











# 1.5 Million Natural Gas Connections Project in 11 Governorates

## Site-Specific Environmental and Social Impact Assessment

## Executive Summary
## Abu Tesht/Qena Governorate
## September 2016

**EGAS**
**Egyptian Natural Gas Holding Company**

**Developed by**

**EcoConServ Environmental Solutions**

**Petrosafe**
**Petroleum Safety & Environmental Services Company**

# EXECUTIVE SUMMARY

## 1. Introduction

The Government of Egypt (GoE) has immediate priorities to increase household use of natural gas (NG) by connecting 1.2 million households/yr 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 1.5 Million households over the next 4 years. The project presented in this study is part of a program that involves extending the network and accompanying infrastructure to connect 1.5 million Households in 11 Governorates between 2016 and 2019 with the assistance of a World Bank Loan of up to US$500 Million and the Agence Française de Développement (French Agency for Development) financing of up to €70 Million. The program is estimated to cost US$850 Million.

The ESIA objectives are as follows:

- Describing project components and activities of relevance to the environmental and social impacts assessments
- Identifying and addressing relevant national and international legal requirements and guidelines
- Describing baseline environmental and social conditions
- Presenting project alternatives and no project alternative
- Assessing potential site-specific environmental and social impacts of the project
- Developing environmental & social management and monitoring plans in compliance with the relevant environmental laws
- Documenting and addressing environmental and social concerns raised by stakeholders and the Public in consultation events and activities

As the project involves components in various areas within the 11 governorates, the parties to the project agreed that Site Specific Environmental and Social Impact Assessments (SSESIAs) for each of the project sub-areas within the governorate will be prepared. Guided by the 2013 Environmental and Social Impact Assessment Framework (ESIAF) and Supplementary Social Impact Assessment Framework (SSIAF), this is the site specific ESIA for the connections network planned for Abu Tesht city in Qena Governorate. The project in Abu Tesht encompasses 4.05 thousand household connections. The households will be connected in year 3 over the 3 years project.

**The local distribution company responsible for project implementation in Abu Tesht is Regions Gas Company (ReGas).**

# 2. Project Description

## 2.1 Background

Natural Gas is processed and injected into the high pressure lines 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[1] in order to facilitate detection. 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.

## 2.2 Project Work Packages

### 2.2.1 Main feeding line/network "7 bar system – PE 100"

A gas distribution piping system that operates at a pressure higher than the standard service pressure delivered to the customer. In such a system, a service regulator is required to control the pressure delivered to the customer.

Main feeding lines are mainly constructed from polyethylene pipes (HDPE) with maximum operating pressure (MOP) below 7 bar.

### 2.2.2 Distributions network "Regulators, PE80 Networks"

A gas distribution piping system in which the gas pressure in the mains and service lines is substantially the same as that delivered to the customer's Meters. In such a system, a service regulator is not required on the individual service lines.

Distribution networks are mainly constructed from polyethylene pipes (MDPE) with MOP below 100 millibar.

### 2.2.3 Installations (Steel Pipes)

A gas distribution piping system consists of steel pipes which are connected from individual service line to vertical service pipe in a multistory dwelling which may have laterals connected at appropriate floor levels; in addition to service pipe connected to a riser and supplying gas to a meter and gas appliances on one floor of a building.

Internal Installation consists of a pipe connecting the pressure reducing regulator/district Governor and meter Outlet (MOP 25 millibar) to appliances inside the customer's premises.

### 2.2.4 Conversions

Conversions involve increasing the diameter of the nozzle of the burner of an appliance to work with natural gas as a fuel gas rather LPG or others.

[1] Because natural gas is odorless, odorants facilitate leak detection for inhabitants of residential areas.

# 3. Legislative and Regulatory Framework

## 3.1 Applicable Environmental and Social Legislation in Egypt

- Law 217/1980 for Natural Gas
- Law 4 for Year 1994 for the environmental protection , amended by Law 9/2009 and law 105 for the year 2015.Executive Regulation(ER) No 338 for Year 1995 and the amended regulation No 1741 for Year 2005, amended with ministerial decree No 1095/2011, ministerial decree No 710/2012, ministerial decree No 964/2015, and ministerial decree No 26/2016
- Law 38/1967 for General Cleanliness
- Law 93/1962 for Wastewater
- Law 117/1983 for Protection of Antiquities
- Traffic planning and diversions
  - Traffic Law 66/1973, amended by Law 121/2008 traffic planning
  - Law 140/1956 on the utilization and blockage of public roads
  - Law 84/1968 concerning public roads
- Work environment and operational health and safety
  - Articles 43 – 45 of Law 4/1994, air quality, noise, heat stress, and worker protection
  - Law 12/2003 on Labor and Workforce Safety
  - Book V on Occupational Safety and Health (OSH)
  - Minister of Labor Decree 48/1967.
  - Minister of Labor Decree 55/1983.
  - Minister of Industry Decree 91/1985
  - Minister of Labor Decree 116/1991.

## 3.2 World Bank Safeguard Policies

Three policies are triggered for the project as a whole: Environmental Assessment (OP/BP 4.01), Physical Cultural Resources (OP/BP 4.11), and Involuntary Resettlement (OP/BP 4.12. However, OP/BP 4.12 will not be applicable to **Abu Tesht** as no land acquisition or resettlement is anticipated. Particularly, as the network will pass through the main urban roads/ streets and side roads without causing any damage to private assets or lands.

In addition to the above mentioned safeguards policies, the Directive and Procedure on Access to Information[2] will be followed by the Project.

[2] https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=3694

# 4. Analysis of Alternatives

## 4.1. No Project Alternative

This Natural Gas Connections to Households Project is expected to yield many economic and social benefits in terms of providing a more stable energy source, achieving savings in LPG consumption and enhancing safety in utilizing energy.

The No-Project alternative is not favored as it simply deprives the Egyptian Public and Government of the social, economic, and environmental advantages.

## 4.2. Energy Alternatives

- **Convert to Electricity**: The second alternative is to convert all homes to use electricity for all energy supply applications. Additional power stations would be needed to cope with the additional demand created by utilization of electricity in homes, which most probably would operate also by natural gas. Power losses in transmission and distribution are also significantly higher than their natural gas equivalents which would add to the overall inefficiency.

Energy alternatives do not provide favorable options to the proposed NG networking

## 4.3. Installation costs

The average natural gas connection installation cost is about 5600 EGP and consumers contribute a part of 1700 LE because the connection is heavily subsidized by the Government. This payment can be made either upfront or in installments over a period of time. Installment schemes are available to all community people.

The government of Egypt is negotiating with the project's financing organizations in order to secure additional subsidy to poor and marginalized groups. They also provide facilitation payments strategies through offering various installment schemes. The following are the main types of installments: 138 EGP/Month for 12 months,74 EGP/Month for 24 months, 52 EGP/Month for 36 months, 42 EGP/Month for 48 months, 35 EGP/Month for 60 months, 31 EGP/Month for 72 months and 28 EGP/Month for 84 months

# 5. Environmental and Social Impacts and Mitigations

The environmental and social advantages of switching household fuel from LPG cylinders to natural gas pipelines are diverse. On the residential level, the proposed project will lead to improved safety, reduced physical/social/financial hardships, and secure home fuel supply. On the national level, it promotes the utilization of Egyptian natural resources and reduces the subsidy and import burden.

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.

The assessment of impacts distinguishes between the construction phase and the operation phase.

## 5.1 Positive Impacts

### 5.1.1 During the construction phase

***Direct job opportunities to skilled and semi-skilled laborers***

- The project is expected to result in the creation of job opportunities, both directly and indirectly. Based on similar projects implemented recently by EGAS and the local distribution companies, the daily average number of workers during the peak time will be about 60 workers in the construction sites across Abu Tesht. The local community of Qena Governorate could provide a proportion of this temporary labour force depending on the skills needed and the strategies of the individual contractors in sourcing their workforce.
- The total number of new short term job opportunities within the project area is estimated at 60 temporary jobs.
- In order to maximize employment opportunities in the local communities it is anticipated that training will be required for currently unskilled workers. On-the-job training will also supplement opportunities for the local workforce for both temporary construction roles and also for long-term operation phase positions, where these are available.

***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 the 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. Being the party affected most from the shortfalls of the use of LPG, 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.
- Constantly available and reliable fuel for home use.
- Reduce expenditure on LPG importation and subsidies. Around 4.05 thousand connections will be installed in Abu Tesht City. Each household consumes 1.6 LPG monthly. Accordingly, the total number of LPG cylinders that is consumed is about 6400 LPG cylinders per month for cooking purposes, as subsidy value is about 70 EGP per each LPG. Consequently, the total subsidy to be saved monthly will be about 448,000 EGP. This will result in total annual savings of 5,376,000EGP. Additionally, significant

savings in electricity will result due to replacing the electric water heater by NG heater.

- Significantly lower leakage and fire risk compared to LPG.
- Improved safety due to low pressure (20 mBar) compared to cylinders.
- Beneficiaries to benefit from good customer service and emergency response by qualified personnel/technicians.
- Eliminate the hardships that special groups like the physically challenged, women, and the elderly had to face in handling LPG.
- Limiting possible child labor in LPG cylinder distribution

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## 5.2 Anticipated Negative Impacts

### 5.2.1 Impact Assessment Methodology

To assess the impacts of the project activities on environmental and social receptors, a semi-quantitative approach based on the Leopold Impact Assessment Methodology with the Buroz Relevant Integrated Criteria was adopted.

The table below presents the classification of impact ratings and respective importance of impact values.

| Importance of Impact | **Impact rating** | |
|---|---|---|
| **0-25** | **None** or irrelevant (no impact); | |
| **26-50** | **Minor** severity (minimal impact; restricted to the work site and immediate surroundings) | |
| **51-75** | **Medium** severity (larger scale impacts: local or regional; appropriate mitigation measures readily available); | |
| **76-300** | **Major** severity (Severe/long-term local/regional/global impacts; for negative impacts mitigation significant). | |

The following tables summarize the impacts and the corresponding mitigation measures within the management plan, in addition to the monitoring plans proposed for implementation.

## 5.3 Environmental and Social Management Matrix during CONSTRUCTION

**Table 1: Environmental and Social Management Matrix during CONSTRUCTION**

| Receptor | Impact | Mitigation measures | Responsibility | | Direct supervision | Means of supervision |
|---|---|---|---|---|---|---|
| | | | Mitigation | Supervision | | |
| **Local traffic and accessibility** | **Traffic congestion** (and associated noise/air emissions) | Excavation during off-peak periods<br><br>Time limited excavation permits granted by local unit & traffic department | Excavation contractors | – LDC +<br>– Traffic department | Contractor has valid conditional permit + Field supervision | Contractor costs<br><br>LDC management costs |
| | | Announcements + Signage indicating location/duration of works prior to commencement of work | – LDC<br>– Excavation contractors | – LDC HSE<br>– Local Unit<br>– Traffic department | Ensure inclusion in contract + Field supervision | |
| | | Apply Horizontal Directional Drilling under critical intersections whenever possible to avoid heavy traffic delays | Contractor | LDC HSE | Field supervision | |
| | | Traffic detours and diversion | Traffic Department | Traffic Department | Field supervision for detouring efficiency<br>Complaints received from traffic department | Additional budget not required |
| | | Road restructuring and closing of lanes | | | Fluidity of traffic flow | |
| **Ambient air quality** | **Increased emissions of dust and gaseous pollutants** | Controlled wetting and compaction of excavation/backfilling surrounding area | Excavation Contractor | LDC HSE | Contractual clauses + Field supervision | – Contractor costs<br>– LDC management costs |
| | | Isolation, covering, transportation in equipped vehicles and disposal of stockpiles | | | Contractual clauses + Field supervision | |
| | | Compliance to legal limits of air emissions from all relevant equipment | | | Measure and document emissions of machinery by regular audits request emission measurements | |

| Receptor | Impact | Mitigation measures | Responsibility | | Direct supervision | Means of supervision |
|---|---|---|---|---|---|---|
| | | | Mitigation | Supervision | | |
| | | _ Availability of 24-7 hotline service (129) to all beneficiaries and the public for reporting possible leaks, damages or emergencies<br>_ Quick response to gas leaks by evacuation of the affected area<br>_ Repair or replacement of failed component | LDC | LDC HSE | Field Supervision | |
| _ **Ambient noise levels**<br>_ **Local community**<br>_ **Workers** | **Increased noise levels beyond WB/National permissible levels** | Ear muffs, ear plugs, certified noise PPE for workers | _ LDC<br>_ Excavation Contractor | LDC HSE | Contractual clauses + Field supervision (audits) | _ Contractor costs<br>_ LDC management costs |
| | | Avoid noisy works at night whenever possible | | | Field supervision<br>Complaints receipt from local administration | |
| _ **Ground utilities' integrity**<br>_ **Local community** | **Damage to underground utilities resulting in water/wastewater leaks, telecom. and electricity interruptions** | Coordination with departments of potable water, wastewater, electricity, and telecom authorities to obtain maps/ data on underground utilities, whenever available | Excavation Contractor | LDC HSE | Official coordination proceedings signed by representatives of utility authorities<br>_ Examination of site-specific reports and records<br>_ Field supervision | _ Contractor management costs<br>_ LDC management costs |
| | | If maps/data are unavailable: Perform limited trial pits or boreholes to explore and identify underground utility lines using non-intrusive equipment | | LDC HSE Supervisor | _ Contractual clauses + Field supervision | |
| | | Preparation and analysis of accidental damage reports | | LDC HSE | _ Review periodic HSE reports | |

| Receptor | Impact | Mitigation measures | Responsibility | | Direct supervision | Means of supervision |
|---|---|---|---|---|---|---|
| | | | Mitigation | Supervision | | |
| | | Repair and rehabilitation of damaged components | | LDC HSE<br>Local Government Unit<br>Local Police | – Contractual clauses + Field supervision | |
| – **Streets (physical status)**<br>– **local community and workers (health and safety)** | **Hazardous waste accumulation** | – Temporary storage in areas with impervious floor<br>– Safe handling using PPE and safety precautions<br>– Transfer to LDC depots for temporary storage<br>– Disposal at licensed Alexandria hazardous waste facilities (Nasreya or UNICO)<br>– Hand-over selected oils and lubricants and their containers to Petrotrade for recycling | – LDC<br>– Excavation Contractor | LDC HSE | Field supervision and review of certified waste handling, transportation, and disposal chain of custody | Indicative cost items included in contractor bid:<br>Chemical analysis of hazardous waste<br>Trucks from licensed handler<br>Pre-treatment (if needed)<br>Disposal cost at Nasreya<br><br>Approximate cost of the above (to be revised upon project execution): 8,000-10,000 LE per ton |
| | | – Adequate management of asbestos and any possible hazardous waste | Water Authority + contractor | | Field supervision + review of Water Authority manifests | – Contractor costs<br>– LDC management |

| Receptor | Impact | Mitigation measures | Responsibility | | Direct supervision | Means of supervision |
|---|---|---|---|---|---|---|
| | | | Mitigation | Supervision | | |
| | | – Minimize fueling, lubricating and any activity onsite that would entail production of hazardous materials empty containers<br>– Pre-Plan the anticipated amounts of hazardous liquid materials (such as paint, oils, lubricants, fuel) to be used in the various activities in order to minimize leftovers and residuals.<br>– To the extent practical, seek to combine leftovers or residuals of the same liquid material/waste in order to minimize the number of containers containing hazardous residuals<br>– Ensure hazardous liquid material/waste containers are always sealed properly and secured from tipping/falling/damage /direct sunlight during transportation and storage<br>– In case of spillage:<br>o avoid inhalation and sources of ignition<br>o cover and mix with sufficient amounts of sand using PPE<br>o collect contaminated sand in clearly marked secure containers/bags<br>– Add sand to inventory of hazardous waste | – LDC<br>– Excavation Contractor | | Field supervision | costs |

| Receptor | Impact | Mitigation measures | Responsibility | | Direct supervision | Means of supervision |
|---|---|---|---|---|---|---|
| | | | Mitigation | Supervision | | |
| _ **Local community** | **Non-hazardous waste accumulation** | 1. Designate adequate areas on-site for temporary storage of backfill and non-hazardous waste<br>2. Segregate waste streams to the extent possible to facilitate re-use/recycling, if applicable<br>3. Reuse non-hazardous waste to the extent possible<br>4. Estimate size of fleet required to transport wastes.<br>**5. <u>Transfer waste to Abu Tesht disposal site West of the city</u>** | _ LDC<br>_ Excavation Contractor | LDC HSE | _ Contractual clauses<br>_ Monitoring of waste management plan<br>_ Field supervision | _ Contractor costs<br>_ LDC management costs |
| **Local community** | **Destruction of streets and pavement** | _ Arrange Restoration and re-pavement ( رد الشئ لأصله) with local unit<br>_ Communication with local community on excavation and restoration schedules. | _ LDC in cooperation with the LGU | EGAS | _ Field supervision<br>_ Coordination with LGU as needed | Included in re-pavement budget agreed by LDC with local units or Roads and Bridges Directorate |

| Receptor | Impact | Mitigation measures | Responsibility | | Direct supervision | Means of supervision |
|---|---|---|---|---|---|---|
| | | | Mitigation | Supervision | | |
| **Occupational health and safety** | **Health and safety** | 1. Full compliance to EGAS and LDC HSE requirements, manuals, and actions as per detailed manuals developed by Egypt Gas<br>2. Ensure the provision of the appropriate personal protective Equipment and other equipment needed to ensure compliance to HSE manuals | Excavation Contractor | LDC HSE and EGAS SDO | Field supervision | – Contractor costs<br>– LDC management costs |
| **Local communities and businesses** | **Lack of accessibility to businesses due to delay in street rehabilitation** | Compliance with the Environmental management plan concerning timely implementation of the construction schedule to minimize impact on local business<br>• Follow up the procedure of Grievance Redress Mechanism<br>• Ensure transparent information sharing | During digging process LDC The sub-contractors | LDC and EGAS SDO | – Ensure the implementation of GRM<br>– Supervision on Contractors performance | No cost |
| **Local community Health and safety** | **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 | During the construction LDC | LDC and EGAS SDO | – List of awareness activities applied<br>– Lists of participants<br>– Documentation with photos<br>– Awareness reports | – 2250 $ per awareness raising campaign<br>– 2250 $ for brochure and leaflets to be distributed (material available by EGAS-$ spent) |

## 5.4 Environmental and Social Monitoring Matrix during CONSTRUCTION

**Table 2: Environmental and Social Monitoring Matrix during CONSTRUCTION**

| Receptor | 1 Impact | 2 Monitoring indicators | 3 Responsibility of monitoring | 4 Frequency of monitoring | 5 Location of monitoring | 6 Methods of monitoring | 7 Estimated Cost of monitoring |
|---|---|---|---|---|---|---|---|
| Local traffic and accessibility | Reduction of traffic flow and accessibility to local community | Comments and notifications from Traffic Department | LDC HSE | Monthly during construction. | Construction site | Documentation in HSE monthly reports<br>Complaints log | LDC management costs |
| Ambient air quality | Increased air emissions | HC, CO% and opacity | LDC HSE | Once before construction + once every six months for each vehicle | Vehicles licensing Department | Measurements and reporting of exhaust emissions of construction activities machinery<br><br>Complaints log | LDC management costs |
| Ambient noise levels | Increased noise levels | Noise intensity, exposure durations and noise impacts | LDC HSE | Regularly during site inspections and once during the night in every residential area or near sensitive receptors such as hospitals | Construction site | Measurements of noise levels<br>Complaints log | LDC management costs |
| | | Complaints from residents | LDC HSE | Monthly during construction. | Construction site | Documentation in HSE monthly reports | LDC management costs |

| Receptor | 1 Impact | 2 Monitoring indicators | 3 Responsibility of monitoring | 4 Frequency of monitoring | 5 Location of monitoring | 6 Methods of monitoring | 7 Estimated Cost of monitoring |
|---|---|---|---|---|---|---|---|
| Underground utilities | Damages to underground utilities and infrastructure | Official coordination reports with relevant authorities<br>Accidents documentation | LDC HSE | Monthly during construction. | Construction site | Documentation in HSE monthly reports | LDC management costs |
| Physical state of street | Waste generation | Observation of accumulated waste piles | LDC HSE | During construction. Monthly reports | Construction site | Observation and documentation | LDC management costs |
| | | Observation of water accumulations resulting from dewatering (if encountered) | LDC HSE | During construction. Monthly reports | Around construction site | Observation and documentation | LDC management costs |
| | | Chain-of-custody and implementation of waste management plans | LDC HSE | Zonal reports | Construction site and document examination | Site inspection and document inspection | LDC management costs |
| Local community | Damaging to the streets | – Streets quality after finishing digging<br>– Number of complaints due to street damage | LDC, EGAS | Four times per year, each three months | Site and Desk work | Checklists and complaints log | No cost |
| Local community | Threat to Safety of users and houses (due to limited level of awareness and misconceptions) | – Number of awareness raising implemented<br>– Number of participants in information dissemination | LDC, EGAS | Quarterly monitoring | Office | Reports<br>Photos<br>Lists of participants | No cost |

## 5.5 Environmental and Social Management Matrix during OPERATION

**Table 3: Environmental and Social Management Matrix during OPERATION**

| Receptor | 8 Impact | 9 Mitigation measures | 10 Responsibility | | 11 Means of supervision | 12 Estimated Cost |
|---|---|---|---|---|---|---|
| | | | Mitigation | Supervision | | |
| - **Ambient air quality**<br>- **Community health and safety** | **Network integrity** | _ Detailed review of the geotechnical and geological history of the project area<br>_ Development of a full emergency response plan<br>_ Random inspections and awareness campaigns to ensure that NG piping and components (both inside the household and outside) are not be altered, violated, or intruded upon in any way without written approval from, or implementation of the alteration by, the LDC.<br>_ Availability of 24-7 hotline service (129) to all beneficiaries and the public for reporting possible leaks, damages or emergencies<br>_ Quick response to gas leaks by evacuation of the affected area<br>_ Repair or replacement of failed component | LDC | LDC HSE. | - Map and local geotechnical report review<br>- Site inspections<br>- Awareness actions<br>- Periodical trainings and drills | LDC management costs |
| - **Ambient air quality**<br>- **Community health and safety** | **Repairs and maintenance (network and households)** | As with construction phase activities | _ LDC<br>_ Excavation Contractor | LDC HSE | As relevant from construction phase | LDC management costs |

| Receptor | 8 Impact | 9 Mitigation measures | 10 Responsibility | | 11 Means of supervision | 12 Estimated Cost |
|---|---|---|---|---|---|---|
| | | | Mitigation | Supervision | | |
| **Economically disadvantaged Community members** | **Financial burden on economically disadvantaged due to the installments** | - Petro Trade should collect the installment immediately after the installation of NG<br>- 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<br>- The installment should not be high | Petro trade (Company responsible for collecting the consumption fees and the installments | EGAS | Banks loans log<br>Complaints raised by poor people due to the frequency of collecting the installments | No cost |
| **Informal LPG distributors** | **Loss of revenue for LPG distributors** | - LPG distributors should be informed about the NG potential areas in order to enable them to find alternative areas<br>- They should be informed about the GRM in order to enable them to voice any hardship | Butagasco | EGAS | Information sharing activities with the LPG vendors<br>Grievances received from them | No cost |
| **Community health and safety** | **Possibility of Gas leakage** | - Information should be provided to people in order to be fully aware about safety procedures<br>- The hotline should be operating appropriately<br>- People should be informed of the Emergency Numbers | LDC | LDC | Complaints raised due to Gas leakage | No cost |

## 5.6 Environmental and Social Monitoring Matrix during OPERATION

**Table 4: Environmental and Social Monitoring Matrix during OPERATION**

| Impact | Monitoring indicators | Responsibility of monitoring | Monitoring Frequency | Location of monitoring | Methods of monitoring | Monitoring Estimated Cost |
|---|---|---|---|---|---|---|
| Network integrity | - Earthquakes or geotechnical settlements<br>- Emergency response time and corrective actions during emergency drills<br>- Reports of alteration or tampering with ANY gas components | LDC HSE | Bi-annual inspections and annual emergency response drills | Along the network and inside and outside households | - Inspection, leakage detection, running the drills | LDC management costs |
| Financial burden on economically disadvantaged due to the installments | - Number of economically disadvantaged people who complained<br>- Number of those who can't pay the installment | LDC and Petro Trade, EGAS | Quarterly | Desk work | - Complaints log<br>- Bank reports<br>- Petro trade reports | No cost |
| Impact on the informal LPG distributors | - Grievance received from the informal LPG distributors<br>- Information shared with them | EGAS, LDC | Quarterly | Desk work | - Complaints log | No cost |
| Possibility of Gas leakage | - Complaints raised by the community people<br>- Number of leakage accidents reported/raised | LDC, EGAS | Four times per year, each three months | Site and Desk work | Complaints log LDC | No cost |

## 6. Stakeholder Engagement and Public Consultation

The public consultation chapter aims to highlight the key consultation and community engagement activities that took place as part of the preparation of the ESIAs and their outcomes. Following are the main groups consulted during the SSESIA and the engagement tools used.

**Table 5: Summary of Consultation Activities in Abu Tesht City**

| Participants | Number | | Methods | Date |
|---|---|---|---|---|
| Government officials | 2 | | In-depth | September and October 2015 |
| NGOs | | 1 | In-depth | |
| | | 12 | FGD | |
| Community people | **8** | **1** | FGD | |
| Community people | **89** | **25** | Structured questionnaire | |
| Potential beneficiaries, government officials, NGO representatives (Abu Tesht was represented by the head of LGU and a group of community people) | 68 | 42 | Public consultation | 7th of February 2016 |
| Total | 167 | 81 | | |

### 6.1 Main Results of Consultation during the Data Collection Phase

The majority of sample surveyed expressed very high demand on the project. They also indicated their willingness to be connected to the NG regardless of the amount of money they can afford to pay. This high level of enthusiasm from the local communities towards the project is attributed to the high level of awareness of the natural gas benefits and the current hardships that the households are facing to secure LPG cylinder.

**Table 6: Sample of the main issues raised during data collection and scoping phase in Abu Tesht**

| Subject | Questions and comments | Responses |
|---|---|---|
| **Electric water heater problems** | Electric water heater will be replaced by NG heater as it highly consumes electricity, especially, in winter. The average cost of electricity used in bathrooms is about 40 EGP per month. | NG will is intended for two appliances. One of them will be the water heater. |
| **Shortage of LPG cylinder** | During winter time, there is significant problem with the availability and cost of LPG cylinders. NG is crucial for the residents | |

| Subject | Questions and comments | Responses |
|---|---|---|
| **Willingness to pay** | NG is important to the community people. The residents can pay in installment.<br>They will not be willing to pay in cash. They afford paying 50-200 EGP per month | |
| **Supportive NGOs** | The project can rely on the following NGOs to share information about NG:<br>The CDA in Soliman<br>El Way El Eslamy NGO<br>They can share information with the community about NG and models of application. The installment schemes will be informed to the community. | EGAS and the LDCs will appreciate working with the NGOs. |
| **Time plan** | Kindly speed up the process of NG installation. It will be useful to share with the community the time plan. | |
| **NG impacts on the buildings** | NG will not affect the buildings while on the other hand LPG cylinders may explode causing severe impacts on the buildings | The NG LDCs apply rigid safety procedures |
| **Gas cut off** | It was heard that NG might cut off, is this true? | The LDCs will share this information with you during the construction. However, NG flow is rarely disturbed. |
| **Contractors performance** | The contractors damage streets in Qena City without rehabilitating them. How can we submit a complaint regarding this? | There is a hotline which is 129. Please phone the company asking to solve the problem.<br>Regarding the street rehabilitation such procedures is arranged with the local governmental unit. |
| **Cost of NG** | The cost of NG installation is about 1700 EGP. This is relatively a lot for the community. How can such problem be solved? | There is an agreement with banks to provide installment schemes |

On the 7$^{h}$ of February 2016, a public consultation session was conducted in Qena City (the capital city of Qena Governorate) to which all project relevant areas in Qena Governorate were invited. The head of municipality, governmental entities, NGOs and some members of the community attended the consultation event. Comprehensive documentation and presentation for the results of the public consultation is presented in the Qena City SSESIA.

## 6.2 Summary of Consultation Outcomes

Site specific consultation activities, as mentioned in details above, included wide range of concerned stakeholders. This included but was not limited to, persons/households affected by the project activities, civil society organizations representing the interest of the community, and regulatory and governmental bodies who will play a role in facilitating and regulating the implementation of site-specific project activities.

Various consultation activities reflected that the majority of community people are in favor of the project. One of the motives to be willing to install the NG is the high electricity bill of water heater. The majority of consulted people were willing to have the NG installed as soon as possible. They were disappointed after being informed about the NG installation plan. Street rehabilitation was one of major concerns as the stakeholders recall the damaged streets in Qena city as a result of the previous NG installations. They were concerned that the same attitude might take place in Abu Tesht.

While WB safeguards and regulations state that a minimum of two large-scale, well-publicized public consultation sessions are a must for projects classified as category 'A' projects like the one at hand[3], additional consultation activities (for example through focus group discussions, in-depth meetings, and interviews) were implemented to reach the most vulnerable and difficult to reach community members. Additionally, in order to obtain larger scale and more quantifiable information, the consultant has conducted surveys in the different sites.

[3] Clause 14 of OP 4.01 states that: "For Category A projects, the borrower consults these groups at least twice: (a) shortly after environmental screening and before the terms of reference for the EA are finalized; and (b) once a draft EA report is prepared. In addition, the borrower consults with such groups throughout project implementation as necessary to address EA-related issues that affect them."