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Contractor Doc No: ES-11

Date
2023-04-11

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Tunisia-Italy Power Interconnector Project

Environmental and Social Impact Assessment (ESIA)

Section 11 – Environmental and Social Management Plan (ESMP)

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05	2023-04-11	Final Version	HPC (M.Pecora) ELARD (M.Nader) IDEACONSULT (M.El Hrizi) PROGER (M.Agostinone)	HPC (R.Andrighetto)	HPC (A.Cappellini)
04	2023-03-29	Emission for consultations			
03	2023-02-02	Draft emission for consultations			
02	2023-01-23	Revision after WB's comments			
01	2022-11-30	Revision after Elmed's comments			
00	2022-11-18	First emission			
Rev.	Date	Description	Prepared by	Checked by	Approved by

ELMED

Revision Approved	Approval Date	Approved by



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1. INTRODUCTION

This document contains the Environmental and Social Management Plan (ESMP) for the project, i.e. the management tool that provides the assurance that the mitigation measures developed for the significant impacts identified by the ESIA are implemented and maintained throughout the project lifecycle. The ESMP outlines management strategies for safety, health and environment stewardship in the project implementation and defines how the project proponent's commitments will be implemented to ensure sound environmental practice.

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 organization 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.

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 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-Project Stakeholder Engagement Plan (SEP) Development and Implementation of SEA/ISH 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/ISH plan budgeted in World Bank's TA Project SEA/ISH Execution Plan: \$ 30,000 Implementation of SEA/ISH 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"> Development 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 before construction commencement RAP adopted before construction commencement 	<ul style="list-style-type: none"> 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
<p>Terrestrial biodiversity</p>	<ul style="list-style-type: none"> Impacts on habitats/species 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), it and Bir Drassen (12km), it 	<p>During design phase [Design Contractor / STEG]</p>	<p>Monitoring</p>	<p>Monitoring costs included in Environmental Monitoring Plan. Design measures and team included in project design costs 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
Terrestrial biodiversity	<ul style="list-style-type: none"> Impacts on habitats/species 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.) 	<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 	<p>Reflected in Project design and implemented prior to the commencement of civil works [Design Contractor / STEG]</p>	<p>Biodiversity Surveys completed</p> <p>Final BMP including full CHA available, reviewed, and cleared by the Bank</p>	<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

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 	<p>Reflected in Project design and implemented prior to the commencement of civil works [Design Contractor / STEG]</p>	<p>Biodiversity Surveys completed</p> <p>Final BMP including full CHA available, reviewed, and cleared by the Bank</p>	<p>Marine Biodiversity surveys: USD 150,000</p> <p>Final BMP and full CHA: USD 50,000</p>
Marine biodiversity	<ul style="list-style-type: none"> Disturbance of benthic habitats Disturbance of pelagic environment 	<ul style="list-style-type: none"> 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 	<p>Measure incorporated into the Project design [STEG]</p>	<p>Survey reports</p>	<p>Included in monitoring cost</p>
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 graveling 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
Noise	Increase in atmospheric concentration of macro pollutants (primarily NOx and CO) induced by vehicles and machinery exhaust emissions Increase in background noise levels due to construction equipment and machinery	<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). Use of heavy equipment and machinery during civil works	<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 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 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
<p>Geology, geomorphology and soil</p>	<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"> Vehicle movements shall be limited to a speed limit of 30 km/h 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 properties: 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 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 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 soil (target=100% of stripped and stored volume) 	<p>\$ 5,000</p>
<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"> 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 	<p>Part of the contract</p> <p>\$ 20,000</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"> Land take 	<ul style="list-style-type: none"> Potential contamination and Alteration of groundwater 	<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 Mlaabi 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 construction sites used 	<ul style="list-style-type: none"> \$ 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: Waste management procedures Excavated soil management 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) 	<ul style="list-style-type: none"> \$ 5,000
Biodiversity Terrestrial section	<ul style="list-style-type: none"> Lowering of groundwater level Lack of water for the other users 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"> Overconsumption of water for construction 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"> 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 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: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Quantities of water extracted from surface water bodies 	<ul style="list-style-type: none"> Part of the contract
				<ul style="list-style-type: none"> Development prior to, and implementation during, construction phase Development: 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) 	<ul style="list-style-type: none"> 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 floral/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>

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Biodiversity Avifauna	<ul style="list-style-type: none"> - 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"> vehicles (heavy machines) strictly to pre-designated routes 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 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 Neophron percnopterus (Egyptian vulture, EN), Falco cherrug (Saker Falcon, EN), Falco vespertinus (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 	<ul style="list-style-type: none"> Development prior to construction phase Development: Monitoring Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Compliance with BAP guidelines All disturbed areas are completely repaired 	<ul style="list-style-type: none"> Survey: \$ 15,000 Monitoring costs included in Environmental and Social Plan costs

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
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 	<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 Gromballa and Jebel Ressay) 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 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 	<ul style="list-style-type: none"> Development prior to, and implementation during, construction phase Development: STEG Approval and control: STEG 	<ul style="list-style-type: none"> Compliance with BAP guidelines All disturbed areas are completely repaired 	<ul style="list-style-type: none"> Flora/fauna inventory included in Environmental and Social Plan Monitoring costs

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 	<p>areas Beni Ayech, Djebel Rerras and Zaghouane)</p> <ul style="list-style-type: none"> 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 Gromballa and Jebel Rerras) 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 	<p>Development prior to, and implementation during, construction phase</p> <ul style="list-style-type: none"> Development: Construction 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 	<p>Throughout construction phase</p> <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
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"> 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 Use HDD for the construction of the marine cables' landfill, 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) 	<p>Throughout construction phase</p> <ul style="list-style-type: none"> Implementation: Contractor Control: STEG 	<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 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' landfill, 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 	<p>Throughout construction phase</p> <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 	<p>Throughout construction phase</p> <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' landfill, avoiding direct interferences with the coastal environments and related habitats 	<p>Throughout construction phase</p> <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. - <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 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
<ul style="list-style-type: none"> Archaeological and cultural heritage 	<ul style="list-style-type: none"> implemented before commencement of works. 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. Potential disturbance or destruction of archaeological sites and/or objects. 	<p>Civil works in general: site preparation, excavations and earthworks</p>	<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. 	<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"> Disturbance of archaeological sites and/or objects. Number of complaints received from stakeholders (authorities and civil society) 	<p>\$ 10,000</p>
<ul style="list-style-type: none"> 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 	<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"> Community Health and Safety Plan approved by STEG before starting of works Training records Records of accidents Records of complaints 	<p>Community and Health Safety Plan: \$ 70,000</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"> Increased stress-related disturbances (noise, dust, light, and air pollution). Potential health risks due to limitations to access local healthcare facilities. 	<ul style="list-style-type: none"> Construction activities Transportation and traffic 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"> Notify landowners along the line route about the construction schedule and activities. Emergency Response Plan (ERP), taking into account access to health care, major incidences, multiple casualty events and pandemics. 		<ul style="list-style-type: none"> Community Health and Safety Plan approved by STEG before starting of works Training records Records of work accidents 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 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 in 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
Labor influx	<ul style="list-style-type: none"> The influx of project workers (and/or in-migration 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 from 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 	<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>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"</p> <ul style="list-style-type: none"> 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 and teenage pregnancies Incidence of crime Number of grievances Incidence of social issues (eg SEA-SH, crime) Monitoring cost of basic goods and services 	Influx Management Plan: \$70,000

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
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"> 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 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

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. 	

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
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 of 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"> 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 	<p>Throughout 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"> 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 remediations. 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 Transport and traffic management plan 	\$ 65,000
Infrastructures and Public Services	<ul style="list-style-type: none"> Increased traffic and disturbance of traffic flow 	<ul style="list-style-type: none"> Worksites in general (CS, OHL, terrestrial cables); 	<ul style="list-style-type: none"> Adopt and implement a Corporate Social Responsibility (CSR) policy, with specific commitment to avoid, 	<p>Development prior to, and implementation</p>		\$ 55,000

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
	<ul style="list-style-type: none"> 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"> 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. 	<p>minimize, mitigate, offset and/or compensate all Project's potential adverse impacts on Infrastructures, Utilities and Services.</p> <ul style="list-style-type: none"> 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 	<p>during, construction phase</p> <ul style="list-style-type: none"> Development: STEG and Contractor Approval and control: STEG 	<p>approved by STEG before starting of works</p> <ul style="list-style-type: none"> Number of focused consultations with 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 	
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	<ul style="list-style-type: none"> 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 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) 	\$ 2,000 x year
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 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 during operation phase 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)	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> 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 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 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"> 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. 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"> Visual inspections during operation phase Compliance with the requirements of the BAP plan No mortality registered 	\$ 25,000
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. 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"> Training records Records of work accidents 	
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

2.4 Decommissioning phase

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
Air quality	<p>Increase in atmospheric concentration of Particulate Matter induced by dust diffuse emissions</p>	<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. 	<p>Throughout decommissioning phase</p> <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 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
	<p>Increase in atmospheric concentration of macro pollutants (primarily NOx and CO) induced by vehicles and machinery exhaust emissions</p>	<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 	<p>Throughout decommissioning phase</p> <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 decommissioning. Contractor shall maintain records of complaints on air quality, and follow-up with corrective measures 	Included in the decommissioning contract
Noise	<p>Increase in background noise levels due to construction equipment and machinery</p>	<p>Use of heavy equipment and machinery during civil works</p>	<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 	<p>Throughout decommissioning phase</p> <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
<ul style="list-style-type: none"> 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 properties: 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 soil contaminated (target=100% of stripped and stored volume) 	<ul style="list-style-type: none"> 5000 USD
<ul style="list-style-type: none"> Landtake 	<ul style="list-style-type: none"> Potential soil disturbance and degradation 	<ul style="list-style-type: none"> Land cleaning and vegetation removal in worksites and under the line corridor Machinery operations and movement of vehicles during the construction Excavation activities Construction yards Construction of access roads Temporary worksites Land clearing and 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 filling. 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 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 Number of used construction sites 	<ul style="list-style-type: none"> 20000 USD 30000 USD
<ul style="list-style-type: none"> 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 	<ul style="list-style-type: none"> 5000 USD

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
<p>Biodiversity Terrestrial section</p>	<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"> Inadequate management of excavated materials 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 of access roads 	<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 proprieties Preliminary assessment of construction sites to be used by the Contractor (minimum distance to keep from watercourses and reservoirs) 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 IBARAMSAR 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 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 	<p>Development prior to, and implementation during,</p> <p>decommissioning phase</p> <ul style="list-style-type: none"> Development: Contractor Approval and control: STEG 	<ul style="list-style-type: none"> No complaints from stakeholders (local communities, NGOs and authorities) Area of vegetation lost/disturbed Number of complaints from stakeholders (local authorities, AAO, ATVS) 	<p>5000 USD</p>
<p>Landscape</p>	<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"> Contaminated soil should be stripped and stored on suitable impermeable surfaces Ensure regular surveillance of any spillage on nearby proprieties Preliminary assessment of construction sites to be used by the Contractor (minimum distance to keep from watercourses and reservoirs) 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 IBARAMSAR 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 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 	<p>Development prior to, and implementation during,</p> <p>decommissioning phase</p> <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) 	<p>15000 USD</p>

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 	<ul style="list-style-type: none"> Development before, and implementation during decommissioning phase 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 Monitoring 	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"> Community Health and Safety Plan approved by STEG before starting of works Training records Records of accidents Records of complaints 	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 	<ul style="list-style-type: none"> Development prior to, and implementation during, decommissioning phase 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
Occupational Health and Safety (OHS)	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. 	<ul style="list-style-type: none"> Development prior to, and implementation during, decommissioning phase 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 (OHS)	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 	<ul style="list-style-type: none"> Development prior to, and implementation during, decommissioning phase Contractor Approval and control: STEG 	<ul style="list-style-type: none"> Training records Records of work accidents 	Included in the decommissioning contract

Environmental and/or Social Components	Potential Impacts	Sources of Impact	Management Measure	Implementation Timing / Responsibilities	Performance Indicators	Costs
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"> • 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 • 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. 	<p>Development prior to, and implementation during, decommissioning phase</p> <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. 	<p>Development prior to, and implementation during, decommissioning phase</p> <ul style="list-style-type: none"> • Development: Contractor • Approval and control: STEG 	<ul style="list-style-type: none"> • Transport and management plan approved by STEG before starting of works 	Included in the decommissioning contract
Subtotal					USD 95 000	

Total Cost for the four phases	
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

					
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3. ESMP MANAGEMENT

The ESMP is a live document and should be amended during project construction and operation to reflect any changes which occur to the design and performance or the relevant environmental and social conditions. The Contractor and Sub-contractors during the construction phase and the Proponent during the operational phase shall comply with the ESMP requirements as applicable to the tasks they are employed to undertake. Due to differences in legislation and different policies of the two national companies, Terna and Steg, that compose ELMED ETUDES, separate plans have been developed for the Tunisian section and for the Italian section of the project.

The present document refers to the Tunisian components, that will be contracted by STEG as Project Proponent.

3.1 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

3.2 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.

Accordingly, the general guidelines and requirements for preparing issues and site-specific contractors Environmental and Social Management Plans (C-ESMPs) are provided in Annex 1.

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 plan
- Traffic and Transport Plan
- Labor grievance mechanism

					
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- 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)

Emergency action plans

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

3.3 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 Health and Safety Plan

Emergency action plans

- Spill prevention plan
- Emergency preparedness and response plan

3.4 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.

					
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4. ENVIRONMENTAL MONITORING

4.1 Introduction

Monitoring is a key tool in analyzing the environmental impacts of the project and a tool for providing information to STEG on adaptive management responses that may be needed to avoid, improve, or reduce these impacts. Monitoring aims to examine changes induced by the project to environmental components. It is aimed at determining whether these variations are attributable to the project and then to seek any corrective actions that can reduce the impacts to acceptable levels.

Three monitoring phases are established, corresponding to project development phases:

- Pre-construction Phase (PCP);
- Construction Phase (CP);
- Operational Phase (OP).

Pre-construction Phase: this phase aims to provide the environmental baseline, before any change related to works. This phase must end before the beginning of construction works.

Monitoring during construction phase: it covers the construction period of the project, from the opening of construction sites up to their complete dismantling and site restoration. This is the phase with the greatest variability as it is closely linked to the progress of works. The aim of monitoring during construction is:

- to evaluate changes to environmental baseline conditions;
- to assess the efficiency of mitigation actions;
- to report the occurrence of any critical issue so to act promptly.

Operational Phase Monitoring: this stage is divided into pre-operation and operation phase of the works and should not start before the complete dismantling and restoration of sites. Monitoring can last for some years after the completion of the works, its duration depending on the specific environmental component being monitored. The aims of OP Monitoring are:

- to evaluate changes to environmental baseline conditions;
- to assess the efficiency of mitigation actions;
- to verify the overall environmental impacts caused by the project and indicate any need for further measures to contain the unforeseen effects;
- to provide information on environmental performance to permitting authorities as needed.

The choice of the environmental components to be monitored, as significant to characterize the quality of the environment, considers both the sensitivity and vulnerability of the environmental context, and the impact estimations and mitigation interventions envisaged by the ESIA.

In particular the location of the monitoring points was defined based on:

- the sensitivity of the territory (presence of sensitive receptors, areas of naturalistic value, ecc.);
- the magnitude of the expected impact, as illustrated in the ESIA.

The data provided by the monitoring should enable direct comparison with national and international benchmarks and other international requirements; as well as standards and guidelines identified in the ESIA.

4.2 Monitoring organization

STEG will be responsible for the implementation of all activities described in the present monitoring plan.

In particular:

- STEG will appoint a qualified Contractor to carry out activities for both terrestrial and marine environment monitoring;

					
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- At the same time, STEG will promptly analyzes, through its organization or qualified consultants, all monitoring data, in order to spot any significant changes induced by the project to the environment, and to compare them with the ESIA's predictions.

4.3 Monitoring programme

The following tables illustrate the monitoring program conceived for the TUNITA project. For each environmental and social component, the following information are given:

- Monitoring methods;
- Monitoring objectives;
- Location of monitoring points/areas;
- Monitoring frequency in the three project phases.

Monitoring activities regard all areas involved by the project, both terrestrial and marine. Areas involved by associated facilities both marine and terrestrial (Italian side) will be the subject of a separate monitoring plan, based on requirements by Italian regulations.

Monitoring reports shall be provided by the monitoring contractor at the end of each monitoring campaign. A yearly monitoring report, with critical analysis of all data, shall be provided each year; the report will include graphs and comments of the evolution of environmental components, together with a description of works and activities carried out during the reference period.

4.4 Terrestrial domain - Tunisian side

Environmental Component	Monitoring Method	Standards/Targets	Location	Frequency	Cost
Air quality	<ul style="list-style-type: none"> Exhaust emission monitoring visual inspection of construction sites and all access roads Inspection of complaints 	Avoid significant degradation of baseline conditions	<ul style="list-style-type: none"> All construction vehicle and equipment 	<ul style="list-style-type: none"> Regularly during CP 	CP: 500 USD per month, total 40 x 500 = <u>20,000 USD</u>
	<ul style="list-style-type: none"> Ambient air quality Visual inspection Air quality monitoring Inspection of complaints Inspection of maintenance records of vehicles and equipment Visual inspection of construction sites and access roads (lower location, CS, HDD and HVDC locations) Visual inspection of vehicles/machines and maintenance and refueling areas Inspection of spill reports and storage areas Inspection of maintenance records Check the condition of disturbed sites after restoration actions Sampling and laboratory analysis (pH, Temperature, turbidity, etc.) Visual inspection to detect any pollution sign (oil, waste, etc.) Visual inspection to verify the presence of sanitation facilities (number and condition) 	Avoid significant degradation of baseline conditions (national standard: NT 106.04)	<ul style="list-style-type: none"> Construction sites (HDD, HVDC, CS, OHL and other sites to be used by the Contractor) Unpaved roads used by the Contractor 	<ul style="list-style-type: none"> PCP/CP: two times per year (summer and winter season) 	PCP+CP: 1000 USD per campaign, total 10 x 1000 = <u>10,000 USD</u>
Soil integrity	<ul style="list-style-type: none"> Minimize erosion at construction sites and at access roads Avoid soil contamination Reforestation 	<ul style="list-style-type: none"> Construction sites (HDD, HVDC, CS, OHL and other sites to be used by the Contractor) Sensitive areas (riverbanks, forest area, agricultural lands, etc.) 	<ul style="list-style-type: none"> PCP/CP: observation CP: after relevant construction 	PCP+CP: 250 USD per campaign, total 10 x 250 = <u>2,500 USD</u>	
	<ul style="list-style-type: none"> Avoid water contamination and any degradation of baseline conditions (National standard NT 106.02) Avoid river's obstruction 	<ul style="list-style-type: none"> Construction sites (HDD, HVDC, CS, OHL) Along the RoW and access roads of the OHL 	<ul style="list-style-type: none"> PCP/CP: two times per year (summer and winter season) 	PCP: 1000 USD per campaign, total 4 x 1000 = <u>4,000 USD</u>	
Water quality	<ul style="list-style-type: none"> Noise measurements (baseline) Noise monitoring campaign include both short term measurements (e.g. 1h for two sensitive receptors) + long term measurements (e.g. 24h for one sensitive receptor) Visual inspection of maintenance records and complaints (local residents, visitors and workers) Instrumental measurements in case of complaints 	Avoid significant degradation of baseline conditions (Municipality of Tunis standards Noise level below 55 dB daytime (WBG))	<ul style="list-style-type: none"> Landfall site of Kélibia Miaâbi CS Other construction sites near sensitive receptors (residential areas) 	<ul style="list-style-type: none"> PCP: 1 noise monitoring campaign per site (baseline characterization) CP: 1 noise monitoring campaign per site per year CP: within 24 hours of request or noise complaint by worker or external party (local community) OP: 1 noise monitoring campaign for CS area 	PCP: 1000 USD per campaign, total 20 x 1000 = <u>20,000 USD</u>
	<ul style="list-style-type: none"> Measurement of electric field and magnetic field Inspection of complaints from workers or local residents 	Avoid significant degradation of baseline conditions	<ul style="list-style-type: none"> HVDC cable Miaâbi CS OHL line 	<ul style="list-style-type: none"> Before beginning of operation phase OP: one annual periodic measurement during operation 	OP: 1000 USD per campaign, total 1 x 1000 = <u>1,000 USD</u>
Electromagnetic fields					PCP: 1000 USD per campaign, total 5 x 1000 = <u>5,000 USD</u>

Environmental Component	Monitoring Method	Standards/Targets	Location	Frequency	Cost
Landscape	<ul style="list-style-type: none"> Visual inspection (no project vs with project) Photographic documentation Interviews with stakeholders and affected persons and inspection of their complaints Check the condition of the project area after restoration actions 	<p>International standards ICNIRP (guidelines 1998) and IEC 61786(1998)</p> <p>Avoid significant degradation of baseline conditions</p>	<ul style="list-style-type: none"> Construction sites (HDD, HVDC, CS, OHL) Along access roads and RoW the OHL line 	<p>phase (at least for the first two years of OP)</p> <ul style="list-style-type: none"> PCP: 1 campaign CP: 2 campaigns per year OP: after land restoration 	<p>OP: 1000 USD per campaign, total 5 x 1000 = <u>5.000 USD</u></p> <p>PCP: 4000 USD per campaign, total 1 x 4000 = <u>4.000 USD</u></p> <p>CP: 4000 USD per campaign, total 7 x 4000 = <u>32.000 USD</u></p> <p>OP: 4000 USD per campaign, total 1 x 4000 = <u>4.000 USD</u></p>
Flora Loss of forested areas	<ul style="list-style-type: none"> Forest inventory and field observations with the support of local authority in charge of forest (DGF department of Forest) Visual inspection of planning documents and observation of final design of the project (OHL line) Inspection of vegetation removal operations Inspection if DGF (Forestry department) was involved during vegetation cutting operations Compensatory tree re-planting actions Inspection of complaints from stakeholders (local community, local NGO, etc.) Visual inspection 	<p>Avoid significant degradation outside the RoW, in particular for the OHL line</p> <p>Avoid and reduce project footprint into terrestrial and coastal natural areas</p> <p>Reduced areas of lost natural/forested areas</p>	<ul style="list-style-type: none"> Along RoW of the OHL line, in particular where forested habitats are found (Beni Ayech, Khanguet El Hojjei, Jebel Ressas and Sidi Frej) Disturbed construction sites 	<ul style="list-style-type: none"> PCP: 1 campaign CP: 1 campaign per year During land clearance and vegetation removal within the RoW After relevant construction 	<p>PCP: 3000 USD per campaign, total 1 x 4000 = <u>3.000 USD</u></p> <p>CP: 600 USD per month, total 24 x 600 = <u>14.400 USD</u></p>
Flora Extraction of trees	<ul style="list-style-type: none"> Field survey and observation of rehabilitated areas Visual inspection 	<p>Vegetation recovery on rehabilitated areas (density and diversity)</p>	<ul style="list-style-type: none"> Along RoW of the OHL line, in particular where forested habitats are found (Beni Ayech, Khanguet El Hojjei, Jebel Ressas and Sidi Frej) Disturbed construction sites Replanting sites 	<ul style="list-style-type: none"> PCP: 1 campaign During land clearance and vegetation removal within the RoW After relevant construction (CP) 	<p>CP: 1000 USD per campaign, total 1 x 1000 = <u>1000 USD</u></p> <p>OP: 1000 USD per campaign, total 3 x 1000 = <u>3000 USD</u></p>
Flora Vegetation success of rehabilitated areas	<ul style="list-style-type: none"> Field survey and observation: when the final design of the OHL line is known (final location of towers), an avifaunal inspection could be performed along the final line route 	<p>Compliance with BAP guidelines</p> <p>Avoid habitat loss</p>	<ul style="list-style-type: none"> Along RoW of the OHL line and near the CS of Mlaabi Forested areas Sites at valleys and mountain meadows 	<ul style="list-style-type: none"> PCP/CP: 4 times in a year OP: 4 times in a year for the first 3 years of operation (mortality, evaluation of 	<p>PCP: 5000 USD per campaign, total 4 x 5000 = <u>20000 USD</u></p>

Environmental Component	Monitoring Method	Standards/Targets	Location	Frequency	Cost
<p style="text-align: center;">Fauna</p> <p style="text-align: center;">Bat conservation</p>	<p>and its access roads to identify sensitive bird receptors (breeding areas, nesting sites, interaction with the migration corridor)</p> <ul style="list-style-type: none"> Verify the list of species affected by the project and the proposed measures Inspection of suggestion/complaints from stakeholders, in particular DGF and AAO (Friends of Birds Association, a Tunisian NGO) monitoring of applied mitigation measures: identification of high-risk areas (burying these areas if possible), installation of bird flight diverters, anti-electrocution insulation devices on pylons) 	<p>Avoid nest destruction and disturbance of breeding areas (especially for threatened species or those placed in the Red List of IUCN)</p> <p>Avoid/reduce any direct or indirect impacts on water storages around the overhead line</p> <p>No mortality (by collision/electrocution)</p>		<p>mitigation effectiveness)</p> <p>measures</p>	<p>CP: 5000 USD per campaign, total 7 x 5000 = <u>35000 USD</u></p> <p>OP: 5000 USD per campaign, total 12 x 5000 = <u>60000 USD</u></p>
	<ul style="list-style-type: none"> Field survey to confirm what species are present and to enable avoidance of key areas (e.g. proximity to roosting sites) 	<p>Compliance with BMP guidelines</p> <p>Avoid habitat loss and disturbance</p> <p>No mortality by collision</p>	<ul style="list-style-type: none"> Along RoW of the OHL line and near the CS of Mlaâbi Forested areas Sites at valleys and mountain meadows 	<ul style="list-style-type: none"> PCP/CP: 4 times in a year OP: 4 times in a year for the first 3 years of operation (mortality, evaluation of mitigation effectiveness) 	<p>PCP: 5000 USD per campaign, total 4 x 5000 = <u>20000 USD</u></p> <p>CP: 5000 USD per campaign, total 7 x 5000 = <u>35000 USD</u></p> <p>OP: 5000 USD per campaign, total 12 x 5000 = <u>60000 USD</u></p>

4.5 Marine domain

Environmental/social Component	Monitoring Method	Standards/Targets	Location	Frequency	Cost
Posidonia oceanica and Cymodocea nodosa	Visual survey (Scuba-diving; ROVs) using permanent transects or quadrats	<ul style="list-style-type: none"> Minimum impact on beds Recolonization of cable laying trench Stable upper and lower limits of the Posidonia oceanica meadows Stable meadow cover and shoot density No invasion by <i>Caulerpa taxifolia</i>, <i>Caulerpa racemosa</i> or other alien species. Distribution map Density 	Cable corridor from the HDD exit point to 40m depth (nearshore)	<ul style="list-style-type: none"> PCP: 1 survey (Baseline) CP: 1 survey at the end of cable-laying works OP: 2 surveys/year (spring and autumn) for the following 3 years 	<p>PCP: <u>USD 20,000</u></p> <p>CP: <u>USD 20,000</u></p> <p>OP: USD 20,000 per survey x 2 surveys per year x 3 years = <u>USD 120,000</u></p>
Caulerpa sp.	Visual survey (Scuba-diving; ROVs) using permanent transects or quadrats	<ul style="list-style-type: none"> No change in average number of species recorded from baseline 	Cable corridor from the HDD exit point to 40m depth (nearshore, Tunisia)	<ul style="list-style-type: none"> PCP: 1 survey (Baseline) CP: 1 survey at the end of cable-laying works OP: 2 surveys/year (spring and autumn) for the following 3 years PCP: 12 surveys over one year (1/month; Baseline); Seasonally (4 times/year; Baseline), fishery catch/effort data per taxonomic group/species CP: Continuous surveying through ROV; 1 additional survey at the end of cable-laying works (before Operation Phase); OP: 1 survey/year for the following 3 years 	<p>PCP: USD 10,000 per survey x 12 = <u>USD 120,000</u></p> <p>CP: <u>USD 120,000</u></p> <p>OP: USD 10,000 per survey x 3 = <u>USD 30,000</u></p>
Actinopterygii and Chondrichthyes	Visual survey (Scuba-diving; ROVs)	No change in average density of species recorded from baseline	Cable corridor between Tunisia and Italy landing points	<ul style="list-style-type: none"> PCP: 1 survey in winter (Baseline); CP: Continuous surveying (ship-based, daily during cable laying works) OP: 1 survey/year (winter) for the following 3 years 	<p>PCP: <u>USD 20,000</u> (to account for vessel rental)</p> <p>CP: Cost of avifauna expert to be included during the construction works onboard the ship: USD 2000 per month x 4,5 months = <u>USD 9000</u></p> <p>OP: USD 20,000 x 3 = <u>USD 60,000</u></p> <p>PCP: USD 10,000 per survey x 4 = <u>USD 40,000</u></p> <p>CP: <u>USD 20,000</u></p> <p>OP: <u>USD 40,000</u> (first year)</p> <p>OP: USD 10,000 per survey x 2 surveys per year x 2 years = <u>USD 40,000</u></p>
Aves	Ship-based/aerial based surveys using fixed line transect counts	No change in average density of species recorded from baseline	Cable corridor from the HDD exit point to 40m depth (nearshore)	<ul style="list-style-type: none"> PCP: Seasonally (4 times/year; Baseline) CP: 1 survey at the end of cable-laying works (before Operation Phase) OP: Seasonally (4 times/year) for the first year Bi-annually for the next 2 years 	<p>PCP: <u>USD 20,000</u></p> <p>CP: <u>USD 20,000</u></p> <p>OP: <u>USD 40,000</u> (first year)</p> <p>OP: USD 10,000 per survey x 2 surveys per year x 2 years = <u>USD 40,000</u></p>
Bivalvia and Anthozoa	Visual survey (Scuba-diving; ROVs) using permanent transects or quadrats	<ul style="list-style-type: none"> Minimum loss in density for individuals in both taxonomic groups Recolonization of cable laying trench 	Cable corridor from the HDD exit point to 40m depth (nearshore)	<ul style="list-style-type: none"> PCP: 1 survey at the end of cable-laying works (before Operation Phase) OP: Seasonally (4 times/year) for the first year Bi-annually for the next 2 years 	<p>PCP: <u>USD 20,000</u></p> <p>CP: <u>USD 20,000</u></p> <p>OP: <u>USD 40,000</u> (first year)</p> <p>OP: USD 10,000 per survey x 2 surveys per year x 2 years = <u>USD 40,000</u></p>

Environmental/social Component	Monitoring Method	Standards/Targets	Location	Frequency	Cost
Reptilia - Marine turtles	Ship-based surveys using fixed line transect counts	No change in average density of turtles recorded from baseline	Cable corridor between Tunisia and Italy landing points	<ul style="list-style-type: none"> PCP: Seasonally (4 times/year; Baseline) CP: Continuous surveying (ship-based, daily during cable burying works) OP: Seasonally (4 times/year) for the next 3 years 	<p>PCP: USD 20,000 x 4 = <u>USD 80,000</u></p> <p>CP: Cost of reptiles expert to be included during the construction works onboard the ship: USD 2000 per month x 4,5 months = <u>USD 9000</u></p> <p>OP: Cost of MMO to be included during the construction works onboard the ship: USD 2000 per month x 4,5 months = <u>USD 9000</u></p> <p>OP: USD 20,000 x 4 surveys per year x 3 years = <u>USD 240,000</u></p> <p>PCP: <u>USD 5,000</u></p> <p>CP: <u>USD 5,000</u></p> <p>OP: USD 5000 x 3 = <u>USD 15,000</u></p>
	Ship-based/aerial based surveys using fixed line transect counts	No change in average density of turtles recorded from baseline	Cable corridor between Tunisia and Italy landing points	<ul style="list-style-type: none"> PCP: 2 surveys (Bi-annually; Baseline) CP: Continuous surveying (ship-based, daily during cable burial works) OP: 2 surveys (Bi-annually) for the next 3 years 	<p>PCP: 1 campaign</p> <p>CP: 1 campaign at the end of cable-laying works</p> <p>OP: 3 yearly campaigns</p>
Sediments	Sampling with Van Veen grab sampler Chemical analysis on samples: total N and P, Metals (Hg, Cd, Pb, As, Cr total, Cr VI, Cu, Ni, Zn, Fe, Mn, total Hydrocarbons, PAH.	Avoid soil contamination	Along the electrode and power cable routes on both Italian and Tunisian sides: <ul style="list-style-type: none"> one point in correspondence to HDD exit point; two points along the cable section within 40 m depth. 	<ul style="list-style-type: none"> OP: 5 yearly campaigns 	<p>OP: USD 10000 x campaign: total = <u>USD 50000</u></p>
Sediments – EMF and thermal radiation	Deploying EMF and thermal radiation sensors with memory capacity at regular intervals (retrieval, download, redeployment)	EMF and thermal radiation are at negligible levels	On top of the marine cable on both Italian and Tunisian sides up to 40m depth	<ul style="list-style-type: none"> OP: Monthly for 12 months (Baseline) CP: Continuous (during sediment disturbance activities) OP: Monthly for year 1; seasonally (4 times/year) for the next 2 years 	<p>PCP: USD 500 per measurement campaign x 12 = <u>USD 6000</u></p> <p>CP: <u>USD 10,000</u></p> <p>OP: USD 500 per month x 12 = <u>USD 6,000</u> (Year 1)</p> <p>OP: USD 500 x 4 x 2 = <u>USD 4,000</u> (Years 2 and 3)</p>
Water column - physio-chemical parameters	In situ monitoring by multiparametric CTD probe	As per most recent national standards/targets (different for Italy and Tunisia)	Cable corridor from the HDD exit point to 40m depth (nearshore)	<ul style="list-style-type: none"> PCP: Monthly for 12 months (Baseline) CP: Continuous (during sediment disturbance activities) OP: Monthly for year 1; seasonally (4 times/year) for the next 2 years 	<p>PCP: USD 500 per measurement campaign x 12 = <u>USD 6,000</u> (Year 1)</p> <p>OP: USD 500 per month x 12 = <u>USD 6,000</u> (Year 1)</p> <p>OP: USD 500 x 4 x 2 = <u>USD 4,000</u> (Years 2 and 3)</p>
Water column - chlorophyll, nutrient	"Rosette" device equipped with Niskin bottles, sampling at different depths for analysis at the laboratory	As per most recent national standards/targets (different for Italy and Tunisia)	Cable corridor from the HDD exit point to 40m depth (nearshore)	<ul style="list-style-type: none"> PCP: Monthly for 12 months (Baseline) CP: Continuous (during sediment disturbance activities) OP: Monthly for year 1; seasonally (4 times/year) for the next 2 years 	<p>PCP: USD 500 per measurement campaign x 12 = <u>USD 6,000</u> (Year 1)</p> <p>OP: USD 500 per month x 12 = <u>USD 6,000</u> (Year 1)</p> <p>OP: USD 500 x 4 x 2 = <u>USD 4,000</u> (Years 2 and 3)</p>

5. MANAGEMENT

5.1 Company Organization and Role Responsibilities

5.1.1 Employer (STEG)

As the proponent of the Project, 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, as well as those 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.

In particular the delivery of compensation for any land acquisition is under the full responsibility of the employer.

To allow for the Project preparation and implementation processes to be carried out effectively, it is proposed that an Environmental and Social Project Implementation Unit (ESPIU) be created, which will report directly to 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 the policies, programs and procedures of STEG. 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 2-year contracts) who will have the following responsibilities:

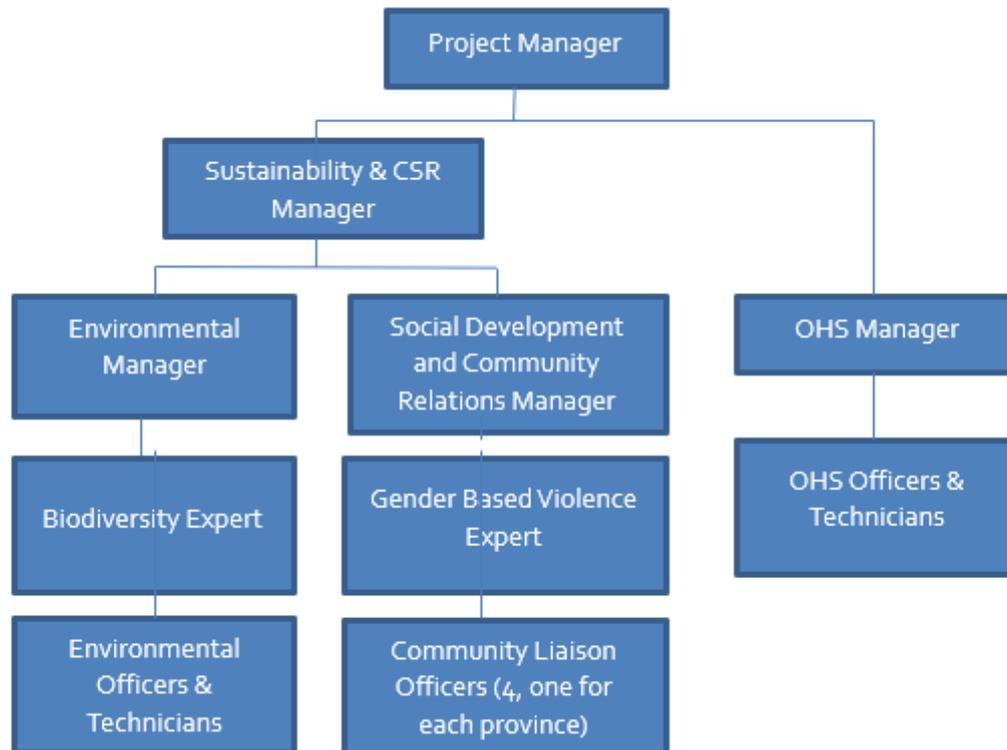
- Establish and maintain appropriate management systems and monitoring programs described in the ESMP are implemented to comply with legal obligations, ESIA commitments, and environmental and social international standard requirements such as the World Bank's ESS;
- Review environmental and social data 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 presented in the following figure, and includes:

- Environmental Manager: direct point of contact for project environmental issues;
- Social Performance Manager: direct point of contact for social aspects;
- Biodiversity Specialist: direct point of contact for all marine and terrestrial biodiversity issues, including coordination and analysis of the related monitoring activities;
- Gender Based Violence Expert: ensures issues related to sexual harassment and gender-based violence between workers and with communities are effectively dealt with respect to the applicable laws and rules
- OHS Manager: direct point of contact for project Health and Safety issues and for Labour Grievance Mechanism;
- Community Liaison Officers (at least one for each of the four governorates) : direct point of contact for community/ stakeholder issues.



ESPIU External Specialists

When required, STEG will appoint external Environmental, Social and OHS specialists (e.g. human rights specialist) 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.

5.1.2 Construction contractor

STEG shall develop general guidelines and requirements for preparing issues / specific Contractors Environmental and Social Management Plan (C-ESMP).

STEG shall require its Contractor to prepare a Contractor ESMP and an Implementation Plan.

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.

Prior to 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 implementation schedule.

During construction, the Construction Contractor will assume overall responsibility for implementation and monitoring of 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 available 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 these are undertaken by the Construction Contractor itself or by Sub-contractors. All Sub-contractors must meet all requirements.

The Construction Contractor shall appoint, for the overall duration of the works, the following key figures:

- Environmental and Social Manager;
- Community Liaison Officer;
- Cultural Heritage Specialist / Archaeologist.

Environmental and Social Manager

The Construction Contractor's Environmental Manager will:

- take responsibility for mitigation and management of potential environmental and social issues on site;
- liaise with the Employer ESPIU team regarding site visits and briefing sessions;
- liaise with Sub-contractors regarding the ESMP requirements;
- organize and maintain briefing session records and mitigation and monitoring documentation;
- respond to site inspection findings;
- receive and respond to any complaints from external parties.

Community Liaison Officer

The Construction Contractor's Community Liaison Officer (CLO) will liaise with all relevant stakeholders and keep them informed about the project during the construction phase.

Cultural Heritage Specialist / Archaeologist

A qualified Cultural Heritage Specialist (CHS) should be retained by the Construction Contractor for the duration of the construction works to provide oversight of the Chance Finds Procedure and remain on-call on an as-needed-basis.

The responsibilities of the CHS include:

- Consultation with relevant key stakeholders (in Italy Archaeological Superintendency);
- Follow the procedures for the documentation and assessment of Chance Finds and determine if additional investigations are required;
- Follow the protocols for consultation with the national regulatory bodies to design and implement additional investigations (if required);
- Undertake record keeping and chain of custody for movable finds (in Italy according to procedures defined by the Archaeological Superintendency);
- Follow expert verification procedures;
- Produce Chance Find reports for issue to the Construction Contractor;
- Provide initial Chance Find training to the Contractor's and Sub-contractors' employees.

5.1.3 Subcontractors

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.

5.2 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. An effective capacity building program should encompass the following points:

- completion of an organizational capacity assessment prior to construction;
- development and implementation of a stakeholder awareness program directed at relevant stakeholders;
- regarding execution of the ESMP, monitoring environmental and social performance, and understanding individual responsibilities;
- provide the institutions responsible for monitoring the ESMP with the tools, techniques, and support necessary;
- promote community involvement in project development, environmental and social performance, and continuous improvement.

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 will regularly monitor that occupational health and safety requirements are implemented. 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 it will be responsibility of STEG to develop and implement an HSE Training Plan for its employers, outlining training requirements, topics, and areas of capacity building, courses, and staff requiring training.

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

Training should include:

- Why the environment needs to be protected and conserved;
- How construction/operation activities can impact on the environment;
- Impact mitigation measures;
- Awareness of the ESMP;
- Awareness of emergency and spills response provisions;
- Social responsibility during construction/operation, related in particular to local population.

5.2.1 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 as a result. The risk of accidents could be reduced by offering training and informative material adapted to local communities. Communities could also play an active role for 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 for example, monitoring of bird mortality, nesting, and carcass management.

5.3 Auditing of ESMP

STEG will designate adequate technical staff to review regularly the ESMP to assess its effectiveness and relevance as follows:

- A full review annually;
- Relevant sections of the ESMP will be reviewed following any reportable incident, or any significant non-compliance;
- Relevant sections of the ESMP will be reviewed following an addition, up-date or change order to the ESMP, or a sub-plan;
- Relevant sections of the ESMP will be reviewed at the valid request of stakeholders, PAPs or the local communities.

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.

To ensure that the ESMP is being implemented the following activities will be undertaken:

- During construction, the Construction Contractor's HSE Manager will carry out daily and weekly site walkovers to verify and ensure compliance to the ESMP;
- A brief audit report will be regularly compiled by the Construction Contractor's HSE Manager;
- During operation, site walkovers will be carried out on a monthly base by the maintenance team, and a monthly audit report will be prepared;
- External audits will be undertaken on a regular frequency during both construction and operation phases.

Audit reports will include incident/grievances forms, consulting with local communities and PAPs, and auditing performance of environmental and social management measures within the ESMP.



5.4 Non-conformance and Corrective Action Procedure

During construction and operation, the Construction Contractor and Employer, respectively, will implement a nonconformance 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.

Annex 1 - General Guidelines and Requirements for Preparing Issues Specific Contractors Environmental and Social Management Plans (C-ESMPs)

❖ Preamble

The Contractor will be responsible for the construction, management, maintenance, and restoration activities at all sites dedicated to the construction and operation phases of the Project, in accordance with the requirements of the World Bank's ESF and industry good environmental and social practices, as detailed in this document within the Authorized Site. One of the major challenges is to cause the least possible damage to the sensitive habitats in within the project area and sphere of influence.

To ensure this responsibility, the Contractor is required to comply with the organizational and technical obligations defined in the Environmental and Social Clauses (CCES) in the enabling contract with STEG. The Environmental and Social (E&S) obligations presented in this CCES reflect the joint requirements of the ESF, Tunisian Institutions and International Donors who finance this Project.

The E&S obligations mandated by the Project are part of the requirements of the World Bank's ESF and other parties concerned to include the Project in the principles of sustainable development, especially during its construction and operations phases, given the E&S sensitivity of the site described in the Environmental and Social Impact Assessment (ESIA). Among the obligations required of the Contractor, the most immediate concerns is an Environmental and Social Management Plan (ESMP) for construction activities that will be prepared by the Contractor and that will define in detail all the organizational and technical measures that it¹ will implement throughout the construction period in order to meet the requirements of the ESF.

❖ General

1. In addition to these general conditions, the Contractor shall comply with any specific Environmental and Social Management Plan (ESMP) for the works that the Contractor is responsible for. The Contractor shall inform himself/herself about such an ESMP and prepare his/her work strategy and plan to fully take into account relevant provisions of that ESMP. If the Contractor fails to implement the approved ESMP after written instruction by the supervising Owner Engineer Team to fulfill his obligation within the requested time, the Owner reserves the right to arrange through the SE for execution of the missing action by a third party on account of the contractor.

2. Notwithstanding the Contractor's obligation under the above clause, the Contractor shall implement all measures necessary to avoid undesirable adverse environmental and social impacts wherever possible, restore work sites to acceptable standards, and abide by any environmental performance requirements specified in an ESMP. In general, these measures shall include but not be limited to:

- (a) Minimize the effect of dust on the surrounding environment resulting from earth mixing sites, vibrating equipment, temporary access roads, etc. to ensure safety, health and the protection of workers and communities living in the vicinity dust producing activities.
- (b) Ensure that noise levels emanating from machinery, vehicles and noisy construction activities (e.g. excavation, blasting) are kept at a minimum for the safety, health and protection of workers within the vicinity of high noise levels and nearby communities.
- (c) Ensure that existing water flow regimes in rivers, streams and other natural or irrigation channels is maintained and/or re-established where they are disrupted due to works being carried out.
- (d) Prevent bitumen, oils, lubricants and wastewater used or produced during the execution of works from entering into rivers, streams, irrigation channels and other natural water bodies/reservoirs, and also ensure that stagnant water in uncovered borrow pits is treated in the best way to avoid creating possible breeding grounds for mosquitoes.
- (e) Prevent and minimize the impacts of quarrying, earth borrowing, piling and building of temporary construction camps and access roads on the biophysical environment including protected areas and arable lands; local communities and their settlements. In as much as possible restore/rehabilitate all sites to acceptable standards.

¹ The acronym GGP refers in this document to the GGP that will be prepared by the Contractor on the basis of this CCES. Any other reference to GGP distinct from this will be specified in such a way as to avoid ambiguity.

- (f) Upon discovery of ancient heritage, relics or anything that might or believed to be of archeological or historical importance during the execution of works, immediately report such findings to the Supervising Energy expert so that the appropriate authorities may be expeditiously contacted for fulfillment of the measures aimed at protecting such historical or archaeological resources.
- (g) Discourage construction workers from engaging in the exploitation of natural resources such as hunting, fishing, and collection of forest products or any other activity that might have a negative impact on the social and economic welfare of the local communities.
- (h) Implement soil erosion control measures in order to avoid surface run off and prevents siltation, etc.
- (i) Ensure that garbage, sanitation and drinking water facilities are provided in construction workers camps.
- (j) Ensure that, in as much as possible, local materials are used to avoid importation of foreign material and long-distance transportation.
- (k) Ensure public safety, and meet traffic safety requirements for the operation of work to avoid accidents.
3. The Contractor shall indicate the period within which he/she shall maintain status on site after completion of civil works to ensure that significant adverse impacts arising from such works have been appropriately addressed.
4. The Contractor shall adhere to the proposed activity implementation schedule and the monitoring plan / Strategy to ensure effective feedback of monitoring information to project management so that impact management can be implemented properly, and if necessary, adapt to changing and unforeseen conditions.
5. Besides the regular inspection of the sites by the Supervising Owner Engineer Team for adherence to the contract conditions and specifications, the Owner may appoint an Inspector to oversee the compliance with these environmental conditions and any proposed mitigation measures. State environmental authorities may carry out similar inspection duties. In all cases, as directed by the Supervising Owner Engineer Team, the Contractor shall comply with directives from such inspectors to implement measures required to ensure the adequacy rehabilitation measures carried out on the bio-physical environment and compensation for socio-economic disruption resulting from implementation of any works.

❖ **List of required Issues Specific Management Plan**

- A. Environmental Monitoring Plan
- B. Environmental Emergency Response Plan
- C. Erosion and Sediment Control Plan
- D. Excavated Material Management Plan
- E. Management Plan for Quarry Sites and Borrowed areas
- F. Water Quality Monitoring
- G. Waste Management Plan
- H. Hazardous Products Management Plan
- I. Dust and other Air Emission Control Plan
- J. Noise Control Plan
- K. Physical Cultural Resources Management Plan
- L. Biodiversity Management/Action Plan
- M. Top Soil Management Procedure
- N. Site Traffic and Site Access Management Plan
- O. Personnel Health Management Plan
- P. Camp Design and Management Plan
- Q. Landscape and revegetation plan
- R. Site Demobilization Plan
- S. Sexual Exploitation and Abuse and Sexual Harassment Management Plan

A. ENVIRONMENTAL MONITORING PLAN

The aims of this Monitoring Program is to ensure that the works phase do not affect the surrounding environment and to know the degree of effectiveness of the environmental management procedures.

The monitoring program will show if the environmental procedures and corrective actions are effective, will allow re-defining the environmental strategy if necessary.

The aims of this Monitoring Program are:

- To evaluate the adequacy of Environmental Assessment;
- To suggest ongoing improvements in the management Program based on the monitoring and to devise fresh monitoring on the basis of the improved ESMP;
- To enhance environmental quality through proper implementation of suggested mitigation measures;
- To meet the requirements of the existing environmental regulatory guidelines and community obligations.

At least These following parameters should be periodically monitored during construction phase:

- Noise (weekly or daily depend on the works)
- Soil (if necessary because of some incident)
- Wastewater quality/Waste streams generated
- Air quality (for PM_x, SO₂, NO_x, CO)
- Waste management
 - ✓ Waste management checklist to be filled monthly basis.
 - ✓ Quantities of waste delivery from the project: monthly
 - ✓ Quantities of sewage form septic tanks and chemical WCs: monthly
- Ecological status (monthly)
- Recruitment of local population (monthly)
- Public complaints (as necessary or monthly)

All monitoring results will be recorded in the site Environmental Monitoring Program register, and it will be shown in the monthly report.

B. ENVIRONMENTAL EMERGENCY RESPONSE PLAN

Purpose

To ensure that all the identified emergencies are properly planned, evaluated and required equipment and resources are made available to prevent and mitigate Environmental impacts in case of actual emergencies situations. This procedure is intended to ensure that in case of incident such as major leakage all necessary actions are taken for protection of Company Personnel, Contractors, the environment, surrounding communities and the assets ,it could serve as the baseline for subcontractors as well as the staff. Further measures can be add in order to improved good practices.

The Emergency Response Plan (ERP) plans are general action plans to tackle emergencies that may occur within an operational site and adjacent communities. This will enable lives to be protected and damage to be kept to a minimum in an emergency at the operational site.

Contingency plans also serve as a guide to the workers at the Operational site to respond to emergencies in an orderly and effective manner.

✓ Terminology

Incident :Uncontrolled and unplanned work-related event in which an injury, ill health, fatality, environmental pollution, business interruption, business loss and/or business or commercial impact regardless of severity) occurred, or could have occurred.

Emergency : An incident which either triggers a long-term threat or poses an immediate risk to health, property, the environment, commercial or business objectives and/or business continuity and requires urgent intervention to contain and resolve the situation.

Crisis : A time of intense difficulty or danger. i.e. Security situation, Natural disasters etc.

Emergency and Preparedness Management Plan: A location-specific plan that details the immediate actions, roles and responsibilities of personnel and the resources required before, during and after an incident to minimize its effects.

Direct Cause : Causes which immediately/directly lead to the incident

Root Cause : The root causes of an incident can be defined as Incident Reporting, Classification and Investigation

- An identified reason for the presence of a defect or issue / incident
- The most basic reasons, which if eliminated, would prevent recurrence
- The source or origin of an event.

Hazardous Substance : Any chemical, material, substance or waste that is classified as “hazardous” by UN classification or local legislation. Hazardous substances can cause harm to people, property and the natural environment because of their corrosive, toxic, carcinogenic, explosive, flammable, oxidizing, radioactive, infectious and/or eco-toxic properties.

Contain or containment: means actions taken in response to a release or threat of release of oil into the environment to prevent or minimize such release so that it does not spread, migrate or otherwise cause or threaten substantial danger to present or future public safety, welfare or the environment.

Corrective Action: Action to eliminate the cause of a detected nonconformity or other undesirable situation.

Preventive Action: Action to eliminate the cause of a potential nonconformity or other undesirable potential situation. The Emergency Response Plans (ERP) focus in accidental spills/leaks, the whole plan served as a guide for avoiding the consequences of this kind of incidents.

The most common environmental emergency in operational site is the oil and chemical spill, which is a potential cause for soil contamination, groundwater and water pollution. Spills of hazardous materials may include:

- Gasoline
- Diesel
- Hydraulic oil
- Lubricating oil and grease
- Cleaning solvents
- Any other chemical product

The ERP must be prepared to cover any potential risks of accidents or spills and will be made known and available to all workers within the site. Key personnel will know and understand their responsibilities as well as coordinate their response actions with their subordinates.

This plan serves as a guideline to organize a prompt and effective response to oil or chemical spills affecting or likely to affect the area of the site and to ensure preparedness, response and reporting following an oil and chemical pollution incident.

For this purpose, the following specific actions are listed:

- Preparedness
- Response
- Reporting

✓ **Preparedness**

- Ensure that Environmental Aspect & Impact assessment, Hazard identification & Risk Assessment is being conducted on regular basis, during respective management of change and during any maintenance works and that suitable controls are in place.

- Ensure the required competences of personnel / team members while selecting an Emergency response team (ERT) and ensure that their certifications / certificates remains updated and be available.
- Everyone will pass an initial induction and training about instruction to follow in case of a leakage.
- Ensure that emergency numbers, location of equipment's and other important information have been adequately communicated to all concerned in the plant.
- Relevant departmental head in coordination with Site HSE officer will ensure that emergency procedure has been communicated to all contractors working in the plant.
- A variety of equipment and personal protective equipment may be needed to support a chemical or oil spill incident response.

A list of equipment is detailed below:

- Sand
- Sandbags
- Buckets and shovels
- Storage containers
- Spill kit

Sand stocks will be dry and buckets and shovels readily available. Mechanical loading shovels, excavators and dump trucks may also be available for sand distribution and clean up. Storage containers for contaminated materials and earth will be bunded, located in the waste storage area, and labelled and treated as hazardous waste.

- All equipment will be stored in a safe location on site near the storage and waste areas. This material is to be used to contain and clean up pollution/spills, care will be taken to dispose of any absorbent materials properly. The Supervisor and Environment Coordinator will keep stocks well maintained and replenished.

✓ **Response**

In the event of a chemical or oil spill the following measures will be employed:

- Notify HSE Supervisor or Environment Responsible
- Only attempt containment and clean-up operations of spilt substances when it can be performed safely
- If spilled material is flammable, eliminate sources of ignition near spill area
- Evacuate personnel and neighbours if they are at risk
- Secure the area and establish perimeter control at a safe distance from the spill.

✓ **Oil Spill Response Options**

Remedial action to collect and remove all materials contaminated by the oil spillage or leakage event is to be taken immediately. The following actions are required:

- Any oil remaining on the ground is to be collected using oil spill kit. The spill is to be surrounded by the kit and then the area of the spill is to be slowly reduced by enclosing the absorbent. The absorbent pads will be used to absorb the oil. Once all of the oil on the ground surface has been collected, the absorbent agents themselves are to be appropriately stored and disposed
- All contaminated materials are to be handled as hazardous waste. The contaminated material shall be collected and appropriately stored. A hazardous waste vendor will collect this
- Contaminated materials will be stored in plastic barrels with tightly closing lids. These barrels are to be stored in a concrete lined bund if available. In absence of such a bund at the site as a short-term storage alternative, a double plastic lined bund will be used. Barrels will be placed on plastic or wooden pallets in the temporary double plastic lined bund and not directly on the plastic; and
- Conventional metal barrels will not be used, however if there are no alternatives the materials may be stored in them provided, they are covered with plastic sheet tightly fastened to prevent Aeolian distribution and again are stored in an appropriately bunded location to prevent leakage will the barrels

suffer corrosion. All contaminated materials that cannot be collected and disposed are to be cleaned in-situ. This cleaning is to be undertaken by an approved service providers.

✓ **Chemical Spill Response Options**

The following actions are to be taken in case of a chemical spill;

- Only attempt containment and clean-up operations of spilt substances when it can be performed safely
- If spilled material is flammable, eliminate sources of ignition near spill area
- Liquid spills – If the spill is liquid its path will be blocked or diverted and then soaked up using an absorbent material such as sand
- Gaseous spills/leaks – A gaseous leak must be stopped at the source as soon as possible and will then disperse in the air
- No spills will be rinsed away
- Contaminated soils and clean-up materials from spills will be handled properly using personal protective equipment, stored in a suitable container that is then labelled and stored in the appropriate location for subsequent disposal
- Any stockpiles of remnant contaminated materials will be covered
- Contaminated materials will be stored in plastic barrels with tightly closing lids. These barrels are to be stored in a concrete lined bund if available. In absence of such a bund at the site as a short-term storage alternative, a double plastic lined bund will be used
- Barrels will be placed on plastic or wooden pallets in the temporary double plastic lined bund and not directly on the plastic
- Conventional metal barrels will not be used, however if there are no alternatives the materials may be stored in them provided they are covered with plastic sheet tightly fastened to prevent Aeolian distribution and again are stored in an appropriately bunded location to prevent leakage will the barrels suffer corrosion. All contaminated materials that cannot be collected and disposed are to be cleaned in-situ. This cleaning is to be undertaken by an approved service providers.

C. EROSION AND SEDIMENT CONTROL PLAN

✓ **Rehabilitation and Soil Erosion Prevention**

- i. To the extent practicable, the Contractor shall rehabilitate the site progressively so that the rate of rehabilitation is similar to the rate of construction.
- ii. Always remove and retain topsoil for subsequent rehabilitation. Soils shall not be stripped when they are wet as this can lead to soil compaction and loss of structure.
- iii. Topsoil shall not be stored in large heaps. Low mounds of no more than 1 to 2m high are recommended.
- iv. Re-vegetate stockpiles to protect the soil from erosion, discourage weeds and maintain an active population of beneficial soil microbes.
- v. Locate stockpiles where they will not be disturbed by future construction activities.
- vi. To the extent practicable, reinstate natural drainage patterns where they have been altered or impaired.
- vii. Remove toxic materials and dispose of them in designated sites. Backfill excavated areas with soils or overburden that is free of foreign material that could pollute groundwater and soil.
- viii. Identify potentially toxic overburden and screen with suitable material to prevent mobilization of toxins.
- ix. Ensure reshaped land is formed so as to be inherently stable, adequately drained and suitable for the desired long-term land use, and allow natural regeneration of vegetation.
- x. Minimize the long-term visual impact by creating landforms that are compatible with the adjacent landscape.
- xi. Minimize erosion by wind and water both during and after the process of reinstatement.

- xii. Compacted surfaces shall be deep ripped to relieve compaction unless subsurface conditions dictate otherwise.
- xiii. Revegetate with plant species that will control erosion, provide vegetative diversity and, through succession, contribute to a resilient ecosystem. The choice of plant species for rehabilitation shall be done in consultation with local research institutions, forest department and the local people.

D. EXCAVATED MATERIAL MANAGEMENT PLAN

✓ Excavated Material Management and Materials

Objectives : To limit the risks of excessive sediment discharge into surface waters, instability (landslide) and excessive impact on land use ;

Principles : Choice of deposit area, adaptation of the design and anti-erosion measures.

- The Excavated Material Management Plan will be prepared by the Contractor as part of the preparation of the ESMP. Each site selected for the storage of excavated material will follow the submission schedule conditions already set out for this type of document;
- The choice of sites will respect the following conditions as far as possible:
 - The site will preferably be in a non-forest area (in order to limit land clearing) and not cultivated;
 - The site will be easily accessible in order to avoid the creation of new access routes ;
 - The boundaries of the Site shall be located more than 200 m from any dwelling on the Site;
 - The boundaries of the site shall preferably be located more than 200 m from any river, but shall in no case approach it within 50 m;
 - The site must not obstruct permanent or temporary natural flow and must not be located in a flood zone; In the event of impossibility to comply with these conditions, the Contractor will first undertake technical studies relating to the diversion of the flow or the estimation of the impact on surface flows in the event of flooding.
- The entire depot area will be stripped of its topsoil beforehand which will be stored and preserved for the duration of use of the site to be reused for the purpose of revegetation of the slopes of the depot or restoration of the site if the deposit is temporary;
- The plan will have to detail the progress program of the deposit, in order to phase the stripping operations and site preparation to minimize the areas of disturbed and unused land;
- Prior to stripping and initiating the repository, a site drainage system will be put in place respecting the specifications;
- For reasons of stability and resistance to rain erosion, material deposits will not exceed 6 m in height, with a maximum slope of 1.5:1. The slope will be intercepted at a height of 3 m by a berm with a minimum width of 2 m which will carry a drainage ditch;
- For permanent deposits of excavated material, the conditions will be as follows: Maximum slope of 1.5:1, berm 2 m wide every 3 m high carrying a peripheral drainage ditch; The excavated material will be regularly shaped and compacted to ensure its long-term stability.
- The drainage system will be reinforced (riprap, concrete) at all flow concentration points and at vertical flows.
- The slopes of the permanent deposits will be revegetated as the deposit grows. For example, as soon as the first berm is built, the slope completed between ground level and this first berm (+3m) will have to be revegetated after spreading topsoil initially preserved on the surface.
- Temporary deposits whose stay before use exceeds 60 days will be revegetated using rapidly developing herbaceous species, either by direct seeding or by hydraulic seeding (hydroseeding), in order to protect the deposit against erosion;
- The revegetation will be carried out according to the landscape and re-vegetation plan.

✓ **Material Excavation and Deposit**

The Contractor shall obtain appropriate licenses/permits from relevant authorities to operate quarries or borrow areas.

The location of quarries and borrow areas shall be subject to approval by relevant local and national authorities, including traditional authorities if the land on which the quarry or borrow areas fall in traditional land.

New extraction sites:

- a) Shall not be located in the vicinity of settlement areas, cultural sites, wetlands or any other valued ecosystem component, or on high or steep ground or in areas of high scenic value, and shall not be located less than 1km from such areas.
- b) Shall not be located adjacent to stream channels wherever possible to avoid siltation of river channels. Where they are located near water sources, borrow pits and perimeter drains shall surround quarry sites.
- c) Shall not be located in archaeological areas. Excavations in the vicinity of such areas shall proceed with great care and shall be done in the presence of government authorities having a mandate for their protection.
- d) Shall not be located in forest reserves. However, where there are no other alternatives, permission shall be obtained from the appropriate authorities and an environmental impact study shall be conducted.
- e) Shall be easily rehabilitated. Areas with minimal vegetation cover such as flat and bare ground, or areas covered with grass only or covered with shrubs less than 1.5m in height, are preferred.
- f) Shall have clearly demarcated and marked boundaries to minimize vegetation clearing.

Vegetation clearing shall be restricted to the area required for safe operation of construction work. Vegetation clearing shall not be done more than two months in advance of operations.

Stockpile areas shall be located in areas where trees can act as buffers to prevent dust pollution. Perimeter drains shall be built around stockpile areas. Sediment and other pollutant traps shall be located at drainage exits from workings.

The Contractor shall deposit any excess material in accordance with the principles of these general conditions, and any applicable EMP, in areas approved by local authorities and/or the Supervising Energy expert.

Areas for depositing hazardous materials such as contaminated liquid and solid materials shall be approved by the Supervising Energy expert and appropriate local and/or national authorities before the commencement of work. Use of existing, approved sites shall be preferred over the establishment of new sites.

E. MANAGEMENT PLAN FOR QUARRY SITES AND BORROWED AREAS

✓ Management Plan for Quarry Sites and Borrowed areas

Objectives: To limit noise and dust impacts and risks to public safety.

Principles: Definition of an operating plan that reduces the footprint of operations, the distance of material transport and optimizes good environmental practices applicable to operational conditions on site.

- As part of the preparation of its ESMP, the Contractor will establish a Quarry Management Plan (riprap, sand and gravel, laterite, clay quarry) including borrowing sites defining all the good environmental practice measures that it undertakes to implement, in compliance with these specifications.
- For each material production site, the Contractor will draw up within the framework of the plan, a specific Management Plan that precisely defines the measures applicable to the site. The submission of this Plan to the PIU follows the rules established for plan.
- The Contractor will limit as much as possible the extension of the site by optimizing its operation;
- The measures implemented for erosion and sedimentation control whose specifications are presented above are applicable to quarry sites. In particular, all storm drainage water and material wash water will have to pass through a sedimentation basin.
- The Plan will detail the points of follow-up measures implemented at the level of discharges into rivers.
- As with other types of sites, topsoil will be pre-stripped and preserved for final site rehabilitation.
- The boundaries of a riprap quarry, where the use of explosives is planned, may not be located within 300 m of dwellings within the Site, in order to have a sufficient security perimeter; All dwellings located within a minimum radius of 800 m around the quarry will be the subject, before the start of the exploitation of the exploitation, of a photographic survey of their general condition to avoid any undue dispute after the start of the mine shooting. The firing of mines will be carried out in accordance with the safety rules defined in the Health and Safety Plan, and will be in particular (i) preceded by siren signals so as to warn the neighboring population, which will have benefited from appropriate prior training and awareness, and (ii) preceded by the temporary closure of road access crossing the security perimeter. In the event of identified problems related to the intensity of the shots, the PIU will be entitled to ask the Contractor to carry out seismographic measurements of the intensity of the vibrations generated by the shots, at a variable distance from the firing points, under the control of the Engineer. The cost of any measures will be borne by the Contractor.
- The use of explosives will be limited to the 6am-6pm time slot in all sites located within one km of homes or near workers' camps ; Unless specifically advised otherwise by the PIU, no time restrictions are imposed in isolated sites;
- The conditions for storing explosives on site, if necessary, shall comply with the provisions of the Government of Tunisia and ESF;
- The road traffic specifications will be strictly implemented for all trucks transporting materials.
- Due to the importance of the noise generated by quarry activities, the Contractor will ensure scrupulous compliance with the wearing of personal safety equipment by site employees;
- The Plan will set out the measures applicable by the Contractor to control dust. In particular, systems for spraying materials at the crusher and conveyor belts are desirable.
- Truck wheel washing systems at the exit of the main extraction sites will be set up by the contractor.

Blasting

- Blasting activities shall not take place less than 2km from settlement areas, cultural sites, or wetlands
- without the permission of the Supervising Energy expert.
- Blasting activities shall be done during working hours, and local communities shall be consulted on the proposed blasting times.
- Noise levels reaching the communities from blasting activities shall not exceed 90 decibels.

F. WATER QUALITY MONITORING**✓ Water Quality Monitoring**

Objectives: Limit water pollution from activity sites and comply with the regulations in force.

Principles: Regularly monitor the effectiveness of pollution control measures implemented at sites.

As part of the preparation of the ESMP, the Contractor will prepare a Water Quality Monitoring Plan that will be applicable at any point concerned by the site activities. The specifications for the preparation of such a Plan are as follows:

- The monitoring program is applicable to natural surface waters, groundwater and all discharges from activity sites dependent on the Project.
- The following are among the facilities for which regular monitoring of water quality is requested from the Contractor :
 - Treated effluents from wastewater treatment plants;
 - Sedimentation basins of concrete plants;
 - Stormwater sedimentation ponds in sites considered particularly sensitive;
 - Drainage water from workshop sites, storage of hazardous products and canteen areas;
 - Water bodies receiving discharges from the sites, with upstream and downstream control of the discharge point;
 - Work sites in rivers, with control of the solid load upstream-downstream works;
 - Drinking water storage and distribution points .
- Monitoring will cover at least the following water quality indicators :
 - Organic pollution: BOD5, Nitrates, Phosphates, particularly related to living areas and sanitation systems ;
 - Oils and grease, relating to the drainage of mechanical activities, the storage of dangerous products (hydrocarbons) and waste water from canteens;
 - Suspended matter, relating to drainage water and performance criteria for anti-erosion installations and sedimentation basins;
 - Bacterial pollution: Fecal and total coliforms, relating to the quality of the drinking water distributed;
 - Chlorine residual, measured at distribution points in the drinking water network ;
 - Groundwater pollution related to the landfill site: BOD5, ammoniacal nitrogen, nitrates, chlorides, zinc, chromium, lead, mercury;
- All samples will also be measured in situ using a probe including: Temperature, pH, Dissolved oxygen;
- To carry out these follow-ups during the duration of the work, the Contractor will install an on-site chemical analysis laboratory capable of carrying out the analysis of these basic parameters;
- The frequency of measurements will vary from once a week to once a month depending on the type of installation concerned. The contractor will make a prior estimate of the number of sites and analyses as part of its offer; the frequency may be occasionally and temporarily increased at certain sites where problems have been identified;
- The Water Quality Monitoring Plan will detail the Contractor's program and will locate on map the location of withdrawal sites;
- The Contractor will provide the Engineer with the results of the water quality monitoring on a weekly or semi-monthly basis;
- It should be noted that the Engineer will randomly take samples and analyze water to confirm the validity of the Contractor's results.

✓ Water Resources Management

The Contractor shall at all costs avoid conflicting with water demands of local communities.

Abstraction of both surface and underground water shall only be done with the consultation of the local community and after obtaining a permit from the relevant Water Authority.

Abstraction of water from wetlands shall be avoided. Where necessary, authority has to be obtained from relevant authorities.

Temporary damming of streams and rivers shall be done in such a way avoids disrupting water supplies to communities downstream, and maintains the ecological balance of the river system.

No construction water containing spoils or site effluent, especially cement and oil, shall be allowed to flow into natural water drainage courses.

Wash water from washing out of equipment shall not be discharged into water courses or road drains.

Site spoils and temporary stockpiles shall be located away from the drainage system, and surface run off shall be directed away from stockpiles to prevent erosion.

G. WASTE MANAGEMENT PLAN

This Plan defines the requirements for control the waste produced during construction phase. It applies to all staff and Subcontractors or supplier involved in the proposed works.

The procedure sets out the management framework to ensure that legal, contractual and ESIA requirements are fulfilled.

The Waste Management Plan is an 'alive' document, updates to the plan may be necessary, any change will be recorded along with new revisions.

✓ **Waste management**

Objectives: To prevent pollution of the natural environment through the generation of solid waste, leachate and effluent:

- Description of the nature, types and quantities of the generated wastes
- The way to identify, segregation and storage of different wastes
- The final disposal (list of local companies in charge of transport and manage the wastes)
- Check-list to fill in (reviewing of the waste management system)
- Quick guide of waste management for training
- Keep records of all documentation

Principles: Implementation of the principles of sound waste management (limitation of production, reuse or recycling, storage under conditions that meet international practices) and effluents (appropriate treatment before discharge).

This Waste Management Plan includes both, solid wastes (hazardous and non-hazardous) and liquid wastes (wastewater).

✓ **Solid waste**

- As part of the preparation of the ESMP, the Contractor will prepare a Waste Management Plan for all sites and activities under its responsibility meeting the following specifications:
- General principles:
 - A categorization of waste must be implemented in the Site (Hazardous, non-hazardous, domestic, solid, liquid)
 - Non-hazardous domestic waste will be collected regularly and deposited in one or more treatment centers;
 - Non-hazardous construction waste will be recycled or landfilled in a dedicated site;
 - Waste classified as hazardous will be stored in a dedicated site before being disposed of and/or stored in a final storage facility;
- Facilities for the treatment of domestic waste will be set up by the Contractor :

- Prior to commencing the works, the Contractor will identify a suitable location for the establishment of a treatment center for domestic waste from the camps;
- The site must be located at a minimum distance of more than 100 m from any river, outside any flood zone; After excavation of the deposit cells, the bottom of the latter must not be located less than 2 m from the roof of the water table in its highest seasonal position; It will be fully fenced, and its access controlled 24 hours a day.
- The installation will respond in its design to international good practices: (i) the cells will be sealed on their walls and on the bottom by the installation of a geomembrane at least 2.5 mm thick at welded tight junctions, or by a layer of compacted clay of minimum thickness of 0.5 m and permeability less than 10⁻⁷ cm/s; (ii) a drainage system for leachate recovery will be put in place; (iii) the leachate will be transported to a lagoon system for aerobic/anaerobic treatment before discharge into the external environment or temporarily stored for regular removal and transfer to a treatment facility (septic tank or treatment plant); (iv) each cell will be surrounded by external drainage limiting the entry of runoff;
- The facility will be sized to treat the waste generated during the construction period as well as the waste that will be produced by the operator's city during the first 10 years of operation; the Contractor will ensure that at the end of the contract a sufficient volume of free cell for this need will be validated by the PIU;
- The installation will respond in its operating procedure to the following good practices: (i) concrete platform for manual sorting of waste brought before deposit in the cell; (ii) regular compaction of garbage and regular covering with soil to limit odors and insect proliferation ; (iii) when the cell is full, installation of vents for the evacuation of gases, covering by geomembrane of minimum thickness 1 mm or layer of compacted clay before final covering by 1.5 m of topsoil to be revegetated.
- A storage center for recyclable products (iron, wood, plastics, glass) will be installed within the boundaries of the landfill allowing the segregation of products before their disposal;
- At least 5 wells (boreholes) will be established at the landfill site boundary that will enter the water table at appropriate locations to allow regular monitoring of groundwater quality and detect any pollution from the site;
- Domestic waste will be collected in bins placed in sufficient numbers in camps and construction sites and which will allow the segregation of waste at source; they will be regularly cleaned;
- Waste will be removed regularly, at least 2 times a week; if necessary, temporary covered shelters will be set up in the camps to store garbage bags awaiting removal ;
- Non-putrescible and non-hazardous waste (metal, glass, rubber, tires) that can be recycled will be stored in the dedicated area of the landfill; any non-recycled part will be buried in a dedicated cell of the landfill at the end of the site; non-recycled tires will be cut before landfill;
- The Contractor will identify the existing channels in Tunisia for the recycling of these products;
- Non-hazardous non-recyclable waste (concrete and other construction waste) will be disposed of and may be buried in permanent deposits consisting of unused excavated material (with the exception of contaminated products);
- Hazardous waste (waste oils, oil and fuel filters, paint cans, solvent cans, vehicle batteries, anti-pollution kits, waste from clinics and first aid stations, etc.) will be separated from other waste and stored in areas identical to those used for hazardous products;
- As part of the preparation of the ESMP, the Contractor will identify the solutions for the treatment of engine oils, hydraulic fluids and used coolants and the various associated filters, which constitute the bulk of the volume of hazardous waste expected; transportation to a refinery is the preferred solution, but if this is not possible, the Contractor will identify other solutions: alternative fuel in cement plant, distillation treatment, etc.
- The Contractor will maintain a register showing all movements of hazardous waste, in order to ensure the traceability of the waste;
- In the event of removal for treatment by an external subcontracting company, the Contractor will provide the PIU with any information proving that the final treatment of the waste is carried out in accordance

with good practices; the PIU reserves the right to visit the subcontractor's facilities and refuse use to the Contractor if the processing conditions are not deemed acceptable;

- All other hazardous products (batteries, fluorescent tubes, energy-saving light bulbs, empty paint cans, etc.) will be collected and stored in a dedicated storage area meeting the criteria set out in section 3.7 (Management of Hazardous Products); in the absence of any external solution for the treatment of this waste, the Contractor will propose to the PIU a long-term storage solution on site, providing all the guarantees of containment and control of the risk of pollution for the environment: for example, storage pit buried within the limits of the burial, with waterproof concrete walls and closed by a waterproof concrete slab which may, in the future, be opened and emptied of its contents when the country has equipped itself with a treatment center for hazardous waste; this final storage center will be sized to ensure the needs that will otherwise be anticipated by the Contractor before demobilization of the site sites;
- The clinic and health centers will use plastic bags of a particular color for their waste to ensure traceability and avoid mixing with other waste; medical waste will be collected separately and incinerated in a system that guarantees a home at more than 700°C.
- The Contractor will set up a training system for its employees to ensure that the basic rules of waste management are known and understood by all; personnel directly involved in the management of the landfill and hazardous waste storage will receive specific technical training (see section 3.15. Environmental and Social Training)

✓ **Waste water**

- As part of the preparation of the Waste Management Plan, the Contractor will develop a Wastewater Management Plan on all activity sites.
- The Plan will present the treatment principles adopted (treatment plant, septic tank, latrines, etc.) for the various types of sites : permanent city of the operator, city of workers, temporary camps, mobile camps, construction sites. The Contractor's choices will be explained and the selected sizing justified in terms of load and quality of processing;
- Particular attention will be paid to canteen installations generating high organic loads and requiring treatment systems with appropriate sizing;
- Any discharge of waste water into natural surface waters may not exceed 30 mg/l BOD₅ and may not contain more than 50 mg/l of suspended solids;
- The Contractor will detail the resources mobilized and the procedures proposed for the maintenance of septic tanks;
- Septic tank sludge will under no circumstances be dumped into landfill cells used for domestic waste; they will be deposited in dedicated trenches set up on the landfill site and stabilized with quicklime before being covered with earth;
- During site demobilization operations, toilet septic tanks will be opened, stabilized with quicklime with pH 12 maintained for a minimum of half an hour, before being filled with soil and completely covered.

✓ **Work site/Campsite Waste Management**

- All vessels (drums, containers, bags, etc.) containing oil/fuel/surfacing materials and other hazardous chemicals shall be bonded to contain spillage. All waste containers, litter and any other waste generated during the construction shall be collected and disposed off at designated disposal sites in line with applicable government waste management regulations.
- All drainage and effluent from storage areas, workshops and camp sites shall be captured and treated before being discharged into the drainage system in line with applicable government water pollution control regulations.
- Used oil from maintenance shall be collected and disposed off appropriately at designated sites or be re-used or sold for re-use locally.
- Entry of runoff to the site shall be restricted by constructing diversion channels or holding structures such as banks, drains, dams, etc. to reduce the potential of soil erosion and water pollution.

- Construction waste shall not be left in stockpiles along the road but removed and reused or disposed of on a daily basis.
- If disposal sites for clean spoil are necessary, they shall be located in areas, approved by the Supervising Energy expert, of low land use value and where they will not result in material being easily washed into drainage channels. Whenever possible, spoil materials should be placed in low-lying areas and should be compacted and planted with species indigenous to the locality

H. HAZARDOUS PRODUCTS MANAGEMENT PLAN

✓ Management of Hazardous Products

Objectives: To reduce the risk of chronic or accidental pollution of water or soil by hazardous products or waste stored at activity sites.

Principles: Preparation and implementation of rigorous procedures in the use of hazardous chemicals; establishment of an emergency response procedure in the event of a serious accidental release of hazardous product.

- As part of the development of the ESMP, the Contractor will prepare a Hazardous Products Management Plan (PGPD) with the following specifications:
- The PGPD will cover all chemicals used on site (mainly hydrocarbons, concrete additives and paints) as well as the main hazardous liquid wastes mainly represented by used hydraulic oils and fluids;
- In the choice of products, the Entrepreneur will exclude:
 - Products containing asbestos in friable form,
 - PCBs (Polychlorinated biphenyls),
 - Lead paints,
 - Lead lubricants,
 - Chromium antioxidants
 - Products containing heavy metals including mercury (with the exception of Nickel-Cadmium batteries from computers and scientific materials).
- All hazardous products entering the site will be recorded in an updated tracking log at each acceptance or use;
- The technical data sheet of all hazardous products entering the Site must be produced in order to determine the conditions of use and treatment once released.
- Used oils and other hydraulic fluids will similarly be registered at the site where these products will be received on a dedicated storage reception; the register will be available from the storage site manager;
- The storage of any hazardous product or waste will only be allowed in areas dedicated to the following characteristics:
 - Concrete platform on the ground surrounded on its 4 sides by a watertight wall whose height will depend on the required retention volume: this volume is defined at least equivalent to 110% of the volume of the largest tank present on the site (minus the volume corresponding to the footprint of all the tanks stored on the site in the retention area);
 - The entire platform is covered with roof overflow of at least 50 cm;
 - In order to allow the evacuation of rainwater, presence of a valve at the lowest point of the site leading into a deoiler before transfer to the local drainage network;
- The pesticides that will be used on the sites, for example for the control of disease vectors, must be acceptable by the PIU, as well as by the regulations of the World Bank. The products chosen must have little or no toxicity to aquatic life, limited persistence in soil, rapid biodegradation and low risk to the user; they will, as far as possible, be replaced by preventive solutions such as, for example, the use of impregnated personal mosquito nets;

- The Contractor shall develop on the various sites where he intends to store hazardous products storage of variable size adapted to his needs, but all must respect the principles set out above;
- At each hazardous product storage area, procedures relating to product labelling, handling safety instructions, user risks and emergency procedures in the event of an accident will be followed:
- The filling of vehicle and equipment tanks will be carried out by dedicated mobile equipment or will be carried out on watertight concrete slabs in order to limit the risk of spillage and pollution.
- Training programs for relevant staff will be implemented.
- An emergency response procedure in the event of an accident will be prepared by the Contractor and included in this plan.

✓ **Disposal of Unusable Elements**

- Unusable materials and construction elements such as electro-mechanical equipment, pipes, accessories and demolished structures will be disposed of in a manner approved by the Supervising Energy expert. The Contractor has to agree with the SE which elements are to be surrendered to the Client's premises, which will be recycled or reused, and which will be disposed of at approved landfill sites.

As far as possible, abandoned pipelines shall remain in place. Where for any reason no alternative alignment for the new pipeline is possible, the old pipes shall be safely removed and stored at a safe place to be agreed upon with the Supervising Energy expert and the local authorities concerned.

AC-pipes as well as broken parts thereof have to be treated as hazardous material and disposed of as specified above.

Unsuitable and demolished elements shall be dismantled to a size fitting on ordinary trucks for transport.

I. DUST AND OTHER AIR EMISSION CONTROL PLAN

✓ **Control of dust and other air emissions**

Objectives: Limitation of air pollution from activity sites and compliance with the regulations in force.

Principles: Regularly monitor the effectiveness of the anti-pollution measures implemented on the sites, in particular the dust control measures along the accesses to the site.

- The Contractor will prepare in the context of the ESMP an Air Pollution and Dust Control Plan, detailing the measures it intends to implement and the means it proposes to mobilize.
- The Plan will incorporate a strict maintenance monitoring procedure for internal combustion engines and vehicles to minimize exhaust gas emissions into the atmosphere;
- The Plan will mention the measures imposed on the site with regard to the burning of waste (imposed elsewhere in the specifications section 3.13 Waste Management) and the reduction of nuisance by odors; Only the combustion of non-toxic waste will be allowed: wood, cardboard and paper; this can only be carried out at the waste treatment center or, for small quantities, at dedicated sites on site (for example, biomedical waste from health centers, to be disposed of in appropriate incinerators reaching a temperature of at least 700°C).
- The Contractor will also have the obligation to effectively combat the emission of dust on the sites specific to the site and along the access roads frequented by vehicles related to the project to the right of inhabited areas;
- The Contractor will define its strategy with regard to the means of control: prior paving of the sections concerned, watering, but which imposes repeated passages and therefore a large truck fleet, or spreading hydrophilic agents such as polymers or magnesium chloride which allow monthly or even seasonal frequency spreading;
- The speed will be set at 30 km in the village and 50 km on the lateritic roads.
- The fight against dust will be based on the following principles:

- Reduction of potential dust emitting areas: minimization of disturbed and cleared areas opened at the same time, gradual revegetation of disturbed sites, deposits of excavated material or materials as they are completed;
- On roads and lanes within the site, reduced vehicle speed;
- On access roads and internal roads to the site, regular application of water or other product allowing a fixation of particles on the ground.
- The Contractor will develop in this Plan a detailed action program for dust control, which constitutes on this type of construction site and on access roads the most severe nuisance for residents. This plan will identify:
 - Water points identified or to be created for the refueling of tanker trucks;
 - The capacity of the tankers mobilized and the calculation of the number of trucks needed.
- The Plan will present the performance criteria, including Norms and Standards, selected by the Contractor.

J. NOISE CONTROL PLAN

✓ Noise control

Objectives : To limit noise on the construction and operations sites and in its surroundings.

Principles : Preventive measures and adaptation to local constraints.

- The Contractor will prepare in the context of the ESMP, a Plan detailing the measures it intends to implement to limit noise during its activities;
- The on-site equipment will use quality equipment, equipped with the latest soundproofing systems;
- Vehicles will be rigorously monitored to keep engines and exhaust systems in conditions of minimum noise level;
- All noisy work (shooting, rocking, drilling, percussion, etc.) will preferably be carried out during the day. They may be allowed at night in isolated areas but will be prohibited between 6 p.m. and 6 a.m. for all sites located within 1 km of homes or workers' camps ;
- Heavy vehicle traffic will only be allowed at night in certain sections to be determined.
On-site noise will comply with applicable international health and safety standards and recommendations (World Bank EHS Guidelines) and must not expose workers to intensities greater than 80 dBA without personal protective equipment.

K. PHYSICAL CULTURAL RESOURCES MANAGEMENT PLAN

✓ Management of Physical Cultural Heritage (CH)

Objective: The specific purpose is the protection of physical cultural resources or heritage discovered during the course of the work.

Principles: Implementation of a procedure allowing a rapid feedback of information in case of discovery and the security of the CH while limiting as much as possible the impact on the progress of the work.

- As part of the preparation of its ESMP, the Contractor will develop a Chance Find Management Plan that will define all the steps to be followed in the event of discovery, in accordance with the World Bank's ESS8;
- Prior to commencing work at a given site, the PIU shall confirm to the Contractor (i) the presence of CH proven during the impact studies and their location for preservation purposes, or (ii) the absence of information on the possible presence of CHs on the site;
- The Plan will provide, inter alia, the following information:
 - Measures taken by the Contractor for all sites notified by the PIU as containing potential or proven CHs;

- Process of internal notification to the Contractor of any discovery made by one of its employees, allowing an immediate escalation of information to the hierarchy of the Contractor and the Engineer;
- The obligation to immediately stop activities at the right of the discovery site pending the resumption order that will be given by the Engineer;
- The establishment of a protection perimeter and the related materialization and monitoring measures;
- The communication procedure between the Entrepreneur and the PIU Owner Engineer which will be imperatively followed on the day of discovery;
- The standard form that will be used as the CH discovery report;
- The Entrepreneur will consult, through the PIU, the competent national authorities for the provisions to be implemented;
- The Contractor will include information on this procedure in its E&S awareness program that will be implemented for all its staff
- ✓ **Repair of Private Property**
 - Should the Contractor, deliberately or accidentally, damage private property, he shall repair the property to the owner's satisfaction and at his own cost. For each repair, the Contractor shall obtain from the owner a certificate that the damage has been made good satisfactorily in order to indemnify the Client from subsequent claims.
 - In cases where compensation for inconveniences, damage of crops etc. are claimed by the owner, the Client must be informed by the Contractor through the Supervising Energy expert. This compensation is in general settled under the responsibility of the Client before signing the Contract. In unforeseeable cases, the respective administrative entities of the Client will take care of compensation.

L. BIODIVERSITY MANAGEMENT/ACTION PLAN

✓ **Contents of the Biodiversity Management Plan**

a) Introduction and Objectives of the Plan BMP

Sub Project Description: Details on the type of subprojects, influence areas, activities / including associated facilities with detailing of schedule and duration of construction, labor force to be employed, need of labor camp and likely location and its distance from biodiversity areas

b) Inventory of Terrestrial and Aquatic Flora Fauna:

Details of Rare, endangered, and threatened species if any, Habitat Type, Population and movement route of schedule I species, possible conflicts

c) Probable risks and impacts of subproject activities on Biodiversity areas:

Details of activities which are likely to interface with flora/fauna such as generation of high noise, physical disturbance due to works on water or nearby areas, transportation of raw material, labor camps, and laborers activities, existing disturbances in addition to the ones caused by the project

d) Application of Regulations:

Legal status of biodiversity areas and compliance requirements, need for permissions, documentation, stakeholder discussions

e) Management plan:

- Measures for avoiding impacts on biodiversity, minimizing, mitigating, and managing possible impacts and risks (eg: control on noisy activities in certain locations, the timing of construction, lighting restrictions, areas to avoid – such as nesting, brooding, spawning areas), enhancement of biodiversity and supportive environment during preconstruction, construction, and post-construction stage, including general guidelines for workers for prevention of poaching and protection areas as a whole
- Implementation Schedule for BMP considering the planned timing of construction and other project activities
- Institutional Responsibilities for Implementation, Supervision, Monitoring, Reporting

- Monitoring, Compliance reporting, and budget for BMP implementation, including upfront investment costs and long-term recurrent costs. The BMP also specifies the funding sources for plan implementation as well as recurrent operating costs

✓ Elements of Biodiversity Action Plan

Objectives: Where biodiversity values of importance to conservation are associated with a project or its area of influence, the preparation of a Biodiversity Action Plan (BAP) provides a useful means to focus a project's mitigation and management strategy.

The ultimate objective of a BAP is to achieve no net biodiversity loss or, if Critical Habitat is triggered, net biodiversity gain as a result of the Project. To achieve this, the "Mitigation Hierarchy" is applied to potential impacts identified during the ESIA screening and planning.

Associated Documents with the BAP: The BAP should build on, and should be read alongside, the following Project Documents:

- **Environmental Social Impact Assessment (ESIA).** The ESIA has been further developed and enhanced to create the Project Environmental and Social Impact Assessment (ESIA) which further described baseline conditions within the projects Area of Influence (AoI) outlines potential impacts of the scheme and details key mitigation to be included in design, construction and operation.
 - **Environmental and Social Management Plan (ESMP):** this document to be implemented by the Contractor during final project design and construction. As an operational document it will inform the EPC Contractors own Environmental and Social Management Plans which will be developed prior to construction commencing.
 - **Critical Habitat Assessment:** Undertaken to determine the potential for impacts on Critical Habitat, Priority Biodiversity Features or Designated or Internationally Recognized Sites to occur.
 - **Stakeholder Engagement Plan (SEP):** This provides additional details of the consultation work undertaken to date (including consultations with ecological NGOs) as well as planned future consultation work.
1. For project activities that may affect natural habitats, critical habitats and protected areas, a BAP needs to be in place. Targeted biodiversity-related mitigation and management measures may be integrated into more general Environmental and Social Management Plans (ESMP) or related plans. However, a BAP provides focused attention to actions in ecologically critical areas
 2. A BAP is a more targeted instrument for enhancing and conserving biodiversity and ecosystem services in particular habitats, demonstrated on an appropriate geographic scale. A BAP should seek to achieve net gains to the biodiversity values for which the critical habitat was designated. A BAP is highly context specific.
 3. Typically, a BAP will be undertaken to address significant gaps in information for undertaking biodiversity-related actions (such as insufficient baseline data or understanding of key biodiversity values) and would articulate a management plan where/when adequate information is available for developing appropriate actions.
 4. General elements of a BAP include the following:
 - (1) Description of biodiversity context:
Identifies national and/or regional biodiversity context; location of projects site/s; relevant physiography; general description of relevant ecosystems, habitats, flora, fauna; priority biodiversity features and components of elevated significance.
 - (2) Objectives and targets biodiversity actions and mitigation:
Identifies measures and actions to enhance and conserve biodiversity and/or in accordance with the mitigation hierarchy avoid, minimize, mitigate, potentially significant adverse social and environmental impacts to acceptable levels.
Describes – with technical details – each biodiversity-related action/mitigation measure, including the type of issue/impact to which it relates and the conditions under which it is required (e.g., continuously or in the event of contingencies), together with designs, implementation descriptions and operating

procedures, as appropriate; takes into account, and is consistent with, other relevant mitigation plans (e.g. indigenous peoples, economic displacement).

(3) Implementation action plan (schedule, cost estimates and source of financing):

Outlines an implementation schedule for measures that must be carried out as part of the project, showing phasing and coordination with overall project implementation plans; and the capital and recurrent cost estimates and sources of funds for implementing the BAP (i.e. budget). Describes institutional arrangements, identifying which party is responsible for carrying out the actions/mitigation and monitoring measures.

(4) Stakeholder Engagement:

Outlines context-specific plan to engage in meaningful, effective and informed consultations with relevant stakeholders, including locally affected groups and international NGOs. Includes information on (a) means used to inform and involve affected people and description of effective processes for receiving and addressing stakeholder concerns and grievances regarding the project's social and environmental performance.

(5) Monitoring and reporting:

Identifies monitoring objectives and specifies the type of monitoring, with linkages to the biodiversity actions and mitigation measures.

Describes parameters to be measured, methods to be used, sampling locations, frequency of measurements, detection limits (where appropriate), and definition of thresholds that will signal the need for corrective actions. Establishes reporting schedule and format.

M. TOP SOIL MANAGEMENT PROCEDURE

The Top Soil Management Procedure covers all activities that could result in adverse effects on topsoil and through all phases of the project.

The procedure principally relates to soil quality, the maintenance of the productive capacity of local soils and stripped topsoil, and erosion control from stripped topsoil.

The objectives of the Top Soil Management Procedure will be to:

- Devise and maintain a top soil balance;
- Ensure effective topsoil removal techniques are employed to maximize volumes of suitable topsoil removed and minimize wastage; and
- Maintain topsoil viability during stripping, spreading, and stockpiling, through best practice techniques and effective stockpile design and management.
- During the construction phase, the implementation of this procedure including:
 - Quantities of topsoil removed;
 - Storage locations, quantities and type of topsoil; and
 - Storage procedures and methods used.

Monitoring any changes to in situ soil condition shall ensure that the soils in the area do not undergo any adverse changes over the life of the project. It shall be done at the same locations where the vegetation monitoring is undertaken and shall require establishing representative sampling locations to assess the potential effects of acid deposition, fugitive dust emissions and the mobilization of metals/elements through changes in soil chemistry.

N. SITE TRAFFIC AND SITE ACCESS MANAGEMENT PLAN

✓ Site Traffic and Site Access Management Plan

Objective: To maintain optimum safety conditions on roads and sites.

Principles: Quality of traffic lanes, signage, behavior prevention, access control.

- The Contractor will prepare a road traffic management plan under the GGP that will meet the following specifications:
 - Establishment of a traffic forecast according to the progress of the project: anticipated fleet of vehicles on sites and on public roads;
 - Presentation of the proposed signage and dedicated parking areas;
 - Presentation of the maximum authorized speeds according to the sections of track, the points of installation of retarders, and the fixed control posts on the accesses;
 - Map of access to the site and the control conditions applied (security checks, wearing of badges, etc.);
 - Presentation of the preventive measures implemented by the Entrepreneur: vehicle maintenance program, monitoring of speed compliance, and presentation of the measures taken by the Entrepreneur in the event of non-compliance by its staff with these measures (sanctions, etc.);
 - Proposed accompanying measures for the passage of large exceptional convoys or for the transport of dangerous goods (hydrocarbons, explosives).
 - Location of access roads/detours shall be done in consultation with the local community especially in important or sensitive environments. Access roads shall not traverse wetland areas.
 - Upon the completion of civil works, all access roads shall be ripped and rehabilitated.
 - Access roads shall be sprinkled with water at least five times a day in settled areas, and three times in unsettled areas, to suppress dust emissions.
- Where appropriate, the Contractor will coordinate the preparation of this plan with the preparation of the Health and Safety Plan which will address certain aspects of road traffic and in particular that of emergency measures in the event of an accident. and Safety Plan.

O. PERSONNEL HEALTH MANAGEMENT PLAN

Objectives: To enable the Health and Safety

In advance of the construction work, the Contractor shall mount an awareness and hygiene campaign. Workers and local residents shall be sensitized on health risks particularly of AIDS.

Adequate Road signs to warn pedestrians and motorists of construction activities, diversions, etc. shall be provided at appropriate points.

Construction vehicles shall not exceed maximum speed limit of 40km per hour.

✓ Contractor's Environment, Health and Safety Management Plan (EHS-MP)

Within 6 weeks of signing the Contract, the Contractor shall prepare an EHS-MP to ensure the adequate management of the health, safety, environmental and social aspects of the works, including implementation of the requirements of these general conditions and any specific requirements of an EMP for the works. The Contractor's EHS-MP will serve two main purposes:

- For the Contractor, for internal purposes, to ensure that all measures are in place for adequate EHS management, and as an operational manual for his staff.
- For the Client, supported where necessary by a Supervising Energy expert, to ensure that the Contractor is fully prepared for the adequate management of the EHS aspects of the project, and as a basis for monitoring of the Contractor's EHS performance.

The Contractor's EHS-MP shall provide at least:

- a description of procedures and methods for complying with these general environmental management conditions, and any specific conditions specified in an EMP;
- a description of specific mitigation measures that will be implemented in order to minimize adverse impacts;
- a description of all planned monitoring activities (e.g. sediment discharges from borrow areas) and the reporting thereof; and
- the internal organizational, management and reporting mechanisms put in place for such.

The Contractor's EHS-MP will be reviewed and approved by the Client before start of the works. This review should demonstrate if the Contractor's EHS-MP covers all of the identified impacts, and has defined appropriate measures to counteract any potential impacts.

✓ **EHS Reporting**

The Contractor shall prepare bi-weekly progress reports to the Supervising Energy expert on compliance with these general conditions, the project EMP if any, and his own EHS-MP. An example format for a Contractor EHS report is given below. It is expected that the Contractor's reports will include information on:

- EHS management actions/measures taken, including approvals sought from local or national authorities;
- Problems encountered in relation to EHS aspects (incidents, including delays, cost consequences, etc. as a result thereof);
- Lack of compliance with contract requirements on the part of the Contractor;
- Changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects; and
- Observations, concerns raised and/or decisions taken with regard to EHS management during site meetings.

It is advisable that reporting of significant EHS incidents be done "as soon as practicable". Such incident reporting shall therefore be done individually. Also, it is advisable that the Contractor keep his own records on health, safety and welfare of persons, and damage to property. It is advisable to include such records, as well as copies of incident reports, as appendixes to the bi-weekly reports. Example formats for an incident notification and detailed report are given below.

Details of EHS performance will be reported to the Client through the Supervising Energy expert reports to the Client.

✓ **Training of Contractor's Personnel**

The Contractor shall provide sufficient training to his own personnel to ensure that they are all aware of the relevant aspects of these general conditions, any project EMP, and his own EHS-MP, and are able to fulfil their expected roles and functions. Specific training should be provided to those employees that have particular responsibilities associated with the implementation of the EHS-MP. General topics should be:

EHS in general (working procedures);

- emergency procedures; and
- social and cultural aspects (awareness raising on social issues).

✓ **Cost of Compliance**

It is expected that compliance with these conditions is already part of standard good workmanship and state of art as generally required under this Contract. The item "Compliance with Environmental Management Conditions" in the Bill of Quantities covers these cost. No other payments will be made to the Contractor for compliance with any request to avoid and/or mitigate an avoidable EHS impact.



Example Format: EHS Report

Contract:

Period of reporting:

EHS management actions/measures:

Summarize EHS management actions/measures taken during period of reporting, including planning and management activities (e.g. risk and impact assessments), EHS training, specific design and work measures taken, etc.

EHS incidents:

Report on any problems encountered in relation to EHS aspects, including its consequences (delays, costs) and corrective measures taken. Include relevant incident reports.

EHS compliance:

Report on compliance with Contract EHS conditions, including any cases of non-compliance.

Changes:

Report on any changes of assumptions, conditions, measures, designs and actual works in relation to EHS aspects.

Concerns and observations:

Report on any observations, concerns raised and/or decisions taken with regard to EHS management during site meetings and visits.

Signature (Name, Title Date):

Contractor Representative

Example Format: EHS Incident Notification

Provide within 24 hrs to the Supervising Engineer

Originators Reference No:

Date of Incident:

Time:

Location of incident:

Name of Person(s) involved:

Employing Company:

Type of Incident:

Description of Incident:

Where, when, what, how, who, operation in progress at the time (only factual)

Immediate Action:

Immediate remedial action and actions taken to prevent reoccurrence or escalation

Signature (Name, Title, Date):

Contractor Representative

Example Format: Detailed EHS Incident Report

The Incident Notification should be followed up by a Detailed EHS Incident Report containing the following information where applicable

1. Incident Summary**2. Specific Details**

- Date
- Time
- Place
- Weather/Visibility
- Road conditions

3. Persons Involved

- Name/s
- Age/s
- Experience
- Date joined Company
- Last Medical Check
- Current Medical Treatment
- Evidence of Drugs/Alcohol
- Last Safety Meeting attended
- Infractions/Incidents record

4. Equipment Involved**5. Description of Incident****6. Findings of Investigation Team Interim/Final**

- Investigation Team Members
- Persons Interviewed
- Recommendations & Remedial Actions
- Investigation Methodology

7. Signature (Name, Title, Date):**8. Attachments**

- Photographs
- Witness Statements and Incident Notification Report

P. CAMP DESIGN AND MANAGEMENT PLAN**✓ Base camp minimal requirements**

The Project Company may construct and operate a base camp in order to host the human resources required for the project, to be located in the site surroundings, respecting at least the requirements hereunder:

- (i) The Project Company shall set up an appropriate security fence around the base camp as well as all necessary electronic equipment, facilities, human resources and control to ensure the security of the Base camp during its construction and operation.
- (ii) A base camp security risk assessment and security management plan shall be defined and submitted 3 months before any works to local authorities for approval before the base camp construction start-up.
- (iii) Compulsory access control of persons, vehicles and deliveries to the Base camp is to be performed at all times, with a systematic registering in a logbook.
- (iv) A particular attention is to be considered for female residents' security during their stay in the base camp.
- (v) Alcohol and drug possession and consumption are strictly prohibited.
- (vi) The criminal responsibility in case of illegal activity shall be clearly defined.

(a) Rainwater Drainage to protect the site

- (i) The Project Company shall ensure the proper drainage of the Base camp including any required works in order to avoid any damage or incident due to heavy rain, taking into account meteorological and hydrological records of the area.

(b) Potable & sanitary water:

The Project Company shall construct, operate and maintain the appropriate facilities in order to produce potable and sanitary water for the Base camp with a quality in conformance with regulations and standards:

- (i) Provide a sufficient quantity of cold and clean potable drinking water.
- (ii) Provide a sufficient quantity of sanitary water suitable for shower
- (iii) Maintain clean and hygienic condition around the water coolers.
- (iv) Ensure that the filters of water coolers are cleaned periodically.

(c) Electricity Supply for the Base Camp

- (i) The conditions for connecting the Base camp to the national electrical grid and the conditions for electricity purchase shall be agreed.
- (ii) The use of diesel generators shall be minimized, and if required, these shall respect the environmental, safety guidelines.

(d) Waste management and treatment

- (i) The Project Company shall construct, operate and maintain the appropriate system in order to treat waste in conformance with the regulations and World bank's, General EHS.
- (ii) All the waste resulting from the operations of the base camp shall be properly treated including, but not limited to water, oil, food, chemicals, including at least a waste water treatment facility. The latter is to be maintained in good conditions and the water recycled for dust control and green areas irrigation. The recycled water shall comply with Moroccan law & regulation before to be used. Records of water analysis shall be kept available in case of inspection.
- (iii) The Project Company shall comply with the Waste Management Plan and Hazardous Materials Management Plan which define the requirements to contain, transport, handle and dispose of camp wastes and hazardous materials to avoid impacts to human health and the environment and apply all appropriate management controls set out in the Project Documents.

(e) Health, Safety and environment

The Project Company shall establish, implement, and maintain a Camp health, safety and environment Management Plan which defines procedures to be implemented in order to insure (among others):

- (i) Identification of hazards, risks and environmental impacts related to the Camp activities and personnel and control of the identified risks and mitigation of the impacts
- (ii) Definition of the Camp HSE organization including responsibility & accountability
- (iii) Definition of HSE incentive & disciplinary program, meetings & committees, trainings & communication, inspections & audits, incidents reporting & investigation, performance monitoring & reporting, emergency situations & emergency response plan, first aid & welfare, noncompliance protocol
- (iv) Such plan shall be provided by The Project Company before the start of the construction of the Camp for approval. It shall be coordinated with the relevant authorities which could be mobilized at any time to assess the Camp compliance and take necessary measures if some requirements are not met.
- (v) The Project Company shall control communicable diseases within camps and to outside communities, limit interaction with the community and prevent weeds, plant pathogens and pests from entering the Camp and spreading outside of those areas.
- (vi) The Project Company shall comply with standards & regulations for Camp buildings, facilities and services.

A fire safety system including equipment, personnel and procedures shall be implemented and regularly tested, respecting the contractual documents and regulations.

There shall be a Material Safety Data Sheets (MSDS) for each chemical or fuel used on campsite. Training is also compulsory for every worker working with chemicals.

- (ix) A competent HSE staff shall be appointed with all equipment and means necessary.
- (x) All the private and common areas shall be cleaned regularly

(f) Lodging

- (i) Rooms are to be constructed with at least a ratio of 6 m² per person and at least a sanitary and shower for each six persons.
- (i) These rooms shall be provided with appropriate and sufficient equipment (bed, linen, soap, bathroom tissue, etc...).
- (ii) They shall be air conditioned and properly isolated from external noise, cold and heat with construction material respecting international standards.

(g) Catering

- (i) The kitchen and the canteen shall be designed, sized, constructed and operated in order to ensure meals of satisfying quality and sufficient quantities at all times, with a sufficient stock in order to avoid any critical shortage (for example on bread).
- (ii) Food safety shall be respected in conformance with standard. This covers procurement, transport and storage and during meals preparation, particularly for perishable food in order to avoid any poisoning. For this purpose, a sample of each prepared meal shall be conserved during 5 days in order to make an analysis if necessary.
- (iii) The meals shall be balanced, with as much variety as possible. Special meals shall be prepared to take into account the cultural aspects (for example during Ramadan), and if there is a personal medical prescription.
- (iv) No cooking shall be allowed in sleeping quarters.

(h) Human resources

- (i) Competent and experienced Human Resources shall be appointed for critical positions such as the Camp Boss, the Doctor / medic, the Chef de cuisine, the HSE manager and the lodging manager. These people shall be available and their phone number communicated to all the camp residents and to Project company for any urgency.
- (i) A minimal service shall be ensured during 7 days a week and 24 hours a day.

(i) Communication:

- In all rooms and common areas, the following information shall be communicated:

(i) Safety instructions

(ii) Urgency and regular phone number

(j) Reporting

(i) A monthly reporting shall be shared with STEG indicating at least the attendance rate, the incidents rates including health, social and technical, as well as medical consultations, water consumption waste treatment and evacuation, water treatment as well as electrical and diesel consumption.

(k) Inspections

(i) The financial institutions shall be able to perform any inspection or visit in any area of the Base Camp upon reasonable notice.

(l) Procedures

- The following procedures are to be prepared and shared with the Bank before the installation of the base camp:

(i) Traffic management plan

(ii) Energy management plan

(iii) Air and water quality management plan

(iv) Waste and management plan, including selective sorting and consumption reduction

(v) All procedures related to the base camp HSE (c.f. part "Health, Safety and environment").

(m) Personal services and Recreational facilities:

The following facilities shall be available at least:

(i) A place of worship and ablution facilities

(ii) A cafeteria (that can be divided in two parts depending on the position)

(iii) A sport gym and football / pitch

(iv) A Computer room with Internet access. Wifi shall also be available in different areas of the base camp

(v) A laundry shall be available at site for cleaning linen as well residents' personal clothes.

(n) Other requirements:

(i) Sufficient green spaces shall be planted and maintained in the common areas of the base camps

(ii) There shall be enough lighting during the night in all private and common areas

(iii) The Project shall make its best efforts to minimize energy and water consumption

(o) Dismantling

(i) After the closure of the Camp, the Project Company shall commit to dismantle and remove all temporary construction facilities installed on the Plot and to return the Plot to its original state within a period of 3 months starting from the end of the demobilization of the residents;

Q. LANDSCAPE AND REVEGETATION PLAN

✓ Landscape and revegetation Plan

The objectives of the plan will be to:

- Ensure that planting of vegetation is conducted properly to promote successful regrowth;
- Ensure appropriate management and monitoring of regrowth to ensure success; and
- Maximize the use of regrowth materials such as topsoil, seeds, seedlings and mulch which have been recovered from land clearing activities.

The landscape and revegetation plan will address methods for:

- Recovery of viable regrowth materials;
- Revegetation plan;
- Land preparation; and
- Planting and maintenance.

A component of the work plan for any activity will be restoration and/or revegetation and if necessary landscaping of impacted areas post-construction. There will be an objective to achieve revegetation as quickly as possible as an initiative to prevent erosion of soils. As much as possible growth medium recovered from clearing activities will be reused for revegetation and landscaping.

R. SITE DEMOBILIZATION PLAN

✓ Demobilization of Sites

Objectives: Ensure the restoration of sites at the end of the project.

Principles : Consistent procedure for implementing GGP measures and program planning.

- As part of the preparation of the ESMP, the Contractor will prepare a Site Demobilization Plan that will define:
 - the procedure (s)he intends to follow,
 - the concrete measures that will be applied,
 - the demobilization schedule for all sites,
 - the proposed structure and content for each Site Demobilization Plan.
- On the basis of this plan of principle, the Contractor will prepare for each of the sites to be demobilized a Site Demobilization Plan (SDP) which will be submitted to the PIU for non-objection no later than 3 months before the start of the demobilization of the site concerned.
- The SDP will be established on the basis of the Site Management Plan drawn up at the opening of the site and possibly updated during the construction (in case of extension of the site, new activities);
- The SDP will assess for each site: the extent of demolitions, the estimated volume of waste by type, the presence of hazardous waste (septic tank sludge, contaminated soil, contaminated concrete), the presence of preserved topsoil and possibly the need for additional topsoil, the areas to be revegetated, and the species proposed.

Decommissioning: Decommissioning as indicated in the preceding section will include demolition, recovery and removal of terrestrial components. The marine portion of the cable is likely to be retired in place, as per current global industry practice. The Contractor's decommission plan shall involve the procedure for the collection, transportation and disposal of debris and other hazardous and nonhazardous materials resulting from the decommissioning taking into account the most cost effective and best practicable methods and legal requirements at that time in a manner that is consistent with GIIP and the ESF.

S. SEXUAL EXPLOITATION AND ABUSE AND SEXUAL HARASSMENT MANAGEMENT PLAN

✓ Addressing Sexual Exploitation and Abuse and Sexual Harassment

Introductory information for partner / vendor briefings:

- **Review of code of conduct:** The hereunder code of conduct should be read aloud and reviewed with partners /contractors/ vendors assisting with any of the project activities in relation to the ELMED Project.
- **Who must sign:** Employees and representatives of the partners / vendors contracted with the ELMED Project, in addition to project personnel working for the government agencies contracted to support this project with the World Bank, must sign the attached code of conduct that specifically addresses and prohibits sexual exploitation and abuse (SEA) and sexual harassment (SH).
- **World Bank policy concerning SEA/SH:** It is World Bank policy to address and prevent SEA and SH in all of the projects that it finances. The Good Practice Note on Addressing SEA/SH in Investment Project Financing involving Major Civil Works instructs project teams on good practices that permit the project to manage risks and impacts associated with SEA and SH, which include the institution of codes of conduct for project personnel and implementing partners.

The World Bank's new Environmental and Social Standards (ESS) also set out specific requirements relating to the identification and assessment of environmental and social risks and impacts associated with projects financed by the World Bank. While the Environmental and Social Framework itself does not explicitly mention SEA/SH, various ESSs are in alignment with the recommendations of the Good Practice Note for addressing SEA/SH, including:

ESS 1: Assessment and Management of Environmental and Social Risks and Impacts;

ESS 2: Labor and Working Conditions;

ESS 4: Community Health and Safety; and

ESS 10: Stakeholder Engagement and Information Disclosure.

- **Key points to cover in the briefing** will be the following:
 - **Purpose of the code of conduct:** Create common understanding around SEA/SH and that such conduct will result in disciplinary action, and foster shared commitment to addressing SEA/SH in project implementation
 - **Definitions of key terms:** sexual exploitation and abuse, sexual harassment, and consent
 - Brief review of **listed examples for SEA/SH** to facilitate understanding
 - **Key distinction between SEA and SH:** SEA occurs between project beneficiaries and project personnel / vendors, and SH occurs between or among project personnel in a workplace environment
 - Review the **individual commitments** listed under the code of conduct
 - Review the **potential sanctions** for any code violations

Introduction

The Contractor is committed to ensuring a work environment which minimizes any negative impacts on the local environment, communities, and its workers. The company also strongly commits to creating and maintaining an environment in which Sexual Exploitation and Abuse (SEA) and Sexual Harassment (SH) have no place, and where they will not be tolerated by any employee, sub-contractor, supplier, associate, or representative of the company. The purpose of this *Code of Conduct* is to:

1. Create a common understanding of what constitutes Sexual exploitation and abuse, and sexual harassment
2. Create a shared commitment to standard behaviors and guidelines for company employees to prevent, report, and respond to SEA and SH, and
3. Create understanding that breach of this code of conduct will result in disciplinary action.

Definitions

Sexual Exploitation and Abuse (SEA)²

Is defined as any actual or attempted abuse of a position of vulnerability, differential power, or trust, for sexual purposes, including, but not limited to, profiting monetarily, socially or politically from the sexual exploitation of another³.

- **Sexual Abuse:** “The actual or threatened physical intrusion of a sexual nature, whether by force or under unequal or coercive conditions.”

Sexual Harassment:⁴

Unwelcome sexual advances, request for sexual favors, and other verbal or physical conduct of sexual nature.

Sexual Harassment versus SEA⁵

SEA occurs against a beneficiary or member of the community. Sexual harassment occurs between personnel/staff of an organization or company and involves any unwelcome sexual advance or unwanted verbal or physical conduct of a sexual nature. The distinction between the two is important so that agency policies and staff trainings can include specific instruction on the procedures to report each.

Consent is the choice behind a person’s voluntary decision to do something. Consent for any sexual activity must be freely given, ok to withdraw, made with as much knowledge as possible, and specific to the situation. If agreement is obtained using threats, lies, coercion, or exploitation of power imbalance, it is not consent.

Under this Code of Conduct⁶ consent cannot be given by anyone under the age of 18, regardless of the age of majority or age of consent locally. Mistaken belief regarding the age of the child is not a defense.

There is no consent when agreement is obtained through:

- the use of threats, force or other forms of coercion, abduction, fraud, manipulation, deception, or misrepresentation
- the use of a threat to withhold a benefit to which the person is already entitled, or
- a promise is made to the person to provide a benefit.

While all forms of violence against a community resident or a co-worker are forbidden, this code of conduct is particularly concerned with the prevention and reporting of sexual exploitation and abuse (SEA) and sexual harassment which constitute gross misconduct, is grounds for termination or other consequences related to employment and employment status:

(1) **Examples of sexual exploitation and abuse** include, but are not limited to:

- A project worker tells women in the community that he can get them jobs related to the work site (cooking and cleaning) in exchange for sex.
- A worker that is connecting electricity input to households says that he can connect women headed households to the grid in exchange for sex.
- A project worker gets drunk after being paid and rapes a local woman.
- A project worker denies passage of a woman through the site that he is working on unless she performs a sexual favor.
- A manager tells a woman applying for a job that he will only hire her if she has sex with him.
- A worker begins a friendship with a 17-year-old girl who walks to and from school on the road where project related work is taking place. He gives her moto rides to school. He tells her that he loves her. They have sex.

² As defined in the UN Secretary’s bulletin – Special Measures for protection from sexual exploitation and abuse October, 9, 2003 ST/SGB/2003/13

³ In the context of World Bank Financed operations exploitation occurs when access to, or benefit from a World Bank Financed good or service is used to extract sexual gain.

⁴ Inter-Agency Standing Committee *Protection against Sexual Exploitation and Abuse (PSEA): Inter-agency cooperation in community based complaint mechanism. Global standard Operating Procedures.* May 2016

⁵ Ibid

⁶ In accordance with the United Nations Convention on the Rights of the Child.

(2) **Examples of sexual harassment in a work context** include, but are not limited to:

- Male staff comment on female staffs' appearances (both positive and negative) and sexual desirability.
- When a female staff member complains about comments male staff are making about her appearance, they say she is "asking for it" because of how she dresses.
- A male manager touches a female staff members' buttocks when he passes her at work.
- A male staff member tells a female staff member he will get her a raise if she sends him naked photographs of herself.

Individual signed commitment:

I, _____, acknowledge that sexual exploitation and abuse (SEA) and sexual harassment, are prohibited. As an (*employee/contractor*) of (*contracted agency / sub-contracted agency*) in (*country*), I acknowledge that SEA and SH activities on the work site, the work site surroundings, at workers' camps, or the surrounding community constitute a violation of this *Code of Conduct*. I understand SEA and SH activities are grounds for sanctions, penalties or potential termination of employment. Prosecution of those who commit SEA and SH may be pursued if appropriate.

I agree that while working on the project I will:

- Treat all persons, including children (persons under the age of 18), with respect regardless of sex, race, color, language, religion, political or other opinion, national, ethnic or social origin, gender identity, sexual orientation, property, disability, birth or other status.
- Commit to creating an environment which prevents SEA and SH and promotes this code of conduct. In particular, I will seek to support the systems which maintain this environment.
- **Not** participate in SEA and SH as defined by this *Code of Conduct* and as defined under (*country*) law (*and other local law, where applicable*).
- **Not** use language or behavior towards women, children or men that is inappropriate, harassing, abusive, sexually provocative, demeaning or culturally inappropriate.
- **Not** participate in sexual contact or activity with anyone below the age of 18. Mistaken belief regarding the age of a child is not a defense. Consent from the child is also not a defense. I will not participate in actions intended to build a relationship with a minor that will lead to sexual activity.
- **Not** solicit/engage in sexual favors in exchange for anything as described above.
- Unless there is the full consent by all parties involved, recognizing that a child is unable to give consent and a child is anyone under the age of 18, I will not have sexual interactions with members of the surrounding communities. This includes relationships involving the withholding or promise of actual provision of benefit (monetary or non-monetary) to community members in exchange for sex—such sexual activity is considered "non-consensual" under this Code.

I commit to:

- Adhere to the provisions of this code of conduct both on and off the project site.
- Attend and actively partake in training courses related to preventing SEA and SH as requested by my employer.

If I am aware of or suspect SEA and SH, at the project site or surrounding community, I understand that I am encouraged to report it to the Grievance Reporting Mechanism (GRM) or to my manager. The safety, consent, and consequences for the person who has suffered the abuse will be part of my consideration when reporting. I understand that I will be expected to maintain confidentiality on any matters related to the incident to protect the privacy and security of all those involved.

					
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Sanctions: I understand that if I breach this Individual Code of Conduct, my employer will take disciplinary action which could include:

- Informal warning or formal warning
- Additional training.
- Loss of salary.
- Suspension of employment (with or without payment of salary)
- Termination of employment.
- Report to the police or other authorities as warranted.

I understand that it is my responsibility to adhere to this code of conduct. That I will avoid actions or behaviors that could be construed as SEA and SH. Any such actions will be a breach this Individual Code of Conduct. I acknowledge that I have read the Individual Code of Conduct, do agree to comply with the standards contained in this document, and understand my roles and responsibilities to prevent and potentially report SEA and SH issues. I understand that any action inconsistent with this Individual Code of Conduct or failure to act mandated by this Individual Code of Conduct may result in disciplinary action and may affect my ongoing employment.

Signature: _____

Printed Name: _____

Title: _____

Date: _____