ul style="list-style-type: none"> No complaints from stakeholders (local communities, NGOs and authorities) 	
Biodiversity – Terrestrial section	<ul style="list-style-type: none"> Loss of natural vegetation and disturbance and loss of natural habitats (habitat fragmentation) Disturbance and loss of fauna Introduction of invasive species Impact on ecosystem service (species with high value and providing services for local community or for carbon sequestration/regulation of water flow/erosion prevention and maintenance) 	<ul style="list-style-type: none"> Corridor vegetation cutting and clearing for the removal of towers and OHL Filling, levelling and grading of land Earth movement Use of engine driven vehicles and machinery (i.e. excavators, bulldozers, side booms, trucks, cars) Construction yards Construction of access roads 	<ul style="list-style-type: none"> Provide training for workers on biodiversity value and need to avoid any disturbing or destroying flora and fauna Conserve the connectivity and integrity of existing natural water channels to reduce impact of vegetation removal on herpetofauna, invertebrates and other species Avoid construction activities during breeding/nesting season in forested areas and near IBA/RAMSAR sites Demarcate the boundaries of construction areas and vegetation disturbance will be limited to within the boundaries and train workers to remain within demarcated construction sites Use existing roads as far of possible to reach the construction sites and restrict movement of construction vehicles (heavy machines) strictly to pre-designated routes Ensure an adequate management of spoil and soil to prevent any damage outside the construction areas At the end of construction, all disturbed areas and used roads must be restored Reduce external soil supply (from other regions) to avoid any introduction of invasive species Noise mitigation/management measures (see above) Limiting of vehicles speed, preventing possible wildlife-vehicles collisions 	Development prior to, and implementation during, decommissioning phase <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Area of vegetation lost/disturbed Number of complaints from stakeholders (local authorities, AAO, ATVS) 	5000 USD
Landscape	<ul style="list-style-type: none"> Visual disturbance and physical changes of the landscape features due to the construction sites and activities 	<ul style="list-style-type: none"> Land clearance and removal of existing vegetation Earthmoving, levelling, excavation and back-filling activities Vehicle transit and transportation activities Temporary presence of active worksites with storage of materials and equipment 	<ul style="list-style-type: none"> Rehabilitate disturbed areas around construction sites in order to restrict extended periods of exposed soil Restore temporary worksites immediately after construction. Maintain construction sites in orderly condition and do not distribute material over many sites before usage 	Development prior to, and implementation during, decommissioning phase <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Inspections by the Contractor All affected areas are restored after construction activities No complaints from stakeholders (local communities, NGOs and authorities) 	15000 USD

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Land Acquisition, Restrictions to Land Use and Involuntary Resettlement	<ul style="list-style-type: none"> Temporary use of land and restoration of land use during decommissioning activities 	<ul style="list-style-type: none"> Corridor vegetation cutting and clearing Earth movements Construction yards Construction of access roads 	<ul style="list-style-type: none"> Clearance and vegetation removal activities to be restricted to the minimum area Strictly follow procedures of the RF and RAP Ensure full compensation is paid to affected persons in compliance with the procedures of the RF and RAP 	Development before, and implementation during the decommissioning phase • Development: Contractor Approval and control: STEG	<ul style="list-style-type: none"> All potential affected persons (PAPs) are fully compensated Absence of non-compliance reports Number of complaints received from stakeholders (authorities and civil society) Number of public grievances 	Included in the decommissioning contract
Marine environment	Disturbance to biodiversity due to cable removal	Cable removal	<ul style="list-style-type: none"> Do not remove the marine cable upon project decommissioning to avoid disturbance to the marine environment 	STEG/ELMED	<ul style="list-style-type: none"> Monitoring 	No additional costs
Community Health and safety	Risk of accidents and physical injuries involving residents	Construction activities	<ul style="list-style-type: none"> Require all Contractors and Subcontractors to comply with relevant STEG's health and safety requirements. Prepare and implement a Community Health and Safety Plan Fencing and guarding of areas intended for company use (base camp, extraction areas, worksites, etc.) Fluorescent strips to delimit other areas of the construction site prohibited to the public Installation of panels indicating and informing local population about the progress of the work 	Development prior to, and implementation during, decommissioning phase • Development: Contractor Approval and control: STEG	<ul style="list-style-type: none"> Community Health and Safety Plan approved by STEG before starting of works Training records Records of accidents Records of complaints 	Included in the decommissioning contract
	Increased stress-related disturbances (noise, dust, and air pollution).	<ul style="list-style-type: none"> Construction activities Transportation and traffic 	<ul style="list-style-type: none"> Prepare and implement a Community Health and Safety Plan Notify landowners along the line route about the construction schedule and activities. 	Development prior to, and implementation during, decommissioning phase • Development: Contractor Approval and control: STEG	<ul style="list-style-type: none"> Community Health and Safety Plan approved by STEG before starting of works Training records Records of work accidents 	Included in the decommissioning contract
Occupational Health and Safety (OHHS)	Working at the decommissioning site will present some generic health and safety risks to workers, as it increases the risk of injury or death from accidents	Construction activities	<ul style="list-style-type: none"> Prepare an occupational health and safety plan and adopt and implement its recommendations. Prepare an emergency preparedness and response plan that considers a range of organizational, operational and preventive measures in the event of an emergency. Require all Contractors and Subcontractors to comply with relevant STEG's health and safety requirements. Training specific to construction site Nursing facilities in each camp Distribution of personal protective equipment (PPE) to all workers 	Development prior to, and implementation during, decommissioning phase • Development: Contractor Approval and control: STEG	<ul style="list-style-type: none"> Training records Records of work accidents 	Included in the decommissioning contract



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Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
			<ul style="list-style-type: none"> Organization of training sessions in Health-Safety-Environment for the personnel operating on the site Organization of regular information and awareness campaigns for workers and residents against STIs/AIDS, waterborne diseases and COVID-19 Agreement with a clinic or a private doctor to carry out regular visits to the camps, monitor the health of the workers, monitor compliance with hygiene conditions 			
Labor and Working Conditions	Degradation of workers' living conditions	<ul style="list-style-type: none"> Worksites Living condition during and after works 	<ul style="list-style-type: none"> Equipment of the camps with sanitary facilities, septic tank, bins, dumpsters, etc. Installation in the camps of a rest area and a canteen equipped to be able to heat up food Require all Contractors and Subcontractors to comply with relevant STEG's health and safety requirements. 	Development prior to, and implementation during, decommissioning phase <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Number of complaints 	Included in project cost
Infrastructure	Increased traffic and disturbance of traffic flow	<ul style="list-style-type: none"> Construction activities Transportation and traffic 	<ul style="list-style-type: none"> Prepare and implement a Transport and traffic management plan Notify landowners along the line route about the construction schedule and activities. 	Development prior to, and implementation during, decommissioning phase <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Transport and traffic management plan approved by STEG before starting of works 	Included in the decommissioning contract
Subtotal						USD 95 000

Total Cost for the four phases of the Project

Phase	Cost (USD)
Project development	870 000
Pre-construction and construction phase	553 000
Operation phase	95 000
Decommissioning phase	95 000
Total	1 613 000