ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT (ESIA) STUDY

EG-Giza North Power Project (P116194)
Utilization of Project Savings for the Procurement, Construction and Operation of additional pipelines to supply natural gas to additional Power Plants in Egypt
A-1 INTRODUCTION

The proposed project is an integral part of Egypt’s strategy which aims to expand the use of natural gas as a clean source of energy; this would be achieved through delivery of natural gas to houses, industrial facilities and power plants. The EG-Giza North Power Project (the original and additional financing) (P116194) have three main components: Component 1 namely the power plant component, construction of 2250 MW Combined Cycle Gas Turbine; Component 2, The construction of transmission lines to connect power plant to national grid; Component 3 The construction of gas pipeline to strengthen the gas supply network and ensure supply of gas to power plant. The power plant is 92% completed, the transmission lines are 95% completed and the gas connections are 96% completed and all are in operation. Component 3: Gas Pipeline Construction which aims to provide natural gas to North Giza power station and to strengthen the national network of gas is implemented by the Egyptian Company for Natural Gas (GASCO) with the assistance of the World Bank.

After completion of the procurement of all Bank financed packages has been concluded, there are still financial savings which can be utilized by the Government of Egypt.

The World Bank received formal requests from the Government of Egypt to utilize the financial savings resulting from the Giza North Power Plant project to procure pipelines required for an upgrade of the gas network to connect new and existing power plants. The Giza North Power Plant project development objective is to contribute to improving the security and efficiency of electricity supply by adding a new generation capacity based on the most efficient thermal power generation technology. The new gas pipelines connections to the existing and new power stations will improve the security and efficiency of electricity supply and therefore this additional scope is fully in line with the Giza North Power Plant project development objectives.

The Bank team conducted an appraisal for the new gas pipelines during the mission dated 7-17 September 2015.

A-2 BACKGROUND

In accordance with Egypt’s energy strategy, it was agreed between Government of Egypt and The World Bank to reallocate the Giza North Power Plant project savings to expand the scope of component 3 (Construction of Gas pipelines) to procure goods for additional set of pipelines in order to supply gas to the additional power plants.

This Terms of Reference has been prepared following the Bank appraisal of the new gas pipelines project (The Project) utilizing the financial savings resulting from the Giza North Power Plant project. The feasibility studies for the Project has been finalized and approved by the Bank on August 16, 2015.
According to the feasibility studies, the routes of the pipeline have been determined and therefore the Environmental and Social Impact Assessment (ESIAs) and Resettlement Action Plans (RAPs) will need to be prepared and completed before construction.

This ToR covers the requirements for the ESIA while a ToR for the RAP is separately prepared.

In this regard, it is planned to procure, construct and operate 10 new gas transmission pipelines to the 8 power plants as follows:

1- Six October Power Station, expected operation date: June 2017
This line of length 400 meters with diameter 20 inches and will feed 6 October power station, the route will pass mainly in a desert area.

2- Damnhour expected operation date: February 2018
This line is of length 4 kilometres, with a diameter 24 inches and will feed Damnhour power station, the route will pass mainly in privately owned agricultural land.

3- El-Syof Power Station, expected operation date: September 2017
This line is of length 3.5 kilometres with a diameter 16 inches and will feed El-Syof power station. The route will pass mainly in privately owned agricultural land.

4- El-Mahmodia Power Station, expected operation date: September 2017
There will be 3 lines feeding this station: the first line will be of length 7 kilometres with diameter 16 inches; the second line will be of length 15 kilometres with diameter 30 inches; the third line will be of length 27 kilometres with diameter 42 inches. The routes of the 3 lines will be passing through privately owned agricultural land.

5- El-Suez Power Station, expected operation date: June 2017
This line is of length 2.5 kilometres with diameter 16 inches and will feed El-Suez power station. The route will be passing in desert land.

6- Soumid import gas pipe line, expected operation date: April 2017
This line is of length 4 kilometres with a diameter 42 inches and will feed the New Capital power station through another gas pipe line which is not included within the scope of this ESIA. 2 k.m of the pipeline will be on platform (already constructed by summed company) and the other 2 k.m will be in desert.

7- New Capital/ Dahshour gas pipeline, expected operation date: March 2017
This line is of length 115 kilometres with diameter 32 inches and will feed Beni Sweif power station. The route will be passing in agricultural lands and desert lands.
8- Dahshour / El Wasta gas pipeline, expected operation date: December 2017
This line is of length 65 kilometres with diameter 36 inches and will feed Beni-Sweif power station. The route will be passing in agricultural lands and desert lands.

9- El-Wasta/Beni-Sweif gas pipeline, expected operation date: June 2017
This line is of length 65 kilometres with diameter 36 inches, and will feed Beni-Sweif power station.

10- El-Gamel /Damita gas pipeline. Expected operation in December 2016
This line is of length 50 kilometres with diameter 42 inches and will feed Burullus power station

Note: more technical details of each pipeline are attached in the annex section of this TOR.

Laying of the pipeline will involve excavation trenches where possible, but upon encountering waterways, a new trenchless technology called Horizontal Directional Drilling (HDD) will be employed.

The planned paths of the pipelines will run mainly through agricultural lands and inhabited areas and also in desert areas. The route will cross several major roads, railways and waterways. GASCO prepared this TOR in order to prepare an Environmental and Social Impact Assessment (ESIA) according to the World Bank standards and to satisfy national requirements. The study will examine the effects of the planned activities on existing environmental and social conditions in the areas which may be affected by the project, and propose measures for mitigating and monitoring any potential negative impacts.

The Consultant will prepare a draft ESIA report which will be designed with the following consideration:

- Report will be concise and limited to significant environmental and social issues
- Main text will focus on findings, conclusions and recommended actions supported by summaries of the data collected and citation of references used to interpret these data
- Additional and background materials will be delegated to annexes
- An executive summary will be prepared to be used as a stand-alone document in a manner that can be accessible to non-technical readers both in English and Arabic languages

A-3 NEEDS AND JUSTIFICATION FOR ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT

The aim of the ESIA study is to assess the environmental and social impacts associated with the design, construction and operation of the planned pipelines. The ESIA will propose practical and effective mitigation measures to prevent or reduce any potential negative implications of the construction and operation of the planned pipelines. In addition, an environmental and social management plan will be developed to ensure best environmental and social performance. In principle, for each of the planned pipelines, the ESIA will be based on the following:
- Environmental and social impacts associated with the project are assessed and examined at the earliest planning stage possible.
- Environmental and social impacts to be investigated and examined include factors that impact public health and safety as well as the natural environment, such as: air, water, soil, waste, accidents, water usage, ecosystems, and biota. Social concerns include: involuntary resettlement of the population, cultural heritage, landscape, gender, communicable diseases, etc. Traffic impacts should also be assessed.
- In addition to the direct and immediate impacts, derivative, secondary and cumulative impacts will also be examined and investigated to a reasonable extent.
- Alternative proposals and/or minimization measures to prevent or reduce adverse impacts are examined to choose a better project option in terms of environmental and social considerations. In examination of measures, priority is to be given to the prevention of environmental impact, and when this is not possible, minimization and reduction of impact must be considered next. The findings of this examination should be incorporated in the plan.
- Examination of the environmental and social considerations will include analysis of environmental costs and benefits in quantitative terms, as much as possible, while taking into consideration economic, financial, institutional, social and technical aspects.
- Appropriate follow-up environmental and social management and monitoring plans will be prepared as part of the ESIA. Estimated costs of implementing such plans and financial resources to cover such costs will be determined.

The ESIA will ensure that the construction and operation of the proposed pipelines will be in compliance with relevant national, laws and ordinances as well as the World Bank safeguards.

**A-4 TASKS**

According to the Terms of Reference, the following tasks are expected to take place in order to prepare the ESIA for the proposed pipelines:

- Conduct meetings with GASCO planning, design, construction and operation team to understand and familiarize with GASCO plans and activities related to the proposed pipelines;
- Conduct visits, to all sites for the purpose of site reconnaissance and establishing updated baseline and collecting data from the local concerned authorities;
- Review all relevant laws and regulations relevant to the planned activities;
- Describe the environmental and social settings for the areas where the planned pipelines will pass across;
- Assess the potential positive and negative environmental and social impacts associated with the planned activities;
- Assess risks and hazards associated with the project activities;
- Prepare a comprehensive Environmental and Social Management Plan (ESMP);
- Perform effective and efficient public consultation process at two stages: during scoping phase and once the Draft ESIA is prepared. A proper communication plan should be prepared and specific actions to be taken to ensure good representation and good
attendance of affected communities and stakeholders in the planned Public consultation events

- Develop an institutional development and capacity building plan to ensure effective and efficient implementation of the proposed environmental and social management and monitoring activities.

A-5 APPROACH

The Consultant will try to the extent possible to identify and compile the readily available technical data and information that would allow preparing the Environmental and Social Impact Assessment with the least uncertainties. Appropriate and justified engineering/scientifically based assumptions should be made to cover any information or data gaps.

In preparing the Environmental and Social Impact Assessment the Consultant will ensure compliance with:

- Current environmental and social regulations and standards in Egypt
- The World Bank Operational Policy 4.01 and other World Bank procedures and guidelines on conducting environmental impact assessment.
- The World Bank Group’s Environmental, Health and Safety Guidelines (EHSGs)

A-6 METHODOLOGY

A-6.1 Overview

This section describes the methodology for conducting the Environmental and Social Impact Assessment and this will cover the planned 10 gas pipeline routes.
A-6.2 Environmental and Social Impact Assessment Methodology

A6.2.1 Detailed Methodology and Sequence of Work

In general, the methodology for preparing the Environmental and Social Impact Assessment has to be in accordance with the Environmental Regulations and Standards in Egypt and the World Bank Operational Policies/Best Practices on environmental safeguards OP/BP 4.01. The Consultant is expected to prepare and submit his own detailed work methodology and approach to fulfil the assignment requirements given the large geographic scope covered under this TOR.

The following will be the minimum requirements of the proposed methodology
(1) **Gain an understanding and study project objectives and familiarize with project locations**
- Obtain necessary documents including maps, site plans, photographs, diagrams, and any visual and graphic aids.
- Familiarize with project, including project purpose; location; components and phases; workforce and equipment; associated activities; schedule; and cost.
- Gather information about pre-construction, construction, and operation plans.
- Detail the elements of the project, highlighting the areas to be reserved for construction and determining the surrounding areas in terms of residential areas, industrial areas, protected areas, historical sites, etc.

(2) **Review relevant legislative and regulatory considerations**
- Review national and international legislations and regulations relevant to the project, including also required governmental permits and authorizations required.
  - Prepare reports to meet the requirements of EEAA, the Oil and Gas Sector and World Bank.
  - The consultant will consider the various relevant safeguard policies of the World Bank, particularly the policy on environmental assessment and the involuntary resettlement.

(3) **Conduct the First Public Consultation (Scoping Session)**
A community consultation will be initiated as early as possible. The Consultant will consult with the stakeholders twice. The first public consultation will be conducted after the identification of relevant impacts in order to discuss and agree on the scope of the ESIA.

In coordination and consultation with GASCO, relevant governmental authorities and other stakeholders will be identified. The Consultant in coordination with GASCO and the relevant authorities will arrange and conduct scoping sessions which should be attended by the relevant authorities and stakeholders. The aim of these scoping sessions is to:
- Explain and reach a common understanding of the potential impacts and sensitivities of the surrounding environment, and similarities and differences between the present project and other similar projects implemented in the area and in Egypt at large.
- Identify, early in the process, any environmental and social aspects, which the stakeholders raise, which may not have been included in the scope of work.
- Provide a basis for reviewing the issues that will be considered in the ESIA.

(4) **Identify Relevant Environmental and Social Aspects**
The Consultant will identify relevant environmental and social aspects to be discussed at the beginning of the work with a sample of concerned parties. The various impacts will be categorized as either positive or negative, and dealt with accordingly. Relevant impacts will be assessed for both the construction and operation phases of the project.
The following are anticipated to be the most relevant environmental aspects:

- Loss of vegetation and erosion during installation of pipeline, affecting drainage patterns and soil stability
- Solid waste, hazardous waste, wastewater, noise, and other possible soil/water/air pollutants produced from associated facilities and activities during construction and operation
- Impacts of condensate or other effluents
- Loss of land use by occupation of land with permanent structures, creation of ROW’s, or other barriers to humans and wildlife
- Disruption of traffic and blockage of waterways and channels
- Fire and explosion related accidents and emergencies;

Among the most relevant social aspect to be considered are the following:

- Impacts on employment, housing of workers, and general public safety issues
- Displacement of people and other adverse impacts upon income or living standards due to land acquisition or other activities associated with construction and operation.
- Impacts on the local market in change in demand for local services, as well as access to social infrastructure
- Loss of land use by occupation of land with permanent structures, creation of ROW’s, or other barriers to humans and wildlife
- Impacts on archaeological sites, historical buildings, and cultural heritage
- Impacts caused by inducting secondary development, such as squatters, within the pipeline ROW;
- Fire and explosion related accidents and emergencies;

The above points will be explained and discussed with relevant authorities and stakeholders of the project including government institutions, national authorities and bodies.

(5) Scoping
Based on the First Consultation the following activities will be performed:

- Document the issues raised during the scoping exercise. This shall provide a basis for reviewing the issues that will be considered in the ESIA
- Finalize the terms of reference for this assignment by incorporating the raised issues in the scoping sessions
- Issue Inception Report including the final ToR of this assignment along with the results of the First Consultation

(6) Analysis of Alternatives
The environmental and social assessment should also include on analysis of alternatives that would examine different alternatives with the objectives of minimizing environmental, health, safety and social impacts of the project. The analysis would focus on the following:

- Summarizing and referencing the alternatives in a manner consistent with national and international guidance
• Analysing the benefits and impacts expected from the project and other technical and economic alternatives including the "Do-Nothing" alternative
• Evaluating the social and environmental analysis of each alternative
• Propose preferred alternatives by comparing alternatives, and justify the rationale for preferring he proposed alternatives

(7) Data Collection and Review
General information about the project site and/or pipeline routing and surrounding areas will be provided in map form, including:
• Provide appropriate image of proposed alignment, general layout of facilities at project related sites
• layout of the existing gas pipeline network and other utility services network;
• project area maps at appropriate scales to illustrate general siting of project related development sites and surrounding areas likely to be environmentally and socially affected
• topographic contours, as available, as well as locations of surface waters, roads, railways, town centers, parks and reserves, and political boundaries
• maps to illustrate existing land use, including industrial, residential, commercial and institutional development, agricultural, etc
• pre-construction activities

Specific data will be complied on the characteristics of the project area in terms of its sensitivity to adverse and beneficial environmental impacts. Historical and secondary source data will be collected, when possible, and validated with field observations. The consultant will conduct the necessary baseline surveys to collect data on the following points, as part of the IEE:
• Physical Environmental Data:
  o Geology (e.g. stratigraphy and structure, seismic history if any of the areas)
  o Topography (e.g. drainage patterns around the pipeline construction areas, view-shed around facilities)
  o Soils (e.g. bearing capacity of soil, agriculture value, soil cover in residue disposal)
  o Climate and meteorology
  o Ambient air quality
  o Ambient water quality
  o Surface water quality
  o Surface water hydrology
  o Receiving water quality (other major pollution sources in the area, if any)
  o Ground water table condition of the study area
  o Ambient noise (note contribution from major sources if any)
  o Significant sources of pollution in the area and prospect for their mitigation
Existing traffic patterns, types of roads, etc.

- **Biological Environmental Data**
  - Flora and fauna, including rare or endangered species in areas adjacent to project-related development sites
  - Sensitive habitats; including wetlands, parks or reserves, significant wild lands, forests within or in areas downstream/downgrading of project-related development areas.
  - Species of commercial importance in areas affected by the project.

- **Socio-Economic Data**
  - Culturally Valuable Sites
  - Geography, administrative districts, etc.
  - Basic Demographic characteristics (population, age structure, birth rate, death rate, rate of natural increase, handicapped, etc.)
  - Living Conditions (household size and density, access to electricity, source of potable water, sanitation, etc)
  - Human Development Profile (education, work status, economic wellbeing, etc.)
  - Undertake a socio-economic assessment/survey with a representative group of households with a focus on lower-income groups to assess the affordability of the residents to connect to the network and identify alternatives for subsidy support.

Subsequent to gathering of data, the environmental and social issues will be assessed in terms of the environmental and social risks and benefits associated with the project.

**(8) Analysis - Environmental and Social Assessment**
The consultant will assess the potential impacts of the project during construction and operation phases. The Consultant will perform the below tasks to identify and concisely present the significant environmental and social impacts:

- Explain and justify the methods used to predict potential impacts of the project on the environment, and on interactions among the project components
- Nominate and classify issues that are potentially important in the assessment of impacts and for decision-making in relation to the project
- Identify potential impacts in the construction and operation phase by conducting an impact analysis on the physical, biological, land-use and socio-economic environments, and the interactions among them.
- Evaluate the impact significance of the project components and activities on the environment and society
- Establish that criteria on which the assessment of the impacts will be based on
- Develop a matrix as a means to present assessment of the impacts graphically, and specify and discuss positive or negative impacts, direct or indirect impacts, reversible
or irreversible impacts, short-term and long-term, and cumulative avoidable impacts on the environment and society

(9) **Develop an Environmental and Social Management Plan**

After the evaluation of impacts, the consultant will establish strategies to reduce or eliminate potentially negative outcomes. This includes avoiding negative impacts where possible, and employing mitigation measures for those that are unavoidable. Issues related to the project location, equipment, and surveys conducted previously will be categorized according to how critical the impact is. These strategies will be formulated in an Environmental and Social Management Plan (ESMP) This process entails:

- Detailing the management measures, roles, and responsibilities for implementation, supervision, and cost
- Indicating parameters to be monitored, their location, frequency of monitoring, roles and responsibilities and cost
- Assessing the ability of the implementing agencies to implement the proposed environmental management and monitoring plan
- Developing the institutional arrangement and capacity building programs necessary to ensure successful implementation

(10) **Conduct the Second Public Consultation Meetings to Involve the Stakeholders of the Project in the ESIA/**

- Select appropriate venue for public consultation meeting.
- Manage logistics of the meetings, including participants and thorough documentation of the event.
- In addition to making a public announcement, invite stakeholders of the project, and potential interested parties including those relating to alignment of the pipeline, address the same in the environmental assessment and provide opinion on project design wherever relevant. Invited stakeholders should have balanced representation of women, NGOs, local community groups, youth and other vulnerable groups (e.g. handicapped, elders….etc.)
- Provide attendees with a summary of the project, and briefing on the impacts and analyses developed in non-technical Arabic and English language.
- Document stakeholders’ concerns and issues raised. The consultant will document all the consultations including the issues raised and actions planned/taken and justifications for no action wherever relevant.
- Assess the public’s perception to the proposed project.
- Document the means by which the public engagement was used in the identification of the issues, and how it affected the project.
The final version of the ESIA report will incorporate the comments raised in the second public consultation meeting. The final report will discuss how the public concerns that are raised during different stages of consultations have been considered and addressed in the project.

(11) Submit a Draft ESIA Report for Review
Based on the results of the public consultation, the consultant will finalize the draft ESIA report and submit it to the client for review.

(12) Submit Final ESIA Report
Based on the comments received from GASCO, the Consultant will perform the following tasks:

- Revise the Draft ESIA report in accordance with comments and concerns received
- Finalize the ESIA report and present the final ESIA report to GASCO
- Submit the Final Report to the Client for public disclosure

A-7 Deliverables
The following reports reflect the main outputs expected from the study:

1. Inception Report (including the work methodology, approach, detailed work plan and results of the scoping phase)
2. Draft Environmental and Social Impact Assessment (ESIA) Report
3. final Environmental and Social Impact Assessment (ESIA) Report

Each report mentioned above will be submitted both as a digital copy and 2 hard copies in both English and Arabic languages.

A-8 Timeframe

The following is the proposed timeline for the expected project deliverables. The Consultant should prepare and submit a detailed work plan showing how the proposed dates will be met.

<table>
<thead>
<tr>
<th>Report</th>
<th>Timeframe</th>
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<tbody>
<tr>
<td>Inception Report</td>
<td>1 Month from Contract Signature</td>
</tr>
<tr>
<td>First Public Consultation (all lines)</td>
<td>2 Months from Contract Signature</td>
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<tr>
<td>Draft ESIA Report(s)</td>
<td>4 Months from Contract Signature</td>
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<tr>
<td>Second Public Consultation (all lines)</td>
<td>5 Months from Contract Signature</td>
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<tr>
<td>Final ESIA Report(s)</td>
<td>6 Months from Contract Signature</td>
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</table>
Annexes

Annex I: Proposed Annotated Table of Contents of ESIA Report

Executive Summary – Non-Technical Summary
An executive summary will be prepared to be used as a stand-alone document in a manner that can be accessible to non-technical readers both in English and Arabic languages.

Chapter 1 – Introduction
The section will include the following:
- Purpose of the terms of reference
- Identify the development project to be assessed
- Explain the executing arrangements for the environmental and social assessment
- Background information which provides a brief description of the major components of the proposed project
- Statement for the project need and objectives it is intended to meet
- Project implementation strategy
- A brief history of the project including alternatives considered
- Project current status and timetable
- Identify associated projects
- Summary of the general scope of ESIA

Chapter 2 – Policy, Legal and Administrative Framework
This section will provide an overview of the pertinent regulations and existing codes of practice and standards governing environmental and water quality, health and safety, protection of sensitive areas, siting, land use control, etc at the international, national, regional and local levels

The section will include the following:
- Permits required to construct and operate the proposed pipeline.
- Relevant environmental policy, legal and administrative issues
- Requirements and scope of the ESIA
- Regional development planning
- International and national environmental standards and guidelines

Chapter 3 – Description of the Proposed Project
This section will provide a description of the project, using maps at appropriate scale when necessary. This section will include the following sections:
- Project Infrastructure
- Project strategic approach and objective
- Prioritization methodology and technical design of the pipelines
- Project main components (including location, general layout, size, capacity, etc.)
• Description of the pre-construction and construction phase
• Description of the operation and maintenance phase
• Project schedule
• Operational management and staffing
• Support facilities and services
• Required offsite facilities
• Project life span
• Institutional arrangement proposed

Chapter 4 – Description of the Environment and Social Context
This section will assemble and evaluate data on the relevant environmental and social characteristics of the project areas. It will include information on any changes anticipated before the project commences, including physical, biological and socio-cultural environments. The presented data will be relevant and commensurate with the project. Information of the existing physical, biological, land-use and socio-economic environment will include, but will not be limited to the following:

• Geology, soils, existing terrain including local topographic and ground surface features, etc.
• Air quality including pollution levels, pollution causes, particulate emissions from stationary or mobile sources, precipitation, etc.
• Water quantity and quality including descriptions and maps of the existing water resources within or near the boundaries of the project, underground water resources, drainage, and hydrological characteristics
• Climatic conditions including data from the nearest meteorological station including prevailing climatic conditions, seasonal variations, wind direction, velocities, ambient temperatures, relative humidity, and climate-related extreme events, etc.
• Noise levels including the existing noise sources, duration, frequency and levels of noise sources.
• Land-use patterns in the region including areas that can be combined and reclaimed within the development needs, area of future extension, archaeological and historical preserved or unexamined areas, valued aesthetic locations and areas used by the community
• Baseline social data, that includes:
  o Characterize the communities in terms of population, gender, health, education, leadership, households, land tenure, occupations, incomes and other relevant factors such as poverty
  o Determine rural community prospective on previous and ongoing sanitation and solid waste management system development
  o Discuss community conditions and readiness for accepting and participating in the projected sanitation and solid waste management systems

Chapter 5 – Environmental and Social Impact Assessment
A description of the significant positive and negative environmental impacts will be mentioned in this section during both the construction and operation phases. This section will also discuss the positive and negative social impacts that the project might have on communities in general and on various sub-groups (women and men, the poor, youth) in particular. Recommendation will be provided for ways to address negative social impacts.

The section will include the following:

- Environmental Impact Process
- Air Quality
- Aquatic Environment
- Noise and Vibration
- Flora and Fauna
- Land Use, Landscape and Visual Impact
- Soils, Geology and Hydrogeology
- Traffic
- Socio-Economic Effects, Quality of Life values
- Archaeological, Historic and Cultural Heritage
- Natural Disaster Risk
- Major Accidents and Hazards
- Solid Waste Management
- Public Health
- Occupational Health and Safety
- Associated Infrastructure

Chapter 6 – Analysis of Alternatives

This section will describe alternatives that were examined in the course of developing the proposed project and identify other alternatives, which would achieve the same objectives. The concept of alternatives extends to siting, design, technology selection, construction techniques and phasing, and operation and maintenance procedures. It will compare alternatives in terms of potential environmental and social impacts and suitability under local conditions. This includes, for example, alternative ways of meeting the electricity demand, alternative technologies, alternative fuels, alternative heat rejection systems, alternative water supply/intake, engineering and pollution control equipment alternatives, alternative sites, etc.

The section will include the following:

- Current Situation (“No Action” option)
- Alternative alignments to avoid/minimize damage to environmentally sensitive areas.
- Alternative sites for associated facilities (to improve public safety as well as to reduce public interference on such facilities).
- Provide opinion on alternative construction technologies.

Chapter 7 – Mitigation of Environmental and Social Impacts
Specific details of mitigation measures during design, construction and operation phases will be proposed and delineated here. Compensation for affected parties will also be addressed here thoroughly.

The section will include the following:
- Mitigation Measures During Design and Construction
- Mitigation Measures During Operation
- Compensation for Affected Parties (cross referenced to the prepared RAP studies)

Chapter 8 – Environmental Mitigation, Management and Monitoring Plan: Environmental and Social Management Plan (ESMP)

This section will provide details on the measures to be implemented during both construction and operation phases of the project. In particular, this section will:
- Outline the procedures for the environmental and social assessments
- Ensure an appropriate level of consultation and disclosure takes place
- Develop screening procedures for project assessment
- Ensure systems and resources are in place for the successful monitoring of the management program
- Possible costs of the mitigation and compensation measures will be included
- Institutional capacity issues will be addressed

The ESMP will address the following:
- Environmental and Social Guidelines and Procedures: will include the guidelines and procedures to be used for the application of the proposed screening procedures and mitigation measures during the construction and operation phases in the various districts and areas of implementation.
- Monitoring Program: a detailed plan to monitor the implementation of mitigating measures and consciously monitor the impacts of the project during construction and operation phases in the various districts and areas of implementation.
- Institutional Arrangements: this section will review the authority and capability of the institutions at local, regional and national levels and recommend steps to strengthen or expand them so that the management and monitoring plans in the environmental and social assessment can be implemented. The costs and sources of funds for the proposed measures and any training requirements for capacity building in the field of environment and social safeguards will be specified.
The ESMP will be presented in a tabular format as follows:

### A. Mitigation

<table>
<thead>
<tr>
<th>Project Activity</th>
<th>Potential Environmental Impacts</th>
<th>Proposed Mitigation Measures</th>
<th>Responsibility of mitigation</th>
<th>Responsibility of direct supervision</th>
<th>Estimated Cost</th>
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<tr>
<td>Construction Phase</td>
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<td>Operational Phase</td>
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### B. Monitoring

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<thead>
<tr>
<th>Project Activity</th>
<th>Impact</th>
<th>Monitoring indicators</th>
<th>Responsibility</th>
<th>Frequency/Duration</th>
<th>Location</th>
<th>Methods</th>
<th>Estimated Cost</th>
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<tr>
<td>Construction phase</td>
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<td>Operational Phase</td>
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### C: Institutional setup and Capacity development requirements

- Proposed institutional structure for environmental management and monitoring Capacity development requirements (e.g. required equipment, training...etc.)

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**Chapter 9 – Consultation and Disclosure: Inter-Agency Coordination and Public/NGO Participation**

This section will describe the process that will result in:

- Coordinating the ESIA with other government agencies
- Obtaining views of local NGOs and affected groups
- Proper records keeping and timely disposition of records
The following two consultations will be documented in this section:
- First Public Consultation (Scoping Session) to discuss and finalize the scope of ESIA
- Second Public Consultation after the draft ESIA report is prepared

The section will include the following:
- Introduction and General Approach
- Consultation Methodology
- First Public Consultation (Scoping Session)
- Second Public Consultation
- Future Consultation and Disclosure
- Ongoing Facility for Public Consultation and Disclosure

References

Annexes

**Estimated organizational setup of the assignment and staffing.**

It is expected that the Consultant would establish a strong core team of specialists, which should include Arabic-speaking personnel. The consultant is solely responsible for proposing an organizational setup of the assignment and the staffing / team composition which in his view is appropriate for carrying out the assignment, fulfilling the Terms of Reference and producing the required outputs. The client has nevertheless some general ideas and suggestions about the organizational setup which reflect the client's knowledge of the local situation and desired outcomes, as follows:

It is envisaged that an experienced environmental or social specialist would serve as the Project Team Leader. The Consultant should complement the skills of the core team with other social, environmental, technical, and institutional specialists with experience in Egypt and/or internationally. Social and environmental specialists who have previous experiences working with the World Bank’s social safeguards requirements and prior experience in preparing ESIA, ESMFs, RPFs, and RAPs will be an advantage. The team is expected to provide pragmatic and insightful planning to complete the above scope of work.

Primary skills and specialties of the team are suggested below. The Project Team Leader should have 8 years professional experience working in environmental and/or social assessment of projects, ability to work with government officials, transport / road and environmental specialists, familiarity with environmental and social assessments for equivalent size projects, and a proven track record in managing and coordinating a diverse group of professionals. The team shall include specialists who are highly familiar with specifying detailed mitigation measures, focused training programs, and structured monitoring programs. The overall proposed Project Team should be able to cover the areas listed below:
- Environmental assessment
- Environmental Engineering
- Oil and gas engineering
- Air emissions and dispersion
- Terrestrial ecology / natural habitats
- Environmental health and safety
- Social Science and social safeguards.
Annex II: Technical details of planned pipelines

1- 6th October Gaseous Power Station

Pipeline Aim:
Feeding 6 of October Power Plant (600 MW).
Pipeline data:
- Length: 0.4 km
- Diameter: 20”
- Material: API 5L X 52
- Maximum operating pressure: 70 bar
- Minimum operating pressure: 25 bar
- Pipeline Capacity: 4 MMSCMD

Route Path:
desert
Crossings:
No crossings

2- Damanhour Combined Power Station

Pipeline Aim:
Feeding Damanhour Power Plant (1000 MW).
Pipeline data:
- Length: 4 km
- Diameter: 24”
- Material: API 5L X 52
- Maximum operating pressure: 70 bar
- Minimum operating pressure: 30 bar
- Pipeline Capacity: 6.8 MMSCMD

Route Path:
Agricultural with crops
Crossings:
- 1 water path crossing

3- El-Seyouf Combined Power Station

Pipeline Aim:
Feeding Al Siouf Power Plant (750 MW).
Pipeline data:
- Length: 3.5 km
- Diameter: 16”
- Material: API 5L X 52
- Maximum operating pressure: 45 bar
- Minimum operating pressure: 25 bar
- Pipeline Capacity: 3.4 MMSCMD

Route Path:
Agricultural with crops
Crossings:
1 railway crossing

4- **EL-Mahmoudia Combined Power Station**

Fed by 3 pipelines: 16", 42", 30"

**Pipelines Aim:**
Feeding Mahmoudia Power Plant (300 MW)

**Pipelines data:**

A. **16" pipeline:**

Planned oper. Date: sept 2017
Length: 7 km
Diameter: 16"
Material: API 5L X 52
Maximum operating pressure: 70 bar
Minimum operating pressure: 30 bar
Pipeline Capacity: 2.1 MMSCMD

B. **30" pipeline:**

Planned oper. Date: sept 2017
Length: 15 km
Diameter: 30"
Material: API 5L X 56
Maximum operating pressure: 70 bar
Minimum operating pressure: 30 bar
Pipeline Capacity: 13 MMSCMD

C. **42" pipeline:**

Length: 27 km
Diameter: 42"
Material: API 5L X 65
Maximum operating pressure: 70 bar
Minimum operating pressure: 30 bar
Pipeline Capacity: 25 MMSCMD

Route Path:
Agricultural with crops
Crossings:
1 water path crossing

5. **Suez Thermal Power Station**

Pipeline Aim:
Feeding Al Suez Power Plant (650 MW).

Pipeline data:
Length: 2.5 km
Diameter: 16"
Material: API 5L X 52
  Maximum operating pressure: 70 bar
  Minimum operating pressure: 30 bar
  Pipeline Capacity: 2.1 MMSCMD

Route Path:
  Desert

Crossings:
  1 sewage path crossing - 1 Road

6. **Summed import gas pipeline**

New Capital Power Plant Feeding

Coordinates: 29 53’ 50.28”N , 31 44’ 3.45”E
  Sumed port Importing 32” (gas transmission pipeline)
Pipeline Aim:
  Importing gas from Sumed Port to feed New Cairo power plant and other Consumers.

Pipeline Data:
  Planned operating date: april 2017
  Origin: Sumed Port
  Destination: Sumed valve room
  Length: 4 km
  Diameter: 32”
  Material: API 5L X60
  Maximum: operating pressure: 70 bar
  Capacity: 28.4 MMSCMD
  Land uses of the Path: Desert – pipe Rack
Path Description: The route starts from an existing room which lies at south side of Sokhna port. then the route extends 2 km towards east till it reaches suez gulf coast and continuous to extend east through suez gulf up to 2km in platform which will be established with total length 4km.
  Crossings: none

Banisuef power station will be feed by 3 pipelines which are:

7. **New Capital – Dahshour 32”**
Pipeline Aim:
  Supporting gas delivery to Beni swif PS and upper Egypt consumers

Pipeline Data:
  Planned operating date: march 2017
  Origin: new capital
  Destination: Dahshour
  Length: 115 km
  Diameter: 32”
  Material: API 5L X60
  Maximum: operating pressure: 70 barg
  Capacity: 20 MMSCMD
  Land uses of the Path: Desert-Agricultural- mountainous
Path Description: The route starts from the future valve room which will be established in the new administrative capital power station then it extends towards west parallel to Cairo-sokhna road up to distance 5km. It is continuing to extend towards south west parallel to the regional ring road from its northern side up to distance 80km passing through desert, agricultural and mountainous lands and also intersecting with the River Nile and the eastern desert road. After that it deviates northern parallel to western Assuit desert road from its eastern side up to distance 30km passing through desert land till it reaches an existing valve room which is located in Dahshour gas area with total length 115km.

Crossings: 6 Asphalt roads-12 Canals&Drains-River Nile

8. **Dahshour – Elwasta 36" (gas transmission pipeline)**

Pipeline Aim:
Supporting gas delivery to Beni swief PS and upper Egypt consumers

Pipeline Data:
- Planned operating date: dec 2017
- Origin: Dahshour
- Destination: Wasta
- Length: 70 km
- Diameter: 36"
- Material: API 5L X60
- Maximum: operating pressure: 70 barg
- Capacity: 20.7 MMSCMD
- Land uses of the Path: agricultural-desert
- Path Description: The route starts from an existing pressure station in Dahshour then it extends towards south parallel to Cairo-Fayoum road up to distance 8km. It is continuing to extend towards south parallel to the western Assyout road from its eastern side up to distance 62km till it reaches an existing valve room which is located on Dahshour-Koraymat gas pipe line with total length 70km
- Crossings: 5 Asphalt roads-1 Railway

9. **Elwasta – Beni Sweif 36" (gas transmission pipeline)**

Pipeline Aim:
Supporting gas delivery to Beni Swief PS and upper Egypt consumers

Pipeline Data:
- Planned operating date: June 2017
- Origin: Elwasta
- Destination: Beni Swief
- Length: 65 km
- Diameter: 36"
- Material: API 5L X60
- Maximum: operating pressure: 70 barg
- Capacity: 20.7 MMSCMD
- Land uses of the Path: agricultural-desert
- Path Description: The route starts from an existing valve room which is located on Dahshour-Koraymat gas pipe line then it extends towards south parallel to the western Assyout road from its eastern side up to distance 8km. After that it deviates eastern parallel to Abo Sir asphalt road then it deviates southern through agriculture land then it extends to eastern southern direction parallel to the new Fayoum-Banyswef road till it intersects with the Nile.
River. then it extends south parallel to Banyswef-Menia road till it reaches an existing valve room no. 2 which is located on Banyswef-Menia gas pipe line with total length 60 km

- Crossings: 10 Asphalt roads-25 canals & drains-Nile River-2 Railways

**10 – Elgameel – Damietta 42” (transmission pipeline)**

Pipeline Aim:
Supporting gas delivery to Burullus PS and northern consumers

Pipeline Data:
- Planned operating date: Dec 1, 2016
- Origin: Elgameel - Port Fouad
- Destination: Damietta
- Length: 50 km
- Diameter: 42”
- Material: API 5L X60
- Maximum: operating pressure: 70 bar
- Capacity: 35 MMSCMD
- Land uses of the Path: agricultural-fish farms-silty sand

- Path Description: The route starts from an existing room which lies near from Petrobel Company. then the route extends 8 km in silty sand soil parallel to Portsaid-Damietta road from its southern direction. it continuous to extend parallel to the road passing through fish farms up to distance 4 km, then it deviates western southern to intersect with international coastal road until it reaches Manzala lake. it extends parallel to international coastal road from its southern direction the distance 23 km passing through Manzala lake . after that it extends 1 km towards west through agriculture land then it extends western southern direction parallel to high voltage elect-towers behind Ahmed Shawlah farm then it intersects with El Salam canal then it extends western northern direction parallel high voltage elect-towers . then it extends towards west intersecting with Mansoura-Faraskour road & River Nile . then it extends towards south parallel to River Nile till it reaches an existing valve room in Kafr el Bati kh city with total length 50km

- Crossings: 5 asphalt roads-8 canals & Drains-River Nile