Submitted to :

Egyptian Natural Gas Holding Company **EGAS**

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ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT FRAMEWORK

Executive Summary

NATURAL GAS CONNECTION PROJECT

IN 20 GOVERNORATES IN EGYPT

(January 2017)

List of acronyms and abbreviations

AFD	Agence Française de Développement (French Agency for Development)
BUTAGASCO	The Egyptian Company for LPG distribution
CAPMAS	Central Agency for Public Mobilization and Statistics
EHDR	Egyptian Human Development Report 2010
EEAA	Egyptian Environmental Affairs Agency
EGAS	Egyptian Natural Gas Holding Company
EGP	Egyptian pound
ESDV	Emergency Shut Down Valve
ESIAF	Environmental and Social Impact Assessment Framework
ESMMF	Environmental and Social Management and Monitoring Framework
ESMP	Environmental and Social Management Plan
FGD	Focus Group Discussion
GoE	Government of Egypt
HP	High Pressure
HSE	Health Safety and Environment
LDC	Local Distribution Companies
LPG	Liquefied Petroleum Gas
LP	Low Pressure
mBar	milliBar
NG	Natural Gas
NGO	Non-Governmental Organizations
PAP	Project Affected Persons
PRS	Pressure Reduction Station
QRA	Quantitative Risk Assessment
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SDO	Social Development Officer
SFD	Social Fund for Development
SSIAF	Supplementary Social Impact Assessment Framework
TOR	Terms of Reference
Town Gas	The Egyptian Company for Natural Gas Distribution for Cities
WB	The World Bank
US $	United States Dollars
€	Euros

Exchange Rate: US$ = L.E 16 as of November 2016

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1 Introduction

The Government of Egypt (GoE) has immediate priorities to increase household use of natural gas by connecting 800,000 to 1 million households per year to the gas distribution network to replace the highly subsidized, largely imported Liquefied Petroleum Gas (LPG). The GoE is implementing an expansion program for Domestic Natural Gas connections to an additional 3-5 million households over the next 3 to 6 years. As part of the program, the project presented in this framework study involves extending the network and accompanying infrastructure to connect 2.2 million households in 20 Governorates between 2016 and 2021 with the assistance of a World Bank Loan of up to USD 500 million and the Agence Française de Développement (French Agency for Development) financing of up to EUR 70 million. The total program for connecting the prospective 2.2 million customers is estimated to cost USD 1 billion and 247 million.

The World Bank (WB), the Agence Française de Développement (AFD) and the European Union (EU) are jointly providing financing to support the implementation of this project, amounting to approximately EUR 1.2 billion (including the USD 800 million contribution of the Egyptian Government and customer fees) named as component 1. Two additional components, components 2 and 3, were added and financed by the EU grant and managed by AFD. Component 2 for Targeted Financial Support and Component 3 for Institutional Strengthening in (i) the implementation of an Enterprise Resource Planning (ERP) system to enhance the quality of reporting and financial management of the implementing agency – EGAS and (ii)

technical assistance to support the establishment of a Gas Regulator as part of the gas sector reforms that are being implemented.

Implementation of Component 2 is expected to maximize the number of beneficiaries amongst poor and disadvantaged households and consists of a subsidy to the poorest households, helping them overcome the financial barrier of paying the gas connection fee.

Table 1.1: Project Costs and Financing Schedule

	WB	AFD	EU
Component 1 - NG network Extension	USD 500 M	EUR 70 M	EUR 10 M
Component 2 - Targeted Financial Support			EUR 45 M
Component 3 - Institutional Strengthening			EUR 13 M

The EU grant financing is delegated to and managed by AFD, according to AFD procurement and financial management procedures.

An Environmental and Social Impact Assessment Framework Study has been prepared for phase 1 of the project (Natural Gas Connections for 11 Governorates project) based on the Terms of Reference prepared by EGAS and cleared by the Bank in 2014, aiming at providing an overview of the anticipated environmental and social safeguards issues related to natural gas distribution and connections to households. Since the project is very dynamic, it was found that the loan can cover more connections than what was originally planned for (1.1 million household) and thus, in August 2016 it was agreed by all parties to extend the project to connect a total of 2.2 million households and cover 9 new governorates (Al Fayoum, Beni Swief, Menia, Assiout, Luxor, Damietta, Beheira, Kafr El Sheikh and Cairo) as phase II of the project. This major change in the original scope of work mandates the preparation of this document which is an updated version of the original ESIAF.Also an updated standalone Resettlement Policy Framework is prepared to include the phase II project.

For phase I project implementation, Town gas has been commissioned to work in Giza, Alexandria and some areas in Ismailia; Sinai Gas in the rest of Ismailia; Regas in Matrouh and Sohag governorates while Egypt Gas will be implementing the project in the remainder of the governorates (Gharbia, Menufia, Dakahlia, Qaliobia, Qena, Aswan). Phase II of the project will be implemented by Town Gas in Cairo governorate, Egypt Gas in Luxor governorate, Natgas in Beheira governorate, Taqa in Beni Sweif, Menia, Assiout and Kafr El Sheikh governorates and Fayoum in Al Fayoum governorate.

The Gas Connection project includes the following three components:

 Component 1: Gas Distribution Network and Household Connections. This includes expansion of the intermediate and low pressure gas distribution networks, installation of control

units and conversions of customer appliances to allow connection and supply of gas to the proposed new 2.2 million households.

 Component 2: Pressure Reduction Stations (PRSs) for reduction of NG pressure from 70 Bar to 7 Bar and odorant addition for residential users. The construction of PRSs to connect the distribution networks in the project areas to the high pressure gas transmission networks. Currently, 36 new PRSs area being considered for financing by the proposed project.

 Component 3: Gas Transmission Connection. . This component includes extending the gas high pressure transmission network to supply gas to the new PRSs in the project areas.

To enable the connections, significant upfront network investment is required. As such, network development and connections in household premises happen simultaneously across the targeted project areas. Therefore, although the main features of the project have been identified, details of pipeline routings, locations of Pressure Reducing Stations, and exact households to be connected have not been confirmed at this stage. Such details will be completed during the course of implementation of the project.

World Bank Environmental and Social Safeguard policies require an Environmental & Social Impact Assessment (ESIA) of the proposed project. Given that the final selection of the exact paths of the gas pipelines, pressure reduction stations, and distribution networks will be made during the course of implementation of the project, the current study will develop an Environmental and Social Impact Assessment Framework (ESIAF). In addition to assessing environmental and social impacts based on the project details currently available, the framework sets the road map for addressing the requirements of the Egyptian Environmental Affairs Agency (EEAA) and the relevant World Bank Environmental and Social Safeguard Policies in site-specific ESIAs/ESMPs which are to be prepared upon finalization of project details.

Due to the expansion of the project to include another 9 new Governorates as phase II of the project, in addition to the 11 Governorates in phase I, the project will cover a total of 20 Governorates. Two methodologies have been applied to set the basis for describing the project's physical, biological, and socioeconomic environment baselines: for phase I Governorates (Giza, Alexandria, Qalyubia, Gharbia, Dakahlia, Menufia, Ismailia, Sohag, Aswan, Qena and Matruh), a thorough desktop review and analysis of primary data was carried out. Special attention was paid to potential Project Affected People as well as vulnerable groups who were investigated using multi-levels of data collection tools. In addition to deliverables required by the initial ToRs (ESIAF and Resettlement Policy Framework), it was recommended by the WB to deliver a stand-alone Supplementary Social Impact Assessment Framework (SSIAF). The SSIAF, disclosed on EGAS website with the link . http://egas.com.eg/Corporate_Overview/NaturalGasConnectionsProject.aspx, should be referred to for detailed social data and assessments. While for phase II, secondary data sources such as published reports, governorate information centers, and environmental profiles have been obtained to cover the basis for describing the project's physical, biological, and socioeconomic environment baselines. More detailed socioeconomic environment baselines will be covered during the preparation of the SSESIA/ESMPs after finalization of the design and other project details.

No major environmental or social risks could be foreseen to prevent reaching the 2.2 million customers targeted over the proposed 5-year timeframe. The extensive experience gained, by EGAS and affiliates, through implementation of the previous WB- and GoE -funded Natural Gas Connection project in Greater Cairo (and all over Egypt) will play a critical role in minimizing environmental and social risks and maximizing public ownership and acceptance.

1.1 Project Objectives

The proposed project represents an integral component of the National energy strategy which calls for greater use of natural gas for domestic users and reduction of government subsidies of the energy sector (LPG). The project will contribute to achieving the Government plan for extending domestic natural gas connections in the country and is planned for completion within 5 years (2016-2021). The following results are envisaged from the project:

- Wider NG coverage and stable household energy supply
- Reduced leakage and fire risk compared to LPG
- Reduced LPG cylinder prices due to lower demand
- Reduced hardships to the physically challenged, women, and the elderly
- Reduced costs compared to butane gas (LPG) and electricity in Egypt
- Reduced strategic dependence on imported fuel (LPG)
- Rationalization of subsidies for LPG cylinders.

1.2 Objectives of the ESIA Framework Study

In addition to assessment of environmental and social impacts based on the available level of project details the specific objective of the study is to develop an ESIA Framework as a "road map" for addressing the following key modules once the final detailing of the project components is complete:

- Describing project components and activities of relevance to the environmental and social impacts assessments

- Identifying and addressing relevant national and international legal and technical requirements and guidelines pertaining to project-related environmental, social, and occupational health & safety issues;

- Performing stakeholder meetings, scoping sessions and public consultations to maximize public ownership and stakeholder engagement

- Describing baseline environmental and social conditions, obtaining key data relevant to the NG connection project and identifying relevant governmental, administrative, and civil society institutions

- Assessing the potential environmental and social impacts of the project in the project areas;

- Developing an environmental and social management and monitoring plan for the mitigation of negative impacts and for monitoring compliance with the relevant environmental laws

Overall, a key objective of each of the sections of this study is to provide a framework for addressing the various components of the specific ESIAs which will be prepared upon final detailing of the project. Governorate-level ESIAs covering the final project components to be implemented will be prepared, cleared, and disclosed prior to commencement of mobilization and construction.

2 Project Description

2.1 Background

The National Natural Gas Grid was established 1975 with 75 km total piping length. Current total piping length reached over 35,000 km with a daily capacity of 205 m^3. Annual national consumption of Natural Gas is dominated by the electricity sector (power plants) and various industrial sectors. Current domestic/residential users (households) consume a mere 3% of the total annual NG production

The Natural Gas Grid in Egypt is fed by numerous gas production fields and treatment facilities for transmission to industrial, commercial, domestic users and power plants.

To date, the natural gas network is planned to reach 26 out of 27 Egyptian governorates excluding El Wadi El Gedeed Governorate that is too distant from the existing network to fulfill the minimum levels of economic and technical feasibility. Domestic user coverage (households) varies to great degree from one governorate to the other. As of September 2016, connections in Cairo, Giza, and Alexandria totaled 3.5 million households out of the nationwide total of 7.7 million households connected. As mentioned above, the proposed project aims to add 2.2 million households in the 20 governorates to the existing 7.7 million households already connected. The NG is processed and injected into the high pressure pipelines of the national Grid (70 Bar) for transmission. Upon branching from the main lines to regional distribution networks, the pressure of the NG is lowered to 7 Bar at the Pressure Reduction Stations (PRS). An odorant is added to the NG at PRSs feeding distribution networks to residential areas in order to facilitate detection in case of leakage. Regulators are then used to further lower the pressure to 100 mbar in the local networks, before finally lowering the pressure to 20 mbar for domestic use within the households. In addition to excavation and pipe laying, key activities of the construction phase also include installation of pipes on buildings, internal connections in households, and conversion of appliance nozzles to accommodate the switch from LPG to NG.

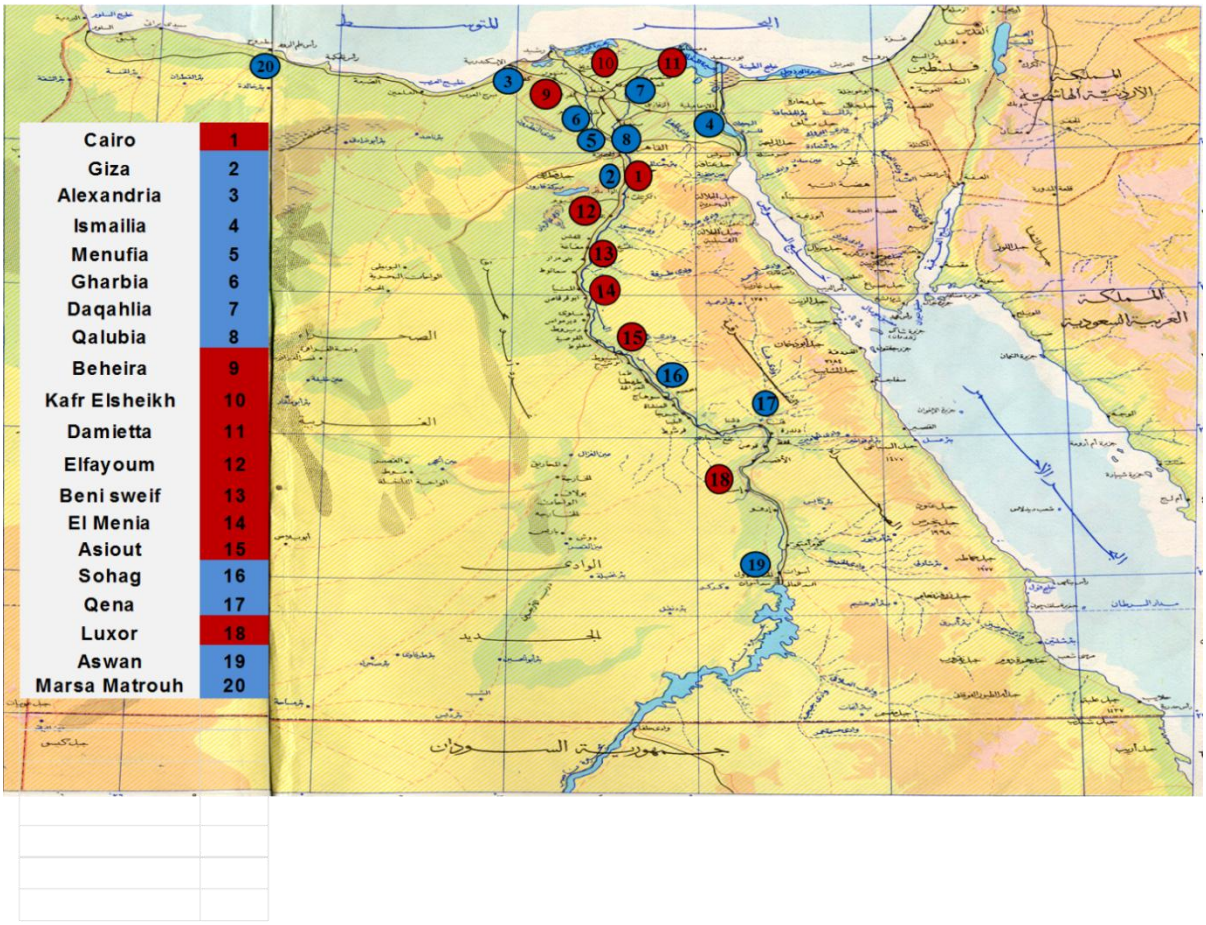

Figure 2-1**: Locations of the 20 governorates of the proposed natural gas connections project**

Governorates of Phase I

Governorates of Phase II

2.2 Coverage Framework

Preliminary project planning has applied social, economic, safety, and technical criteria to identify 96 districts and villages in phase I of the project in addition to 128 new districts in phase II as targets for connecting the 2.2 million customers (households). The project shall introduce the service in new areas, which have not been connected before, and shall further extend the network in areas which are partially covered.

The Egyptian Natural Gas Holding Company (EGAS) is mandated to oversee the planning and implementation of the project. This project will be implemented by the

Egyptian Natural Gas Holding Company (EGAS) and the local distribution companies: Egypt Gas, Town Gas, Regas, Sinai Gas, Natgas, Taqa group, Fayoum Gas and Cairo Gas with loan assistance from the World Bank (WB) and the Agence Française de Développement (AFD).

For phase I project implementation, Town Gas has been commissioned to work in Giza, Alexandria and some areas in Ismailia, Sinai Gas in the rest of Ismailia, Regas in Matrouh and Sohag Governorates, while Egypt Gas will be implementing the project in the remainder of the governorates (Gharbia, Menufia, Dakahlia, Qalubia, Qena, Aswan). **Phase II of the project will be implemented** by Town Gas in Cairo governorate, Egypt Gas in Luxor governorate, Natgas in Behira governorate, Taqa in Beni sweif, Menia, Assiout and Kafr El Sheikh governorates and Fayoum in Al Fayoum governorate. .

2.3 Project Components

The project involves design, planning, excavation, construction, testing, and monitoring for:

2.3.1 Design and material take-off (MTO) including procurement

2.3.2 Piping and connections

2.3.3 Pressure Reduction Stations

Table 2-1: Required locations forPRSs[1]

	Governorate	PRS location	70-bar steel lines (Km)	LDC
Phase I	Giza	Giza North	0.5	Town Gas
		Giza South	17	
		Atfih	0.05	
	Ismailia	ElQantara Sharq	0.05	Sinai Gas
		ElQantara Gharb	5	
		Fayed		Town Gas
	Matrouh	Matrouh	0.05	Regas
	Qaliobia	Qaha		Egypt Gas
		El Khossous		

[1] Exact locations of some of the required PRS's are currently not identified and will be determined at later stages

	Gharbia	Qotoor		
	Dakahlia	Belkass		
		Dekernes		
		Aga		
	Menufia	Ashmoon		
	Qena	Qena	0.05	Regas
		ElWaqf		
		Farshout		
	Sohag	Tema	0.05	
		Sohag	0.05	
		Gerga	0.05	
Phase II	Gharbia	Kafr El Zayat		Egypt Gas
		Zefta		
	Luxor	Al Luxor city		
		Esna		
		Armant		
	Ismailia	Ismailia el Gedida		Sinai Gas
	Benisweif	El fashn		Taqa group
	El Menia	El wasta		
		Malawy		
		Beni Mazar		
	Asiout	Kanflot		
		Abou Teeg		
		Dayrout		

	Kafr el Sheikh	Balteem		
	El Fayoum	El Tamya		El Fayum Gas
		El Fayoum		

2.4 Activities of the Construction Phase

2.4.1 Mobilization of equipment, materials and workers
2.4.2 Excavation and pipe laying
2.4.3 Leakage testing
2.4.4 Connections to households
2.4.5 Conversion of appliances
2.4.6 Construction works for PRSs and regulators

2.5 Activities of the operation phase

2.5.1 Operation of the PRS
2.5.2 Operation of the network
2.5.3 Repairs in households

3 Legislative and Regulatory Framework

3.1 Preface

The World Bank has defined 10 environmental and social safeguard policies that must be considered to its financed projects (for both framework and specific assessments), if applicable. Applicability of such policies to this project is overviewed and discussed in subsequent sections

There are no specific Egyptian legal or regulatory requirements for preparing framework documents such as this one. However, this chapter in the ESIAF is meant to outline the legal and regulatory guidelines to be addressed in preparation of the specific ESIAs upon finalization of project detailing.

It is important to note that, in the case of ESIA Framework studies such as this one, EEAA issues a "No Objection" rather than an approval. The conditions of the "No Objection" verdict are expected to stipulate that detailed site specific ESIA studies must be carried out upon finalization of project detailing (final pipeline routes, exact locations of PRSs, etc.).

Following loan approval by the World Bank and the Agence Française de Développement, design and alignment details will be finalized. Once final project designs, alignments, components, and activities are determined, site-specific ESIAs should be prepared and presented to the Egyptian Environmental Affairs Agency for approval and environmental permitting.

3.2 ESIA NATIONAL ADMINISTRATIVE AND LEGAL FRAMEWORK

The main legal instrument dealing with environmental issues in Egypt is Law 4/1994, amended by Law 9/2009 and Executive Regulation 1095/2011 modified by 710/2012, commonly known as the Law on Protection of the Environment. The law deals mostly with the protection of the environment against pollution. Prime Ministerial Decree 631 of 1982 established the EEAA as the competent body for environmental matters in Egypt. Law 4 also stipulates the role of the EEAA as the main regulatory agency for environmental matters.

An ESIA is required to be viewed as an integrated part of the project planning process, according to EEAA requirements. The ESIA will help to ensure that environmental concerns are taken into account along with technical and economic considerations.

After submission of an ESIA for review, EEAA may request revisions in the ESIA report within 30 days, including additional mitigation measures, before issuing the approval of the report. EGAS will have the right to issue an appeal within 30 days from its receipt of EEAA decision. It should be noted that once the ESIA has been approved, the ESMP as will be presented in the report, that is considered an integral part of the project; and EGAS will be legally responsible for the implementation of that plan, depending on its involvement in construction or operation. It is therefore worth mentioning that EGAS and its project implementing entities (Town Gas and Egypt Gas) must ensure that all mitigation measures and environmental requirements described in the ESMP are clearly referred to in the tender documents for the construction works, the construction contracts, and have been respected. EGAS will follow-up on the construction contractor to ensure that the ESMP is adequately implemented in the construction phase.

3.3 Applicable Environmental and Social Legislation in Egypt

3.3.1 Law 217/1980 for Natural Gas

3.3.2 Law 4/1994 for the Environment (amended by Law 9/2009)

3.3.3 Law 38/1967 for General Cleanliness

3.3.4 Law 93/1962 for Wastewater

3.3.5 Law 117/1983 for Protection of Antiquities

3.3.6 Traffic planning and diversions

3.3.7 Work environment and operational health and safety

3.3.8 EEAA ESIA guidelines related to the Public Consultation

3.3.9 Law 10 of the year 1990 for property expropriation for Public Interest Projects

3.3.10 Law no.4 of the year 1988 and its executive regulations Decree no.292 for the year 1988 related to gas pipelines

3.3.11 Relevant international treaties to which Egypt is a signatory

3.4 Applicable World Bank Safeguard Policies

3.4.1 OP 4.01 – Environmental Assessment

3.4.2 OP 4.11 – Physical Cultural Resources

3.4.3 OP 4.12 – Involuntary Resettlement

EGAS and the local distribution companies are bound by internal policies which obligate them to comply with national legal requirements. In the case that national requirements are non-existent or less stringent for specific issues or pollutants, WB requirements will be adopted.

4 Description of the Environment

4.1 Introduction of the 20 governorates

The geographical spread of the project over 20 governorates, from the Southern Governorates (Aswan, Luxor, Fayoum, Benisweif, Menia, Assiout, Qena, and Sohag) to the Northern (Alexandria and Beheira) and from Eastern Governorates (Ismailia and Damietta) to the Western (Matrouh), yields a diverse array of baselines for the project areas.

Methodology used for description of the Environment for (Phase I) of the project:

Phase 1 of the project covers 11 governorates (Giza, Alexandria, Qalyubia, Gharbia, Dakahlia, Menufia, Ismailia, Sohag, Aswan, Qena and Matruh).The socioeconomic and environment conditions of the target areas were comprehensively covered through a multi-data collection approach that utilizes both primary and secondary data. Delivering a supplementary Social Assessment Framework to the ESIAF in March 2014.

However, the most important source of project-relevant baseline data, included outcomes of the initial survey and the Property & Appliance survey carried out by the local distribution companies (Egypt Gas and Town Gas).

In addition to the primary and secondary data collection, various tools were developed as follows:

- Structured questionnaire
- Focus Group Discussions (FGD)
- Group structured discussions
- In-depth interview guidelines with NGOs and community based organizations
- Comparative case analysis
- Maps, Photos and Observation
- Methodology of vulnerability identification
- Public consulations

Methodology used for description of the Environment for (Phase II) of the project:

Phase II includes nine new Governorates (ELFayoum, Beni Suef, Mineya, Assiout, Luxor, Damietta, Beheira, Kafr el sheikh and Cairo). Secondary data sources were used such as published reports from CAPMAS, governorate information centers, and environmental profiles have been obtained and examined to cover the basis for describing the project's physical, ecological, and socioeconomic environment baselines. In the meantime, public consulation session has been conducted with diverse groups of stakeholders representing the nine new Governorates (please refer to Chapter 8 of the updated ESIAF for more details on the public consulation). Detailed socioeconomic environmental and social baselines will be covered during the preparation of the Site Specific Environmental and Social Impact Assessments (SSESIA) after fulfilling the gaps of information related to phase II of the project and finalization of design and various project details.

In the specific ESIAs, the focus of the baseline descriptions of the project areas should be on aspects and components of high relevance to the environmental and social impact assessment of the natural gas connections project.

4.2 Selected Background Data

4.2.1 Phase I Governorates

- **Alexandria Governorate**

Alexandria Governorate is bordered to the north by the Mediterranean Sea(marine costal zone), to the East by El Beheira and to the West by Matrouh Governorate. It has Mariout lake.

Alexandria's total area comes to approximately 2300.0 km^2, and divided into one Markaz, one city, 7 districts, and 3 rural local units.

Alexandria is an industrial governorate where 40% of Egyptian industries are concentrated, especially chemicals, food, spinning and weaving as well as oil industries and fertilizers. Borg Al-Arab city was established to be an industrial, housing and agricultural city to absorb the current and future population increase.

- **Matrouh Governorate**

Matrouh Governorate occupies a unique location on the Mediterranean Sea (marine costal zone)serving as the hub between Egypt and the Arab Maghreb (North Africa).It hosts natural protected areas such as El Obayed wet land, El Salloum gulf and Siwa Oasis.The governorate's total area comes to 166563 km^2, forming 16.5% of the country's total area. It is divided into 8 Markaz, 8 cities, and 56 rural local units with 1 affiliated village.

Main activities of the population are trade, sheep and camel breeding as well as cultivation of figs and olives.

- **Daqahlia Governorate**

Daqahlia Governorate is located in the Delta Region. The governorate's total area comes to 3538.20 km^2, forming 0.4% of the country's total area. It is divided into 16 Markaz, 19 cities, 2 districts, and 120 rural local units with 366 affiliated villages. The governorate's population reaches 5.6 million. Daqahlia serves as the base of the rich Nile Delta triangle, and is ranked among the main agricultural governorates. It is advantaged by rich water resources and fish wealth. It is also famous for the production of meat, poultry and dairy products. Daqahlia has Eslamic and Christian arechaeological sites.

Daqahlia also hosts major industrial facilities spreading all over the governorate, and is famous for large and diversified industries, most important of which are chemicals - spinning and weaving garments - hydrogenated oils - soap - rice milling - grain mills – cotton ginning - milk - and printing and publishing .

The governorate won worldwide fame for hosting specialized medical centers and hospitals. Some of these centers include: urology and nephrology, and ophthalmology.

- **Qalubia Governorate**

Qalubia Governorate is part of the Greater Cairo region. It lies in the East of the Nile at the top point of the Delta. It is bordered to the South by Cairo and Giza Governorates and to the North by Daqahlia and Gharbeia Governorates, to the East by Sharqiah Governorate and Menufia to the West. Shoubra El Khaima city is the starting point of the agricultural highway to Lower Egypt governorates, as such Qalubia is held as liaison connecting between lower Egypt and Upper Egypt governorates

El Qanater el Khairya is a city in Qalyubia Governorate, It is the location of the Delta Barrages, the first modern irrigation structure across the Nile, located at the apex of the Nile Delta.The governorate's total area comes to 1124.30 km^2, forming 0.1% of the country's total area. It is divided into 7 Markaz, 10 cities, 2 districts, and 50 rural local units with 147 affiliated villages.

Qalyubia is known for its agricultural production of crops, fruits and vegetables. It is.also the leading Egyptian governorate in the production of chicken and eggs, in addition, Shoubra El Khaima hosts the largest industrial cluster including several factories of: spinning and weaving, electric appliances, plastics, vehicles, oil refining, food packing and processing, metal products, in addition to Abo Za'bal industrial zone which is famous for fertilizers and chemicals industries.

- **Gharbeia Governorate**

Gharbeia is located in the center of Delta region, the governorate's total area comes to 1942.30 km^2, forming 0.2% of the country's total area. It is divided into 8 Markaz, 8 cities, 4 districts, and 70 rural local units with 251 affiliated villages.The governorate is renowned for growing traditional crops such as cotton, rice, wheat, beans, maize and fruits, in addition to Jasmine, and medical herbs and plants, of which, extracts and pastes are exported. The governorate is also famous for growing potatoes for exports and local market.

Gharbeia has some archaeological areas, such as the Museum and the Metropolitan Coptic Church located in Tanta city, and Samanoud temple.It is a lead governorate in livestock and poultry breeding. In the industry field, it hosts large industries including spinning and weaving.

- **Menufia Governorate**

Menufia Governorate is part of the Delta Region .The governorate's total area comes to 2499 km^2, forming 0.2% of the country's total area. It is divided into 9 Markaz, 10 cities, 2 districts, and 70 rural local units with 245 affiliated villages. It is known of its fertile soil, agriculture is the main activity in the governorate, it obtains its water needs from Rosetta and Damietta branches of the Nile. It is famous for growing cotton, maize, wheat and vegetable.

The governorate contributes also to the industrial activity as it hosts large industries such as spinning and weaving. Furthermore, it is famous for the silk carpet industry for exporting purposes. The governorate experienced a huge industrial movement reflected in establishing several industrial facilities and other developmental projects that created job opportunities.

In addition, the governorate hosts many industrial zones which provide great investment potentials and incentives.

- **Ismailia Governorate**

Ismailia is Egypt's Eastern gateway to the Asian Continent and the Asian Arab and Islamic countries. The governorate lies on Suez Canal banks and is bordered by Port Said to the North and Suez to the South.

The governorate's total area is 5067 km^2, forming 0.5% of the country's total area. It is divided into 6 Markaz, 7 cities, 3 districts, and 33 rural local units with 5 affiliated villages.

The governorate hosts the Archaeology Museum, Delesips Museum and Orabi Castle .It also has the Temsah lake, one of the Bitter Lakes linked by the Canal..

Ismailia offers several investment opportunities, most important of which are: industrial investment carried out in the first and second industrial zones. The industrial zones had been connected to roads accessing the Egyptian ports and the duty free zone in Ismailia.

- **Giza Governorate**

Giza is one of Greater Cairo region urban governorates.The governorate's total area reaches 13184 km^2, forming 3% of the country's total area. The governorate is divided into 9 Markaz, 11 cities, 8 districts in addition to 48 rural local units with 120 affiliated villages.

Giza is privileged with plenty of ancient Pharoanic monuments, placing it second after Luxor city in this regard. Most Important monuments include Giza pyramids, the Sphinx, Cheops Ship. It also hosts Hassana Dome and El wahaat el Baharya Protected Areas

- **Sohag Governorate**

Sohag Governorate belongs to south Upper Egypt Region .The governorate's total area comes to 11218.10 km^2, forming 1.1% of the country's total area. It is divided into 11 Markaz, 11 cities, 3 districts and 51 rural local units with 213 affiliated villages. Sohag lies on the Western bank of the Nile on a fertile agricultural plain. Moreover, the city comprises of two islands, Karaman-ez-Zahur Island, which is bigger and uninhabited, and ez-Zahur Island Gazirat az-Zuhur, "Flower Island" which has some homes.Agriculture is the main economic activity of the governorate which is known for growing wheat, cotton, and onions, as well as livestock and poultry production.
The governorate pays great attention to the industrialization and motivation of investors. This trend is reflected in the industrial complex (Nile Company for Oil and Detergents, spinning and weaving, onion dehydration, beverages and sugar in Gerga).Recently, Sohag established four industrial zones in El Kawthar district and 3 other industrial zones: West Tahta, West Gerga, and Ahayiwia Shark.

- **Qena Governorate**

Qena Governorate is part of the south Upper Egypt Region. The governorate's total area comes to 8979.80 km^2, forming 0.9% of the country's total area. It is divided into 9 Markaz, 9 cities, and 41 rural local units with 111 affiliated villages. Qena is an agri- industrial governorate. It ranks first in the production of sugar cane, tomatoes, bananas, sesame and hibiscus.
The River Nile flows through the Governorate in a predominantly northerly direction, Although for the most part devoid of natural habitats or green areas, towns and villages are situated in or adjacent to agricultural wetland or desert environments. It hosts El-Dababya as a natural Geological protected area. Several factories operate in the governorate including 3 sugar

factories, and one spinning and weaving, in addition to the Aluminum Complex standing as the largest industrial facility in the Middle East .
Qena also hosts two industrial zones; the First Industrial Zone situated in Kalaheen at Qaft Markaz. The Second Industrial Zone is at Yahaw in Nagg`a Hammady. Another small industries cluster is located in Salehia at Qena markaz.

- **Aswan Governorate**

Aswan Governorate is part of the southern Upper Egypt region. It serves as Egypt's southern gate and liaison between Northern and Southern parts of the Nile Valley and concurrently between Egypt and Africa. The governorate's total area is 62726 km^2, forming 6.2% of the country's total area. It is divided into 5 Markaz, 10 cities, and 36 rural local units with 90 affiliated villages.

Agriculture is the main activity in the governorate, which is famous for growing sugar-cane, hibiscus, wheat, dates and henna. The governorate contributes as well to industry, most importantly sugar, chemical fertilizers, phosphate, and fish processing and packing. The industrial zone in El Shalal had been completed including installation of water, and electricity supply, as well as modern roads networks. Accordingly, many job opportunities were created for the people of the governorate. Aswan has many protected areas such as Saluga, Ghazal islands and the Small Islands in between which are considered Wetlands and landscape protected areas , there is also Wadi Al-Alaqi, a desert protected area, After the construction of the High Dam and filling lake Nasser with water, the water flowed into Wadi Al -Alaqi and it became part of the Lake

4.2.2 Phase II Governorates

- **Beni Suef Governorate**

Beni Suef is situated in the center of the country. Its capital is the city of Beni Suef, located about 120 km South of Cairo on the West bank of the Nile River. It is well known for cement factories. The nearby Medium pyramid is the only prominent tourist attraction in the area.The governorate's total area is 1095 km^2, and divided into 7 cities, , 222 villages,1 city of new communities. Total population of the governorate is 2856812 which represents 3.2% of the total population in Egypt. It hasWadi Sanor Cave geological Protected Area .

- **Menia Governorate**

Menia is one of the governorates of Upper Egypt. Its Capital is city of Menia. The governorate is one of the most highly populated governorates of Upper Egypt where the population reaches 5156702 which represents 5.9% of the total population of Egypt. The rural feature dominates the governorate, most of the population concentrates along the Nile Valley that runs through Menia South-north. 436957 feddans are cultivated in Menia depending on the Nile's water. The rest of the governorate is considered desert.The governorate's total area is 32279 km^2, forming

3.2% of the country's total area. It is divided into 9 cities, 361 villages and 1 city of new communities.

- **Asyut Governorate**

Asyut governorate is one of the governorate of Egypt that stretches along the Nile. Its capital is the city of Asyut. The governorate's total area is 2.6% of the country's total area. It is divided into 11 cities, 2 districts, 235 villages and 1 city of new communities.the total population of the governorate is 4245215 which represents 4.8% of the total population in Egypt. It has Wadi Al-Asioutty Protected Area .

- **Luxor Governorate**

It is located 635 km South of Cairo in the Southern part of Upper Egypt, its capital is Luxur city. It is currently the smallest governorate in Egypt, spanning approximately 5 km from North to South, and 1.5 km form East to West. The governorate's total area is 55 km^2, forming 0.24% of the country's total area. It is divided into 7 cities, 56 villages and 1 city of new communities. The total population of the governorate is 1147058 which represents 1.3% of the total population of the country. It has been estimated that Luxor contains about a third of the most valuable monuments and antiquities in the whole world, which makes it one of this planet's most important tourism sites. Monuments such as The Luxor Temple, Karnak Temple, the Valley of the Kings

- **Fayum Governorate**

Fayoum is meeting between the three agricultural, coastal and desert environments. Pre-historic civilizations, the Pharonic, Greek, Roman, Coptic and Islamic civilizations emerged there. Fayoum is located in the middle of the country. Its capital is the city of Fayoum, located about 130 km South of West Cairo. It has a population of 3170150 which represents 3.6% of the total population in Egypt. The governorate's total area is 1827 km^2. It is divided into 6 cities, 163 villages and 1 city of new communities.The governorate has natural protectorates such as Qaroun Lake, and Wadi El-Rayan, it also has many touristic sites such as Ein El Seleen.

- **Cairo Governorate**

Cairo governorate is the most populated of the governorates of Egypt and it is the national capital of Egypt and the major part of the greater Cairo metropolitan area.The governorate's total area is 3085 km^2, forming 0.3% of the country's total area. It consists of one big city which is divided into 35 districts and 4 Cities of New Communities.

Cairo governorate's population is 9278441 forming 10.5% of total Egypt population. Since Cairo is the biggest city, it offers several investment opportunities, most important of which are: Sale & repairing vehicles, Manufactures, Constructions & Building, Transportation & storage and Education . It has many historical sites such as the Egyption museum, Salah El Din Castle, it also has natural protected areas including Wadi Degla and petrified forest protected area in Maadi.

- **Damietta Governorate**

Damietta Governorate is located in the Northeastern part of the country, the Nile meets the Mediterranean sea at one of the oldest summer resorts in Egypt at Ras El Bar which is one of its famous cities. The governorate's total area is 1029 km^2, forming 0.1% of the country's total area. It is divided into 10 cities, 85 villages and 1 City of New Communities.

Damietta Governorate's population is 1330843 forming 1.5% of total Egypt population..The city of Damietta is famous of its skilled carpenters and furniture . These productions are also exported . Eighty percent of the governorate's income is related to furniture. Damietta also produces wheat, maize, cotton, rice, potatoes as well as the palm trees that the governorate exports millions of it to many countries every year.

- **Beheira Governorate**

Beheira Governorate is a costal governorate located in the Northern part of the country in the Nile Delta at West of the Rosetta branch. Beheira governorate comprises four important highways, namely the Cairo-Alexandria desert road, the Cairo agricultural road, the international road and the circular road. Beheira Governorate is also home to a number of the most important Coptic moneries in Wadi El Natrun (Scetes). It also has idku and Nabe El Hamraa lakes.The governorate's total area is 10130 km^2, forming 1% of the country's total area. It is divided into 15 cities, 497 villages and 1 City of New Communities.

Beheira governorate's population is 5804262 forming 6.6% of total Egypt population .Agriculture is the main activity in the governorate due to its soil fertility, but it has also some activities in Sale & repairing vehicles, Constructions & Building, Transportation & storage

- **Kafr El Sheikh Governorate**

Kafr El Sheikh governorate lies in the Northern part of the country along the Western branch of the Nile. Lake Burullus is located in the North of the governorate. The governorate's total area is 3436 km^2, forming 0.3% of the country's total area. It is divided into 13 cities, and 223 villages.

Kafr El Sheikh governorate's population is 3172753 forming 3.6% of total Egypt population.Agriculture is the main activity in the governorate due to its soil fertility, it has also activities in Education and Sale & repairing vehicles.It has El Burullus lake, a natural wetland protected area.

4.3 Basic Demographic Characteristics

The ESIAF paid attention to describe the main characteristic of the project areas. However, due to the wide geographical scope of the NG project, the ESIAF report will shed light briefly on the project sites characteristics. Additional detailed social information is presented in the standalone Supplementary Social Impact Assessment Framework report conducted for the 11 governorates (phase I of the project) .Yet, it will be essential to collect more site oriented data during the preparation of the specific ESIA/ESMP for phase II of the project.

A detailed description of the following demographic characterestics are elaborated in the ESIAF

4.3.1 Population Characteristics

Age Structure and Rate of Natural Increase were studied. The total number of the targeted NG project installation is 2.2 million household connections that will serve around 9 million beneficiaries.[2] The highest proportion of people (10.5%) inhabits Cairo Governorate. The least strata of people (0.5%) inhabit Matrouh Governorate.

The urban governorates are characterized of low household size. The average household size was the basis of estimated population to benefit from the project

4.3.2 Living Conditions

Living conditions were studied for Phase I of the project in order to obtain clearer view about the household characteristics of the potential beneficiaries. However, more localized socioeconomic investigations should be carried out during the preparation of the site specific ESIA.

4.3.3 Access to Basic Services

Access to Municipal Water Network is high in the 20 Governrates (access to potable water is about 99% in urban areas and 96% in Upper Egypt Governrates. Access to Municipal Sewage Network varied from urban Governrates than Delta Region and Upper Egypt. Coverage is 96.8%, 64.6% and 36.2% respectively. The Accessibilty to Electricity Network is high at 99% (EHDR 2010)in the project Governorates.

4.3.4 Human Development Profile

Egypt's Human Development Report (2010) ranked the governorates according to their human development index scores. Tracking the level of Human Development achieved in different governorates since 2005, it was found that Alexandria, Beheira, and Kafr Elsheikh are among the highest rank Governorate, while the bottom five Governorates included Giza, Beni Suef, Fayoum, Menia, and Assuit.

4.3.5 Poverty index

Assuit, Sohag and Qena Governorates are of poorer conditions than the other governorates. The total number of the poor people of the total population in each Governorate, represent 61%, 47.5% and 39% respectively. The GDP per capita in Qena is 6387.3 EGP, while in Sohag is 7329.7 EGP and Asyout is 8019 EGP. The lowest 40.0% of people represented 25.8% in the Qena and Sohag governorates while it is 23.8% In Assuit The ultra-poor represents (31.5%) of the poor people in Assuit.

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[2] The number of beneficiary household in each governorate was multiplied by the average size of household within the Country according to the Statistical year Book 2015.

4.3.6 Income and expenditure

Expenditure analysis results for phase I were to some extent consistent with the income distribution among the sample surveyed. Varaitions among governrates was obvious. Stability of income is one of the factors that might play a role for the benefit of the project as paying by installment is one of the payment options.

Although no surveys were conducted as part of the preparation for Phase II of the project, the survey findings for phase I could be taken as an indictor for the 20 including the 9 Governorates in phase II.

4.3.7 Fuel currently used in households

Secondary information provided by Butagasco (company filling and distributing LPG cylinders) reported that the LPG stores in the project areas vary according to the total population of the area. Qalubia governorate hosts 31 stores, while Matrouh and Aswan host only 4 stores. The sample surveyed reported that the main type of fuel used for cooking is the LPG cylinders

4.3.8 Problems faced with the current household fuel

Main problems reported that LPG cylinders are not easy to be obtained, greedy LPG distributors raise the price of LPG informally, long queues customers have to stand in to get an LPG cylinder, It is worth mentioning that the electricity problems is less than the LPG. (55.6%) of those who have electric water heating reported that they face no problem with the electricity.

4.3.9 Perception towards the project

Throughout the various consultation and engagement activities conducted in phase I, there was a remarkable and overwhelming public acceptance, even eagerness, by the community and the governmental stakeholders towards the proposed project.

Community perceptions were investigated in order to gain better understanding for the hosting communities' attitudes towards the project. It is very obvious that over 97% of the sample have positive perception about NG. 52.9% of the sample surveyed reported that NG is available all the time while 43.9% shed a light on the agony they face to get the LPG through long queues they have to stand in for hours. ***"I had to skip my school today to go to the LPG storeroom in order to get one… that was in vain… Should I skip school again tomorrow?"*** reported a young student in Sohag Governorate. The women had to carry their children to go to the LPG storeroom. Other respondents reported that the LPG does not have a fixed and unified price.

4.3.10 Willingness to pay

As part of phase 1 of the project, a willingness to pay survey was conducted and the key findings showed that the majority of sample surveyed expressed their willingness to be connected to the NG regardless to the amount of money they can afford to pay. Such attitude was attributed to the shortage of LPG cylinder during the data collection process. Although the willingness to pay

survey was not replicated for phase 2, yet phase 1 findings are expected to be valid as indictor for the willingness to pay for the local communities in the new 9 Governorates.

The data collection and consultation methods used in both phase 1 and phase 2 for the preparation of the framework, clearly revealed positive perception about the project and high demand on the service from the targeted Governorates. Appropriate schemes are adopted by the Government to encourage access to the service.

5 Environmental and Social Impacts

The environmental and social advantages of switching household fuel from LPG cylinders to natural gas pipelines are quite diverse. On the residential level, the proposed project provides improved safety, reduced physical/social/financial hardships, and secure supply. On the national level, it promotes the utilization of Egyptian natural resources and reduces the subsidy and import burden. Even on the global level, the project involves cleaner fuel with reduced carbon footprint.

A thorough analysis of environmental and social impacts is important to detail an effective management and monitoring plan which will minimize negative impacts and maximize positives.

5.1 Positive Impacts:

5.1.1 During Construction phase

Create indirect opportunities

As part of the construction stage, a lot of indirect benefits are expected to be sensed in the targeted areas due to the need for more supporting services to the workers and contractors who will be working in the various locations. This could include, but will not be limited to accommodation, food supply, transport, trade, security, manufacturing… etc.

5.1.2 During Operation phase

As indicated in the Baseline Chapter, women are key players in the current domestic activities related to handling LPG and managing its shortage. The NG project is expected to be of special and major benefits to women. This includes, but is not limited to, clean and continuous source of fuel that is safe and does not require any physical effort and is very reasonable in terms of consumption cost. Time saving is among the benefits to women. The use of a reliable source of energy will allow women to accomplish the domestic activities in less time and this will potentially open a space for better utilization of the saved time. Other benefits are as follows:

- Constantly available and reliable fuel for home use.
- Reduced expenditure on LPG import and subsidies
- Significantly lower leakage and fire risk compared to LPG
- Improved safety due to low pressure (20 mBar) compared to cylinders
- Customer service and emergency response by qualified personnel/technicians
- Eliminate LPG hardships to the physically challenged, women, and the elderly
- Elimination of insects and dirt typically associated with LPG cylinders
- Limiting the LPG cylinder "black market" due to lower demand
- Limiting possible child labor in LPG cylinder distribution
- Hiring of nearly 600 fee collectors in the 20 governorates

Detailed discussion of the potential positive socioeconomic impacts for phase I is presented in the Supplementary Social Impact Assessme Framework (SSIAF)

5.2 Potential Negative Impacts during Construction

In addition to International guidelines and best-practice which outline typical negative impacts which may potentially arise from such a gas connections project. Monitoring reports from the Greater Cairo gas connections project and the analysis of ESIAF for phase I, highlight the following aspects as key areas of possible concern:

5.2.1 Reduction of Traffic Flow and Access Limitation

Traffic congestion and loss of access due to excavation and installation works are temporary, local, and range from low to high severity.

5.2.2 Air Emissions

Air emissions from heavy machinery and generators and dust from excavation activities are expected to be temporary, local and of low severity

5.2.3 Noise

Noise levels from heavy machinery and asphalt breaking; as well as other construction/demolition for extending NG piping into households are expected to be temporary, local and of low to medium severity.

5.2.4 Risk on Infrastructure and underground utilities

Risk of damage/breakage of underground utility lines and piping (drinking water, wastewater, electricity cables, telephone lines) during excavations are expected to be temporary, local but of medium severity.

5.2.5 Possible effects on structures

Potential risk to weak structures may arise in areas where building standards are not followed or in areas where high groundwater levels affect integrity of foundations. Structural impacts on vulnerable buildings may be permanent and highly severe

5.2.6 Effect on Culturally Valuable Sites

Structural and aesthetic effects on culturally-valuable sites and antiquities. Impacts on culturally valuable sites and buildings may be permanent and highly severe.

5.2.7 Effect on ecological systems

Excavations and pipe laying will take place for both the HP steel lines and the PE distribution lines. The distribution lines will mostly be aligned along routes previously excavated or paved. However, HP steel lines may be aligned under ecological systems requiring reinstatement and/or offsetting during excavation.No official protected areas will be encountered in the alignment of any of the lines, HP or PE. Impacts on ecological systems are expected to be temporary and low in severity.

5.2.8 Solid and Liquid Waste Disposal

Management of solid, liquid and hazardous wastes from handling and temporary storage to transportation and final disposal. Waste management impacts are temporary but may range from low to high severity

5.2.9 Street Restoration and Rehabilitation

"Rehabilitation" or "Restoration", that is returning the item to its original state. In the context of the proposed project, it is applied to the responsibility of the implementing LDC detailed in the terms agreed with the local governmental units to provide the necessary resources to re-pave roads and streets to the original state after natural gas excavation and installation works. This issue is of importance as delays in street restoration may lead to varying degrees of damage to vehicles, loss of access and business, traffic congestions with associated delays and emissions, and a potentially significant level of public discontent. Although the restoration impact may be temporary, localized, and of low severity, it is perceived by the public as major inconvenience.

5.2.10 Waterbodies

Groundwater removed during dewatering processes could result in a reduction in the water table.

In cases where workers camps are close to water bodies, it is important that wastewater is not released in water bodies and be properly disposed of.

5.2.11 Potential Negative Socioeconomic Impacts of PRS Construction

The negative impacts or risks associated with PRSs construction are related to handling of construction waste, noise and air pollution from construction machinery which have all been discussed earlier.

5.2.12 Impacts on assets (land) and livelihoods of the farmers (crops)

- Penetrating into the cultivated land will result in temporary damage to the crops and consequently on the livelihoods of the farmers. This case will require triggering the World Bank policy OP. 4.12 in developing a Resettlement Action Plan. The potential cultivated lands for the entire high pressure pipeline lengths are difficult to determine at this stage as the routes had not yet been defined at the time of the submission of this report.
- It is a priority to EGAS to allocate the PRSs on state owned land. In cases of unavailability of sate owned land, EGAS purchases land through Willing Buyer- Willing Seller approach following its procedure for securing land as per Annex (2) of the ESIAF.

5.2.13 Impacts due to lack of restoration or rehabilitation of streets

- Negative effects on the business of neighboring shopkeepers due to digging close to their shops.

- Congestion and traffic disturbance for both pedestrians, cars as well as the livelihoods of taxi, microbus and Tuk Tuk drivers. In coastal governorates traffic congestion might affect tourism.

5.2.14 Impacts on labours and community due to lack of awareness of safety measures

- Lack of safety awareness among workers or to the community members, particularly children, especially close to the excavation sites.
- Accumulation of waste in the construction areas might become a hub for insects and unfavorable smells which will negatively affect the surrounding communities.

5.2.15 Impacts on communities from Temporary project induced labor influx

In some cases, the permanat labor force of the LDCs is not enough to carry out the required connection works, in such cases a contractor is appointed by the LDC to source the required labor force through a contractual agreement named **"Contract for the Provision of Technical Services for Natural Gas Connections Works".** Connections works include installation, network extension (excavation works and vents) and conversion.

The provisions of this contract obliges the contractor to supply the labor from the surrounding community, all recruited labour should be of good reputation and has no criminal record. The recruited labor are viewed in the same way as the permanat staff and are governed by Law 12/2003 "Labor and Workforce Safety". The LDC has the right to dismiss any of the supplied labour due to misconduct, inefficiency or careless behaviours and the contractor is responsible to provide a skilled replacement. All sourced workers are local residents and therefore there is no need to secure additional accommodations or camps.

Since all the provided labour is from the same area, it is not expected to encounter any of the social adverse impacts resulting from influx of outside labour and thus this impact is considered non applicable or of minimal severity.

5.3 Potential Negative Impacts during Operation

5.3.1 User health and safety

Impacts on user health and safety may occur through improper handling of piping and valves. This may be due to a lack of awareness, illiteracy, or failures in piping or sealants. User safety impacts could be permanent and highly severe.

5.3.2 Improper handling of the Odorant

The odorant containing Tertiobutylmercaptin (80%) and Methylehylsulphide (20%) is highly flammable and toxic upon thermal decomposition.Also irritant and toxic to aquatic flora and fauna. Impacts of improper odorant handling may be permanent and highly severe.

5.3.3 Noise of PRS

The pressure reducers normally cause noise generated from the reducers' pipes. The generated noise is constant (not intermittent). Impacts of PRS noise may be permanent and severe.

5.3.4 Safety Aspects of PRS Operation

The safety risks associated with PRSs' operation (leakage, fire hazard, explosion, suffocation) should be assessed for the workers and the public at large, using Quantitative Risk Assessment (QRA) modeling and comparing the results with international risk management guidelines as a reference. Impacts of PRS safety may be permanent and may vary from low to highly severe.

5.3.5 Integrity of the pipelines

Low-probability events may impact the integrity and safety of the NG network and components during the years of the operation phase. Despite the low probability of Geological and geotechnical events and Sabotage that may occur, impacys may be permanat and highly severe

5.3.6 Potential negative Socioeconomic impacts during operation

The analysis of social impacts of any project lies at the core of assessing the relevance of the project based on its benefits versus its drawbacks to communities including the hosting community. In case the potential project's estimated positive impacts on the community overweight the negative impacts, then the project is likely to be beneficial in terms of social outcome. The discussion of positive impacts is presented in details within the Supplementary Social Impact Assessment.

5.3.7 Ineligibility for connection to Natural Gas

Due to the fact that household connection is selected following certain technical and safety criteria, some of the areas and houses of the project will not satisfy the mentioned criteria, this may raise some concerns among community members that will not benefit from the project.

5.3.8 Proposed criteria for assessment of impacts during site-specific ESIAs/ESMP

Each impact is quantified and evaluated according to size, intensity, frequency and exposure time using the point system outlined below. Negative value of severity indicates negative impacts and positive values positive impacts.

Impacts have also been assessed if they are of **short-term or long-term** duration, and whether they are **reversible or irreversible**, in the latter case resulting in a permanent change to baseline environmental conditions.

Severity (S)	Frequency (F)
-1 Minimal	1. Once every year
-2 Low	2. Once every 6 months
-3 Moderate	3. Once per month
-4 High	4. Once per day
-5 Very High	5. Continuous

Environmental aspects and impacts are identified using Severity and Frequency (SF) where SF= Severity(S) x Frequency (F). Impacts for which -1 > SF > -10 and 1< SF < 10 are considered insignificant. When SF < -10 factors such as reversibility of the impact should be considered, and possible mitigation measures will be described as needed in the site-specific ESIAs/ESMP

6 Analysis of Alternatives

6.1 No Project Alterative

The No-Project alternative is not favored as it simply deprives the Egyptian Public and Government of the social, economic, and environmental advantages detailed in positive impacts during operation sections of this report.

6.2 Energy Alternatives

Three alternative energy sources(a) expand LPG usage, or (b) convert to electricity, or (c) use renewable energy sources could be considered as alternatives for supplying stable reliable energy .Energy alternatives do not provide favorable options to the proposed NG networking

6.3 Piping material Alternatives

With regards to the materials the piping inside the households, International standards state that either copper or steel may be used. Several considerations support the use of steel piping in Egypt. These include strength, cost, and some aspects of public attitudes (copper is known in Egypt as an attractive target for theft due to its high value). Aside from the aspect of minimizing corrosion (and therefore risk of leakage), selection of one of the piping materials over the other does not seem to offer contrasts in the environmental and social impacts (except a marginally lower pressure loss with copper piping). Therefore, as long as precautions and safety margins are respected steel seems to be the more practical and safer choice.

6.4 Excavation Technique alternatives

Excavation may proceed through using the Open cut technique. Alternatively, borings may be excavated using hydraulic drive, and finally Horizontal Directional Drilling (HDD) technique. HDD is the method that shall be used in crossing the water ways(if any), roads and railways(if any)

6.5 Sequence of work progress (within various areas/ area inside the city) Alternatives

Construction of the gas network inside the various areas / area inside the city comprises two main components, the first is the distribution network in the longitudinal roads direction, and the second is the lateral connection network to the residential units perpendicular to the road direction.

Progressing from constructing the distribution network to constructing the connection network, this could be practiced through two alternatives:

- Alternative 1: Complete the construction of the distribution network and then start the connection network at a later stage.
- Alternative 2: Complete both networks simultaneously in one stage.

Advantages of Alternative 1 over Alternative 2 are:

- Technical problems during line testing could be avoided, as detecting leaks in the main pipe will be much easier if no connections are placed;
- Lower risks for re-excavating parts of the line including leaks; and
- Shorter traffic disturbance time for the first excavation stage because no lateral intersection with the traffic flow.

Advantages of Alternative 2 over Alternative 1 are:

- Amount of excavation/filling works are slightly less, because intersections between mains and connection trenches are excavated only once;
- Makes mobilization of equipment and areas of storage occupied only once; and
- Traffic disturbance occurs only once.

The environmental benefits and negative impacts of the two alternatives are close. The amount of excavations in the two alternatives are approximately equal, however, the second alternative has a clear advantage of causing disturbance only once for the same street, in addition to less air emissions and traffic disturbance caused during equipment mobilizations. Therefore, if all other technical or financial factors are equal then the second alternative may be slightly more advantageous from an environmental perspective. However, because phasing of connection works will depend mainly on developing contracts with new customers, no objections are foreseen in going along with Alternative 1.

6.6 Routing Alternatives

Siting and routing alternatives are guided by technical, environmental, and social considerations. Technically, the foremost factor of selection is the safety of the installations and minimal explosion, leakage, or fire risks. International (British) standards are referred to upon project detailing. Feasibility studies and detailed Property & Appliance surveys assess and recommend connections to areas with adequate environmental conditions (conditions of buildings, and complete utilities networks) as well as to lower income/high population density areas. Environmentally, pipeline routing avoids passing through any ecologically or culturally sensitive areas. In addition the high pressure pipelines will not cross international waterways.

Socially, the routing is usually designed to avoid passing through agriculture land. In case this option is unavoidable, RAPs should be prepared to regulate the compensation system for the affected persons.

6.7 Land Alternatives

As previously mentioned it is a priority to EGAS to allocate the PRSs on state owned land. In cases of unavailability of state owned land, EGAS examines number of other land alternatives including privately owned land to be purchased through Willing Buyer - Willing Seller approach following its procedure for securing land , where land alternatives are chosen to ensure that the selected land is technically, economically and socially acceptable. Even in state owned lands it has to be ensured that there are no tenants occupying the land and in case there are, appropriate compensatory measures should be applied

6.8 Household payment alternatives

Household have two alternatives for payment. They can either pay in cash or they can pay in installments with a minor simple interest rate.

7 Environmental and Social Management & Monitoring Framework

7.1 Objectives of the ESM&MF

The objective of this Environmental and Social Management and Monitoring Framework, is to outline a mechanism for minimizing or eliminating potential negative impacts and for monitoring the application and performance of mitigation measures. The ESMMF identifies roles and responsibilities for different stakeholders for implementation and monitoring of mitigations. This section also presents an assessment of the institutional capacity for implementing the ESMMF.

For the current study, the specific environmental and social impacts arising from the wide geographical, socioeconomic, physical, and developmental variations between the areas of the proposed project will be addressed in the detailed site-specific ESIAs which will be prepared once final project detailing is complete.

At the available level of project details, the impact significance (summarized in the table below), is based on two main criteria:

1- Duration: of the possible outcome of the impact (in case it does take place).
    a. Temporary, Permanent
2- Severity: Difficulty of repair or remedy of the outcome (in case it does take place).
    a. Low, Medium, High

Table 7-1: Summary of impacts significance

	Potential Impact Significance (Duration, Difficulty to mitigate)									
Activity	**Traffic**	**Air quality**	**Noise**	**Underground utilities**	**Vulnerable structures**	**Cultural sites**	**Waste disposal**	**Ecological systems**	**Socioeconomic aspects**	**Health and safety**
Construction Phase										
Mobilization	Temporary, low	N/A	Temporary, low	N/A	N/A	N/A	Temporary, low	Temporary, low	Temporary, medium	N/A
Excavation	Temporary, high	Temporary, medium	Temporary, high	Temporary, high	Permanent, high	Permanent, high	Temporary, high	Temporary, low	Temporary, medium	Temporary, low
PE Pipe laying	Temporary, low	Temporary, low	Temporary, low	N/A	N/A	N/A	Temporary, low	N/A	N/A	Temporary, low
HP piping installation	Temporary, low	Temporary, low	Temporary, low	N/A	N/A	N/A	Temporary, low	Temporary, low	N/A	Temporary, low
PRS construction	Temporary, medium	Temporary, medium	Temporary, high	N/A	N/A	N/A	Temporary, medium	N/A	Temporary, medium	Temporary, low
Leakage testing	Temporary, low	Temporary, low	Temporary, low	N/A	N/A	N/A	Temporary, low	N/A	N/A	Temporary, low
Street restoration	Temporary, high	Temporary, low	Temporary, high	N/A	N/A	N/A	Temporary, medium	N/A	Temporary, low	Temporary, low
Connections	Temporary, medium	Temporary, low	Temporary, high	N/A	Temporary, medium	N/A	Temporary, medium	N/A	Temporary, low	Temporary, low
Conversions	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Temporary, medium	N/A
Operation Phase										
PRS operation	N/A	N/A	Permanent, low	N/A	N/A	N/A	Permanent, medium	N/A	Permanent, low	Permanent, high
Network operation	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	Permanent, low
Repairs	Temporary, medium	Temporary, medium	Temporary, medium	Temporary, high	Permanent, high	Permanent, high	Temporary, high	Temporary, low	Temporary, medium	Temporary, low

7.2 Management and Monitoring activities During Construction Phase

7.2.1 Management of Traffic

7.2.2 Management of Air Emissions

7.2.3 Management of Noise

7.2.4 Management of Excavation Activities Posing Risk on Utilities

7.2.5 Management of Activities Posing Risk on Structures Stability

7.2.6 Management of Culturally Valuable Sites

7.2.7 Management of Waste Disposal

7.2.8 Management of Street Restoration after asphalt breaking

7.2.9 Management of grievances *(Environmental and Social Grievance Redress Mechanisms)*

Establishing a grievance redress mechanism (GRM) is one of the most fundamental procedures that warrantee smooth and amicable implementation for the project activities. The importance of having a local based GRM is to ensure that complaints are passing through appropriately announced channels and are handled properly and timely. A functioning GRM is considered to be a good feedback mechanism from the customer and one tool of the citizen engagement.

In order to propose practical procedures for the GRM, the Consultant started with analyzing the current grievance mechanism adopted by NG companies. The analysis of current procedures is summarized as follows:

Table 7-2: Current grievance mechanism adopted in the NG companies

Activities	LDCS	EGAS
During the construction phase		
Tiers of grievances	First tier is applied on the level of LDCs	Second tier on the level of EGAS
Communication channels	They receive the complaints through the following channels: 1- Hotline 129 2- Website and E- mail 3- Postal Mail 4- On site complaints 5- Social Development Officer	1- Mails 2- Visit EGAS
Roles	They receive the complaints as follows: 1- In the construction site where the	In case of not solving the problem on the

Activities	LDCS	EGAS
	responsible person in the site tries to solve the problem immediately 2- In case of not solving the problem, the complainant goes to the project manager who takes practical procedures to solve the problem In case of not solving the problem the complainant targets to the third level which is the Central Department	first level of grievance the complainant raise his complaint to EGAS They contact the client for more details about his complaint They transfer the complaint to the implementing company in order to solve the problem. They follow up the complaint until satisfactory solution is attained
Monitoring	The Internal Monitoring Specialist (IMS) follow up the implementation of corrective procedures After solving the problem, the IMS finalizes the complaint and inform the complainant about the solutions adopted in order to measure his/her satisfaction with the solutions	They monitor the performance of the LDCs
Documentation	The person in charge of complaints receives and analyzes the complaints. S/he proposes some solutions and gets in contact with the implementing department in order to propose solutions for the complaints. The IMS document a summary of the complaint in a complaint log (CL) An analysis is conducted to identify the main triggers for complaints by the end of each year. Some recommendations are developed in order to enhance the performance of the companies The complaints are documented and kept in the company for three years	No records or documentation for all grievances
Reporting	Quarterly report is developed to EGAS	Quarterly progress report is developed to Funding Agency

Activities	LDCS	EGAS
During the operation phase		
The above mentioned procedures are adopted with the addition of the 'Customer Service Office' in LDCs. Its roles are as follows: - Receive any complaints related to the NG installation during the operation phase. - Provide information about the entity responsible for problem solution		

The above mentioned mechanism managed to limit the number of complaints that required judicial intervention, raising only a limited number of cases to courts, which testifies to the functionality of the proposed mechanism. On the other hand, this mechanism lagged behind when it came to information dissemination to members of the community and providing feedback to the complainants.

Since the resettlement work will be carried out with the full participation of the PAP, it is expected that no major grievance issue will arise. However, to ensure that the PAP have avenues for redressing their grievance related to any aspect of land acquisition and resettlement, detailed procedures of redress of grievances have been established in the RPF.

The ESIAF has prepared detailed grievance mechanism that will be shared with the community beneficiaries. Leaflets, posters and brochures will be prepared and distributed to the beneficiaries, NGOs, local governmental units, mosques and churches. Thus, sufficient and appropriate information about the GRM will be shared with the communities prior to the construction phase.

7.3 Environmental Management Matrix during CONSTRUCTION

Table 7-3: Environmental Management Matrix during CONSTRUCTION

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
Traffic congestion and diversion	Construction during off-peak periods Traffic department to grant excavation license limited to specific hours	: LDCs	LDCs Health, Safety, and Environment (HSE) Department Relevant Traffic Department	LDC has valid conditional permit + Field supervision	Contractor management costs (included in bid price) LDCs management costs
	Announcements using local broadcasts Signage indicating location/duration of works prior to commencement of work	Local administration LDCs	LDCs) HSE + Traffic Department	Ensure inclusion in contract + Field supervision	LDCs management costs (included in bid price)
	Consider the feasibility of using the Horizontal Directional Drilling (HDD) technique under critical intersections to avoid heavy traffic delays (and associated noise/air emissions)	LDCs	LDCs Traffic department	Field supervision	LDCs management costs (included in bid price) LDCsmanagement costs

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
	Traffic detours and diversion	Traffic Department	Traffic Department	Ensure detouring efficiency	Additional budget not required
	Road restructuring and closing of lanes	Traffic Department	Traffic Department	Ensure adequate traffic flow	Additional budget not required
Air emissions	Best practice in controlled wetting and compaction of excavations to minimize dust emission	LDCs	LDCs HSE	Contractual clauses + Field supervision	LDCs management costs
	Sound isolation, storage, transportation and disposal of stockpiles	LDCs	LDCs HSE	Contractual clauses + Field supervision	LDCs management costs
	Compliance to legal limits of air emissions from all relevant equipment	LDCs	LDCs HSE	Review manufacturer catalogues and exhaust certificate or request emission measurements	) LDCs management costs
Noise	Ear muffs, ear plugs, certified noise PPE	LDCs	LDCsHSE	Contractual clauses + Field supervision	LDCs management costs
	Avoid noisy works at night whenever possible	LDCs	LDCsHSE	Field supervision	Contractor management costs (included in bid price) LDCs management costs

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
Damage to U/G utilities	Pre-planning and coordination with central, regional, and local departments of potable water, wastewater, electricity, and telecom authorities to obtain maps/ data on depth and alignment of underground utilities	LDCs	LDCsHSE	Official coordination proceedings signed by representatives of underground utility authorities Examination of site-specific reports and records Field supervision	LDCsmanagement costs
	Limited trial pits or boreholes to explore and identify underground utility lines Non-intrusive Radio- cable and pipe locator to detect underground utilities	LDCs	LDCsHSE Supervisor	Contractual clauses + Field supervision	LDCsmanagement costs
	Preparation and analysis of accidental damage reports	LDCs	LDCsHSE	Review periodic HSE reports	LDCsmanagement costs
	Repair and rehabilitation of damaged components	LDCs	LDCs HSE Local Government Unit Local Police	Contractual clauses + Field supervision	Included in contractor cost but must be evaluated on a case-by-case basis

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
Effects on cultural sites	Identify areas of antiquities, monument repair zones	LDCs& Supreme Council for Antiquities and Local Council	LDCsHSE	Review permitting procedures and ensure review of Council	LDCsmanagement costs
	Supervise intensity and locations of construction activities	Expert from Supreme Council of Antiquities	LDCsHSE	Review field reports + field supervision	Indicative cost to be revised and included in contractor bid $715 / site for supervision and measurement of vibration for locations identified as "monument-critical" LDCsmanagement costs
	Control dewatering process	LDCs	Supreme Council Expert + LDCsHSE	Field supervision	Indicative cost to be revised and included in contractor bid $2,850 /site as "monument-critical" LDCsmanagement costs
	Reduce vibrations	LDCs	Supreme council Expert + LDCsHSE	Contractual clauses + Field supervision	Indicative cost to be revised and included in contractor bid $2,150/site as "monument-critical" LDCsmanagement costs
	Preserve architecturally valuable sites	LDCs	LDCsHSE	Field supervision	Contractor costs (included in bid price) LDCsmanagement costs

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
	Preserve any found antiquity	LDCs + HSE supervisor	LDCsHSE	Field inspection throughout works and review field reports	Contractor costs (included in bid price) LDCsmanagement costs

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
Waste disposal	Identify distances to disposal sites and facilities nearest to the work area Classify disposal sites and facilities by type of waste accepted by the disposal. Estimate the amounts expected from each type of wastes Identify and contract certified hazardous waste handling and transportation contractors. Estimate handling and disposal fees according to type and amount of waste Estimate size of fleet required to transport wastes. Estimate tipping fees according to specific disposal sites For areas distant from facilities in Alexandria, consider setting up waste **transfer stations (possibly with primary treatment)** for storage hazardous waste Design a comprehensive handling and transportation plan for all waste types	LDCs	LDCsHSE	Contractual clauses + review of comprehensive waste management plan	) LDCsmanagement costs

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
	Management of excavation waste according to the waste management plan	LDCs	LDCs HSE supervisor	Field supervision	LDCs management costs
	Prevent fueling, lubricating and any activity that would entail production of hazardous materials empty containers	LDCs	LDCs HSE supervisor	Field supervision	LDCsmanagement costs
	Transfer empty hazardous waste containers to Alexandria facilities (Nasreya or UNICO) and landfill(s)	LDCs	LDCs HSE supervisor	Field supervision and review of certified waste handling, transportation, and disposal chain of custody	Indicative cost to be revised: Allocate 5 truckloads (2 tons/truck) of hazardous waste per governorate during construction x ($715 per load for each of the 10 governorates close to Alexandria + $1,285 per load for each of the 10 distant governorates)= $53,570
	Adequate management of asbestos and any possible hazardous waste	Water Authority + contractor	LDCsHSE	Field supervision + review of Water Authority manifests	LDCsmanagement costs
Effect on structures from dewatering activities	Screening of areas / sectors	Technical Committee or independent consultant + LDCs	LDCsDesign Manager + T/E GAS HSE	Review committee's reports	LDCsmanagement costs

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
	Limited dewatering schedule	LDCs	LDCsHSE	Field supervision	LDCsmanagement costs
Dewatering	Arrange effective drainage during dewatering	LDCs	LDCsHSE	Field supervision	LDCsmanagement costs
	Transfer any contaminated water resulting from dewatering to an adequate nearest facility	LDCs	LDCs	Field supervision	LDCsmanagement costs
Restoration and rehabilitation of streets	Announce re-pavement plan indicating the responsibility whether it is the LDCs or the Governmental district units.	LDCs/ local administrations	LDCs	Field supervision Coordination with LGU as needed	Included in re-pavement budget agreed by LDCswith district units (

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
Effect on ecological systems	Survey proposed route or alignment of the steel high-pressure lines from secondary sources or through field investigations, as possible Avoid sensitive or irreplaceable ecological systems, if encountered on alignment of HP steel or PE pipelines Take necessary measures to offset or displace disrupted sensitive ecological systems	LDCs planning unit	LDCs	Review of inclusion of ecological surveys in the routing or alignment of the HP steel pipelines	LDCsmanagement costs
Health and safety	All soil piles will be stored a minimum of (60) cm from the sides of the excavation. For excavation 122 cm or deeper, stairways, ramps, or ladders will be used. For trenches, the employee must not exceed 750 cm of lateral travel to reach the stairway, ramp, or ladder. No employee will work in	LDCs	LDCs HSE	Field supervision	LDCsmanagement costs

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
	an excavation where water is accumulating unless adequate measures are taken. Ensure the provision of the appropriate personal protective Equipment				

7.4 Environmental Monitoring Matrix during CONSTRUCTION

Table 7-4: Environmental Monitoring Matrix during CONSTRUCTION

Impact	Monitoring indicators	Responsibility of monitoring	Frequency of monitoring	Location of monitoring	Methods of monitoring	Estimated Cost of monitoring
Reduction of traffic flow	Comments and notifications from Traffic Department	LDCs HSE	During construction. Monthly reports	Construction site	Documentation in HSE monthly reports	LDCsmanagement costs
Air emissions	HC, CO% and opacity	LDCs HSE	Once before construction + once every six months for each vehicle	Vehicles licensing Department	Measuring exhaust emissions of vehicle, electrical unit, or heavy equipment in documented reports	$100/ project area
Noise	Noise intensity, exposure durations and noise impacts	LDCs HSE	Regularly during site inspections and once during the night in every residential area or near sensitive receptors such as hospitals	Construction site	Noise meter	LDCsmanagement costs
	Complaints from residents	LDCs HSE	During construction. Monthly reports	Construction site	Documentation in HSE monthly reports	LDCsmanagement costs

Impact	Monitoring indicators	Responsibility of monitoring	Frequency of monitoring	Location of monitoring	Methods of monitoring	Estimated Cost of monitoring
Risk of damaging underground utilities and infrastructure	Official coordination reports with relevant authorities Accidents documentation	LDCs HSE	During construction. Monthly reports	Construction site	Documentation in HSE monthly reports	LDCsmanagement costs
Effect on structures by dewatering activities	Specialist assessment reports Duration of dewatering and water level	LDCs HSE	During dewatering activities. Reported in monthly reports	Construction site	Documentation in HSE monthly reports	LDCsmanagement costs
Effects on monuments and vulnerable buildings	Vibration test results	LDCs HSE	During construction near sites identified by the Council	Construction site	Calibrated vibration test meter	($750/meter + $160 maintenance and calibration) x 11 vibration meters = $10,000
	Investigate possible buried antiquities	LDCs HSE + Supreme Council for Antiquities	Once before construction if required by the council	Streets and areas identified by the Council	Geophysical survey	$715/km in areas designated as antiquities or monument repair zones (to be covered by LDCs
Waste Management	Observation of accumulated waste piles	LDCs HSE	During construction. Monthly reports	Construction site	Observation and documentation	LDCs management costs

Impact	Monitoring indicators	Responsibility of monitoring	Frequency of monitoring	Location of monitoring	Methods of monitoring	Estimated Cost of monitoring
	Observation of water accumulations resulting from dewatering	LDCs HSE	During construction. Monthly reports	Around construction site	Observation and documentation	LDCs management costs
	Examination of chain-of-custody documents and implementation of waste management plans	LDCs HSE	Zonal reports	Construction site and document examination	Site inspection and document inspection	LDCs management costs

7.5 Social Management Matrix during CONSTRUCTION

Table 7-5 : Social Management Matrix during CONSTRUCTION

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
1) Impacts on assets (land) and livelihoods of the farmers (crops)	OP 4.12 should be triggered and a resettlement Action Plan should be prepared stipulating all compensation measures	Prior to the construction in each area EGAS, LDCsand the Governorate	LDCs EGAS (SDO)	Ensure the implementation of RAPs	13000 $ for RAPs Cost of compensation can't be defined during this stage

2) Raise community people concerns due to not being connected to NG	• Try to connect the defined districts through preparing technical solutions to those who might not be connected within the limits of the approved standards • Provide information to community members on the selection criteria for Natural Gas Connections (brochures/leaflets, awareness through NGOs) Follow the procedure of Grievance Redress Mechanism	Along the life of the project LDCs	LDCs	Ensure the implementation of GRM	No cost as it is part of the process
3) Impact on businesses due to no street rehabilitation	In compliance with the Environmental management plan concerning timely implementation of the construction schedule to minimize impact on local business • .Follow up the procedure of Grievance Redress Mechanism • Ensure transparent information sharing	During digging process LDCs The sub-contractors	LDCs	• Ensure the implementation of GRM • Supervision on Contractors performance	No cost

4) Threat to Safety of users and houses (due to limited level of awareness and misconceptions)	Prepare Citizen engagement and stakeholder plan Awareness raising campaigns should be tailored in cooperation with the community-based organizations (distribution of brochures / leaflets)	During the construction LDCs	LDCs EGAS	• List of awareness activities applied • Lists of participants • Documentation with photos • Awareness reports	2250 $ per awareness raising campaign 2250 $ for brochure and leaflets to be distributed

7.6 Social Monitoring Matrix during construction

Table 7-6: Social Monitoring Matrix during CONSTRUCTION

Impact	Monitoring indicators	Responsibility of monitoring	Monitoring institution (if different from responsible)	Duration/Frequency) of monitoring	Location of monitoring	Methods of monitoring	Estimated Cost of monitoring
1) Impacts on assets (land) and livelihoods of the farmers (crops)	• Number of PAPs compensated • Number of PAPs who were not compensated • Number of complaints raised • Minutes of meetings with PAPs • Minutes of meeting with Compensation Committee	LDCs	EGAS	Prior to the construction in each area	Site visits Desk work	Reports Minutes of meetings Complaints log	No cost
2) Raise community people concerns due to not being connected to NG	Number of complaints raised	LDCs	EGAS	Four times per year, each three months	Site and Desk work	Checklists Photos and complaints log	No cost

Impact	Monitoring indicators	Responsibility of monitoring	Monitoring institution (if different from responsible)	Duration/Frequency) of monitoring	Location of monitoring	Methods of monitoring	Estimated Cost of monitoring
3) Damaging the streets	Streets quality after finishing digging Number of complaints raised due to damaging streets	LDCs	EGAS	Four times per year, each three months	Site and Desk work	Checklists and complaints log	No cost
4) Threat to Safety of users and houses (due to limited level of awareness and misconceptions)	• Number of awareness raising implemented • Number of participants in information dissemination	EGAS, LDCs		Quarterly monitoring	Office	Reports Photos Lists of participants	No cost

7.7 Management and Monitoring activities During Operation Phase

7.7.1 User health and safety

Several measures are suggested to overcome obstacles to full understanding and adoption of safety measures by the clients in the social management plan. Examples include using drawings instead of written instructions to improve communication with illiterate customers, coordinating with women of local NGOs to explain safety precautions to women in the households to be connected, and constantly monitoring the performance of emergency response units.

During all consultation activities conducted, participating NGOs offered to host awareness activities related to the NG project. EGAS has already communicated with 30 NGOs during the implementation of Greater Cairo NG project. Consequently, such activities will not necessitate additional cost. The Social Development Officers should outreach with the NGOs in order to mobilize them

7.7.2 Management of Odorant Handling

7.7.3 Management of Repairs and Maintenance

7.7.4 Management of PRS noise

7.7.5 Management of PRS Safety Aspects

7.7.6 Management of network integrity

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7.8 Environmental Management Matrix during OPERATION

Table 7-7: Environmental Management Matrix during OPERATION

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
Management of odorant and its containers	Evacuation of odorant in holding tank and ship empty containers to a certified hazardous waste facility using certified handling and transportation contractors	PRS staff	LDCs	Quarterly auditing for each PRS	Indicative cost to be included in PRS running budget: Estimate tonnage of empty odorant containers and multiply by $360 per ton for transportation and disposal of waste from the 6 governorates close to Alexandria and $640 per ton for hazardous waste from the 5 governorates distant from Alexandria
Noise of PRS operation	Locate noisy pressure reducers away from PRS borders in residential areas	LDCsDesign Department	LDCsHSE	Review of PRS layout	LDCsmanagement costs
	Build barrier walls between reducers and sensitive receptors when needed (as required for PRSs in residential areas)	LDCs	LDCsHSE	Field supervision of PRS construction	LDCs costs
Leakage and fire	Mitigations based on Quantitative Risk Assessments	Independent consultant	LDCsHSE	QRA Document review	$50,000 for QRAs of all the proposed PRSs to be covered by LDCs
Network	- Detailed review of the geotechnical and geological	LDCs	LDCsHSE.	- Map and local geotechnical report review	LDCsmanagement costs

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
safety	history of the project area - Development of a full emergency response plan in case of rare events which exhibit multiple simultaneous impacts			- Periodical trainings and drills	
Potential risks due to PRS Operation	Remote actuation of isolation and slam-shut valves by T/E GAS for PRS and pipelines.	Designer	LDCsProject Dept.	PRS design Document Review	Additional budget not required
	- Produce Hazardous Area Classification drawings for all PRSs - Proper design of control room exit	Designer	Eng. / Elect. Dept. Projects Dept.	Drawing and design Document Review	Additional budget not required
	Preventive maintenance policy and station manual	PRS contractor + LDCs	Engineering Dept.	Policy and manual review	Included in PRS cost
	Provision of self-contained breathing apparatus (2 pieces for each station) for handling odorant leaks	LDCs	HSE Dept.	Inspection by operators	Include $5000 per PRS in project budget
	Apply jet fire rated passive fire protection system to all critical safety shutdown valves ESDVs or Solenoid valves (As applicable)	Designer	LDCsProjects Dept.	Component inspection and design document review	Included in PRS cost

Impact	Mitigation measures	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
	Place signs in Arabic and English "Do Not Dig" and "High Pressure Pipeline Underneath"	LDCs	Engineering Dept.	Signage inspection and site visits	Additional budget not required
	Install an elevated wind sock and provision of portable gas detectors	LDCs	HSE Dept.	Design and implementation review	$6000 per PRS
	The design should fully comply with IGE TD/3 code requirements	Designer	Project Dept.	Design document review	LDCsmanagement costs
Repairs and maintenance (network and households)	As in construction phase	LDCs	LDCsHSE	As relevant from construction phase	LDCsmanagement costs

7.9 Environmental Monitoring Matrix during OPERATION

Table 7-8: Environmental Monitoring Matrix during OPERATION

Impact	Monitoring indicators	Responsibility of monitoring	Frequency of monitoring	Location of monitoring	Methods of monitoring	Estimated Cost of monitoring
Improper management of odorant during operation	Number of treated containers	LDCsHSE	Quarterly for each PRS	PRSs	Reviewing Environmental Register, compare with odorant	LDCsmanagement costs

					delivery forms, observation of site	
Noise of PRS operation	Noise intensity	LDCsHSE	Quarterly for each PRS	PRSs	Noise meter	LDCsmanagement costs
Network integrity	Occurrence of earthquakes or geotechnical settlements Emergency response time and corrective actions during emergency drills	LDCsHSE	Bi-annual inspections and annual emergency response drills	Along the SS-HP steel pipelines and PE pipelines	Inspection, leakage detection, running the drills	LDCsmanagement costs

7.10 Social Management Matrix during OPERATION

Table 7-9: Social Management Matrix during OPERATION

Impact	Mitigation measures	Timing of mitigation	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
1) Visual intrusion	• The entrance of pipes should be selected at the back of the building (if possible) • Town Gas and Egypt Gas should develop a plan to log into the house without affecting the building. However, such plan should not affect the safety of building.	During the installation of pipes	LDCs	LDCs	Modified maps and designs developed to avoid visual intrusion	No cost
2) Financial burden on economically disadvantaged due to the installments	• Petro Trade should collect the installment immediately after the installation of NG • The installments should be collected on monthly basis in order not to add burden to the poor, as it will be easier for them to pay on monthly basis • The installment should not be high	During the operation phase	Petro trade (Company responsible for collecting the consumption fees and the installments	EGAS	Banks loans log Complaints raised by poor people due to the frequency of collecting the installments	No cost
3) Impact on the informal LPG distributors	• Lists should be obtained from the Social Fund for Development • Provide the informal distributors and the SFD loan borrowers with the needed information about the areas that will not be served by the NG •	During the operation phase	Butagasco	EGAS	Lists from the Social fund for Development	No cost

Impact	Mitigation measures	Timing of mitigation	Responsibility of mitigation	Responsibility of direct supervision	Means of supervision	Estimated Cost of mitigation / supervision
4) Possibility of Gas leakage	• Information should be provided to people in order to be fully aware about safety procedures • The hotline should be operating appropriately • People should be informed of the Emergency Numbers	During the operation phase	LDCsSianco (company responsible for maintenance of appliances during operation)	LDCs	Complaints raised due to Gas leakage	No cost

7.11 Social Monitoring Matrix during operation

Table 7-10: Social Monitoring Matrix during OPERATION

Impact	Monitoring indicators	Responsibility of monitoring	Monitoring institution (if different from responsible)	Duration/Frequency) of monitoring	Location of monitoring	Methods of monitoring	Estimated Cost of monitoring
1) Visual intrusion	Number of complaints raised due to VI	LDCs	EGAS	Four times per year, each three months	Site and Desk work	Checklists Photos and complaints log	No cost
2) Financial burden on economically disadvantaged due to the installments	• Number of economically disadvantaged people who complained • Number of those who can't pay the installment	LDCs, Petro Trade	EGAS	Quarterly	Desk work	Complaints log Bank reports Petro trade reports	No cost
3) Impact on the informal LPG distributors	• Number of those who could not pay the installments to the Social fund for Development	EGAS, LDCs	EGAS	Quarterly	Desk work	Report from the Social Fund	No cost

Impact	Monitoring indicators	Responsibility of monitoring	Monitoring institution (if different from responsible)	Duration/Frequency) of monitoring	Location of monitoring	Methods of monitoring	Estimated Cost of monitoring
4) Possibility of Gas leakage	Complaints raised by the community people Number of leakage accidents reported/raised	LDCsSianco	EGAS	Four times per year, each three months	Site and Desk work	Complaints log LDCsSianco reports	No cost

7.12 Reporting of Mitigation and Monitoring Activities

LDC HSE Departments are to prepare monthly and quarterly reports to be submitted to EGAS Environment Department during the construction and operation phases.

Monthly reports during Construction phase should include as a minimum:

- Conditional permits and any comments or recommendations by Traffic Department and Supreme Council for Antiquities
- Number and date of paint cans shipped to company depot or returned to supplier
- Evaluation of LDC and contractor's performance on applying his relevant mitigation measures
- Any accidents or breaking of utility pipes
- Monitoring results of excavation machinery exhaust emission, noise and vibrations
- The number of complaints received and how they were dealt with
- Communication and information sharing activities done by the LDC on the field

Monthly reports during Operation phase should include as a minimum:

- Evaluation of the adherence of staff to safety measures
- Pipeline leakage or damage incidents
- The number of complaints received and how they were dealt with

7.13 Institutional Framework for ESM&MF Implementation

7.13.1 Existing Environmental Management Structures

The project shall be implemented by the Egyptian Natural Gas Holding Company (EGAS) and the LDCs working under its supervision Town GAS, Egypt Gas, Natgas, Regas, Sinai Gas, Taqa group , El Fayoum Gas and Cairo Gas.

The LDcs will be responsible for the implementation of the ESMP under the supervision of EGAS

7.13.2 Current Environmental and Social Management Structure of the project implementing LDCs

Environmental Departments in both EGAS, Town Gas, Egypt Gas and Cairo Gas gained experience through the implementation of the Natural Gas Connections Project in Greater Cairo 2006-2012 as they were involved in planning, tender**ing and construction procedures.**

Sinai Gas and Regas staff participated in a number of training sessions and workshops organized by EGAS and the World Bank. The current number of their staff is not sufficient to implement the ESMP and the additional requirements of phase II of the project.

Taqa group, Nat Gas and Fayum gas are not familiar with the Environmental and Social safeguards of the World Bank and do not have enough experience to implement the

requirements of the ESMP including the nomination of Social Development Officers for Social issues

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7.13.3 Required Resources

In view of the responsibility of EGAS as a supervisory body on the implementation of the ESMP by the LDCs, and the current institutional capacity of EGAS and the diversity of the project areas in the 11 Governorates to be further extended to cover additional 9 Governorates, there is an urgent need to reinforce EGAS capacity with additional resources such as manpower, financial resources and additional capacity building to the existing officers.

7.13.4 Capcity Building requirements for EGAS / LDCs

Table 7-11: Recommended Training Courses for EGAS/LDCs

Training course	Type of training	Particpating parties	Proposed Scheduling	Cost in US $
Tailored training on Environmental and social Management and monitoring plan (ESMP) for the project	Class room + on job training	- Environmental and Social Department new staff of EGAS - Environmental and Social staff of LDCs - Design, Projects and Operations department staff LDCs	Before detailed design of the project	20,000
Treatment of odorant containers	On Job training	PRS &HSE staff of ReGas/Sinai Gas/FayumGas/Natgas /Cairo Gas	To be part of the oreintation of new PRS staff and HSE staff of LDC during project operation	Included LDC management costs
Quantitative risk assessment for PRSs	Classroom + on Job training	PRS & HSE staff of ReGas/Sinai Gas /Fayum Gas /Cairo Gas	Once before start operation of PRS To be part of the oreintation of new PRS staff and HSE staff during project operation	14,500

Training course	Type of training	Particpating parties	Proposed Scheduling	Cost in US $
World bank safeguards requirements	Class room	- Environmental and Social Department new staff of EGAS - Environmental and Social staff of LDCs - Design, Projects and Operations department staff LDCs	Before detailed design of the project	750
Communication skills+Report Writing	Two days' Workshop + on the job training	- Environmental and Social staff of LDCs	One workshop during the beginning of the project implementation	700

Table 7-12 : Recommended Training Courses for Social Development Officers in EGAS /LDCs

Training course	Type of training	Particpating Parties	Proposed Scheduling	Cost Estimate In US $
Information about Natural Gas project	Workshop + on the job training	Social Development Officers Community leaders	Prior to the project	2000
Promotion of Awareness Raising Activities	Workshop + on the job training	Social Development Officers	Once before the project implementation Refreshment course during the impelemtnation of the project	3000
OP 4.12 with emphasis on involuntary actions and grievances(RAP preparation)	One day Workshop + on the job training	Social Development Officers	- One workshop during the beginning of the project implementation	750
Egyptian laws related to land acquisition (if needed)	One day Workshop + on the job training	Social Development Officers	- One workshop during the beginning of the project implementation	750
Community Participation Tools	One day Workshop + on the job training	Social Development Officers	- One workshop during the beginning of the project implementation	750

7.14 ESM&MP Budget Summary

A summary of the proposed budget for the Environmental and Social Management & Monitoring Plan (ESM&MP) is presented below.

Table 7-13 shows the proposed budget ESMMP implementation

Cost in $US	ESM&MP& Studies component
Mitigation Components as per costs indicated in the framework of 11 governorates (2014)	
26000	**Mitigation of PRS air emissions and gas analyzers for 36PRS**
98000	**Hazardous waste management during construction**
100000	**Various Environmental training and capacity-building programs**
13000	**Emergency fund for repairing damage to underground utilities**
237000	**Mitigation Subtotal**
Monitoring Components as per prices indicated in the framework of 11 governorates (2014)	
18000	**Vibration monitoring**
18000	**Air emissions monitoring**
180000	**Breathing suits for 36 PRS**
130000	**Contingency and unexpected costs**
346000	**Monitoring Subtotal**
Studies as per the rates of contract(November 2015 of 11 governorates)	
910000	**Specific ESIAs for each districts[96 districts(phase 1)-128district(phase 2)]**
150000	**Quantitative Risk Assessments for 36 PRS**
38000	**Social Management Plan (including RAP)(if needed)**
1,098000	**Studies Subtotal**
1,681,000	**Total**

8 Stakeholder Engagement and Public Consultation

8-1 Stakeholder Engagement and Public Consultation for Phase I of the project

The public consultation chapter aims to highlight the key consultation and community engagement activities and their outcomes, in addition to outlining the key aspects to be addressed when holding the consultation activities of the (11) site-specific ESIAs upon final project detailing.

Throughout the various consultation and engagement activities, there is remarkable and overwhelming public acceptance, even eagerness, by the community and the governmental stakeholders towards the proposed project. The indignity and financial hardships experienced by scores of Egyptian families (especially women) in obtaining LPG cylinders (the current household fuel) was revealed through testimonies all over the country. Aside from a limited number of concerns regarding street rehabilitation after construction works and options of installation fee payment; the glaring message from governmental and community consultations was to commence implementation ASAP (with repeated requests to expand coverage beyond what is planned for the project).

Consultation activities (scoping, interviews, focus group discussions, public hearings/consultations) with various stakeholders and community people in the host communities were held for the proposed 1.1 million household NG connections project

Table 8-1 Main stakeholders identified for the Framework of phase I of the project

Stakeholder	Role/ concern
Local Governmental entities	
Governorates	The main role of the governorates is the provision of support to the project through mobilizing people to gain information about the project. Media is known to shed light on activities of the governorate entities
Local Governmental units (District authorities and village authorities)	- Permissions for the lands needed for PRS should be prepared by the governorate and approved by the LGU. - Rehabilitation of roads, which is one of the major issues raised by the community, will be performed by the LGU.
Other governmental entities	
Information Centers on the governorate level	Provide NG companies with underground utilities and infrastructure maps.
Governmental Authorities	Various authorities in the governorate will support the project through permissions for excavation works, maintenance, health related issues, etc.
The Social Fund for Development	Offers loans in LPG distribution startups.
Egyptian Environmental Affair Agency (HQ and RBOs)	Responsible for reviewing and approving ESIAs, and monitoring implementation of the Environmental Management Plan
Security Department	Secure the construction sites and prevent people from in- flushing into it
Ministry of Health	Providing health facilities to the project workers
Ministry of Tourism	Relevant to project implementation in Touristic Governorates such as Aswan, Qena, Matrouh, and Alexandria.

Stakeholder	Role/ concern
Ministry of Antiquities	Very important to issue permissions for excavations and accompany the working teams, particularly, in Sohag and Aswan which are rich in monuments.
Media	
Television and radio representatives	Inform the community about the project and its impacts and support dissemination of ESIA studies
Press people	
Websites editors	
NGOs working on environmental and social related aspects	
NGOs on the central level	Play an active role in any awareness-raising related to the project May provide financial support to the poorer customers
NGOs on district level	
Specific union of NGOs	
Universities and Educational institutes	
Faculty of Engineering	Review and enrich the ESIA study with feedback
Secondary vocational schools	Propose needed capacity building for their students to potentially find employment with the project
Researchers/consultants	Review results of the study and provide feedback
Other	
Private companies	Mainly potential tenderers for construction works
Traders	Provide workers with food and amenities.
Contractors	From the project adjacent areas, may be affected.
Community people	
Community leaders	Main cornerstone in mobilizing the communities.
Heads of tribes	In Marsa Matrouh city, provide security to the pipelines. Their approval to allow the project to cross their lands should be obtained during the early stage of the project.
Potential beneficiaries	Potentially benefit from the project
Potential Project Affected Persons (PAPs)	Farmers whose lands may be traversed by project components. LPG distributors(formal and informal), LPG storage workers.
Natural Gas companies	
EGAS	Implementing agency overseeing activities of the Environmental and Social Management Plan
Egypt Gas	Local distribution company (LDC) who will implement, operate, and manage the ESMP
Town Gas	Local distribution company (LDC) who will implement, operate, and manage the ESMP
Butagasco	May be affected due to the installation of the NG
Petro trade	They are the responsible entity for collecting the consumption fees and the bank installment

The abovementioned stakeholders were consulted using various tools. Most of them have attended the public consultation hearings conducted during December 2013 in the 11 governorates.

Consultation Methodology and Activities

3441 community members were engaged directly. Consultations were conducted on various levels to outreach all levels of stakeholders.

8.1.1 Public scoping sessions

- Giza and Qalubia Governorates on November 24th of 2013 in Flamenco Hotel, Cairo

- Upper Egypt Governorates on November 26th 2013 in Maraga City Hall, Sohag.
- Delta governorates on November 28th 2013 in Menufia University Hotel.

Participants profile

Participants of the scoping session consultation events represented different categories of stakeholders from the targeted areas. Diversity in age and educational backgrounds was reflected in participants' contributions. The diversity between literate and illiterates, workers and unemployed enriched the discussion to a great extent. A variety of organizations as well as representatives from governmental and community based authorities, institutes, and entities also took part in these scoping session meetings.

الشركة المصرية القابضة للغازات الطبيعية (إيجاس)

جلسات الاستماع ومناقشة عامة (أولى)

لدراسة تقييم التأثيرات البيئية والإجتماعية
لمشروع توصيل الغاز الطبيعي فى ١١ محافظة

فى إطار خطة الشركة المصرية القابضة للغازات الطبيعية خلال الثلاث سنوات القادمة والتى تعد جزءا متكاملاً من استراتيجية الدولة فى التوسع فى توصيل الغاز الطبيعى للوحدات السكنية لعدد ١,١ مليون عميل فى محافظات (الإسكندرية / الجيزة / مرسى مطروح / القليوبية / الدقهلية / الغربية / المنوفية / سوهاج / قنا / أسوان / الإسماعيلية). فإنه يسعد الشركة المصرية القابضة للغازات الطبيعية (إيجاس) بالتعاون مع شركة إيكونسرف للحلول البيئية دعوة ممثلى المجتمع المدنى والجهات والأفراد المعنيين بموضوعات التنمية المستدامة والبيئة للمشاركة وإبداء الرأى بشأن المشروع وتأثيراته البيئية والإجتماعية المحتملة وذلك طبقا للمواعيد التالية:

المحافظة	التاريخ	الموعد	المكان
الجيزة	الأحد ٢٤ نوفمبر ٢٠١٣	الساعة ١٠ صباحا	فندق فلامنكو ٢ شارع الجزيرة الوسطى بالزمالك
سوهاج	الثلاثاء ٢٦ نوفمبر ٢٠١٣	الساعة ١٠ صباحا	قاعة مجلس مدينة المراغة
المنوفية	الخميس ٢٨ نوفمبر ٢٠١٣	الساعة ١٠ صباحا	فندق جامعة المنوفية بجوار كلية الزراعة

وفى حالة الرغبة فى الحصول على نسخة من مسودة ملخص الدراسة البيئية برجاء زيارة الموقع الإلكترونى للشركة القابضة للغازات الطبيعية www.egas.com.eg
أو الحضور لمقر الشركة ٨٥ طريق النصر - مدينة نصر
وأننا نتطلع لمشاركة سيادتكم فى هذه الجلسة
للمزيد من المعلومات برجاء الاتصال بالمكتب الاستشارى - إيكونسرف
فاكس: ٠٢-٢٧٣٦٥٣٩٧ تليفون: ٠٢-٢٧٣٦٤٨١٨ / ٠٢-٢٧٣٥٩٠٧٨
بريد إلكترونى genena@ecoconserv.com

Photo 1: Advertisement published in El Ahram related to the 3 scoping sessions

Photo 2: Woman interviewed in the NGO

Photo 3: Consultation on the street

Summary of discussions

All participants expressed their eagerness for commencement of project implementation without further delay and many participants demanded the extension of the project to additional areas. Following is a summary of all discussions conducted.

1- Options of poorer customers to receive additional financial support
2- Physical and financial burdens of LPG cylinders and dilemmas during shortage
3- Corruption related to LPG distributors
4- Credible information due to the misconceptions related to NG safety
5- Feasibility of connecting NG to rural areas and remote ones
6- Importance to integrate community based organizations in awareness activities
7- Monitoring and maintenance of the grid

8- NG job opportunities for areas adjacent the project
9- Cooperation with the LGU throughout the life of the project

8.1.2 Final public consultations

Consultation activities were conducted in the 11 Governorates during the last 10 days of December 2013. Parallel teams implemented the consultation activities.

Table 8-2: 11 Consultation activities conducted during the final consultation phase

Governorate	Date	Venue
Aswan	21st of December 2013	Governorate Hall (Arous El Neil)
Menufia	21st of December 2013	Governorate Hall
Qena	23rd of December 2013	Girls Club Hall in Qena city
Giza	23rd of December 2013	Army Hotel Hall
Matrouh	25th of December 2013	Nile centre for Media
Sohag	25th of December 2013	Local Popular Council
Alexandria	26th of December 2013	Mercure Hotel
Daqahlia	29th of December 2013	Marshal Hotel
Gharbeia	29th of December 2013	Panorama Hotel
Qalubia	30th of December 2013	Egypt Public Library in Benha
Ismailia	30th of December 2013	Media Compound in El Sheikh Zaid

The list of invitees was developed by EEAA regional branches, environmental offices of the governorates, NGOs, governmental media centers, and various government employees, in cooperation with the Consultant. Invitees were informed of the date and location of the Public Consultation at least two weeks ahead.

Photo 4: One of the developed posters

Participants profile

971 participants attended the 11 final consultation events. Participants reflected different categories of stakeholders from the project targeted areas. Female participation was targeted throughout advertising and invitation process. The highest representation of women was noted in Ismailia Governorate while the least representation of females were found in Matrouh. Taking the unique cultural traits of Matrouh into account, additional mini meetings were conducted with the females on the governmental employees and residents levels. Matrouh as invitations extended to heads of tribe and the NGOs working on the tribal levels.

Overall, special attention was paid to involving young groups and females as they are most affected by the physical hardships of obtaining the LPG cylinders. The physically-challenged were represented in consultation activities through NGOs working with them.

Summary of discussions

All consultation events started with a summary of the project and the Natural Gas in Egypt. Using PowerPoint and multimedia, representatives of EGAS, Town Gas and Egypt Gas presented detailed information about all project activities. Simple wording was used whenever possible by the environmental and social expert in order to be comprehended by the members of community. The resettlement policy framework was presented as an important element of the final public consultation.

Photo 5: A tribe leader in Matrouh Gov.

Photo 6: Participants in Daqahlia Governorate

Photo 7: Posters in Sohag Governorate.

Photo 8: Consultation event in Sohag Governorate

Table 8-3: Key comments and concerns raised during the Final Public Consultations of phase I of the project

Subject	**Questions and comments**	**Responses**
Damaging underground utilities and infrastructure during digging	Will the implementing agencies avoid damaging the underground utilities/facilities and infrastructure?	All necessary procedures should be carried out to avoid damaging underground utilities/facilities and infrastructure. In case any facilities are damaged, they will be restored
Collaboration with governmental entities and information centers	Many governmental entities (Local Governmental Units, Information centers, Road Authority, Water resource, Mayors…etc.) are willing to cooperate with the project to facilitate work. Will this be possible?	It is crucial to collaborate with these entities in order to obtain information, maps and permissions
Role of community based organization and tribe leaders	It is recommended to cooperate with members of civil society in order to increase awareness	Civil Society members play a major role in carrying out awareness raising activities as well as securing the financial aid to poor people
Role of the Army	EGAS should consult and contribute with the army in the frontier governorates	Their approvals and permissions are key to implementing project activities

Subject	Questions and comments	Responses
Reduction the installation cost	It is recommended to: 1. Take the LPG cylinder as an advance payment for the NG. Thereafter, the poor pay by installment 2. Cooperate with the Ministry of Social Solidarity to reduce the installation cost for poor 3. Mobilize the local community and the NGOs to provide support to poor	It is difficult to adopt these recommendations
People living with disabilities	At least 5% of jobs provided by EGAS should be filled by people with disabilities	This recommendation will be taken into consideration
Appropriate time for construction	Matrouh, Alexandria and Ismailia are touristic areas. Thus EGAS should avoid working there during summer time	This recommendation will be taken into consideration
Restoration of streets	All attendees voiced their concern about damaging the streets without restoring them after the completion of installation activities due to the bad performance of the Local Governmental Unit (corruption)	Two alternatives of street rehabilitation were investigated: - Restoration will be fully undertaken by NG companies (Town Gas – Egypt Gas)or - NG companies will pay local governmental units to carry out restoration works
Some devices cannot be operated by the NG	We use a baking stove. This will not be operated by the NG. What should we do?	The baking stove can't be connected to the NG for safety purposes
Awareness activities	Awareness activities should cover the following: Contact person in the site (foreman) GRM personnel Hotline for damage and maintenance Website and SMS	This recommendation will be taken into consideration
Job opportunities	The jobs provided by this project should be made available to the local community	It is more economically viable to provide jobs to the local community
Remote areas and suburbs	NG should be installed to remote areas and the suburbs	They will be concerned in later stage
Capacity building	EGAS should raise the capacity of community members in order to enable them to work in the project	This will be investigated and implemented whenever possible
Paying by installment	Does the proposed system for paying by installment contain any interest?	The bank should have their interest rate
Criteria to select certain areas to install the NG	What are the criteria to select the project areas	There are numerous selection criteria based on economic aspects and technical consideration
Safety measures	What are the safety measures followed by the NG companies	We apply the maximum standards of safety (British standards)

Media covered events and interviewed participants:

1- **Newspapers: El Youm 7, El Masry El Youm, El Watan**
2- **News websites: El Ahram, El Borsa website, El Shrouk, Aswat Mesria, El Mashad, Misr El Youm**
3- **Aswan governorate website, ONA news**
4- **Tibah and Canal National TV channels**

8.2 stakeholder Engagement and Public Consultation for phase II of the project


24/9/2016

الشركة المصرية القابضة للغازات الطبيعية (إيجاس)

جلسة الاستماع ومناقشة عامة (أولى)

لدراسة تقييم التأثيرات البيئية والاجتماعية الاستباقية

للتوسع فى مشروع توصيل الغاز الطبيعى بعدد ٩ محافظات مصرية

فى إطار إستراتيجية الدولة فى التوسع فى توصيل الغاز الطبيعى للوحدات السكنية والتى تنفذها الشركة المصرية القابضة للغازات الطبيعية (إيجاس) من خلال العديد من المشروعات، وفى شوء التوسع فى أحد المشروعات الجارية بإضافة عدد ١,١ مليون عميل فى عدد ٩ محافظات (القاهرة / الجيزة / كفر الشيخ / دمياط / الفيوم / بنى سويف / اسيوط / المنيا / الاقصر). فإنه يسعد الشركة المصرية القابضة للغازات الطبيعية (إيجاس) دعوة ممثلى المجتمع المدنى والجهات والأفراد المهتمين بموضوعات التنمية المستدامة والبيئة للمشاركة وإبداء الرأى بشأن توسع المشروع وتأثيراته البيئية والاجتماعية المحتملة، وذلك يوم الاثنين الموافق ٢٠١٦/١٠/١٠ فى تمام الساعة الثانية عشر ظهرا بدار الدفاع الجوى - محور المشير طنطاوى - التجمع الخامس

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photo 9: Public announcement for the consultation session for phase II of the project on 24/09/2016

The first public consultation meeting of Phase II was announced in Al Ahram Newspaper on September 24th, 2016. The meeting was held in October 10th, 2016 , with the participation of around 170 representatives of different stakeholders, the meeting reflected the interactive engagement of the participants

8-2-1 Participants Profile

In addition to the public announcement, invitation letters were sent to the key stakeholders to the project in the nine governorates. The stakeholder groups which were invited included:

- Environmental and social NGOs in the nine governorates;
- Different Departments in the project governorates
- Environmental Affairs offices of the Governrates
- Social Affairs
- Public Relations
- Egyptian Environmental Affairs Agency (EEAA)
- Regional branch offices of EEAA
- Directorates of the relevant Ministries
- General Authority for Roads and Land Transport

- Ministry of Irrigation
- Ministry of Social Solidarity
- Ministry of Petroleum and the project implementing Local Distribution Companies;
- Electricity Production Companies in the project Governorates
- Media

Table 8-4 Areas of concerns and issues raised by the public consultation participants in phase II consultation

Question	Answer	Reference in the study
project level (PRS, High pressure and network)		
1. What is the possibility of reducing the duration of the project in touristic cities such as Luxor and what are the safety precaution measures during construction?	it is not only the decision of the Ministry of Petroleum to reduce the duration of the implementation but it is a shared responsibility with other ministries, where the priority is to finalise the connection works in a very short time so the the LDCs can move to other areas. LDCs follow a methodology, connecting more than 100 new areas. LDCs follow safety concept "Safety First" and when there are any violations to safety measures construction activities are stopped immediately.	Safety and environmental mitigation measures are more elaborated in chapter 7
2. What is the possibility of expanding project range in order to cover other cities that have high population densities like ESNA and ARMANT and the possibility of decreasing the fees of connecting factories?	concerning the reduction of connection fees it is the decision of the Cabinet of Ministries,bearing in mind that those fees are held the same for more than 10 years besides there is a facility of paying in installments	
3. Is there coordination between governmental organization during connecting different facilities like clean water, sewage and natural gas and about the reason why natural gas is the last facility to be connected?	according to the nature of sewerage systems installation where the pipes are inclined that requires excavation on deeper depths than the Natural gas pipelines, thus Natural gas is the last utility to be installed for safety reasons. Construction works begin after obtaining necessary permits from different governmental entities	
4. Can roads and bridges withstand the heavy utilities used in the project?	To avoid roads disruption horizontal Directional drilling technique is used at a depth of not less than 30 meters	Different drilling techniques can be used according to the nature of the roads, this is referred to in chapter 2 and chapter 6.

5. Why the expansion did not include (El Zohor neighborhood) which has high population density? And the possibility of connections in new urban communities: In special cases, EGAS decide to extend the gas network to the new urban communities and areas all over the governorates where the social housing units are existing. This decision taken according to bear the ministry of housing to the cost of the gas network to feed this areas.	The occupancy percentage should exceed 50% to connect any area to natural gas and whever the 50% is contracted connection works tak **Household occupancy in new urban communities:** In special cases, EGAS decide to extend the gas network to the new urban communities and areas all over the governorates where the social housing units are existing. This decision taken where the Ministry of Housing bears the cost of the gas network.	
6.What is the schedule of connecting districts of Asyut governorate? And there is a complaint from Wadi El Nile company's clients that there was a delay in the service for 6 month to a year.	Gas was connected to Markazes of Fath and Abanoub and Assuit city and connection works are in progress for the rest of Markazes according to the connection plan	
7. Is the project financed by the state or by the people	It is the state that finances the network and supports citizen of medium income	
8. Is there a plan for constructing natural gas refilling stations	There is a plan for construction of Compressed Natural Gas fueling companies affiliated from the Ministry of Petroleum which are either public or private companies	
HP Route and PRS		
1. What are the compensation strategies and the role of NGOs during project implementation?	there is temporary compensation for the temporary use of land for the High pressure route with appropriate compensation in view of the allocated budget for that purpose while for the case of securing land for the construction of Pressure reducing stations it is either allocated by the Governorate as State Owned Land or private land that is purchased through Willing Buyer Willing Seller approach, land purchasing procedures are implemented by Land Purchase Committee formulated specifically	Compensation procedures are detailed in the updated RPF document found on EGAS website while the procedure for securing lands is found in annex 2 of this document

	for that purpose. The role of NGOs is very important, with coordination with the LDCs can help in providing awareness to the safe use of Natural Gas to the natural gas users	
2. What are procedures of handling and disposal of empty Mercaptan containers (which is a hazardous waste resulting from project activities)?	disposal takes place by incineration in the steel factories	Waste management is detailed in chapter 7 of this document
3. Does reduction station have security guards to secure it?	there are security guards at the pressure reducing stations and there are no records of explosions at the station	
HP pipeline and network		
1. What are the followed procedures in emergency cases and maintenance after operation?	Emergency procedures are taken for the high pressure pipelines following a very fast actions of mximum of 10 minutes	More details can be found in chapter 7 (management and monitoring during operation phase)
2. What is the possibility of employing workers from the governments in which construction is occurring, and the policy of protection of workers by personal protective equipment?	gas gonnection require highly skilled labors, whereas, excavation and restoration works utilize local labors from the Project governorate	Please see chapter 5 (socioeconomic impacts during construction phase)
3. What is the mechanism of disposal of excavation wastes to insure no traffic obstruction occurs?	Excavation takes place at the edges of the road in the trench and is restored and in case excavation is require to cross the road inside the city there is standard for restoration for that purpose that differs from the other applied standard	More details are found in chapter 7(management and monitoring during construction phase)
LP Network		
1. What are measures taken to restore affected structures/Streets to pre-project conditions?	Restoration takes place in coordjnation with the local governmental units where the LDCs pay the restoration cost in advance during the phase of obtaining permits of construction works	More details are found in chapter 7 (management and monitoring during construction phase)
2. In case of fracturing sewage lines, are they fixed temporarily or permanently during construction?	The damaged sewage pipelines are fixed temporarly and then permantly fixed upon coordination with the Sewage company where the gas distribution company pays the cost of fixing the damage	More details are found in chapter 7 (management and monitoring during construction phase)

Photo 10- announcement of the Public Consultation

Photo- 11: participants during the consultation