

**Environmental and Social Management Framework Document for the  
Additional Finance for the Renewable Energy Integration Project (REIP)  
Supported by the World Bank in Turkey**

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## **List of Acronyms**

EIA Environmental Impact Assessment

FD Framework Document

ESMP Environmental and Social Management Plan

SC Submarine Cable

WB World Bank

GIS SS Gas Insulated Substation

ESIA Environmental and Social Impact Assessment

REIP-AF Renewable Energy Integration-Additional Finance

SS Substation

TEİAŞ Turkish Electricity Transmission Corporation

UGC Underground Cable

## 1. INTRODUCTION

Increasing the capacity of the REIP project will enable a stronger transmission system and help expand the automated controls, improve management and protect the stability of the high-voltage grid and prevent the widespread of sizable disruptions, which will supply protection of the systems. In view of connection of renewable power plants to the national grid as well as ensuring improved security and reliability of the electrical power system, the scope of the project concerns the construction of two submarine cables, Gas Insulated Substations (GIS) and underground cables.

REIP has been designed as series of projects and this Environmental and Social Management Framework (ESMF) has been prepared for the additional finance of the REIP project.

### ***1.1 Objectives of the Additional Finance of the Renewable Energy Integration Project***

As part of its principal remit, TEIAS has made most investments regarding substations, power transmission lines, underground and submarine cables as well as investments for materials and equipment in relation with the planning, projecting, erection, operation and maintenance of the national interconnected system with the overarching aim to renovate and improve the performance of the electrical power system and increasing capacities between consumption areas as well as to ensure security and reliability of the electrical power system, with some investments still ongoing.

Lapseki 1 and 2 and Sutluce Submarine Cable projects built and system-integrated by TEIAS have all been financed by the World Bank. With their great input to the security of supply in the Thrace region have been commissioned in 2016 and 2017, respectively. Similarly, the 380 kV Lapseki 3 - Sutluce 3 Submarine Cable and the Gulf of Izmit Submarine Cable crossing projects included in the Investment Program for 2018, when built, shall free the transmission system from operational bottlenecks and the plan seeks also transmit electrical power generated in renewable energy plants already available, that are being and will be built in Southern

Marmara and Western Anatolia regions to Thrace and Istanbul Anatolian side that are quite needy in terms of generation plants.

The scheme for REIP as the first of the series of projects is composed of the components below:

**Component 1: Development of transmission infrastructure to facilitate faster development of Wind Power Plants (WPPs).**

Within the Aegean and Marmara regions that hold the highest wind energy potential in Turkey, the provinces of Izmir, Canakkale and Kırklareli rank among the highest with installed wind capacity of 877 MW, 407 MW and 382 MW respectively. The wind power investments in these three provinces together constituted nearly 70 percent of the installed wind capacity in Turkey in 2012. Due to their high wind potential, these provinces will continue to attract more investments in WPPs. Availability of upfront transmission infrastructure to cater to growing needs of new WPPs in these provinces could enable faster implementation of wind energy projects. The first component of this project would therefore develop three 380kV 500 MVA highly digitalized sub-stations with associated grid connection structures for evacuation of wind power in the areas of Can, Izmir and Vize. The proposed structures would include high voltage (HV) substations, HV grid interfacing equipment, smart-metering systems, feeders (underground cables), tele-metered dispatch systems, digital protection systems, supervisory systems, and automatic voltage control systems.

**Component 2: Smart-grid investments to strengthen grid operation and management in face of higher wind energy generation.**

These investments will enable TEIAS to monitor network status in real-time and operate entire network reliably and securely. It would enable TEIAS to handle the increasing amounts of wind energy. It consists of:

- Upgrade of hardware and software of the National Control Center (NCC), Emergency National Control Center (ENCC) and 9 Regional Control Centers (RCCs) in TEIAS'

existing SCADA/EMS system and the addition of Renewable Energy Resource (RER) Operator Desk on SCADA system to manage rapidly increasing WPP.

- Remote Terminal Unit (RTU) installation to substations and power plants to monitor and control them from dispatching centers.
- Digital Protection Relay deployment which will make faster fault clearing in order to minimize network disturbance and outage area.
- Shunt Reactor installation to bulk-transmission network to secure appropriate system voltage among network.

**Component 3: Lapseki 2-Sutluce 2 380 kV Submarine Power Cable to better inter-connect wind energy locations with other parts of Turkey.**

As the second double-circuit submarine cable route having 4.35km length across the Dardanelles strait, this cable will connect Anatolian side and Thrace side of Turkey with a capacity of 2GW. Along with the first submarine cable being implemented under APL-6, the aggregate submarine cable capacity across the Dardanelles strait will be 4GW, connecting wind power sub-stations in provinces of Can, Izmir and Istanbul. As a result of this sub-component, the 380kV bulk-transmission network to Istanbul across the Bosphorus and Dardanelles straits will form a secure strong loop network around Marmara Sea.

**Component 4: Strengthening of Transmission Networks to cater to growing demand and supply of electricity in Turkey**

This component will cater the investment needs for 380kV bulk-transmission and 154 kV sub-transmission network expansions to meet rapidly increasing demand and supply. This component consists of the 380kV Yeni Ambarlı– Yenibosna single-circuit underground cable (route length 16.7km), four 380kV substations (total transformer's capacity is 2100MVA), four 154kV substations (total transformer's capacity is 800MVA), and four 154kV single-circuit underground cable (total route length is 31.2km). For the sake of urgent requirement, procurement of the 380kV Yeni Ambarlı – Yenibosna underground cable has been initiated under APL-6 though most of the investment will be financed by this REIP.

## **Component – 5: Supporting implementation of smart grid technologies and strengthening regulation and support to wind power market**

In addition to the abovementioned components, the following activities are foreseen: (i) designing and implementation of smart grid systems and capacity development, (ii) simplification of regulation and market processes regarding obtaining licenses for wind power (and other renewable energy types), (iii) strengthening of wind power market and (iv) strengthening of environmental and social safeguards with respect to cumulative impact assessment in wind power projects (WPP).

Power security has been one of the priorities in Turkey, to meet the soaring requirement for power and the number of projects concerning the use of renewable energy sources multiplied, which, in turn, necessitated that TEIAS reinforces the transmission network and further integrates renewable energy sources. Therefore, the additional finance of the REIP has been evoked. With the additional finance project, the high-capacity renewable energy in Marmara Region shall be safely and effectively connected to the national grid, which will both strengthen the national transmission network, prevent shortages and ensure system continuity as well as security. Within this scope, the additional finance project is looking into the components below:

### **Component 1: Development of transmission infrastructure to facilitate faster development of WPPs.**

This component will construct the 380 kV Ciftlikkoy Gas Insulated Switchgear (GIS) substation which will collect electricity generated by WPPs in southern Marmara region and transfer to the consumers in Bursa, Istanbul and Kocaeli. This is also the southern connecting point of Izmit Gulf Crossing sub-project below. It will be equipped with three transformers and one reactor. This will be a fully digitalized substation by way of the substation automation system (SAS) and the digital protection relay (DPR) using smart grid technologies, and it will be monitored and supervised by the national control center (NCC) through RTU and supervisory control and data acquisition (SCADA) system.

**Component 2: Submarine power cables to better inter-connect wind energy locations with other parts of Turkey.**

- i. Lapseki 3-Sutluce 3 380 kV Submarine Power Cable:** As the third double-circuit submarine cable route having 4.5 km across the Dardanelles strait, 380 kV Lapseki 3 – Sutluce 3 submarine cable will connect Anatolian side and Thrace side. Along with the first and the second submarine cables implemented under the APL-6 and REIP projects, the increased transmission capacity across the Dardanelles strait will allow to transfer more electricity generated from WPPs in southern Marmara and western Anatolia provinces to Thrace region through a shorter route. As a result of this sub-component, the 380kV bulk-transmission network will form a secure strong loop network around Marmara Sea.
- ii. Izmit Gulf Crossing Sub-Project:** This sub-project will construct seven new 380 kV cable transmission lines. Southern Marmara and western Anatolia regions have high wind energy potential. Some new WPPs are expected to be operational soon in Canakkale, Balıkesir, Izmir and Manisa (total is nearly 2850 MW). The Izmit Gulf Crossing sub-project consists of 380 kV double circuit submarine cable and related connection structures and will help evacuate power to Kocaeli and İstanbul Anatolia side through the shortest path. This sub-project consists of the following parts:

  - a. Hersek - Dilovasi Submarine Cable, 380 kV, 2x1600 mm<sup>2</sup> Submarine Cable, 3.5 km
  - b. Deri OIZ GIS – Tepeoren Substation Cable, 380 kV, 2000 mm<sup>2</sup> Cable, 11.3 km
  - c. Gebze GIS – Kroman Celik GIS Cable, 380 kV, 2000 mm<sup>2</sup> Cable, 12 km
  - d. Kroman Celik GIS – Deri OIZ GIS Cable, 380 kV, 2000 mm<sup>2</sup> Cable, 11 km
  - e. Gebze GIS – Dilovasi Cable, 380 kV, 2000 mm<sup>2</sup> Cable, 9.65 km
  - f. Diliskelesi GIS – Dilovasi Cable, 380 kV, 2000 mm<sup>2</sup> Cable, 4.5 km
  - g. Izmit Gulf Crossing Interface Point – Hersek Cable, 380 kV, 2x2000 mm<sup>2</sup> Cable, 2.4 km

**Component 3: Strengthening of Transmission Networks to cater to growing demand and supply of electricity in Turkey.** This component will cater the investment needs for 380kV bulk-transmission network expansions to meet rapidly increasing demand and required supply



capacity in the north-east Marmara region and compensate reactive power created by the transmission line and cable expansion. This component consists of two 380 kV GIS substations, namely Deri OIZ GIS substation (four transformers and one reactor), and Gebze GIS substation (two transformers and one reactor). Gebze GIS substation is one of the northern connecting points in the Izmit Gulf crossing sub-project for wind power evacuation from the southern Marmara region to Istanbul Anatolia side. They will be also fully digitalized substations by way of the SAS and DPR, and they will be monitored by the NCC through RTU and SCADA system. These investments are tentative and can be flexibly replaced by similar cables, substations, transformers and reactive power compensation system in different place(s) contributing to the supply capacity increase, the connection point and the reactive power compensation in the region due to land availability, change of load condition derived from development program change.

The Bank financed components explained above, specifically Izmit Gulf Crossing and Lapseki 3-Sutluce 3 submarine cable, will be connected to the national grid through the overhead lines with TEIAS' own financing sources. These facilities are being built to improve the security of the system. A transmission grid often needs these security-centric investments essentially to make the high voltage grid more meshed so that there are alternative paths. There are several alternative routes for establishment of the connection lines. It should be noted that the connection lines are constructed not only for connecting the Bank financed components to the national grid (which could be implemented with other alternative routes), but also ensuring security of the whole system. Therefore, the selected alternative routes are based on the two targets explained above. Given the description of the associated facility according to World Bank policies, these facilities are not considered as associated facilities for the REIP additional finance.

Investments to be implemented under REIP Additional Finance shall be in line with Turkey's national legislation as well as the World Bank Safeguard policies. TEIAS shall be the implementing agency. In addition to requirements in Turkey, TEIAS, as the implementing agency shall ensure that World Bank policies on environmental and social issues are pursued as

specified in this framework document. Projects under REIP Additional Finance are given in Table 1.

As a general policy, TEIAS shall only focus on projects that satisfy the requirements of the Environmental Impact Assessment (EIA) Regulation in Turkey, irrespective of the projects' source of finance. In other words, before TEIAS's assessment, all sub-component projects shall meet the requirements of the EIA Regulation of Turkey and EIA positive, EIA not required or EIA not relevant decisions should be taken. Furthermore, no sub-project shall be approved until Turkey's national and World Bank environmental and social safeguards policy/legislation requirements have been successfully met.

**Table 1. Projects Proposed for REIP Additional Finance**

No.	Project No.	Name of Project	Project Characteristics
1	17D000330	Lapseki 3-Sutluce 3 380 kV Submarine Power Cable	380 kV, 2x1600 mm <sup>2</sup> cable, 4.5 km
2*	17D000343	Hersek - Dilovasi Submarine Cable	380 kV, 2x1600 mm <sup>2</sup> cable, 3.5 km
3*	18D000990	Deri OIZ GIS – Tepeoren Substation Cable	380 kV, 2000 mm <sup>2</sup> cable, 11.3 km
4*	17D000340	Gebze GIS – Kroman Celik GIS Cable	380 kV, 2000 mm <sup>2</sup> cable, 12 km
5*	18D001250	Kroman Celik GIS – Deri OIZ GIS	380 kV, 2000 mm <sup>2</sup> cable, 11 km
6*	17D000341	Gebze GIS – Dilovasi Cable	380 kV, 2000 mm <sup>2</sup> cable, 9.65 km
7*	17D001320	Diliskelesi GIS – Dilovasi Cable	380 kV, 2000 mm <sup>2</sup> cable, 4.5 km
8*	17D001330	Izmit Gulf Crossing Interface Point – Hersek Cable	380kV, 2x2000 mm <sup>2</sup> cable, 2.4 km
9	17D000980	Deri OIZ GIS	380/154 kV, 2x250 MVA + 420 kV, 160-250 MVA <sub>r</sub> Adjustable Reactor + 380/33 kV, 2x125 MVA + 154/33 kV, Transformer Feeder 1 and 2.
10	18D000490	Ciftlikkoy GIS	380/154 kV, 2x250 MVA + 420 kV, 160-250 MVA <sub>r</sub> Adjustable Reactor + 154/33 kV, 50 MVA + Transformer Feeder 2.
11	17D000860	Gebze GIS	380/33 kV, 2x125 MVA + Transformer Feeder 3 + 420 kV, 160-250 MVA <sub>r</sub> Adjustable Reactor

\*Projects marked are defined under Izmit Gulf Crossing Project

### *TEİAŞ's assessment of alternatives during survey stages;*

Number one priority for TEİAŞ, during route-selection for power cable projects is to find and use the shortest and the most economical route over government land between SSs to be erected. Since the project locations are selected considering the government lands as priority, no expropriation works are required and hence the social impacts are minimized. In accordance with the identified route of the cables, relevant infrastructure agencies are contacted and their official views and opinions are obtained. In line with the views and opinion from respective agencies, the route is finalized through partial modifications, as required. As such, first, TEİAŞ determines the the electrically most suitable route, views and feedback from public bodies responsible for public land along the route are obtained and in line with these views and feedback, the route is finalized.

### ***1.2 The Purpose and Scope of the ESMF Document***

The environmental and social safeguards policies of the World Bank require the borrower to prepare an ESMF document in observance of the EIA Regulation (published in the Official Gazette No. 29186 and dated 25.11.2014) and the Environmental Assessment Operational Policies of the World Bank for REIP additional finance. Since the exact locations, design and technical details of some sub-projects under the additional finance of REIP are unknown at this stage, this ESMF is the key document that is shared with stakeholders before implementation. On the other hand, the design and feasibility studies for some of the sub-projects have been completed and the environmental and social assessment of these are ongoing, and the outcomes of these works, until the stage of project appraisal, shall be presented in respective environmental and social assessment documents (such as the ESIA, ESMP, etc.)

Although the ESMF provides the framework of the comprehensive environmental and social management approach agreed to identify the potential environmental and social impacts of the additional finance, it also provides guidance as to how to identify the environmental and social impacts of the sub-projects of which are yet to be determined and against which principles as well as how such impacts can be prevented or mitigated. The ESMF seeks to amalgamate all

project-related policies and regulatory tools in the Turkish legislation with the World Bank safeguards and to make sure that they are well-understood. For the exact location and design of the technical details of some sub-projects planned in connection with the project are not yet clear, a detailed assessment of the environmental and social impacts of sub-projects can only be performed once the projects and design details have been clarified. The ESMF, at the same time, shall also cover those projects that are not on the additional finance project list but that can be added. Yet, the ESMF covers the entire environmental framework of the previous REIP project as well as the impacts from novel finance options. Then, for those projects the impacts of which are known, Environmental and Social Management Plans (ESMPs) in line with the principles defined in this ESMF shall be prepared, which shall be shared with respective stakeholders and final documents published on the TEIAS and World Bank's websites, before the project approval.

The ESMF functions as a general and systematic guide composed of policies, procedures and provisions that shall be integrated to the project lifecycle to ensure that environmental and social issues are systematically handled at the sub-project level. Furthermore, it also provides guidance and technical input to the REIP Additional Finance project from the perspective of environmental and social management perspective. Accordingly, ESMF practices and implementation shall also provide guidance to the integration of environmental and social issues to the decision-making processes regarding the planning, design, implementation, operation and maintenance of sub-projects by way of identification, prevention and/or minimization of adverse environmental and social impacts at the early stages of the project cycle.

Procedures specified in this Framework Document provide further details on the World Bank Operational Policy OP/BP/GP 4.01 (Environmental Assessment), OP/BP 4.04 (Natural Habitats), OP/BP 4.11 (Physical Cultural Resources), and OP 4.12 (Involuntary Resettlement) which are the three principles triggering environmental policies during project planning phase as well as the Turkish Environmental Legislation and Procedures.

This document sets forth the variations between the requirements of Turkey and those of the World Bank and defines steps to fill in the gaps in between.

## **2. ENVIRONMENTAL AND SOCIAL ASSESSMENT**

### ***2.1 Turkey's EIA Regulation***

TEIAS shall determine the route of underground cables and the location of substations. TEIAS, during the planning phase, shall contact all official bodies concerned (Ministry of Culture and Tourism, Ministry of Environment and Urbanization, etc.) regarding the location and the routing of the right of way. In line with official correspondence, TEIAS shall endeavor to refrain from any protected and/or archaeological sites, etc. As a requirement of Turkish EIA Regulation, the Environment and Expropriation Department of TEIAS shall satisfy all environmental assessment requirements including obtainment of relevant EIA official letter from the Ministry of Environment and Urbanization.

In line with the Turkish EIA Regulation (Annex 1 Projects in the Regulation) power transmission line projects above 15 km and 154 kV require a full EIA process and a full EIA report.

Annex 2 of the Turkish EIA Regulation provides a list of projects requiring the preparation of a Project Information File, which is a simpler form of the Environmental Impact Assessment Report providing a summary of the main features, the location of the project, as well as mitigation measures identified in relation thereto, on the basis of which the Ministry of Environment and Urbanization shall scan these projects and determine whether or not a full EIA is required. This Annex covers power transmission lines that are longer than 5 but shorter than 15 km and with a voltage level beyond 154 kV.

The Environment and Expropriation Department of TEIAS, EIA-competency certified by the Ministry of Environment and Urbanization shall execute Environmental and Social Impact Assessment works in relation with sub-projects.

In parallel with environmental assessment requirements and the national EIA Regulation, the same TEIAS department shall be responsible for determination of the environmental category of the sub-projects in negotiation with the World Bank, as per OP 4.01. As mentioned

before, the REIP Additional Finance project is classified as Category B and in the event that, it is found that another sub-project experiences graver problems or is classified as Category A, TEIAS shall exclude this project from the WB finance scheme or require a restructuring of the REIP Additional Finance.

Also, ESIA/ESMPs shall also include additional information regarding the characteristics and EIA status of the project.

## ***2.2. National Legislation Concerning Social Impacts***

Although Turkey's EIA Regulation is short of fully satisfying international standards in terms of social impacts, it still provides certain legal arrangements regarding the management of a variety of social impacts. As such, a brief list of the legal framework regarding the social impacts of the project is as follows:

- Labor Law No. 4857 published in the Official Gazette No. 25134 of June 10, 2003.
- Occupational Health and Safety Law No. 6331 published in the Official Gazette No. 28339 of June 30, 2012.
- Regulation on Contractors and Sub-contractors published in the Official Gazette No. 27010 of September 27, 2008.

Turkey's legal arrangements regarding Involuntary Resettlement can be summarized as follows:

- Expropriation Law published in the Official Gazette No. 18215 of November 8, 1983.
- Law Regarding the Amendment of the Expropriation Law published in the Official Gazette No. 24393 of May 5, 2011.

## ***2.3. World Bank Policies Applicable to the Project***

### **2.3.1 Environmental Assessment Policy OP. 4.01**

#### Project Categories and Screening:

Projects under the Environmental Assessment system of the World Bank (OP. 4.01) are classified as Category A, B, or Category C in view of the estimated potential risk.

Category A projects are those that can negatively impact environmentally and socially-important areas such as humans, forest areas and other natural habitats. These impacts, in general, are large scale impacts and irreversible, sensitive, diverse, cumulative, exemplary and might be impacting an area larger than the location and facility financed under the project. For example, Category A projects can display one or more of the characteristics below: significant transformation or destruction of natural habitats; extraction, consumption or transformation of significant amount of forests, mines and other natural resources; direct discharge of pollutants as a result of which air, soil and air quality has been deteriorated; generation, storage, use or disposal of hazardous materials or wastes. Category B projects have less negative potential environmental and social impacts. These impacts are area-specific and can be reversed and mitigation measures might seem simpler than those in Category A projects and can be planned.

Category B can include projects with a variety of potential environmental and social challenges on a larger scale. In fact, Category B includes all projects that are not as complex and as risky as to require EIA (demonstrating larger potential outcomes and including detailed alternative analyses as well as environmental and social baseline data). However still, in order to be able to determine suitable mitigation measures and monitoring indicators, analyses of potential environmental and social impacts are also needed. Although not defined as such in the OP, Category B projects can, among themselves, be bifurcated as Low B and High B projects. Projects considered as High B have relatively larger impacts than those that are Low B and include a higher number of mitigations, yet these impacts and mitigations are not as important as to require classification as Category A. Different types of environmental and social assessment documents can be required depending on the level of significance of the limited

impacts from Category B projects. A basic ESMP or an ESMP checklist may suffice for the construction/rehabilitation of really simple projects however, in the event of projects with limited but significant impacts, an environmental and social assessment document (similar to a detailed ESMP) may be needed.

Category C projects include no activities that might have a negative impact on the environment. Thanks to the integration of good practices, potential impacts of such projects in this category can be almost zeroed-out.

There are differences between the environmental selection/eligibility criteria of the World Bank and those provided in national legislation. For example, one cannot presume that Annex I corresponds to World Bank's Category A or Annex II to Category B. Differences between the two systems might emerge and some Annex I projects can correspond to Category B or some Annex II projects can correspond to Category A if planned for sensitive areas. Again, in cases where some projects that can be treated as 'out-of-scope' as per the Turkish legislation have limited and short-term impacts, these can be classified as Category B.

#### The Scope of the Environmental and Social Assessment:

The scope and type of the Environmental and Social Assessment (ESA) varies between Category A and Category B projects.

An ESIA to analyze the potential negative and positive as well as the social impacts of the sub-project, that compares the impacts thereof with those of feasible alternatives (including no-project option) and one that makes recommendations as to the prevention, minimization, reduction or remedy of negative impacts and to multiply environmental and social performance shall be prepared for sub-projects under Category A. One of the outstanding features of an ESIA is the analysis of alternatives. The ESIA, at the same time, covers an explanatory Environmental and Social Management Plan (ESMP) setting forth measures needed during the implementation and operation phases of the (sub)project so as to eliminate, mitigate or balance negative environmental and social impacts; steps needed to implement those measures and monitoring



indicators, actions and liabilities (for ESMP format, see. Annex -A&B) Sample tables provide a list of possible environmental and social impacts likely to encounter in sub-projects as well as determine mitigation methods for each of the impacts presented. A sub-project shall not necessarily be limited to all of the impact categories specified in this table nor subject to those. So, a separate ESMP shall be prepared specific to the impacts of each sub-project.

The scope of the environmental assessment document of a Category B sub-project can differ between projects, but it is still of a lesser scope than a Category A ESIA. Similar to a Category A ESIA, this one also analyzes the potential negative and positive environmental and social impacts and makes recommendations to minimize, reduce or remedy such negative impacts and to improve environmental and social performance. In the event that the project has been categorized as a Category B project, and when site-specific problems requiring a site-specific analysis are unavailable, the ESMP can also provide such data as required. An example can be the construction of a medium-scale building in an urban environment that would require only one ESMP when, normally, there are no site-related environmental issues that are known. In cases where this construction is carried out in greenfield, an ESA shall be performed to clarify whether or not there are any site specific environmental or social issues. In cases where the outcome of the ESA reveals significant damage to natural habitats, the project category can be modified as Category A. On the other hand, in cases where the project has been categorized as Category B, an ESIA shall be prepared so as to satisfy specific requirements.

Within the scope of the said project, any sub-projects identified as Category A shall not be eligible for financing. Project components need to be Category B or a lower risk class. Accordingly, site-specific ESMPs as environmental and social impact assessment tools (mostly for substations and underground cables) and ESIAs (for submarine cables) are envisaged in addition to this ESMF.

## Public Consultation and Disclosure

As a requirement of the World Bank policies, for all Category A and B sub-projects proposed for Bank finance, TEIAS shall consult with the affected groups and civil society organizations impacted by the environmental and social aspects of the sub-project and takes their views into consideration during the ESIA process. At least one meeting with affected groups and civil society organizations shall be carried out for Category B sub-projects, when the ESIA report has been completed (together with the ESMP).

In addition, TEIAS shall also consult with these groups during project implementation so as to table issues in relation with the ESA documents, which affect them.

In order to be able to have meaningful consultation with the project-affected groups and civil society organizations in relation with Category B and Category B sub-projects proposed for World Bank financing, TEIAS shall present related materials (in Turkish) before such meetings. These materials shall be in the language and form that negotiation parties can understand. At the same time, TEIAS shall hand out to the public posters, fliers, brochures, etc. to provide information about the sub-project before such meeting and make also a presentation regarding possible environmental and social impacts, mitigations proposed, monitoring of the project as well as the Grievances Mechanism to handle complaints and requests regarding the project.

TEIAS shall ensure that a printed copy of each ESA documents and the Abbreviated Land Acquisition Plans (ALAPs), as applicable, and in Turkish, are displayed and remain accessible by the people before public consultation. Following consultations, TEIAS shall revise final draft documents and feedback and views collected through such consultations. TEIAS shall submit both Turkish and English versions of ESA and other environmental and social documents to the World Bank for approval.

Prior to the project appraisal, the final versions of the ESAs and ALAPs shall be published in-country in both Turkish and English. English versions of ESAs and ALAPs shall be published on the external WB website.

Preparation, Review and Approval of Environmental and Social Assessment Documents:

TEIAS, before commencement of construction activities shall prepare all social and environmental documents in relation with the WB Safeguard Policies. Documents prepared as such regarding all safeguard policies shall be approved by the Republic of Turkey and the World Bank and published in Turkish on the World Bank external website and the official website of TEIAS, in a way all stakeholders can understand.

Finance support requires the implementation of the ESIA or the ESMP. Within this scope, ESA documents concerned shall be included in tender documents and shall become a part of the contract of the contractor selected to execute the sub-project.

Monitoring:

In order to ensure that ESA documents are duly implemented, TEIAS shall regularly inspect sub-projects during construction and operation phases. When any problems regarding the implementation of ESA documents are identified, TEIAS shall determine steps needed to remedy such problems. Specifically, in the event of any environmental events such as death, other events leading to lost working days, spill of materials hazardous for the environment, etc.) the contractors shall notify TEIAS in 3 working days regarding the matter, who shall further notify the Bank. The detailed accident report including root-cause analysis, measures taken and compensation measures shall be submitted to TEIAS in 30 working days and TEIAS shall forward this report to the Bank. TEIAS shall present its findings in the six-monthly project progress reports or more frequently, as required, to the World Bank. The World Bank project team shall visit project sites as part of project supervision and as required.

### **2.3.2 The World Bank Operational Policy OP 4.11 on Physical Cultural Resources**

Cultural assets are critical for economic and social development, hence shall be taken into consideration in all project practices. Potential impacts are demonstrated as integral parts of the environmental assessment process. For many cultural inheritances not documented or not protected by law, consultations with project-affected groups, authorities of respective institutions and civil society organizations are used to determine measures to identify potential impacts and preventive measures.

A cultural heritage management plan seeking to prevent negative impacts on cultural resources and to strengthen monitoring and institutional capacity, as an integral part of the environmental assessment document shall be developed in the scope of the environmental assessment process. The gist here is bi-dimensional: (i) identification of chance-finds during construction and (ii) the potential impact of the project on known cultural assets. Laws in Turkey, especially the Law No. 2863 dated 21/07/1983 on the Protection of Cultural and Natural Assets (together with the amendment as published in the Official Gazette dated 27/07/2004) and related practices are satisfactory in view of World Bank requirements. TEIAS shall be responsible for the enforcement of the legislation concerned and to prevent or reduce the impacts of projects financed on physical or cultural resources. As such, TEIAS shall not maintain sub-project financing until all legislative requirements have been satisfied.

Also, measures to be employed shall be included in ESA documents concerning follow-up and also the monitoring plan.

### **2.3.3 The World Bank Operational Policy OP 4.04 on Natural Habitats**

There is the possibility that construction works within the scope of the project can affect critical or not-critical natural (as per the definition in OP 4.01) habitats. Sub-projects, which have a significant impact of an accepted critical habitat or an eco-system shall be considered 'ineligible' for financing under OP 4.01 and the main topic to be covered under the ESIA shall be the determination of project alternatives in view of its location and scope.

#### **2.3.4 World Bank Operational Policy OP 7.50 on International Waterways**

The Sea of Marmara as an inland sea is related with the World Bank's Policy of International Waterways however, for the submarine crossing sub-projects under this project have almost zero impact on the aquatic receiving environments, the World Bank deems that shall be observed as per OP 7.50.

The 380 kV Lapseki 3-Sütlüce 3 Submarine Cable Route is closely positioned with the submarine pipeline project (SPP) which has been planned to transport the natural gas extracted from various gas fields in other countries including the Azerbaijan Shah Sea 2 field, to Europe via Turkey. For this reason, SPP Sediment Plume Modeling Report represents a model for reviewing the impact of TEIAS Project on sediment.

The open sea pipeline route of SPP passing through the Marmara Sea has a length of approximately 17.6 km, and its maximum depth is around 70 m. The 380 kV Lapseki 3 – Sütlüce 3 Submarine Cable is planned to have a length of approximately 4.75 km, and to be laid 1.00 m below the sea bed.

A numerical distribution modeling study has been conducted to quantitatively identify the expected distribution of the suspended and settled sediments as a result of the trench excavation envisaged at two land approaches of submarine pipeline. The study has used existing data recorded in the close vicinity of project site in addition to the global forecast (hindcast) datasets in order to create a hydrodynamic model for ensuring the environmental guiding conditions and meteorological-oceanographic guiding conditions for distribution modelling. The seabed sediment data have been derived from the geotechnical information obtained from the geophysical and geotechnical surveys conducted in the field.

Modelling conditions included representative summer and winter scenarios and the modeling considered calm (waveless) state and habitat wave conditions. Distribution modeling revealed the following results:

1. Under different scenarios reviewed for each land approach, there is no significant difference between the trench excavation plume formation amounts in affected areas, during summer and winter periods, wavy and waveless states, for similar quantities and total suspended solid matters (TSSM).

2. There is no significant difference between the trench opening and closing scenarios.

3. In some wavy state scenarios, some insignificant re-suspension states are observed after the trench excavation is completed, which are not always observed in calm (waveless) state scenarios. However, since they are short-term (usually a few hours) these are not considered significant.

4. At the land approach on the Anatolian side, plumes disperse along the coast and laterally off the shore.

5. At the land approach on the European side, plumes are driven towards the west with the dominant wave, with a certain amount of interference observed from the east of the footprint of trench excavation.

6. At the land approach on the Anatolian side, the areas defined with 1 mg/L total suspended solid matter (TSSM) and 50 percent contour lines ranges from 150 ha to 212 ha in all scenarios. At the 95 percent level this range is 231 ha to 369 ha.

7. At the land approach on the European side, the areas defined with 1 mg/L TSSM and 50 percent contour lines range from 510 ha to 573 ha in all scenarios. At the 95 percent level, the range is 1133 ha to 1280 ha.

8. During trench opening and closing, at the land approach on the Anatolia side, the peak levels of suspended sediment concentration reaches the value of approximately 250 mg/L at 100 meters to the footprint of trench excavation.

9. During trench opening and closing, at the land approach on the European side, the peak levels of suspended sediment concentration usually reaches the value of approximately 250 mg/L at 100 and 200 meters in the west, but short-term sudden increases occur exceeding 1000 mg/L under winter and summer conditions including wavy and waveless states.

10. The period of time in excess of 1 mg/L suspended sediment concentration does not exceed 5 days at the land approach on Anatolian side, however the summer time wavy state trench closing scenario were this period is exceeded on a land of approximately 13 ha is excluded from this. Under the summer time trench opening and closing scenarios (usually an

area of approximately 30 ha), the value of 5 mg/L is exceeded for up to 3 days around the footprint of trench excavation.

11. The 1 mg/L and 5 mg/L suspended sediment concentration excess times exceed 10 days, in the range of 478 ha and 574 ha for the 1 mg/L level and in the range of 10 ha and 262 ha for the 5 mg/L level under all scenarios at the land approach on the European side. The areas where the 10-day time is exceeded are larger under winter scenarios (above 200 ha) than under summer scenarios (between 10 ha and 33 ha).

12. The sediment settlement area with 1 mm layer thickness at the land approach on the Anatolian side disperses laterally towards the cape in the west from the footprint of trench excavation, and approximately 500 meters in the east, also towards the open sea at depths in excess of 30 m.

13. The areas covered with 1 mm of material range from 114 ha to 138 ha at the land approach on the Anatolian side in all model scenarios.

14. Under all model scenarios, an area of approximately 3.3 ha is covered with 100 mm of material near the land approach on the Anatolian side.

15. At the land approach on the European side, the sediment settlement area with 1 mm layer thickness disperses approximately 2 km towards the west along the coast, 1 km towards the east and towards the open sea by approximately 500 meters where depth is around 30 m.

16. Under all model scenarios, the areas covered with 1 mm of material range from 440 ha to 600 ha at the land approach on the European side.

17. Under all model scenarios, the areas covered with 100 mm of material range from 14.5 ha to 17.5 ha at the land approach on European side.

In line with the data provided in SPP Sediment Plume Modeling Report, it is anticipated that the suspended and settled sediments of 380 kV Lapseki 3-Sütlüce 3 Submarine Cable Project will remain within the borders of Turkey and will be dispersed much less.

It is considered that the approximately 4.2 km long planned 380 kV İzmit Gulf Crossing will be located on the east end of Marmara Sea and thus the project construction will not cause any environmental problem with regard to sediments as it is far away from the Dardanelles Strait.

### **2.3.5 World Bank Operational Policy OP 4.12 on Involuntary Resettlement**

Since land-acquisition-related impacts of some sub-projects are not yet clear and in view of the possibility of future sub-project modifications during the project implementation period, TEIAS has prepared a Land Acquisition Policy Framework (LAPF) in observance of the requirements of OP 4.12. The purpose of this LAPF is to define the land-acquisition-related impacts of the sub-projects under the Additional Finance as well as to assign mitigations and determine to which impact group such mitigations should be assigned and in cases where these impacts are unmitigable then, to define reduction methodology and tools for those impacts. As detailed in the LAPF prepared, depending on the magnitude of livelihood impacts, the LAPs or ALAPs shall be prepared for sub-projects with known impacts on land but land acquisition works under which have not started and also Ex-Post Social Audits seeking to make an assessment of works under sub-projects with land acquisition work ongoing will be prepared.

Although sub-projects shall refrain from land acquisition as much as possible, there might still be certain construction works to require additional land acquisition. In such cases, TEIAS shall evaluate alternative government land that can be allocated for the purposes of the project. Since sub-projects shall establish servitude right generally for overhead lines and that fixed facilities take up much space, no significant land acquisition requirement is foreseen. In cases where land acquisition is inevitable, project design shall be so arranged as to keep land acquisition at a minimum. In cases requiring additional land acquisition, TEIAS shall prepare an (A)LAP in line with the LAPF. This (A)LAP, before start of construction works, shall be subject to approval by the World Bank. Similarly, TEIAS shall get World Bank approval for social audit reports it has prepared for sub-projects land acquisition works of which have either kicked-off or completed.



### 3. POSSIBLE ENVIRONMENTAL AND SOCIAL IMPACTS OF THE PROJECT AND MITIGATIONS

#### *3.1 Social and Environmental Impacts*

Potential impacts in relation with this REIP Additional Finance could arise from substations, submarine and underground cables. Project activities concerned shall have similar impacts and mitigation and monitoring measures. These impacts concern dust, noise, solid waste and wastewater to generate, loss of habitat, hydrology and fauna/flora (Annex-E) for submarine cables, seabed geology, quality of sea water, etc. Also, other critical issues concern management of occupational health and safety issues and traffic and community health and safety. Within this scope, TEIAS, as required by World Bank environmental and social policies, shall promote certain good practices that can provide some guidance for both its own staff and project contractors regarding gender issues. Impacts during operation are generally about the management of the SF6 gas, disposal of waste oils and lubricants during the maintenance of the substation, etc. Environmental and social impacts that can be encountered during the project are discussed in following sections.

**Air Quality:** Formation of dust is expected during the scraping of top soil and as a result of other excavation activities during site preparation and construction activities under the project. Also, dust shall generate during the production, dismantling, loading and transport of such materials, which shall be possibly used as sand, gravel and lime. Vehicles dumpers shall be covered during transport and operators shall seek to load-offload so smoothly as not to cause any dust. Furthermore, exhaust emissions are also expected from construction machinery and equipment. Measures against the generation of dust and exhaust gases shall be employed. Within this scope, construction machinery, equipment and vehicles shall be periodically checked. Therefore, impacts are expected to be low. However, in the event of negative impacts on sensitive receiving environments and near-by communities, measures shall be employed as required.

**Noise:** Noise from construction equipment and vehicles is expected to have adverse impacts on sensitive receiving environments adjacent to the project. Construction works shall

be carried out during the day between 07:00-19:00 hrs so as to minimize such impact. Then, noise levels in sensitive receiving environments shall be monitored and additional measures shall be employed as required.

**Water and Wastewater:** Requirement for water shall mostly concern the daily requirement of workers and for other uses at the camp site. Ready-mixed concrete shall be used at the facility, and since concrete shall retain water, no wastewater shall be generated. Water shall also be used to wash down concrete mixers and dust to form on other machines as well as during the dampening of roads and cleaning of other equipment. TEIAS and the subcontractor shall be liable to satisfy their water requirement without causing any negative impacts on ground and surface waters. The quality of water needed (service water and water used for concrete) shall be periodically monitored.

Wastewaters will generally be of domestic nature and generated at the camp site and the construction worksites. Wastewaters shall be firstly dumped in the sewage system as per the national local legislation and the WB criteria and in cases where such systems are not available, such waters shall be stored in mobile WCs or in impermeable septic tanks to be collected regularly by licensed companies and discharged to the sewage system for treatment, after which they shall be discharged to the receiving environment. Water to be used for spraying of the project site to prevent generation of dust will not result in generation of wastewater. Domestic wastewaters during operations shall be disposed of as per the requirements of the Water Pollution Control Regulation and the Regulation on the Protection of Basins for Water for Drinking and Service Purposes.

**Community Health and Safety:** Throughout site preparation and construction works, TEIAS shall ensure that such health and safety measures as due information of the public of the construction plan and locations, due availability of signposts to delineate construction sites as well as due spraying and dampening in dry season and ensure that these rules and procedures are observed by subcontractors as well. In addition, since there will be entry and egress of vehicles at the construction site during works, a local congestion in traffic is also expected. Accidents to threaten community health and safety might occur as a result of inadequate fencing of worksites and lack of appropriate signature.

**Occupational Health and Safety (OHS):** Construction works can lead up to accidents to threaten the health and safety of workers unless required measures are in place. In this context, TEIAS and subcontractor companies are liable to provide a safe and healthy working environment to workers. Workers shall be knowledgeable, hence duly informed regarding job descriptions, responsibilities and risks that might translate into threats on health and safety. Workers shall be provided with personal protective equipment, as required, and updated regarding occupational health and safety through regular trainings. Camp sites shall be fitted with facilities to meet any requirements of workers.

Project works shall be conducted in observance of the provisions of the Occupational Health and Safety (OHS) Law No. 6331. All works to be carried out within the scope of the said law, risk assessment shall be carried out, the roll out of which TEIAS shall oversee. Also, activities carried out under the project shall be performed in line with OHS policies and procedures set forth in the TEIAS Occupational Health and Safety Regulation. There are available procedures prepared in view of vocational and OHS training of workers personal protective equipment (PPE) and OHS materials, site work, work with chemicals, working at heights, OHS inspections, periodical health examinations, work accidents and near miss notifications.

Field of activity of TEIAS is categorized under very dangerous works, requiring that OHS issues be prioritized. One of the principals of TEIAS is to reduce work accidents below scientifically acceptable limits to protect its staff from all sorts of possible risks. In line with its OHS policy, TEIAS undertakes to ensure that its workers, subcontractors, visitors and other TEIAS staff employed at other premises will employ all measures per the current OHS legislation, keep accessible tools, equipment and personal protective equipment as well as used. Another target is also to carry out a risk assessment before works start to identify and eliminate conditions that can lead to work accidents and vocational diseases, to monitor OHS practices at sites under TEIAS' supervision and to ensure that the OHS system in place is sustained.

OHS performance in relation with projects sites under TEIAS responsibility that have been financed by the World Bank shall be monitored by TEIAS' regional offices and reported to TEIAS and the World Bank. These reports shall provide information on the use of personal

protective equipment (PPE), site observation regarding the use of signages, OHS training records, drill logs, risk assessment practices, emergency action plan updates and statistical data such as Lost Time Injury Frequency Rate (LTIFR). Reporting shall be quarterly.

**Hazardous Materials:** Presently, the plan is not to have on-site fueling and vehicle maintenance at the construction site. However, this will be a requirement in the event that heavy machinery are used on construction site. TEIAS and subcontractors shall take measures required for the storage and use of hazardous materials to go into operations. Furthermore, chemical spills and other possible accidents involving hazardous materials shall be incorporated in emergency management plan scenarios and equipment required shall be made available on site as well as drills concerned shall be carried out.

**Waste Management:** Wastes generated during construction shall be stored and disposed of in compliance with the national legislation as well as the WB criteria. As top soil shall be used for rehabilitation purposes after the construction phase, generation of excavation wastes is not expected. However, in the event that the amount of excavation material is in excess of the actual requirement, the excess portion shall be duly disposed of.

In addition to excavation wastes, generation of domestic and hazardous solid wastes is also expected. Those wastes shall be separately stored at camp and construction sites as per national legislation and transported to licensed facilities for due disposal. TEIAS and the subcontractor shall be responsible for all communication with licensed facilities as well as that all wastes have been disposed of in observance of the national legislation and the procedures of the WB.

**Natural Habitats, Flora and Fauna:** Location and the footprint of sub-projects shall be determined in view of natural habitats. Within this scope, during environmental and social assessments natural habitats under national/international protection that can be impacted by project sites and activities shall be taken into consideration, potential impacts of the project footprint thereupon shall be evaluated and measures to prevent/minimize negative impacts shall be determined. Furthermore, monitoring of these measures shall also be listed in documents concerned. No sub-project with the possibility to negatively impact and critical habitat shall be financed under the project. Similarly, flora and fauna species in project activity areas that can

be negatively impacted shall be determined, impacts on these species that can be negatively affected by construction activities and other operations shall be identified as well as measures to minimize/prevent these impacts determined, and other information regarding monitoring activities shall also be included in the environmental and social impact assessment activities.

**Infrastructure:** Existing roads shall be used during construction. The construction contractor shall rehabilitate possible damages on road surfaces from heavy machinery traffic. In cases where infrastructure elements on private property are damaged as a result of construction activities, implementation of the mitigation measures shall be the responsibility of the contractor. Infrastructure requirements of camps to be erected as part of construction activities shall be satisfied separately, without impacting the existing infrastructure. For this reason, the impact of the project on local infrastructure shall be insignificant.

**Land Acquisition:** The ultimate goal is to refrain from land acquisition to the extent possible. However, in some sub-projects where land acquisition is unavoidable, TEIAS will take measures in line with its LAPF prepared as per WB OP 4.12. Economic resettlement is foreseen for the project, including minimal physical displacement on public land. In the event that ad hoc or permanent acquisition of land is required for certain components of the project, although small in scale, some livelihoods might still be compromised. In observance of project principles, use of government land shall be prioritized over use of private property and agricultural land. In cases where expropriation of private property is inevitable, and expropriation is needed, works shall proceed after the Bank approved (A)LAPs are implemented by TEIAS.

**Immovables and Livelihoods:** The project will lead to minimal economic displacement, which have already taken place before Bank financing. Future land acquisition will take place and also project has encountered physical displacement to minimal extent, which led to losses on buildings or other structures. Project design is based on use of existing roads for access. Depending on the condition and use of land needed for the project, some crops and trees with economic value can also be lost. There is also the possibility that project activities might affect land-reliant livelihoods in areas the project also trespasses agricultural land. In such cases, compensation and livelihood restoration measures regarding damages on and loss of immovables and livelihoods affected by the project shall be detailed in (A)LAPs to be prepared.

**Local Employment and Procurement:** Workforce required throughout construction works shall be supplied through the locals affected by the project to the extent possible. However, in view that the skill-set and the level of knowledge of the locals might be insufficient for the technical construct of the project, required labor can be supplied also regionally or nationally, as required. Since construction activities will also require procurement of local products and services for a limited amount of time, it is also expected to create a positive impact in these regards. Procurement of construction machinery and equipments, construction materials and transportation, catering as well as laundry, food supplies and security services shall be supplied through local suppliers to the extent possible.

**Other Stakeholders including farmers, local people and sensitive groups:** In cases where construction activities coincide with rural areas used for agricultural purposes, agricultural workers (i.e. seasonal and daily workers) and women involved in agricultural activities can also be impacted by the project as the project may temporarily limit such demands regarding irrigation, cultivation and harvesting. Seasonal workers move around with their families and are involved in agricultural activities also with their families. On the project site where there is a requirement for seasonal workers, children are not salary-workers but just helping their families. This modality of work is not considered as forced labor. Then, there is also the national legislation banning all sorts of child labor. On these grounds any kind of forced or child labor will be banned as per the national labor law. The fishing activities may be adversely affected due to construction activities of the submarine cable and interfaces for a short time. The impacts will be assessed throughout the project lifetime starting from pre-construction phase and appropriate mitigation measures will be taken, based on the results of the assessment, if required. In cases where sensitive groups have been identified during the project, all project stakeholders including these groups shall be consulted and informed about the impacts of the project and the construction schedule as well as damages applicable for project affected people as a result of loss of land or livelihoods.

**Gender Impact:** The national law has equal provisions for women and men, and hence there are no limitations for women owners or tenants of land. TEIAS and contracting companies shall employ measures as required so as to ensure that women right-holders, who are actively involved in activities to be carried out are involved in all consultative processes and equally

informed, especially in activities to be carried out in rural settings. TEIAS shall separately monitor project-affected women right-holders for the purposes of certain data provided in monitoring reports (ex. number of project-affected women, number of women participating in consultation meetings, grievances from women, etc.)

**Working Conditions, Influx of Workers and Child Labor:** A camp site shall be set up for sub-projects. Camp site shall extend over a minimum amount of land and distant to the local residential areas as possible and with the capacity to house workers. Camp site shall be located as far from the locals and local settlements as possible so as to minimize community interaction. Camp sites shall be equipped with such amenities and utilities, electricity, sewage and communications networks, etc. Although the camps are mostly male dominant in this sector, for camps where female workers are hired and/or visiting, contractors will ensure that camp amenities will be accessible for women with appropriate health and safety conditions provided. Camp sites shall have road access, using the existing roads to the extent possible. In cases where accommodation is provided on project site(s), TEIAS shall ensure the observance by contractors of code of conduct and that workers are trained on the provisions of the labor law on good behaviours and harassment-free workplace, interaction with the locals (including women and children) as well as before the job starts. Facilities to be used on project site(s) (health facilities, galleys, etc.) shall be in compliance with the WB standards. The project shall fully observe international labor standards and, as a party to ILO standards, the Turkish Labor Law. Accordingly, child labor, forced labor and discrimination on the basis of race and gender shall not be tolerated.

**SF6:** SF6 is a non-toxic, inert, insulator, coolant, colorless, odorless and non-flammable gas with high dielectric resistance and thermal stability. With a molecular mass 5 times heavier than air, SF6 is one of the known heavy gases, also with a dielectric resistance (at 50 Hz and 1 bar) 2.5-3 times greater than that of nitrogen and air. These values increase in tandem with pressure exceeding the dielectric resistance of the transformer insulation lube at 3 bars.

SF6 is a perfect arc-suppression capability thanks to its electronegativity. As the temperature increases as a result of the arc during breaking, this disintegrates SF6, releasing sulphur and fluorine atoms. Fluorine atoms with high electro-negativity catches-up with free

electrons, reducing arc current down to zero. Following the break, the SF<sub>6</sub> gas heats-up (2000 °C) and cools down and fluorine and sulphur atoms reintegrate to form SF<sub>6</sub> again, which restores the dielectric environment.

Chemically very-stable, SF<sub>6</sub> are used in breakers and other installations alike, as well as GIS assemblies in GIS Sub-stations. At its pure state, SF<sub>6</sub> gas is not poisonous and enables a safe working environment and therefore, is preferred.

5 times heavier than air, SF<sub>6</sub>, when released into the atmosphere, is inclined to fill lower spaces. A mix of 20% oxygen and 80% SF<sub>6</sub> can be inhaled without detrimental impacts. In the event of any leaks, one must be protected from SF<sub>6</sub> that collects above the ground. High concentration of SF<sub>6</sub> leakages in closed environments can cause the risk of asphyxiation for staff due to reduced level of oxygen. In this case contaminated area has to be ventilated and evacuated, and proper PPE must be used before re-entry.

Vitiated and stale SF<sub>6</sub> to fill the environment after the arc can be intoxicating. In this case, OHS principles shall be observed through out work performed with SF<sub>6</sub>.

Furthermore, 1 kg of SF<sub>6</sub> released into the atmosphere triggers an un-natural greenhouse effect similar to that of a mid-class gasoline car through 120.000 km (185 g CO<sub>2</sub>/km). SF<sub>6</sub> emissions shall be refrained from as much as possible. Amount of SF<sub>6</sub> needed to perform certain tasks shall be minimized.

**Cultural Assets:** Studies for Natural and Archaeological Sites on and adjacent to the project site shall be carried out within the scope of respective Law and regulations. No work shall be carried out on protection sites identified or to be identified on the project site(s). In view of this aim, such areas shall be cordoned off and fitted with signposts and markings, and staff access to these areas shall be restricted. In the event that such measures have been employed by the project, there shall be no significant impacts on cultural and natural assets.



A chance-find procedure in line with the Turkish legislation shall be prepared in view of possible chance-finds on the project site, per which respective authorities in the event of a chance-find shall be contacted to ensure that the respective legislation is enforced.

**Submarine Cables and Interfaces:** Forecasted impacts from submarine cables and interface activities include generation of wastes and other impacts on hydrology, flora and fauna, habitat, protected areas, air quality, noise and vibration, traffic, landscape, seabed geology and the quality of seawater. Majority of these impacts are related with conventional construction works but still can be minimized through appropriate mitigations. In addition, physical damages are only possible along the route of the submarine cable and during the laying of the submarine cable on the seabed. Then, there might be low levels of noise and vibration on the seabed. Such impacts as noise, vibration and turbidity that might adversely affect species of marine flora and fauna can also be encountered. Sedimentation and sea-bottom creatures can also be subject to negative impacts during the construction of the submarine cable route. Again, works concerning the submarine cable can possibly affect maritime traffic. There is also the possibility to observe construction-related sedimentation and increased turbidity. However, level of turbidity of the seawater is expected to return to normal once construction works are over. Moreover, other negative impacts such as oil, lubricants and chemical spills from maritime traffic and potential accidents that might negatively impact the quality of seawater. All these impacts have been taken into consideration and it is deemed possible that these impacts can be minimized with appropriate mitigations.

Impacts from proposed project activities, mitigations and monitoring requirements are provided in further detail in Annex-A&B 'Sample Mitigation and Monitoring Chart.' This sample chart shall avail as a guide and ESMPs of sub-projects shall be project-specific, with some room also for additional/lesser mitigation and monitoring requirements.

Impacts covered under OP 4.12 on Involuntary Resettlement, as indicated before, are discussed also in the project-specific LAPF.

Environmental and social assessment documents prepared for sub-projects shall include an impact assessment of the outlines, OP 4.11 on Physical and Cultural Resources and OP 4.04

on Natural Habitats. Although this is not a requirement per the Turkish law and regulations in view of the project's servitude right or in cases of presence of cultural heritage within the project's impact zone, it still requires that the environmental assessment touches upon the sensitivity of such an asset as well as makes reference to the correspondence between TEIAS and the Ministry of Culture and Tourism, mitigations as well as monitoring procedures identified.

National legislation on chance-finds can be used as it complies with the WB policies. In brief, work on site shall be stopped and Directorates of Culture at the provincial/municipal level shall be promptly notified should any cultural or archaeological assets be encountered. Nobody shall be allowed to move such findings or disrupt the find area, which would otherwise entail ousting or termination of the contract. Construction shall resume once inspection has been carried out and upon written approval of the authorities.

All ESIA/ESMP/Prevention Plan/Checklist documentation for the sub-projects shall include procedures and responsibilities concerning accidental or chance find of cultural assets regardless whether or not the sub-project concerned is in a historical sight.

The announcement for the meetings on the 380 kV Lapseki-Sutluce Submarine Cable Project was published in the national daily Star (17.7.2011), local paper Lapseki Gazetesi (District of Lapseki-11.7.2011) and the local paper Ay Yıldız Gazetesi (District of Gelibolu-16.7.2011). Public consultation meeting regarding the 380 kV Lapseki-Sutluce Submarine Cable Project took place at 10:30 hours on 27.7.2011 in the District of Lapseki, at the Lapseki Municipal Meeting Hall and at 18:00 hours at the coffeehouse of the Sutluce Village in the District of Gelibolu. Public consultation meeting for the 380 kV Lapseki 2- Sutluce 2 Submarine Cable Project, for this very reason, was deemed unnecessary since both locations were in the same vicinity 1 km apart as adjacent settlements.

TEIAS shall commission a submarine survey on the impacts on seabed geology, marine habitat (flora and fauna) and seawater quality of the 380 kV Lapseki 3 - Sutluce Submarine Cable and Izmit Gulf Crossing submarine cable. The survey shall also include aquatic flora and

fauna data in addition to benthic fauna. Issues pertaining to natural habitats shall be provided in detail in the ESIA's and ESMPs.

TEIAS shall employ Turkish and the World Bank standards (whichever is stricter) for sub-projects. These standards, in essence, are related but not limited to issues here-below:

- Environmental and Social Impact Assessment
- Solid and Hazardous Waste Management
- Level of Noise (during construction)
- Intense electrical and magnetic fields at the subgrade level (transmission/distribution) and the fence-line (substations)
  - Use of polychlorinated biphenyls (PCB) in any equipment (ex. transformers, condensators) or in spares. No PCB or PCT shall be used.
- Selection of Right of Way
- Environmental Audits
- Health and Safety
- Site Cleaning
- Cultural Heritage
- Natural Habitats

Criteria and standards and other issues pertaining to issues specified above can be found in the Turkish legislation, Pollution Prevention and Reduction Manual of the World Bank and the Environmental Health and Safety Guidelines of the World Bank Group (WBG EHS Guidelines). Requirements of the Turkish legislation in relation with these issues must be fully complied with. In cases where the Turkish legislation does not provide neither any standards or requirements or in cases where the standards of the WB are stricter, then World Bank standards shall be observed. World Bank documents in relation with these matters are the Bank's Safeguard Policies, EA Source-book and Updates, the Pollution Prevention and Reduction Handbook and the Environmental Health and Safety Guide accessible at the World Bank Web.

### ***3.2 Stakeholder Engagement and Information***

Through stakeholder engagement, TEIAS seeks to establish a seamless and mutual process of interaction between parties, who will be potentially impacted by the projects and those that are somehow related to the project (i.e. stakeholders). This process ensures that throughout the project life-cycle (design, pre-construction, construction, operation and decommissioning) a robust participatory process is well-established to improve active participation of all project stakeholders through the use of a variety of tools and activities.

Accordingly, a timely and sustained dialogue between the project affected people and the stakeholders shall be ensured, which would, in turn, make sure that they have equal and ample opportunity to provide their views and feedback.

For this project TEIAS shall focus on aspects below as part of stakeholder engagement:

- To ensure and sustain a constructive stakeholder engagement process with all stakeholders concerned.
- To assess the level of stakeholder interest in and support for the project and ensure that stakeholder views are taken account during project design and the assessment of environmental and social performance.
- Throughout the life-cycle of the project, to ensure an effective and comprehensive participatory process involving project-affected people and on matters with the potential to create impact, and to enable instruments required.
- To ensure that technically and culturally important project particulars regarding environmental and social risks have been relayed in a timely, understandable and accessible manner.
- To provide project affected parties an accessible and comprehensive feedback mechanism enabling them to forward their problems and grievances.

Effective stakeholder engagement ensures a 'social license' to further project activities, which is based on mutual trust and respect and transparent communication between TEIAS and stakeholders. A well-designed stakeholder engagement process shall at once improve decision-

making processes as well as project performance through cost and risk management, prevents conflict, enhances corporate policies, provides continuous feedback on matters pertaining to governance, project implementation and impacts and the opportunity to manage stakeholder interactions.

In this project TEIAS defines stakeholders concerned as follows: Respective Government Agencies, Governor's office, Municipalities and the project affected people.

With the aim to draw a deadline for public consultation regarding Category B projects that require ESMP or ESIA, coordination with TEIAS Group Directorates shall be ensured, as always been the case, concerning the distribution of brochures about the project and mukhtars shall be provided with respective contact information and feedback from the people shall be collected for a duration of at least fifteen days, which, if applicable, shall then be included in the ESMP. Project-specific information shall be accessible to people through brochures or news pieces including information as to how to relay feedback to the project through the mukhtars. Accordingly, there shall be no deadline for the provision of feedback and other views and grievances, which would facilitate communication with the people in a more flexible time frame. Detailed meetings shall also be arranged for as required for public information.

Once the draft ESMP (or the ESIA) has been prepared for the project, it must be made available at mukhtar's offices, together with the brochures introducing the project. At the same time a text along the lines of the sample text below shall be put up on TEIAS website:

*"The brochure and/or the draft ESMP document in relation with Project XXX is now available at the XXX mukhtar's office. Please notify the mukhtar directly of any comments, ideas you might have or as well the respective TEIAS Transmission and Facility Operations Department or the TEIAS Department of Environment and Expropriation. You can also download the document at: XXX website."*

*Furthermore, an announcement shall also be made on TEIAS' corporate social media accounts that the document is available on the project website.*

This shall enable stakeholders (government bodies, NGOs, locals, universities, etc.) to have easy access to TEİAŞ to provide their feedback and views, which should provide them also with further details regarding the project or the ESMP and additional meetings etc. can be arranged for as required.

TEİAŞ held a stakeholder consultation meeting on 25 October 2019 in Ankara. Officials of General Directorate of Highways and General Directorate of Land Registry and Cadastre attended the meeting. In the meeting, the framework documents prepared within the scope of the REIP-AF loan package, the environmental and expropriation processes of the planned projects and the contents of the environmental and social documents were presented. Minutes of the stakeholder engagement meeting, the list of participants and photographs are given at Annex D.

The Department of Environment and Expropriation has made a presentation to meeting participants about WB policies including the framework document prepared in relation with the REIP-AF project as well as TEİAŞ projects. Issues discussed at the meeting were as follows:

- Projects included in the REIP-AF package and the ESMP and ESIA reports to be prepared for these projects,
- İzmit'te halkın katılımı toplantısı düzenleneceğinden
- The previous submarine flora and fauna surveys carried out for SMC projects,
- Ulusal mevzuat kapsamındaki projeler için ÇED Yönetmeliği gereğince “ÇED Gerekli Değildir” kararlarının alındığından
- The guarantee to employ any and all safety, environmental and social measures throughout construction and operational phases of projects,
- Projelerin inşaat süreleri boyunca her 3 ayda bir yüklenici tarafından uygulama raporları hazırlanacağından ve TEİAŞ Bölge Müdürlüklerince yerinde kontrolünün sağlanmasının ardından Genel Müdürlükçe tetkik edileceğinden,
- That TEİAŞ's GRM and communication capabilities shall be made available to locals on-site,
- and that the final version of the FD shall be published on TEİAŞ and WB websites.

Also, satellite images of planned projects have been screened.

### ***3.3 Grievance Mechanism***

In addition to the nationwide grievance mechanism (Presidential Communication Center) TEIAS also has its own mechanism composed of Feedback/Grievance Boxes used during Environmental and Social Management Plan implementation activities. In this project, TEIAS has so far registered grievances collected in writing and on the phone and notified the World Bank accordingly. Similarly, TEIAS shall make other arrangements regarding the collection, handling and resolution of grievances concerning sub-projects during project activities. Concerns, requests and complaints and grievances project affected people might have regarding the environmental and social impacts of the project shall be handled through the grievance mechanism.

Information regarding pre-construction activities such as land acquisition (land consolidation, land acquisition, etc.), the construction schedule and how to access the grievances mechanism of the project as well as other consultations and participatory activities shall be announced to affected communities through TEIAS web site, regional offices concerned.

Although not compulsory, a grievance notice has been prepared and provided here (see. Annex C) to facilitate the process. All grievances, recommendations and concerns collected through the grievance mechanism shall be archived for a pre-determined period and resolved. Grievance related statistics shall be continuously notified to the WB.

The first draft of the ESMF is published on TEIAS' web site on 23.10.2019 before stakeholder engagement and public consultation meetings so that respective stakeholders can examine and provide their feedback thereupon. Then, stakeholders' feedback are feed into the ESMF and the agreed version shall be announced to the public on media and as specified above. Similar to the ESMF, sub-project-specific ESA documents shall also be prepared in English and Turkish before stakeholder engagement meetings in a timely manner to allow people to examine

and provide their feedback. Final versions of the site-specific ESA documents shall also be made publicly available once they are revised.

TEIAS feedback/grievance boxes shall also be available on site throughout the construction phase of the project, where people will be able to provide their feedback anytime. Sample grievance forms are provided as an attachment to this ESMF.

Public consultation meetings schedule as planned by TEIAS before the signature of the loan agreement:

- 1) Public consultation meeting, Sutluce
- 2) Public consultation meeting, Izmit

Apart from these meetings, TEIAS shall consult with the people on a regular basis, organizing face-to-face meetings as required.

Responsible parties as specified in the monitoring plan shall monitor contractor's performance throughout the construction period. TEIAS' Environment and Expropriation Department shall be responsible to carry out the final review of the contractor's bidding documents and ESMP performance against respective specifications. In the event of EIA (as per the EIA regulation in Turkey) TEIAS shall have top responsibility to ensure that the EIA is streamlined with the ESMP. However, the Ministry of Environment and Urbanization shall have the final say on matters regarding the streamlining of the Turkish version of the EIA with specifications. Thus, in the event of variation between the EIA document that has been prepared for the WB and the one prepared for the Ministry of Environment and Urbanization, ultimate authority to review that the EIA document prepared in observance of the provisions of the Turkish legislation as well as the authority to ensure that the two documents are streamlined shall rest with the Ministry of Environment and Urbanization whereby TEIAS shall bear the responsibility to monitor that works progress in tandem with both the EA document prepared as per the Turkish legislation and the ESMP/ ESIA of the WB.



#### **4. INSTITUTIONAL ARRANGEMENTS IN VIEW OF ENVIRONMENTAL AND SOCIAL MANAGEMENT**

As elaborated here-above, in line with WB Safeguard Policies a special assessment shall be carried out on the construction site and site-specific ESAs shall be prepared, which shall essentially be TEIAS' responsibility. This document shall be available in construction tender dossiers. During the construction phase, TEIAS Environment and Expropriation Department shall cooperate with regional directorates to monitor and control the performance of the contractor so as to ensure that works performed are satisfactory in terms of meeting the requirements specified in the EIA performed and TEIAS as the lead authority shall be expected to remedy any discrepancies, if any. From this perspective, quarterly reporting of contractor and site control activities is deemed necessary.

TEIAS' Environment and Expropriation Department during operation shall assist the operations department and oversees performance as to its compliance with the requirements specified in the ESA for the operation phase of the project. Authorities at the TEIAS and the Department of Environment and Expropriation shall monitor the environmental and social management performance of project-related TEIAS regional offices. TEIAS shall submit to the World Bank the quarterly monitoring reports for all Category B sub-projects (as per the approved ESA).

**Table 1. Roles and Responsibilities**

Responsible Party	Duties/Responsibilities
<b>The World Bank</b>	<ul style="list-style-type: none"> <li>• Reviewing ESIA's and ESMPs, LAPFs and ALAPs.</li> <li>• Support missions to make sure that the project fits in with WB OPs.</li> <li>• Making the ESMF and the LAPF available to public on WB official website.</li> </ul>
<b>Contractors</b>	<ul style="list-style-type: none"> <li>• Site-implementation of ESIA's and ESMPs, and update of ESMP, as required, in cooperation with TEIAS.</li> <li>• Acceptance and implementation of respective laws and regulations that have been defined by TEIAS and also covered in tender documents in consultation with the WB.</li> <li>• Sharing ESMPs before construction starts.</li> <li>• Develop 'Chance Find Procedures' as required.</li> <li>• Collecting and resolving all grievances regarding construction.</li> <li>• Ensure continuity of the Grievance Mechanism.</li> <li>• Regular (daily, weekly, monthly, etc.) monitoring of activities defined in ESIA and ESMPs.</li> <li>• Prepare ESMP implementation reports (ESMPIR)</li> </ul>
<b>TEIAS</b>	<ul style="list-style-type: none"> <li>• Sharing and effective implementation of both the Turkish and English versions of the ESMF, ESIA's and ESMPs, (A)LAPs and LAPF.</li> <li>• Project implementation and management of funds.</li> <li>• Ensure that funds are utilized as per policies and procedures as well as for respective cost items specified in the loan agreement.</li> <li>• Collect field data (using external resources as required) for outcome indicators through the Monitoring and Evaluation unit, which shall be quality-checked and evaluation of the results.</li> <li>• Monitor project progress and report to government bodies concerned as well as the WB management regarding progress, outcomes, possible challenges and solutions.</li> <li>• Ensure correspondence with government bodies, which, also need to be monitored.</li> <li>• Review and approve data in reports for submission to the WB and assess results.</li> <li>• Establish a standalone accounting system to track cash fund flows.</li> <li>• Prepare data required for regular reports as requested by stakeholders.</li> <li>• Employment through the PIU.</li> <li>• Prepare the Project Operational Guidelines in consultation with the WB.</li> <li>• Establish the grievance mechanism and resolve grievances and concerns on both provincial and national levels.</li> <li>• Determine construction contractors.</li> <li>• Reporting to the WB regarding compliance with the safeguards that are directly implemented.</li> </ul>

## **ANNEX A. SAMPLE ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN FORMAT (ESMP)**

### **Responsible Party**

Indicate name and title of the person/institution to prepare the ESMP and the date the ESMP was prepared.

### **Project Description**

Provide a brief description of the project. This definition shall include the content of investment, the location and project-specific significant features (such as an adjacent protected area, or other areas of historical, cultural or religious importance) as listed in Annex A. In addition, a brief description of general land use status (agriculture, industry, etc.) and closest settlements shall be elaborated. Locate the project site on the map, if possible. Provide site specific environmental and social baseline data, impacts pertained to the project.

Within the scope of the Project, ESIA's shall be prepared for UCs and SCs as well as ESMPs for GIS SSs among the projects included in the REIP-AF loan package. Such information as the project location, environmental and social impacts, near-by settlements, etc. shall be provided in detail in the said documents. For projects requiring land acquisition, also, LAP and ALAP shall be prepared as per O.P. 4.12.

### **1. MITIGATION PLAN**

Stage	Issue*	Mitigation Measures	Responsible Body**
Construction	<ul style="list-style-type: none"><li>•</li><li>•</li><li>•</li><li>•</li><li>•</li></ul>		

Operation	<ul style="list-style-type: none"> <li>•</li> <li>•</li> <li>•</li> <li>•</li> <li>•</li> </ul>		
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\*Issues the construction contractor is responsible for shall be specified in tender documents

\*\*Issue and measures shall be project-specific (based on an assessment of the location or route of the project).

## 2.MONITORING PLAN

Stage	What are the <b>Parameters to monitor?</b>	Where to monitor parameters?	How to monitor parameters/varieties of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why <b>Monitor</b> parameters?	Cost	<b>Responsible Party</b>
Construction							
Operation							

NOTE: For each bullet in the mitigation plan there shall be a corresponding bullet provided in the monitoring plan. For example, one bullet concerns something specified in mitigation plan regarding noise, it shall appear also in the noise monitoring plan.

### 3. SCHEDULE

Start and completion dates for activities below shall be indicated (preferably in graphic format):

- Mitigation measures
- Monitoring

### 4. INSTITUTIONAL ARRANGEMENTS

Section on this topic shall provide the details of the issues below, including supporting organograms:

- Institutional responsibility and procedures regarding measures to be taken and monitoring, their links to environmental management.
- Flow of environmental data (reporting, issuers and recipients and the frequency of reports).
- Decision-making hierarchy regarding environmental management (sanctions, penalizing decision-making, decision to shut-down, etc.)

In brief, here, issues pertaining to how to use monitoring data for a reasonable environmental and social program, who has collected and analyzed such data, who prepared the reports, to whom these reports have been submitted and how frequently, who the initial recipient of these reports have forwarded the reports or what the initial recipient has done with these reports, who is responsible for facility shut-down, operational amendments and expenditures shall be defined.

### 5. CONSULTATIONS WITH PROJECT AFFECTED PEOPLE AND LOCAL VOLUNTEERING BODIES

Public Consultation Meetings to be carried out as part of the EIA process shall be considered within this scope. However, the process below shall be followed for projects requiring the preparation of a PIF.

***Issues below shall be recorded:***

- Date of consultations
- Venue of consultations
- Invitees  
Name, Institution or Occupation, Tel./Fax./E-mail/Address (home or work)
- Participants  
Name, Institution or Occupation, Tel./Fax./E-mail/Address (home or work)

- Meeting/Schedule/Calendar, as required

What is to be presented, by who?

- Brief Meeting/Minutes of the Meeting (Views, Questions and Responses by Presenters), as required. The minutes of the meeting shall also include the names of the TEIAS staff to attend
- Activities agreed upon or an agreed monitoring activity and the schedule thereof

## ANNEX B. SAMPLE MITIGATION MEASURES TABLE FOR UNDERGROUND CABLES, SUBMARINE CABLES AND SUBSTATIONS

MITIGATION MEASURES						
Stage	Issue	Measures***	Cost	Responsible Party**	Starting Date	Completion Date
<b>PRE- INSTALLATION</b>	Cultural and Historical Assets	<ul style="list-style-type: none"> <li>In the event of encountering any cultural assets construction shall stop and respective Cultural and Natural Asset Conservation Boards shall be notified. Then, works on site shall stand-by until the response from the Conservation Board. There shall be no construction.</li> <li>Construction can resume upon affirmative response.</li> </ul>	No additional cost.	Contractor	Start of construction works	Completion of construction works



MITIGATION MEASURES						
Stage	Issue	Measures***	Cost	Responsible Party**	Starting Date	Completion Date
AND INSTALLATION	Disassembly of the existing substation (substations only)	<ul style="list-style-type: none"> <li>All unnecessary equipment and wastes shall be separately collected and those, which can be recycled shall be forwarded to recycling by a licensed recycling company.</li> <li>Asbestos-containing materials shall be disposed of by companies licensed for the disposal of hazardous wastes.</li> </ul>	Included in the contract	Contractor	Start of dismantling	Completion of dismantling
	Dust-particulate	<ul style="list-style-type: none"> <li>The limit value 1.0 kg/hr. as specified in Table 2.1 in the Regulation on the Control of Air Pollution from Industry regarding emissions from sources other than shafts shall be adhered to for dust and particulate emissions. There shall be spraying/dampening in dry season</li> <li>There shall be no scattering/blowing during loading and/or unloading. These works shall also be performed in special areas allocated for this purpose so as to prevent scattering/blowing of dust and particles. Also, water shall be sprayed for dampening during such works. Furthermore, workers shall be warned for caution during loading and/or unloading. Limit-heights shall be determined for loading and/or unloading of materials that can blow off. Wind direction shall also be considered during loading and/or unloading.</li> <li>Trucks shall be covered and there shall be speed limits imposed. Speed limit on project site shall be 30 kmh and 50 kmh in the city.</li> <li>Exhaust emission permits shall be obtained for all vehicles to be used on project site.</li> <li>Tires of trucks operated on site shall be washed down before leaving premises (for the streets).</li> </ul>	Included in the contract	Contractor	Start of excavation	Completion of excavation

MITIGATION MEASURES						
Stage	Issue	Measures***	Cost	Responsible Party**	Starting Date	Completion Date
FACILITY	Noise	<ul style="list-style-type: none"> <li>Work shall be carried out between 7:00 AM to 7:00 PM. In cases where work is required outside of these hours, the local authority and public institutions concerned as well as citizens shall be duly notified in advance.</li> <li>Those living close-by shall be notified informed throughout construction.</li> <li>Continuous noise from the worksite shall be compliant with the level (70 dBA) stipulated in the Regulation on the Measurement and Management of Ambient Noise for daytime. To ensure this, the substation shall be fenced off and walled off with a protective concrete wall.</li> <li>Also, in cases where the noise level has increased such measures as not operating heavy machinery simultaneously shall be taken in addition to replacing old machinery with new ones to the extent possible for wear and tear is directly proportionate with level of noise.</li> </ul>	No additional cost.	Contractor	Start of construction works	Completion of construction works
	Air Quality	<p>The 3 mg/Nm3 threshold, which is the limit value for dust and particulate emissions stipulated in the Regulation on the Control of Air Pollution from Industry shall not be exceeded. To ensure this;</p> <ul style="list-style-type: none"> <li>Spraying and damping shall be ensured in dry season.</li> <li>There shall be no scattering/blowing during loading and/or unloading. These works shall also be performed in special areas allocated for this purpose so as to prevent scattering/blowing of dust and particles. Also, water shall be sprayed for dampening during such works. Furthermore, workers shall be warned for caution during loading and/or unloading. Wind direction shall also be considered during loading and/or unloading.</li> <li>Trucks shall be covered and there shall be speed limits imposed. Speed limit on project site shall be 30 kmh and 50 kmh in the city.</li> <li>Exhaust emission permits shall be obtained for all vehicles to be used on project site.</li> </ul>	No additional cost.	Contractor	Start of construction works	Completion of construction works

MITIGATION MEASURES						
Stage	Issue	Measures***	Cost	Responsible Party**	Starting Date	Completion Date
	Wastewaters generated on construction site	<ul style="list-style-type: none"> <li>Wastewaters from the construction site shall be discharged to the sewage system through the connection that shall be built and in places without sewage, such wastewaters shall be collected in impermeable tanks to be emptied with vacuum/sewage trucks.</li> </ul>	Not high	Contractor	Start of construction works	Completion of construction works
	Excavation, solid and hazardous wastes from the construction site	<ul style="list-style-type: none"> <li>Excavation wastes shall be disposed of at the closest licensed dump-site.</li> <li>Solid wastes from the use of construction materials such as wood and metal and packaging wastes such as glass, paper and plastics shall be collected separately and handed either over to the municipality or a recycling company.</li> <li>Domestic organic wastes shall be given to the municipality concerned for to be dumped at the Solid Waste Landfill concerned.</li> <li>Wastes such as oil, paint, etc. shall be separately collected in labeled, metal containers and handed out to a licensed recycling company.</li> </ul>	Not high although might differ depending on the municipality and/or the licensed recycling facility.	Contractor	Start of construction works	Completion of construction works
	Wastes from the Parking Lot	<ul style="list-style-type: none"> <li>To the extent possible, vehicle maintenance shall not be carried out on the construction site.</li> <li>Waste oils, grease, etc. from construction machinery and vehicles shall be collected in stainless barrels and disposed of by the contractor, who shall ensure that these wastes are collected by licensed companies.</li> <li>Barrels shall be stored on impermeable grounds protected from rain and the sun, and in a covered area, with adequate fire protection. The area housing such barrels shall be cordoned off. Firefighting kit (buckets, axes, shovels, pick-axes and hoes) shall be available on site.</li> <li>Such materials as batteries, tires, etc. to generate from the operation of machinery and vehicles shall be handed over to licensed companies for disposal.</li> </ul>	Not high	Contractor	Start of construction works	Completion of construction works

MITIGATION MEASURES						
Stage	Issue	Measures***	Cost	Responsible Party**	Starting Date	Completion Date
	Involuntary Land Acquisition/Impacts on Livelihoods	<ul style="list-style-type: none"> <li>• Sub-projects shall be designed in a way to minimize involuntary land acquisition.</li> <li>• An Abbreviated Land Acquisition Plan shall be prepared for a project requiring land acquisition.</li> <li>• Damages to arise from land acquisition shall be remedied as per legislation and the WB policies.</li> <li>• If there are persons with special needs, who will be negatively impacted by construction works such as the elderly, women and children or persons with disabilities, ad hoc measures shall be put in place so as to ensure that accessibility is sustained.</li> <li>• The impacts of the construction activities on the fishing cooperatives will be assessed.</li> </ul>	Included in construction costs	TEIAS and contractor	Before construction	Upon completion of land acquisition

MITIGATION MEASURES						
Stage	Issue	Measures***	Cost	Responsible Party**	Starting Date	Completion Date
	Occupational Health and Worker Safety	<ul style="list-style-type: none"> <li>Workers shall be provided with all required personal protective equipment such as hard-hats, safety harnesses, OHS overalls, goggles, gloves, hard-shoes, etc.</li> <li>Signposts that read 'Caution,' 'No trespassing,' 'Restricted Entry;' etc. shall be placed in view of safety of the locals.</li> <li>Workers shall receive 'Occupational Health and Worker Safety' training. Before construction starts, all workers shall be informed about statutory safety and security issues to observe on site, and about risks throughout the construction period as well as regulations in relation thereto.</li> <li>Measures against landslides or subsidence shall be ensured (such as using aluminum, steel or wooden supports). No worker shall be allowed on site until required measures have been taken.</li> <li>The contractor shall take measures in line with respective regulations so as to protect and improve occupational health and safety as well as to ensure good working conditions.)</li> <li>The contractor shall treat all workers equally and fairly, ensuring equal conditions for all.</li> <li>In the event of any incidents to threaten the environment or occupational and/or public health and safety, the contractor shall expeditiously notify TEIAS thereof, who shall further notify the World Bank in three days. Detailed report on the accident including the root-cause analysis as well as information on post-accident measures employed and on damages and remedies shall be submitted to TEIAS and the World Bank in 30 days.</li> </ul>	Within project budget	Contractor	Start of construction works	Completion of construction works

MITIGATION MEASURES						
Stage	Issue	Measures***	Cost	Responsible Party**	Starting Date	Completion Date
	Landscaping	<ul style="list-style-type: none"> <li>Construction site shall be restored.</li> <li>No hazardous, solid, liquid and/or construction wastes shall be left behind inside the area.</li> </ul>	Within project budget	Contractor	Completion of construction works	Commissioning of the substation
FACILITY	Habitat (flora/fauna)	<ul style="list-style-type: none"> <li>All agreed natural habitats, wetlands and protected areas in the vicinity of the work site shall be protected and not exploited or used in ill faith. Staff shall not hunt, go about looking for food, cut trees or act in other detrimental ways, which shall be strictly prohibited.</li> <li>Such measures as use of bales of hay or silt curtains/fences shall be employed against erosion and subsidence so that wetlands and streams are protected against flows from the construction site.</li> <li>No unlicensed quarries, material pits or waste dumps shall be availed around the vicinity and especially around protected areas.</li> </ul>	Within project budget	Contractor	Start of construction works	Commissioning of the substation

MITIGATION MEASURES						
Stage	Issue	Measures***	Cost	Responsible Party**	Starting Date	Completion Date
	Public Consultation and Access to Information	<ul style="list-style-type: none"> <li>The ESMP shall be made available to the public for ease of receiving feedback from the people.</li> <li>Project info-sheets including the construction schedule shall be prepared (such as posters, fliers, brochures, etc.)</li> <li>A grievance mechanism shall be established and promoted to the people.</li> <li>Meetings will be conducted with the locals about project components and project activities.</li> <li>People shall be informed about traffic arrangements</li> </ul>	No additional cost.	Contractor TEIAS	Start of construction works	Completion of construction works
	Traffic and Pedestrian Safety	<p>The contractor shall be responsible to duly secure the construction site as per national legislation as well as to regulate construction-related traffic. Related measures shall include but not limited to the following:</p> <ul style="list-style-type: none"> <li>Traffic signposts, warning signs, barriers and service roads; the site shall be clearly visible and people shall be warned regarding potential dangers.</li> <li>Staff shall be trained especially about site access and the heavy traffic around the site and a traffic management system shall be established. In areas where construction traffic crosses paths with the locals, safe crossing facilities and zebra crossings shall be provided for pedestrians.</li> <li>Working hours shall be arranged in view of local traffic. For instance, significant transports shall be refrained from at times of commute and movement of herds.</li> <li>Trained and visible on-site staff shall ensure active traffic management at times when people require safe and due crossing.</li> <li>In cases where building rehabilitated are open and continue receiving people, safety and security of access to offices, shops and residences shall be ensured at all times and without interruption.</li> </ul>	Within project budget	Contractor	Start of construction works	Commissioning of the substation

Stage	Issue	Measures***	Cost	Responsible Body**	Starting Date	Date of Completion
OPERATION	Noise	<ul style="list-style-type: none"> <li>Regulatory thresholds (<math>L_{\text{daytime}}</math>:65 dBA, <math>L_{\text{night time}}</math>:55 dBA) shall not be exceeded with reliance on the Regulation on Measurement and Management of Ambient Noise.</li> <li>Substation equipment shall be compliant to the International Electric Commission (IEC) 60076-10 standards as well as other international standards to ensure (<math>\leq 70</math> dBA).</li> <li>The perimeter of the substation shall be fenced-off.</li> </ul>	Under operation budget	TEIAS	Commissioning of the substation	End of economic life of substation
	EMF (Electrical and Magnetic Fields)	<ul style="list-style-type: none"> <li>Such limit values specified in the International Commission on Non-Ionizing Radiation Protection (ICNIRP) as 5 kV/m electrical field (for people), 1000 mG (24 hrs/d) for magnetic fields, 10 kV/m electrical field (for workers) and 5000 mG (8 hrs/d) for magnetic field shall be satisfied. To ensure this;</li> <li>During the procurement of all substation equipment (transformer, breaker, separator, surge protector, current voltage transformer, etc.) the IEC or other international standards shall be observed. Reinforcement on this basis shall follow controls and renovation.</li> <li>A wall shall be built around the substation to prevent entry, approach and settlement.</li> <li>The substation building, equipment, the wall and the fence shall be grounded. In the event of any signs (such as malfunction of equipment, increased contact currents, electrical arcs, local heating, etc.) the grounding voltage shall be measured and unfit grounding shall be rectified through local replacement/renovation and by ensuring seamless connectivity, etc.</li> </ul>	Under operation budget	TEIAS	Commissioning of the substation	End of economic life of substation
	Health and Safety	<ul style="list-style-type: none"> <li>Teams to operate, maintain and repair the substation shall be trained on such issues as electrical safety, firefighting, working at heights and first-aid.</li> <li>Around the substation shall be warning signs and mounting preventers.</li> </ul>	Not high (Under operation budget)	TEIAS	Commissioning of the substation	End of economic life of substation



Stage	Issue	Measures***	Cost	Responsible Body**	Starting Date	Date of Completion
OPERATION	Risk of fire	<ul style="list-style-type: none"> <li>The substation to be set up as per the fire safety principles set out in the Regulation on Electrical High Current Facilities shall be regularly controlled including control, test, maintenance, repair and replacement of all equipment (bushing, SF6, insulation oil, cable terminal caps and gas seeps, etc.)</li> <li>All equipment are tested per national as well as international standards against arc and sparks.</li> </ul>	Not high (Under operation budget)	TEIAS	Commissioning of the substation	End of economic life of substation
	SF6 Gas	<ul style="list-style-type: none"> <li>SF6 gas shall be continuously monitored through heat-resistant pressure devices and gas seeps shall be inspected. In the event of any gas seeps (Before SF6 gas density drops below critical level) the system shall automatically turn on and block-close.</li> <li>Workers shall be informed about safe operations.</li> </ul>	Not high (under operation budget)	TEIAS	Commissioning of the substation	End of economic life of substation
	Transformer Oil	<ul style="list-style-type: none"> <li>Physical and chemical analyses of oils shall be carried out on a regular basis and in the event of expiry of usability, such oils shall be replenished.</li> <li>Waste oil shall be tested for category determination and duly disposed of.</li> </ul>	Not high (Under operation budget)	TEIAS	Commissioning of the substation	End of economic life of substation
	Solid, Liquid and Hazardous Wastes	<ul style="list-style-type: none"> <li>Solid wastes and scrap materials as well as construction wastes shall be separately collected for disposal by municipalities or licensed recyclers.</li> <li>Pick-up by the municipality of domestic organic wastes shall be ensured, which shall be dumped at the Solid Waste Landfill concerned.</li> <li>Wastes such as oil, paint, etc. shall be separately collected in labeled, metal containers and handed out to a licensed recycling company.</li> </ul>	Not high although varies between municipalities and/or licensed recycling plant	TEIAS	Commissioning of the substation	End of economic life of substation

\*\*Applies when works concerned are awarded to any Contractor. Otherwise, responsibilities defined for the Contractor shall rest with TEIAS.

\*\*\*All Regulations concerned shall be observed as these measures are employed (i.e. Regulation on the Control of Air Pollution from Industrial Facilities, Regulation on Control of Water Pollution, Regulation on the Assessment and Management of Ambient Noise, Regulation Concerning Pits to be Built in Areas where Sewage Construction is not Possible, Regulation on the Control of Solid Wastes, Regulation on the Control of Soil Pollution, Regulation on the Control of Excavated Soil and Demolition Debris, Regulation on Packaging and Control of Packaging Wastes, Regulation on the Control of Hazardous Wastes, Regulation on Grounding in Electrical Facilities, Occupational Health and Safety Regulation, Regulation on Safety and Health Signage, Regulation Regarding the Use of Personal Protective Equipment at Workplaces, Regulation on Health and Safety Conditions Regarding the Use of Work Equipment, etc.).

Mitigation Plan for the Submarine Cable								
Project Phase	Environmental Impact/Issue	MEASURES			Cost	Dates		Responsible Party
		Measures	Purpose of Measures	Regulations to Follow		Start	Completion	
Construction	Wastes	<u><b>Solid Waste</b></u> <ul style="list-style-type: none"> <li>•Adequate solid waste collection shall be ensured on project site.</li> <li>•Excavation wastes generated during the construction of interfaces shall be disposed of at licensed dump-sites.</li> <li>•Recyclable packaging wastes shall be handed over to licensed recyclers for recycle and those that cannot be recycled shall disposed of at dump-sites licensed by the Lapseki and/or other municipalities.</li> </ul>	In view to minimize environmental impacts, to ensure disposal as per respective regulation of excavation and solid and hazardous wastes to generate during project construction.	Regulation on the Control of Excavation Soil and Construction and Demolition Debris Regulation on the Control of Solid Wastes Regulation on the Control of Packaging Wastes Regulation on the Control of Hazardous Wastes	Within project budget	Excavation start	Completion of excavation	Contractor
		<u><b>Waste Oil/Fuel</b></u> <ul style="list-style-type: none"> <li>•Used oils from vehicles or equipment shall be stored temporarily in barrels.</li> <li>•Barrels shall be stored on impermeable grounds protected from rain and the sun, and in a covered area, with adequate fire protection. Barrel storage area shall be fitted with warning signs and the set of fire extinguishers must be available.</li> <li>•Vehicle maintenance shall not be performed on site except for emergencies.</li> <li>•Waste oils shall be given to PETDER for disposal through recycling or reuse.</li> </ul>		Regulation on the Control of Waste Oils	Within project budget	Excavation start	Completion of excavation	Contractor

Mitigation Plan for the Submarine Cable								
Project Phase	Environmental Impact/Issue	MEASURES			Cost	Dates		Responsible Party
		Measures	Purpose of Measures	Regulations to Follow		Start	Completion	
Construction	Wastes	<u><b>Solid and liquid waste from workers</b></u> <ul style="list-style-type: none"> <li>Domestic wastes shall be disposed of landfills licensed by the municipality.</li> <li>Wastewaters from the construction site shall be connected to the municipal sewage (through existing toilets if possible and if not through mobile on-site toilets).</li> </ul>	In view to minimize environmental impacts, to ensure disposal as per respective regulation of excavation and solid and hazardous wastes to generate during project construction.	Regulation on the Control of Solid Wastes Regulation on Water Pollution	Within project budget	Excavation start	Completion of excavation	Contractor
	Air Pollution	<ul style="list-style-type: none"> <li>3 mg/Nm<sup>3</sup> limit value for dust and particulates shall not be exceeded.</li> <li>Spraying and damping shall be ensured in dry season.</li> <li>There shall be no scattering/blowing during loading and/or unloading. These works shall also be performed in special areas allocated for this purpose so as to prevent scattering/blowing of dust and particles. Also, water shall be sprayed for dampening during such works. Furthermore, workers shall be warned for caution during loading and/or unloading. Wind direction shall also be considered during loading and/or unloading.</li> <li>Trucks shall be covered and there shall be speed limits imposed. Speed limit on the project site and its vicinity shall be 30 kmh and 50 kmh in the city.</li> <li>Exhaust emission levels for all vehicles to be used shall be approved and permitted.</li> </ul>	To reduce emissions of dust from excavation on project site and to ensure that limit values specified in the regulation are not exceeded. In addition, to gauge emissions from vehicles and equipment to reduce the emission into the atmosphere of exhaust CO <sub>2</sub> and other substances so as to minimize fluctuation of ambient air quality.	Regulation on the Control of Air Pollution from Industry	Within project budget	Excavation start	Completion of excavation	Contractor

Mitigation Plan for the Submarine Cable								
Project Phase	Environmental Impact/Issue	MEASURES			Cost	Dates		Responsible Party
		Measures	Purpose of Measures	Regulations to Follow		Start	Completion	
	<i>Historical, Cultural and Archaeological Assets</i>	<ul style="list-style-type: none"> <li>In the event of encountering finds of cultural or archaeological values during project excavation works, all works shall be suspended and the Ministry of Culture and Tourism shall be notified and construction activities shall resume only after permission.</li> </ul>	Aim is to conserve and protect cultural assets.	—	No additional cost.	Excavation start	Completion of excavation	Contractor
Construction	<i>Noise and Vibration</i>	<ul style="list-style-type: none"> <li>Work shall be carried out between 7:00 AM to 7:00 PM. In cases where work is required outside of these hours, the local authority and public institutions concerned as well as citizens shall be duly notified in advance.</li> <li>People living around the vicinity of the project site shall be informed throughout construction.</li> <li>The level of noise pollution from the construction of interfaces, laying of the submarine cable and during excavation shall not be exceeding 70 dBA.</li> <li>Heavy machinery and vehicles shall be periodically inspected so that specified noise levels are not exceeded and new machinery shall be used to the extent possible.</li> </ul>	To ensure that locals around the vicinity of the project site are not impacted by way of ensuring the level of noise and vibration pollution during works is well beyond the values specified in the regulation.	Regulation on the Measurement and Management of Ambient Noise	No additional cost.	Excavation start	Completion of excavation	Contractor

Mitigation Plan for the Submarine Cable								
Project Phase	Environmental Impact/Issue	MEASURES			Cost	Dates		Responsible Party
		Measures	Purpose of Measures	Regulations to Follow		Start	Completion	
	<i>Community and Occupational Health and Safety</i>	<ul style="list-style-type: none"> <li>Risk assessment studies will be implemented. Workers shall be provided with all required protective equipment such as hard-hats, safety harnesses, OHS overalls, goggles, gloves, hard-shoes, etc.</li> <li>Staff shall be trained on occupational health and safety. Throughout the construction phase, all staff shall be informed about security rules on-site as well as risks and other regulations to follow.</li> <li>Along the excavation route warning signs shall be placed for public security and entry to the construction site shall be controlled and prevented by tapes, barriers and phosphorescent warnings.</li> </ul>	To prevent possible work accidents during the laying of cables and connectivity work during construction as well as to ensure safety of workers and the people.	Occupational Health and Safety Regulation	Within project budget	Excavation start	Completion of excavation	Contractor
	<i>Traffic Safety</i>	<ul style="list-style-type: none"> <li>Transportation of materials for use during project construction and building works outside of the project site might impact traffic in the area.</li> <li>Speed limit on the project site and its vicinity shall be 30 kmh and 50 kmh in the city.</li> </ul>	Aim is to prevent possible traffic accidents in and around the project area.	—	Within project budget	Excavation start	Completion of excavation	Contractor
Operation Phase	<i>EMF (Electromagnetic Field Strength)*</i>	<ul style="list-style-type: none"> <li>Lower limit values specified for electrical and magnetic fields regarding cables and materials used shall be ensured in respect of international standards (Electrical field 5 kV/m and magnetic field 1000 mG; for workers electrical field 10 kV/m and magnetic field 5000 mG).</li> </ul>	To ensure that international thresholds regarding the impact on the environment of electromagnetic fields.	Regulation on Measures to be Employed for the Protection of Environment and People from the Effects of Non-ionizing Radiation	Under operation budget	Commissioning of the cable	Expiry of the economic life of the cable	TEIAS
	<i>Community and Occupational</i>	<ul style="list-style-type: none"> <li>Teams to carry out the maintenance, control, repair and operation of the submarine cable, interface locations and connection lines shall be selected from</li> </ul>	To prevent possible work accidents during maintenance/repair and operation of cables during	Occupational Health and Safety Regulation	Not high (under operation budget)	Commissioning of the cable	Expiry of the economic life of the cable	TEIAS

Mitigation Plan for the Submarine Cable								
Project Phase	Environmental Impact/Issue	MEASURES			Cost	Dates		Responsible Party
		Measures	Purpose of Measures	Regulations to Follow		Start	Completion	
	<i>Health and Safety</i>	among those trained on such issues as electrical safety, firefighting and first-aid. <ul style="list-style-type: none"> <li>Warning signs shall be placed along the cable route.</li> </ul>	operation as well as to ensure safety of workers and the people.					
	<i>Solid, Liquid and Hazardous Wastes</i>	<ul style="list-style-type: none"> <li>Solid wastes to generate during the maintenance of the cable shall be collected separately and handed over to the respective municipality.</li> </ul>	To prevent damaging impacts of wastes on people and the environment as well as to ensure that wastes are disposed of in observance of regulations.	Regulation on the Control of Solid Wastes Regulation on the Control of Packaging Wastes Regulation on the Control of Hazardous Wastes Regulation on Water Pollution	Within project budget	Commissioning of the cable	Expiry of the economic life of the cable	TEIAS
Plan of Measures Concerning the Laying of the Submarine Cable								
Project Phase	Environmental Impact/Issue	MEASURES			Cost	Dates		Responsible Party
		Measures	Purpose of Measures	Regulations to Follow		Start	Completion	
Construction	<i>Air Pollution and Pollution from Noise and Vibration</i>	<ul style="list-style-type: none"> <li>Vehicles, equipment and motors to be used during the laying of the submarine cable shall be regularly maintained.</li> <li>New equipment and vehicles shall be used to the extent possible.</li> </ul>	Target is to provide regular maintenance for power engines, UPSs and other equipment to be used during the laying of the submarine cable so as to reduce exhaust/smoke	Regulation on the Control of Air Pollution from Industry Regulation on the Measurement and Management of Ambient Noise	Within project budget	Excavation start	Completion of excavation	Contractor

Mitigation Plan for the Submarine Cable								
Project Phase	Environmental Impact/Issue	MEASURES			Cost	Dates		Responsible Party
		Measures	Purpose of Measures	Regulations to Follow		Start	Completion	
			emissions and pollution from noise.					
	<i>Impact on seabed Geology</i>	<ul style="list-style-type: none"> <li>With reliance on data from surveying of the project route, geologically sensitive areas shall be refrained from to the extent possible.</li> </ul>	To protect biological and physical aspects of the project are and to minimize damages thereupon throughout construction.	—	No additional cost.	Excavation start	Completion of excavation	Contractor.
	<i>Impact on the Marine Environment, Flora and Fauna**</i>	<ul style="list-style-type: none"> <li>Works concerning the laying of the submarine cable and during the connection of the latter to the underground cable shall be carried out with utmost caution and in the event of any damages on the coast or on the near-coastal areas at the end of such works in these areas, rehabilitation shall follow.</li> <li>In view to prevent any accidents during the laying of the submarine cable (such as any spills or leaks into the marine environment of oil/fuel from vehicles), cable-laying vessel shall be equipped with barriers, booms and other emergency equipment.</li> </ul>	Not to incur permanent damages on the marine environment and not to disrupt the marine ecosystem.	Bern Convention	No additional cost.	Excavation start	Completion of excavation	Contractor.
	<i>Maritime Traffic</i>	<ul style="list-style-type: none"> <li>The cable route has been so selected as not to be in the vicinity of the transportation network (access points, ferries, speed boats, etc.).</li> </ul>	To ensure that maritime traffic is not hampered and to prevent accidents at sea.	—	No additional cost.	Excavation start	Completion of excavation	Contractor.

Mitigation Plan for the Submarine Cable								
Project Phase	Environmental Impact/Issue	MEASURES			Cost	Dates		Responsible Party
		Measures	Purpose of Measures	Regulations to Follow		Start	Completion	
		<ul style="list-style-type: none"> <li>Ministry of Transport, governors concerned, and Provincial Maritime Undersecretaries shall be informed regarding the cable route and works in relation thereto.</li> <li>Stakeholders concerned in the field of impact of works (locals, fishing ports, etc.) shall be informed.</li> </ul>						
	<i>Impacts on local fisheries</i>	<ul style="list-style-type: none"> <li>The impacts on the fishing cooperatives will be assessed and appropriate mitigation measures will be taken, based on the results of the assessment, if required.</li> </ul>	To prevent adverse impacts on fishing activities	-	No additional cost	Pre-construction phase	Operational phase	TEIAS and Contractor
	<i>Quality of Sea Water</i>	<ul style="list-style-type: none"> <li>Turbidity on the seabed from excavation shall clear away naturally in a matter of days.</li> <li>There shall be no unnecessary excavation, which shall not lead to significant turbidity and impact the quality of the seawater.</li> </ul>	To prevent sudden disruption of the quality of sea water.	Regulation on the Control of Water Pollution	No additional cost.	Excavation start	Completion of excavation	Contractor.
Operation Phase	<i>EMF (Electromagnetic Field Strength)***</i>	<ul style="list-style-type: none"> <li>Lower limit values specified for electrical and magnetic fields regarding cables and materials used shall be ensured in respect of international standards (Electrical field 5 kV/m and magnetic field 1000 mG; for workers electrical field 10 kV/m and magnetic field 5000 mG).</li> </ul>	To ensure that international thresholds regarding the impact on the environment of electromagnetic fields.	Regulation on Measures to be Employed for the Protection of Environment and People from the Effects of Non-ionizing Radiation	Under operation budget	Commissioning of the cable	Expiry of the economic life of the cable	TEIAS



Mitigation Plan for the Submarine Cable								
Project Phase	Environmental Impact/Issue	MEASURES			Cost	Dates		Responsible Party
		Measures	Purpose of Measures	Regulations to Follow		Start	Completion	
	<i>Community and Occupational Health and Safety****</i>	<ul style="list-style-type: none"> <li>Teams to carry out the maintenance, control, repair and operation of the submarine cable, interface locations and connection lines shall be selected from among those trained on such issues as electrical safety, firefighting and first-aid.</li> <li>Warning signs shall be placed along the cable route.</li> </ul>	To prevent possible work accidents during maintenance/repair and operation of cables during operation as well as to ensure safety of workers and the people.	Occupational Health and Safety Regulation	Not high (under operation budget)	Commissioning of the cable	Expiry of the economic life of the cable	TEIAS

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
<b>FACILITY</b>	Cultural and Historical Assets	New cultural assets possible to encounter in the project area	At the construction site	Visual monitoring	In the event that cultural assets have been encountered, monitoring shall be carried out by authorities from the Cultural and Natural Assets Conservation Boards.	To ensure streamlining with the Law on the Conservation of Cultural and Natural Assets	Not high in the event that any cultural assets have been damaged	Provincial Directorate of Culture and Tourism	Start of construction works	Completion of construction works

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
	Dismantling of the existing substation	Substation components and installation  Unnecessary equipment and wastes	At the construction site	Visual monitoring	Throughout dismantling	Environmental Law and Regulations Concerned	No additional costs (within project budget)	TEIAS  Regional Directorate	Start of construction works	Completion of construction works

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
	Dust-particulate	Dust from the mobility and exhaust of excavation and construction machinery (mg/Nm <sup>3</sup> )  Public grievances	At the construction site	Visual monitoring  Interviews at nearby settlements	Weekly during excavation/during intensive construction/upon complaint	Regulation on the Control of Air Pollution from Industry	No additional cost. Within project budget	TEIAS  Regional Directorate	Start of construction works	Completion of construction works
<b>FACILITY</b>	Noise	Level of noise  Public grievances	On construction site	Sound measurement using audiometer (noise level measuring device)  Interviews at nearby settlements	Weekly visual observations  Upon people's complaint	Regulation on the Measurement and Management of Ambient Noise	Not high	TEIAS  Regional Directorate	Start of construction works	Completion of construction works

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
<b>FACILITY</b>	Wastewater from construction site	Connection to the sewage system  Pollution, turbidity, smell in water and soil at the substation area	Connection to the sewage system and substation	Visual observation (of whether or not waste waters are discharged in areas where discharge is not permitted and of documents regarding whether or not waste waters have been disposed of through connection to the sewage system)	Weekly (flash checks and controls)	To ensure adherence to the Regulation on the Control of Water and Soil Pollution and on Locally Polluted Sites	No additional costs (within project budget)	TEIAS  Regional Directorate  Municipality	Start of construction works	Completion of construction works

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
FACILITY	Excavation, solid and hazardous wastes from the construction site	Smell, Storage and Conditions for Disposal	On construction and dump sites	Visual	Weekly (flash checks and controls)	To ensure compliance with Regulation on the Control of Solid Wastes, Regulation on the Control of Soil Pollution and Locally Polluted Sites, Regulation on the Control of Hazardous Wastes, Regulation on the Control of Excavation Soil, Construction and Demolition Debris and the Regulation on the Control of Waste Oils	No additional costs (within project budget)	TEIAS  Regional Directorate  Contractor.  Municipality	Start of construction works	Completion of construction works

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
<b>FACILITY</b>	Wastes from the car park	Waste oils, batteries, expired tires and scrap electronic on-board materials	At the car park	Inspection and control of vehicle inspection documentation	During breakdown or periodical maintenance	To ensure disposal of wastes in observance of regulations on the control of hazardous wastes, on the control of waste oils, waste batteries, expired tires	Not high although might differ depending on the a licensed recycling facility.	Contractor.	Start of construction works	Completion of construction works

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
	Health and Safety	Documentation for training on health and safety  Training certificates to prove training participation  Safety equipment used on construction site such as hard hats, gloves, shoes, safety harnesses, etc.	At the construction site	Visual	At the beginning of each work          Daily	To ensure adherence to the Regulation on Occupational Health and Safety	No additional cost. Within project budget	TEIAS  Regional Directorate	Start of construction works	Completion of construction works



MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
	Involuntary Land Acquisition/Impacts on Livelihoods	Land acquisition and economically displaced people (impacted livelihoods)	At and around the facility	Land acquisition reports, court files and registries, complaints received in relation with livelihoods	Continuous	As a requirement of legislation and OP 4.12	No additional cost. Within project budget	TEIAS Regional Directorate	Before construction works	Upon completion of construction works and during operation phase, as required
CONSTRUCTION	Landscaping	Wastes (excavation, solid, liquid, hazardous, etc.)  Excavated/dug roads and areas	At substation area	Visual	During site close-down	To ensure adherence to the Environmental Law and regulations	No additional cost. Within project budget	TEIAS Regional Directorate	Completion of construction works	Commissioning of the substation
	Habitat	Negative impacts on the flora/fauna at project site	Project Site	Visual	Continuous	To ensure adherence to the Environmental Law, regulations and the ESMP	No additional cost. Within project budget	TEIAS Regional Directorate	Start of construction works	Completion of construction works

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
	Traffic	Placement of signs, vehicle speed, etc.	Project Site	Visual	Continuous	To ensure adherence to the Environmental Law, regulations and the ESMP	No additional cost. Within project budget	TEIAS Regional Directorate	Start of construction works	Completion of construction works

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
OPERATION	Noise	Level of noise  Public grievances	On the border of the substation  In near-by settlements	Interviews with dwellers of near-by settlements	Upon complaint (as required)	Control of whether or not values specified in the regulation have been met	Not high	TEIAS  Regional Directorate	Commissioning of the substation	End of economic life of substation
	EMF	Distance from substation wall/fence  Documentation regarding the procurement of substation equipment and fittings  Ground resistance (ohm)	Inside and in the area of the substation	Visual monitoring  Interviews with dwellers of near-by settlements  Grounding measurement	Before the commissioning of the substation  When there is a problem with grounding	To ensure adherence to the Regulation on Measures to be Employed for the Protection of Environment and People from the Effects of Non-ionizing Radiation	Not high	TEIAS  Regional Directorate	Commissioning of the substation	End of economic life of substation

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
	Health and Safety	Technical Training (Operation and Maintenance)  Protective equipment and overalls (whether or not used by workers)	At substation area	Visual	Throughout operation (at suitable intervals)	To ensure adherence to any and all Occupational Health and Safety-related regulations	No additional cost. (Under operation budget)	TEIAS  Regional Directorate	Commissioning of the substation	End of economic life of substation

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
OPERATION	Risk of fire	SF6 gas pressure,  cable terminal caps,  insulators,  cable connections  Primary and secondary controls	At substation area	With technical tests and standard maintenance works performed by control teams	Once every six months in the event of any failures or as required by the electrical system	Upon risk of fire  To ensure adherence to fire safety principles specified in the Regulation on Electrical High Current Facilities, for the maintenance of worn out, broken sections, as well as to prevent the risk of accidents and shortages	No additional cost. (Under operation budget)	TEIAS  Regional Directorate	Commissioning of the substation	End of economic life of substation
	SF6 Gas	SF6 gas pressure	At all sections	With pressimeter	Throughout operation (continuous)	To ensure adherence to regulations concerned	To ensure adherence to the Environmental Law and regulations  As a requirement of operations	TEIAS  Regional Directorate	Commissioning of the substation	End of economic life of substation

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
	Transformer Oils	Characteristic features of oil (density, acidity, fluidity, spark point, corrosive sulphur, PCB, color)	In transformers	Test Methodology	daily/weekly/monthly as a result of a failure every two years	Oil quality control	No additional costs (within operational budget)	TEIAS  Transmission Construction and Operation Group Directorate  Department of Transmission Line Operation and Maintenance	Commissioning of the substation	End of economic life of substation

MONITORING TABLE										
Stage	Issue	What are the parameters?	Where to monitor parameters?	How to monitor parameters/variety of monitoring equipment?	When to monitor parameters - frequency of measurements to monitor/continuous measurement?	Why monitor parameters?	Cost	Control authority	Starting Date	Date of Completion
OPERATION	Solid and hazardous wastes generated during operations (batteries, waste oils)	Pollution generated within the substation area (wastes, smell, etc.)	At substation area	Visual	Throughout operation	To ensure adherence to Regulation on the Control of Soil Pollution and Locally Polluted Areas, Regulation on the Control of Hazardous Wastes and the Regulation on the Control of Waste Oils	Not high although varies between municipalities and/or licensed recycling plant	TEIAS Transmission Construction and Operation Group Directorate	Commissioning of the substation	End of economic life of substation
		Wastes from failed equipment and fittings		Test methodology	Upon failure, breakdown and expiry of economic life of equipment  Upon expiry of the economic life of transformer oils	To ensure adherence to the Regulation on the Control of Waste Oils	Not high although depends on the measurement company			
		Pollutants in waste transformer oils (Arsenic, Cadmium, Lead, Total Halogens, PCB, spark point)								

Project Stage	Environmental Impact/Issue	Submarine Cable Monitoring Plan				When to monitor parameters? (measurement frequency)	Cost	Dates		Control authority
		What parameters to be monitored?	Why monitor parameters?	Where to monitor parameters?	How to monitor parameters?			Start	Completion	
Construction	<i>Cultural and Historical Assets</i>	New cultural assets possible to encounter in the project area	To ensure streamlining with the Law on the Conservation of Cultural and Natural Assets	Along the cable route	Visual monitoring	In the event that cultural assets have been encountered, monitoring shall be carried out by authorities from the Cultural and Natural Assets Conservation Boards.	Not high in the event that any cultural assets have been damaged	Excavation start	Completion of excavation	Provincial Directorate of Culture and Tourism
	<i>Dust Emissions</i>	Dust from the mobility and exhaust of excavation and construction machinery (mg/Nm <sup>3</sup> )  Public grievances	Application of the Regulation on the Control of Air Pollution from Industry	Along the cable route	Visual monitoring  Interviews at near-by settlements	During excavation Weekly during excavation/during intensive construction/upon grievances	No additional cost. Within project budget	Excavation start	Completion of excavation	TEIAS  2. Transmission Construction and Operation Group Directorate
	<i>Air Quality and Noise and Vibration</i>	Public grievances  Level of noise (dBA)	Application of the Regulation on the Measurement and Management of Ambient Noise	Along the cable route	Interviews at near-by settlements  Sound measurement using audiometer (noise level measuring device)	Weekly visual observations  Upon public grievances	Within project budget	Excavation start	Completion of excavation	TEIAS  2. Transmission Construction and Operation Group Directorate



	<b>Community and Occuparitional Health and Safety</b>	Documentation for training on health and safety  Safety equipment used on construction site by workers such as hard hats, gloves, shoes, safety harnesses, etc.	To ensure adherence to the Regulation on Occupational Health and Safety	On construction sites (along the cable route)	Visual Monitoring	At the beginning of each work  Daily	No additional cost. Within project budget	Excavation start	Completion of excavation	TEIAS  2. Transmission Construction and Operation Group Directorate
	<b>Traffic Safety and Maritime Traffic*</b>	Plastic tape, barriers, phosphorescent warning lights  Traffic load	To ensure adherence to the Environmental Law and regulations  To ensure public safety	Along the cable route	Visual Monitoring	Throughout construction	No additional cost.	Excavation start	Completion of excavation	TEIAS  2. Transmission Construction and Operation Group Directorate  Municipality
	<b>Livelihoods</b>	The measures identified as a result of the impact assessment are implemented	To ensure that local fisheries are not adversely affected from the project activities	Cable locations	Discussions with the fishing cooperatives	Throughout project lifetime	No additional cost	Prior to construction	Operation	TEIAS Contractor
<b>Construction</b>	<b>Solid, Liquid and Hazardous Waste</b>	Solid, Liquid and Hazardous Wastes  Storage and Conditions for Disposal	To ensure compliance with Regulation on the Control of Solid Wastes, Regulation on the Control of Soil Pollution and Locally Polluted Sites, Regulation	Cable route (on construction site)	Visual and with documentation check	Weekly (flash checks and controls)	Within project budget	Excavation start	Completion of excavation	TEIAS  2. Transmission Construction and Operation Group Directorate  Contractor.  Municipality

			on the Control of Hazardous Wastes, Regulation on the Control of Excavation Soil, Construction and Demolition Debris and the Regulation on the Control of Waste Oils							
		Liquid Waste (wastewater)	Observance of the Regulation on the Control of Water Pollution	Discharge to the sewage system  Cable route	Visual and discharge permit or sewage documents	Weekly (flash checks and controls)	No additional costs (within project budget)	Excavation start	Completion of excavation	TEIAS  2. Transmission Construction and Operation Group Directorate  Municipality
		Waste oils, batteries, expired tires and scrap vehicle parts and materials	To ensure waste disposal as per regulations on the control of waste oils, batteries and control of batteries and expired tires	At the car park	Inspection and control of vehicle inspection documentation  Control of documentation on waste management	During breakdown or periodical maintenance	Within project budget	Excavation start	Completion of excavation	Contractor.

Operation Phase	<b>EMF (Electro-magnetic Field Strength)**</b>	Public grievances  Electronic field (V/m) and magnetic field (Amperes) strengths	To control whether international and national reference values are met or not	Cable route	Interviews with dwellers in near-by settlements	Upon grievances	Within project budget	Commissioning of the cable	End of economic life of substation	TEIAS  2. Transmission Construction and Operation Group Directorate
	<b>Community and Occupational Health and Safety***</b>	Technical Training (Operation and Maintenance)  Protective equipment and overalls (whether or not used by workers)  Signposts/warning signs	To ensure adherence to any and all Occupational Health and Safety-related regulations	Cable route/connect ions	Visual and document checks	Before operation  During maintenance and repair (periodically as required)  Once before commissioning	No additional cost. (Under operation budget)	Commissioning of the cable	End of economic life of substation	TEIAS  2. Transmission Construction and Operation Group Directorate
	<b>Solid, Liquid and Hazardous Waste</b>	Failed equipment wastes  Used cable wastes	To ensure adherence to the Regulation on the Control of Solid Wastes, Regulation on the Control of Soil Pollution, Regulation on Locally Polluted Sites, Regulation on Water Pollution, and the Regulation on the Control of	Cable route	Visual and checking the waste management documents	During the maintenance of the cable  During breakdown	Within project budget	Commissioning of the cable	End of economic life of substation	TEIAS  2. Transmission Construction and Operation Group Directorate  Municipalities

			Hazardous Wastes							
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## ANNEX C. GRIEVANCES FORM AND GRIEVANCE CLOSEURE

### Grievance Form

<b>Ref.No.</b>			
<b>Name and Surname</b> <i>Although provision of a name and surname is not mandatory, one must not forget certain problems might be experienced as a result of lack of information during the process of assessment of grievances and the provision of feedback in relation thereto</i>			
Please Specify how you would like to be contacted			Please provide details as to your preferred method of contact
E-mail			
Telephone			
Mail			
Other			
<b>Province/District/Village/Neighborhood</b>			
<b>Tarih</b>			
		<b>Complaint Category</b>	
		1. Leaving (hospital, condo)	
		2. Project impacted assets/property	
		3. Infrastructure	
		4. Reduced/entire loss of income	
		5. Environmental problems (ex. pollution)	
		6. Employment	
		7. Traffic, transportation and other risks	
		9. Other (please specify)	
		<b>Description of Complaint</b> What Happened? When? Where? What are the outcomes from this matter?	
		<b>What would you like done to resolve this matter?</b>	

**Signature:**

**Date:**

### **Grievance Closure Form**

Grievance Closure No.	
Emergency Action:	
Actions in the long run (if needed):	
Any requirement for damages?	<input type="checkbox"/> Y <input type="checkbox"/> N
<b>CONTROL OF REMEDIAL ACTION AND DECISION</b>	
Stages of Remedial Action	Deadline and Responsible Bodies
1.	
2.	
3.	
4.	
5.	
6.	
7.	
8.	

### **DAMAGES AND FINAL STAGES**

This section shall be filled in and undersigned by the complainant after receipt of payment for damages and upon remedy of the concern of the complaint.

Notes.

Complainant  
Name-Surname and Signature

Authorized Body/Company  
Representative  
Title, Name-Surname and Signature

Date: .../.../.....

## ANNEX-D MINUTES OF THE STAKEHOLDER ENGAGEMENT MEETING AND THE LIST OF PARTICIPANTS

	<p><b>TOPLANTI TUTANAĞI</b></p>
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Toplantı Konusu	DEEP-ET Kredisi "Arazi Edinin (Bilim) Gecici" ve "Genel ve Sosyal Sektörün Gecici" Dokümanları		
Toplantı Başkanı	Gül MISIRLI - TEİAŞ Gec. ve Kam. Dai. Bşk.		
Yer	TEİAŞ Genel Müdürlüğü	Tarih	25.10.19
		Saat	10:00

Gündem Başlıkları	
S.No	
1	Dünya Bankası YEGP-GF Kredisi Gergene Dokümanlar
2	Kredi paketi kapsamında planlanan projeler
3	Genel ve sosyal dokümanların çalışma süreçleri
4	" " " " " "
5	Kredi paket kapsamında planlanan projelerin kamulaştırma
6	süreçleri ve durumları

TOPLANTI NOTLARI			
No	Görüşülen Konular /Alınan Kararlar	Sorumlu	Planlanan Tarih
1			
2			
3			
4			
5			
6			
7			
8			

EY.KY.PR.08.TT.01 / Yayın Tarihi:28.03.2019 Rev No:..... Rev Tarihi:.....



## TOPLANTI TUTANAĞI

KATILIMCI LİSTESİ				
S.No	Adı Soyadı	Birim/Ünvan	Tlf / e-posta	İmza
1	Gül MISIRLI	Daire Başkanı	2038565	
2	Çağrı KÖK	TEİAŞ / Sube Müdürü	2038614	
3	Şevket DİLLER	KGM / Kurul-Sb. Md.	4498002	
4	Şengül KARATAŞ	TEİAŞ / Müdür Yrd.	2038301	
5	Mustafa YAVUZ	TKGM / Tasınmaz D. Birim. Sor.	5514395	
6	E. Seril JAHANGİR	KGM / Çevre Sb. Md. proje şefi	4499182	
7	Yakup ÇİFTÇİ	Genç ve Yen. Dairesi Başkan. Müdürü	2038567	
8	Ayşegül Arslan	Kievre ve kam. daire baş.	2038569	
9	F. İrem KALELİ	TEİAŞ / Çevre Müh.	2038612	
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## ANNEX E. METHODOLOGY OF FLORA/FAUNA STUDIES

At the initial preparatory stage of Flora-Fauna studies, the impact zone and the study area are determined on Google Earth by taking into consideration the '.kml satellite data file' for the Power Transmission Facility concerned.

Feedback from institutions regarding the Power Transmission Facility (UC, PTL, SS) are examined.

Before commencement of field works, information on such topics as topography, the climate and existing meteorological conditions in the area are studied, which are the determinants of site preparation criteria.

Literature review of the flora and fauna aspects of the work site is carried out for further information on species of plants and animals that will be encountered.

### **Flora (Vascular Plants) - Working Methodology**

The work of literature that provides the basis for literature reviews regarding Turkey's flora is the *Türkiye Bitkileri Listesi-Damarlı Bitkiler* (List of Plants of Turkey-Vascular Plants) by Güner et al. published by the Turkish Flora Studies Association in 2012, the website at <https://www.tubives.com> and the book entitled *Flora of Turkey and the East Eagean Islands* (Davis 1965-85; Davis et al., 1988; Güner et al., 2000).

Such organs as roots, stems, leaves and flowers of plants required for type definition of herbacious or arboreal plants are studied during site studies to determine taxons of plants as well as bulbs of underground species.

Species identified during such field research are then photographed for further use in literature studies.

Regarding plant samples to be collected during field work such information as to their range, habitat, elevation and date of collection are entered in the field log.

Samples pressed on-site as per herbarium technique are dried.

Study area shall be meticulously scanned to determine species that are classified as endangered or endemic as per IUCN.

Data on the flora of the research area pepared following field work and literature review is presented in the report prepared for EIA purposes, in a table format.

## **Methodology of Fauna Studies**

Such data as droppings, footprints, remnants of food of mammals encountered in the study area are examined to determine mammal species in the area of work.

Questionnaires are also carried out in the study area for further information on mammal populations in the area of work. Also, information regarding possible mammals in the area of work is obtained from <http://www.tramem.org/>.

The number of tracks and signs observed throughout the field work also provide information on the mammal population in the area.

Birdwatch activities are carried out from dawn until dusk inside the PTL area for an inventory of birds living in the area. Furthermore, scientific studies previously carried out in the area are reviewed.

In general, for birds, crest and/or linear observations are carried out.

Field studies concerning the determination of reptilian and amphibian species start with the identification of such habitats along the study-line at the PTL and research is focused accordingly.

Before field work information on reptilians and amphibians possible to encounter in the study area is obtained from [www.turkherptil.org](http://www.turkherptil.org).

Since such field work purports the risk of injuries, researchers shall wear thick gloves and work with a stick to work with reptilians.

Study area shall be meticulously scanned to determine species that are classified as endangered or endemic as per IUCN.

Data on the fauna of the study area compiled through field work and literature review is provided in the ESIA in table format.

## **ANNEX F. Format of ESIA**

### **1. REGULATIONS, LAWS AND LEGAL FRAMES**

### **2. PROJECT DEFINITION**

#### **2.1 The Overall Objective and Description of the Project**

#### **2.2. Basic Information on Project Sites**

##### **2.2.1 Project Routes**

##### **2.2.2. Project Area**

##### **2.2.3. Characteristic Features of the SC**

##### **2.2.4. Project Technical Information**

##### **2.2.5. Characteristics of Interface Locations**

##### **2.2.6. Marine Works**

##### **2.2.7 Project Stages**

### **3. ENVIRONMENTAL IMPACT OF THE PROJECT**

#### **3.1 Impact Classification per Impact**

#### **3.2 Potential Environmental Impacts During Construction**

#### **3.3 Potential Environmental Impacts During Operations**

##### **3.3.1 Interface Locations:**

##### **3.3.2 Sub-marine Cable:**

##### **3.3.3 Underground Cable:**

#### **3.4 Potential Environmental Impacts During Maintenance/Repair and Decommissioning**

### **4 MITIGATIONS PLAN**

#### **4.1 Project Site Seismicity and Measures to be Employed**

### **5 MONITORING PLANS**

### **6 INSTITUTIONAL ARRANGEMENTS**

#### **6.1 Measures to be Employed and Corporate Responsibility for Monitoring, Procedures and Linkages with Environmental Management**

#### **6.2 Flow of Environmental Data (Reporting, the frequency of report submission and recipients, etc.)**

#### **6.3 Flow of Environmental Data**

### **7 PUBLIC CONSULTATIONS**

### **ANNEXES**

### **PREPARED BY**