1.5 Million Natural Gas Connections Project in 11 Governorates

Site-Specific Environmental and Social Impact Assessment

Executive Summary
El Hadtha/Qalubia 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 El Hadtha in Qalubia Governorate. The project in El Hadtha encompasses 10,000 households’ connections to be connected over 3 years: 1,000 in year 1; 5,000 in year 2; and 4,000 in year 3.

The local distribution company responsible for project implementation in El Hadtha is Egypt Gas
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 consist 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.

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\(^1\) 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 38/1967 for General Cleanliness
- Law 93/1962 for Wastewater
- Law 117/1983 for Protection of Antiquities
- Traffic planning and diversions
  - 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 55/1983.

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 El Hadtha 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 will be followed by the Project.

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

- **Maintain LPG Use**: Introduction of piped natural gas to replace LPG will help to remove subsidies and reduce imports. The proposed project would also improve the safety of gas utilization as appliance standards are strictly controlled and only qualified personnel carry out installations and respond to emergencies. In the case of LPG, installations are not carried out by trained personnel resulting in possible unsafe installations and unsafe use of LPG.

- **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.

- **Use Renewables**: the renewables market does not present feasible, practical, and affordable alternatives to connecting 1.5 million households at this point in time in Egypt. Biogas requires large amounts of agricultural and domestic waste, while solar panels and heaters remain in pilot phase.

| 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. 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.

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

5.1 Positive Impacts

5.1.1 During the construction phase

Provide 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 company, the daily average number of workers during the peak time will be about 125 workers.
- The total number of new short term job opportunities within the project areas is estimated at 130-150 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.
- Reduced expenditure on LPG importation and subsidies, as 10 thousand connections will be installed in the area. Each household consumes 2.5 LPG cylinder monthly. Accordingly, the total number of LPG cylinders consumed is about 25 thousand LPG cylinders per month. The subsidy value is about 70 EGP per each LPG cylinder. Consequently, the total saved monthly subsidy will be about 1.75 million EGP monthly. This will result in total annual savings of 21 million EGP.
- Significantly lower leakage and fire risk compared to LPG.
- Improved safety due to low pressure (20 mBar) compared to LPG 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.

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 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

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Impact</th>
<th>Mitigation measures</th>
<th>Implemented by</th>
<th>Direct supervision</th>
<th>Means of supervision</th>
<th>Estimated Cost of mitigation / supervision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local traffic and accessibility</td>
<td>Traffic congestion (and associated noise/air emissions)</td>
<td>Excavation during off-peak periods</td>
<td>Excavation contractors</td>
<td>LDC + Traffic department</td>
<td>Contractor has valid conditional permit + Field supervision</td>
<td>Contractor costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Time limited excavation permits granted by local unit &amp; traffic department</td>
<td></td>
<td></td>
<td></td>
<td>LDC management costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Announcements + Signage indicating location/duration of works prior to commencement</td>
<td>LDC - Excavation contractors</td>
<td>LDC HSE - Local Unit - Traffic department</td>
<td>Ensure inclusion in contract + Field supervision</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Apply Horizontal Directional Drilling under critical intersections whenever possible to avoid heavy traffic delays</td>
<td>Contractor</td>
<td>LDC HSE</td>
<td>Field supervision</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Traffic detours and diversion</td>
<td>Traffic Department</td>
<td>Traffic Department</td>
<td>Field supervision for detouring efficiency</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Road restructuring and closing of lanes</td>
<td>Traffic Department</td>
<td>Traffic Department</td>
<td>Complaints received from traffic department</td>
<td></td>
</tr>
</tbody>
</table>

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Fluidity of traffic flow

Additional budget not required
<table>
<thead>
<tr>
<th>Receptor</th>
<th>Impact</th>
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</thead>
<tbody>
<tr>
<td>Ambient air quality</td>
<td>Increased emissions of dust and gaseous pollutants</td>
<td>Controlled wetting and compaction of excavation/backfilling surrounding area</td>
<td></td>
<td>LDC HSE</td>
<td>Contractual clauses + Field supervision</td>
<td>Contractor costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Isolation, covering, transportation and disposal of stockpiles</td>
<td></td>
<td></td>
<td>Contractual clauses + Field supervision</td>
<td>LDC management costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Compliance to legal limits of air emissions from all relevant equipment</td>
<td></td>
<td></td>
<td>Measure and document emissions of machinery by regular audits request emission measurements</td>
<td></td>
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<td></td>
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</tr>
<tr>
<td>Ambient noise levels</td>
<td>Increased noise levels beyond WB/National permissible levels</td>
<td>Ear muffs, ear plugs, certified noise PPE for workers</td>
<td></td>
<td></td>
<td>Contractual clauses + Field supervision (audits)</td>
<td>Contractor costs</td>
</tr>
<tr>
<td>Local community</td>
<td></td>
<td>Avoid noisy works at night whenever possible</td>
<td></td>
<td>LDC HSE</td>
<td></td>
<td>LDC management costs</td>
</tr>
<tr>
<td>Workers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Field supervision</td>
<td></td>
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<tr>
<td></td>
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<td></td>
<td></td>
<td></td>
<td>Complaints receipt from local administration</td>
<td></td>
</tr>
</tbody>
</table>
### Receptor Impact Mitigation measures Implemented by Direct supervision Means of supervision Estimated Cost of mitigation / supervision

<table>
<thead>
<tr>
<th>Receptor</th>
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<th>Estimated Cost of mitigation / supervision</th>
</tr>
</thead>
</table>
| Ground utilities’ integrity | Damage to underground utilities resulting in water & wastewater leaks, telecommunication and electricity interruptions | Coordination with departments of potable water, wastewater, electricity, and telecom authorities to obtain maps/data on depth and alignment of underground utilities, whenever available | LDC HSE | Official coordination proceedings signed by representatives of utility authorities  
- Examination of site-specific reports and records  
- Field supervision | | |
| Local community | | If maps/data are unavailable: Perform limited trial pits or boreholes to explore and identify underground utility lines using non-intrusive radio-cable and pipe locators | Excavation Contractor | | | |
| | | Preparation and analysis of accidental damage reports | LDC HSE Supervisor | - Contractual clauses + Field supervision | | |
| | | Repair and rehabilitation of damaged components | LDC HSE  
Local Government Unit  
Local Police | - Review periodic HSE reports | | |
| | | | | | | |
### Receptor Impact Mitigation measures Implemented by Direct supervision Means of supervision

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</table>
| Streets (physical status) local community and workers (health and safety) | Hazardous waste |  - Temporary storage in areas with impervious floor  
- Safe handling using PPE and safety precautions  
- Transfer to LDC depots for temporary storage  
- Disposal at licensed Alexandria hazardous waste facilities (Nasreya or UNICO)  
- Hand-over selected oils and lubricants and their containers to Petrotrade for recycling | LDC Excavation Contractor | LDC HSE | Field supervision and review of certified waste handling, transportation, and disposal chain of custody |
|          |                         |  - Adequate management of asbestos and any possible hazardous waste                  | Water Authority + contractor |                   | Field supervision + review of Water Authority manifests                               |
|          |                         |  - Minimize fueling, lubricating and any activity onsite                              | LDC Excavation Contractor |                   | Field supervision                                                                    |

- **Indicative cost items included in contractor bid:**  
  - Chemical analysis of hazardous waste  
  - Trucks from licensed handler  
  - Pre-treatment (if needed)  
  - Disposal cost at Nasreya  

- **Approximate cost of the above (to be revised upon project execution):**  
  - 8,000-10,000 LE per ton  

- **Contractor costs**  
  - LDC management costs
<table>
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</tr>
</thead>
</table>
| Local community | Non-hazardous waste accumulation | 1. Designate adequate areas on-site for temporary storage of backfill and non-hazardous waste  
2. Segregate waste streams to the extent possible to facilitate re-use/recycling, if applicable  
3. Reuse non-hazardous waste to the extent possible  
4. Estimate size of fleet required to transport wastes.  
5. **Transfer waste to Abu Zaabal disposal facility East of El Hadtha Area** | LDC Excavation Contractor | LDC HSE | Contractual clauses  
Monitoring of waste management plan  
Field supervision | Contractor costs  
LDC management costs |
| Local community | Destruction of streets and pavement | - Arrange Restoration and re-pavement with local unit  
- Communication with local community on excavation and restoration schedules. | LDC in cooperation with the LGU | EGAS | Field supervision  
Coordination with LGU as needed | Included in re-pavement budget agreed by LDC with local units or Roads and Bridges Directorate |
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</table>
| 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  
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                   |
| 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  
- Follow up the procedure of Grievance Redress Mechanism  
- Ensure transparent information sharing | During digging process  
LDC  
The sub-contractors | LDC and EGAS SDO                               | _ Ensure the implementation of GRM  
_ Supervision on Contractors performance | _ LDC management costs   |

LDC = Local Distribution Company  
EGAS = Egypt Gas Authority  
HSE = Health, Safety, and Environment  
SDO = Supervisory Division Office  
GRM = Grievance Redress Mechanism
## Executive Summary

**Site-specific ESIA - NG Connection 1.5 Million HHs - Qalyubeya Governorate /El Hadtha - August 2016**

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</thead>
</table>
| 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  
- Lists of participants  
- Documentation with photos  
- Awareness reports | 2250 $ per awareness raising campaign  
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**

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Impact</th>
<th>Monitoring indicators</th>
<th>Responsibility of monitoring</th>
<th>Frequency of monitoring</th>
<th>Location of monitoring</th>
<th>Methods of monitoring</th>
<th>Estimated Cost of monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local traffic and accessibility</td>
<td>Reduction of traffic flow and accessibility to local community</td>
<td>Comments and notifications from Traffic Department</td>
<td>LDC HSE</td>
<td>Monthly during construction.</td>
<td>Construction site</td>
<td>Documentation in HSE monthly reports, Complaints log</td>
<td>LDC management costs</td>
</tr>
<tr>
<td>Ambient air quality</td>
<td>Increased air emissions</td>
<td>HC, CO% and opacity</td>
<td>LDC HSE</td>
<td>Once before construction + once every six months for each vehicle</td>
<td>Construction site</td>
<td>Vehicles licensing Department, Measurements and reporting of exhaust emissions of construction activities machinery, Complaints log</td>
<td>LDC management costs</td>
</tr>
<tr>
<td>Ambient noise levels</td>
<td>Increased noise levels</td>
<td>Noise intensity, exposure durations and noise impacts</td>
<td>LDC HSE</td>
<td>Regularly during site inspections and once during the night in every residential area or near sensitive receptors such as hospitals</td>
<td>Construction site</td>
<td>Measurements of noise levels, Complaints log</td>
<td>LDC management costs</td>
</tr>
<tr>
<td>Underground utilities</td>
<td>Damages to underground utilities and infrastructure</td>
<td>Official coordination reports with relevant authorities, Accidents documentation</td>
<td>LDC HSE</td>
<td>Monthly during construction.</td>
<td>Construction site</td>
<td>Documentation in HSE monthly reports, Complaints log</td>
<td>LDC management costs</td>
</tr>
</tbody>
</table>
## Executive Summary

**Site-specific ESIA - NG Connection**

1.5 Million HHs - Qalyubeya Governorate / El Hadtha - August 2016

### Receptor Impact Monitoring Indicators

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Impact</th>
<th>Monitoring Indicators</th>
<th>Responsibility of monitoring</th>
<th>Frequency of monitoring</th>
<th>Location of monitoring</th>
<th>Methods of monitoring</th>
<th>Estimated Cost of monitoring</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Physical state of street</strong></td>
<td>Waste generation</td>
<td>Observation of accumulated waste piles</td>
<td>LDC HSE</td>
<td>During construction. Monthly reports</td>
<td>Construction site</td>
<td>Observation and documentation</td>
<td>LDC management costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Observation of water accumulations resulting from dewatering (if encountered)</td>
<td>LDC HSE</td>
<td>During construction. Monthly reports</td>
<td>Around construction site</td>
<td>Observation and documentation</td>
<td>LDC management costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Chain-of-custody and implementation of waste management plans</td>
<td>LDC HSE</td>
<td>Zonal reports</td>
<td>Construction site and document examination</td>
<td>Site inspection and document inspection</td>
<td>LDC management costs</td>
</tr>
<tr>
<td><strong>Local community</strong></td>
<td>Damaging to the streets</td>
<td>- Streets quality after finishing digging</td>
<td>LDC, EGAS</td>
<td>Four times per year, each three months</td>
<td>Site and Desk work</td>
<td>Checklists and complaints log</td>
<td>No cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Number of complaints due to street damage</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Local community</strong></td>
<td>Threat to Safety of users and houses</td>
<td>- Number of awareness raising implemented</td>
<td>LDC, EGAS</td>
<td>Quarterly monitoring</td>
<td>Office</td>
<td>Reports Photos Lists of participants</td>
<td>No cost</td>
</tr>
<tr>
<td></td>
<td>(due to limited level of awareness and misconceptions)</td>
<td>- Number of participants in information dissemination</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
### 5.5 Environmental and Social Management Matrix during OPERATION

<table>
<thead>
<tr>
<th>Receptor</th>
<th>Impact</th>
<th>Mitigation measures</th>
<th>Responsibility of mitigation</th>
<th>Responsibility of direct supervision</th>
<th>Means of supervision</th>
<th>Estimated Cost of mitigation / supervision</th>
</tr>
</thead>
</table>
| - Ambient air quality  
- Community health and safety | Network integrity | - Detailed review of the geotechnical and geological history of the project area  
- Development of a full emergency response plan in case of rare events which exhibit multiple simultaneous impacts  
- Random inspections and communication/awareness actions 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. | LDC | LDC HSE. | - Map and local geotechnical report review  
- Site inspections  
- Awareness actions  
- Periodical trainings and drills | LDC management costs |
| - Ambient air quality  
- Community health and safety | Repairs and maintenance (network and households) | As with construction phase activities | LDC  
- Excavation Contractor | LDC HSE | As relevant from construction phase | LDC management costs |
| 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  
- 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 | 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 |
<table>
<thead>
<tr>
<th>Receptor</th>
<th>Impact</th>
<th>Mitigation measures</th>
<th>Responsibility of mitigation</th>
<th>Responsibility of direct supervision</th>
<th>Means of supervision</th>
<th>Estimated Cost of mitigation / supervision</th>
</tr>
</thead>
</table>
| 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  
- 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  
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  
- The hotline should be operating appropriately  
- 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**

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

Table 5: Summary of Consultation Activities in El Hadtha area

<table>
<thead>
<tr>
<th>Participants</th>
<th>Number</th>
<th>Methods</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government officials</td>
<td>3 Male, 1 Female</td>
<td>In-depth</td>
<td></td>
</tr>
<tr>
<td>Health centers</td>
<td>2 Male</td>
<td>In-depth</td>
<td></td>
</tr>
<tr>
<td>NGOs</td>
<td>2 Male</td>
<td>In-depth</td>
<td></td>
</tr>
<tr>
<td>Community people</td>
<td>7 Male, 7 Female</td>
<td>Focus group discussion</td>
<td>January 2016</td>
</tr>
<tr>
<td>Community people</td>
<td>66 Male, 35 Female</td>
<td>Structured questionnaire</td>
<td></td>
</tr>
<tr>
<td>LPG vendors</td>
<td>2 Male</td>
<td>Public consultation</td>
<td></td>
</tr>
<tr>
<td>Public hearing for the ESIA of the governorate level. Included potential beneficiaries, government officials, NGO representatives, (10 people have attended from El Hadtha)</td>
<td>64 Male, 19 Female</td>
<td>Public consultation</td>
<td>10th of February 2016</td>
</tr>
<tr>
<td>Total</td>
<td>146 Male, 62 Female</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

6.1 Main results of Consultation during the Data Collection Phase

The majority of sample surveyed expressed their willingness to be connected to the NG regardless of the amount of money they can afford to pay. This trend is attributed to the fluctuation of the LPG cylinders prices.

Following are the main issues raised during data collection and scoping phase

Table 6: Sample of the main issues raised during data collection and scoping phase in El Hadtha

<table>
<thead>
<tr>
<th>Subject</th>
<th>Questions and comments</th>
<th>Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Role of the NGOs</td>
<td>All community people will support the project, especially, the NGOs. They can be your main channel of information sharing. No need for big budget. Any engineer from the gas company can visit the NGO and make a presentation about the benefits of NG. This will cost EGAS nothing</td>
<td>Cooperation with the civil society will be discussed and it is always fruitful sharing information with the community.</td>
</tr>
</tbody>
</table>
### Community coherent

In El Hadtha, the majority of people are affiliated to esteemed families who care for their reputation. All of them will work for the benefit of the project as they suffer from LPG problems. Two years ago, families were fighting to obtain an LPG. Yes, the problem declined now but it is always a concern not to find the LPG one day. The families can gather in meetings to receive any information about the NG. In case if the project faces any problem, head of families can solve the problems.

Females can’t attend public meetings but the NGOs can reach them with the help of the NGO promoters.

**Responses**

This will be considered.

### Brochures and leaflet

Gas companies can provide information about the project through posters leaflets and brochures. Such advertisements should be put in public areas. They can be distributed in active NGOs.

**Responses**

To be considered by EGAS care for all engagement activities.

### Benefits of the NG

In El Hadtha the LPG cost 10 EGP. In the past the LPG price was 4 EGP. It increased due to the greedy vendors attitudes. During Ramadan and the feasts the price might be doubled.

NG is much cheaper than the LPG and the electricity on scale from 1 to 10 the NG is 10. It is extremely good. It is safe and of low cost.

### Complaints related to the LPG

Sometimes the community complain about the LPG to the Supply Office goes in vain.

### Charity NGO role

Mansour Amer charity NGO can provide additional support to poor people to install the NG. They provide 50 EGP to poor people in the area. They can provide similar amount to install the NG.

### Role of community people

Community people can mobilize each other to install the NG. Additionally, they can provide guidance to the illiterate groups.

### Cost of NG installation

We know that the NG installation cost is high but the monthly consumption cost is low. However, the LPG cost us at least 30 EGP per month. The installation cost is about 1700 EGP. This is expensive but people can pay it in installment. The proposed monthly installment varies between 70-100 EGP (this is in consistent with the installment mechanism).

### Safety of the NG

When we talk about safety you might understand that there is low probability of explosions. This is not meant by safety in El Hadtha. They mean that the LPG vendors will not enter the houses. The LPG sellers are bullies and thieves. It is unsafe having them in the house.
Executive Summary - Site-specific ESIA - NG Connection 1.5 Million HHs - Qalyubeya Governorate /El Hadtha - August 2016

Subject | Questions and comments | Responses
--- | --- | ---
NG health benefits | In El Hadtha, the illiteracy rate is high and people use a small stove that can explode easily. The installation of the NG will save their lives and secure them from accidents and burns. The women and young children carry the LPG cylinder up to their apartment, this might cause problems in the backbone. Having the NG installed will reduce such problems |  
Impact on vendors | The project will have unfavorable impacts on LPG vendors. |  

On the 10\textsuperscript{th} of February 2016 a public consultation was conducted in Banha City to which all areas of relevance to the project in Qalyubeya Governorate were invited. Governmental entities, environmental sector related units, NGOs and some members of the community attended the consultation event from El Hadtha and Qaluob. The results and documentation of the public consultation event can be found in the El Khosous City SSESIA.

### 6.2 Summary of Consultation Outcomes

The consulted stakeholders expressed their welcoming attitude of the project. They were keen to obtain information about the contracting procedures and technical requirements to have the NG installed. The majority of households pass across severely unfavorable aspects attributed to the LPG e.g. fluctuation of the LPG cylinder prices, inhuman treatment of the LPG distributors. Old people, poor people and women suffer most as they have to assemble in queues to get one LPG. The cost of NG installation was a concern raised by the stakeholders. They were happy with the installment mechanism adopted by EGAS.

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, or regulatory and governmental bodies who will play a role in facilitating or regulating the implementation of site-specific project activities.

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.

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\(^3\) 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.”