



1.5 Million Natural Gas Connections Project in 11 Governorates

Zefta High Pressure Pipeline /Gharbia Governorate



EGAS

Egyptian Natural Gas Holding Company

Due Diligence

Final report

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Developed by



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LIST OF ACRONYMS AND ABBREVIATIONS

Abbreviation	
ARP	Abbreviated Resettlement Plan
CAPMAS	Central Agency for Public Mobilization and Statistics
EA	Environmental Assessment
EEAA	Egyptian Environmental Affairs Agency
EGAS	Egyptian Natural Gas Holding Company
EIA	Environmental Impact Assessment
GASCO	Egyptian Natural Gas Company
GRM	Grievance and Redressal Mechanism
LDC	Local Distribution Company
LPG	Liquefied Petroleum Gas
NG	Natural Gas
NGO	Non-Governmental Organization
PAP	Project Affected Persons
PRS	Pressure Reduction Station
BUTAGASCO	The Egyptian Company for LPG distribution
RAP	Resettlement Action Plan
RPF	Resettlement Policy Framework
SDO	Social Development Officer
TOR	Terms of Reference
WB	World Bank

1 US \$ is equivalent to 18.15 EGP as in April 2017

1 Euro is equivalent to 19.26 EGP as in April 2017

1 Feddan is equivalent to 4200 m²

1 Qirate is equivalent to 175 m²



EXECUTIVE SUMMARY

A. Introduction

The Government of Egypt (GoE) recognizes the importance of the residential household natural gas connection program to improve the delivery of natural gas to households with affordable prices, high safety measures and the replacement of costly and troublesome LPG cylinders. In this regard, the GoE is implementing an expansion program for domestic natural gas connections to an additional 1.5 million households across 11 governorates between 2016 and 2019 with the assistance of the World Bank loan of up to US\$500 million, and Agence Française de Développement (French Agency for Development) financing up to €70 million and the European Union €10 million. The program is estimated to cost US\$850 million.

The Due Diligence covers the High-Pressure Pipeline and offtake as associated facilities¹ that **were financed by a local fund**, to a new pressure reduction station planned to be partially financed by the World Bank. The PRS was constructed in Zefta City under the jurisdiction of Gharbia Governorate. The local distribution company responsible for project implementation in Zefta is Egypt Gas (غاز مصر).

The objective of the DD is to assess the extent to which the associated facilities are meeting the applicable legal and E & S operational policies' requirements.

B. Associated Facilities Description

The off-take is an area of land that was obtained to install a valve room that connects the Natural Gas national grid to the PRS. At the off-take location, valve rooms/valve ditching is constructed so as to control the flow of the natural gas through the pipeline (branch). These valves work like gateways for the Zefta area. The off-take is connected to Zefta PRS through the 18 Km Shebsheir – Banha High Pressure Pipeline. It required the purchase of a land plot of dimensions 25m*25m that was obtained through willing buyer willing seller approach.

Zefta high pressure pipeline has been completely installed. The path started with a pipeline of 28" diameter from the off-take. It extended in parallel to El Atf drainage in the western area. It diverts south towards Izbet Naqra El Bahary. Thereafter, it extends south towards Izbet Saba' Regal until reaching the boundaries between Menofia and Gharbia Governorates. It extends south of Hannoun village. Thereafter, it moves to the north in order to avoid Damanhour El Wahsh village. Thereafter, it extends in agriculture lands until reaching the graveyards. Then it passes by el Khadrawya canal,

¹ "Associated Facilities" means facilities or activities that are not funded as part of the project and are: (a) directly and significantly related to the project; (b) carried out, or planned to be carried out, contemporaneously with the project; and (c) necessary for the project to be viable and would not have been constructed, expanded or conducted if the project did not exist.



Kafr El Hadedy Fersis and Izbet El Eslah avoiding El Gahsh hamlet. It goes left until reaching the PRS. A second set of lands were temporarily acquired for the construction of existing HP pipeline of 18 km*20 m occupying an area of 360,000 square meter connecting the off take to the PRS.

C. Impacts of Associated Facilities:

The construction of the associated facilities resulted in some adverse environmental and social impacts on the receptors: soil, air quality, noise, traffic, Occupational Health and safety, Community Health and Safety. Also, temporary and permanent land use. They were as follow:



Table showing Relevant environmental and social risks, impacts and status of compliance

Potential Impact Significance (Duration, Difficulty to mitigate)												
Activity	Air emissions	Noise	Reduction of traffic flow	Ground water	Solid, hazardous wastes and liquid waste	Community health and safety	Labor conditions and occupational health and safety	Labor influx	Child labor	Soil pollution	Crop damaging	Land acquisition
Negative impacts during construction phase												
Mobilization	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	N/A	Temporary, medium	Temporary, extremely low	Temporary, low	N/A	Temporary, low	Temporary, low
Excavation	Temporary, medium	Temporary, low	Temporary, low	Temporary, medium	Temporary, medium	Temporary, low	Temporary, medium	Temporary, low	Temporary, low	Temporary, low	Temporary, low	Temporary, low
PE Pipe laying	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	N/A	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	Temporary, low
Leakage testing	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	N/A	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	Temporary, low
Impact Assessment	Medium	Minor	Low	Low	Medium	Low	Medium	Low	Low to medium	Medium	Low	Low
Compliance status	Compliance	Compliance	Not verified	Not verified	Compliance	Not verified	Compliance	Not verified	Not verified	Compliance	Compliance	Compliance
Negative impacts during operation phase												
Pipeline and off take operation	N/A	No impact	N/A	N/A	No impact	Permanent medium	Permanent low	N/A	N/A	N/A	N/A	No land needed
Repairs	N/A	No impact	N/A	N/A	No impact	Permanent medium	Permanent low	N/A	N/A	N/A	Extremely minor	Extremely minor
Impact Assessment	Of no significance	Of no significance	Of no significance	Of no significance	Of no significance	Medium	Minor	Of no significance	Of no significance	Of no significance	Of no significance	Of no significance
Compliance status	Compliance	N/A	N/A	N/A	N/A	Compliance	Compliance	N/A	N/A	N/A	N/A	N/A



D. Summary of Due Diligence Performance Assessment and proposed corrective measures

This section presents the gap assessment results against OP 4.12 and World Bank Group General Environmental, Health, and Safety Guidelines, WBG Environmental, Health and Safety Guidelines for Gas Distribution Systems.

The presentation of gap assessment result is segregated into:

- 1- Procedures of land acquisition and compatibility with the WB OP 4.12
- 2- Adherence to environmental, social and health & safety mitigation measures during construction phase that has been already completed
- 3- Adherence to environmental, social and health & safety mitigation measures during operation phase until 2018

Afterwards, recommended corrective actions plan will be developed to be implemented during future operational phase.



Table showing Procedures of Land Acquisition and Compatibility with OP 4.12

OP 4.12 requirements	Procedure	Required corrective measures
<p>OP 4.12 stipulated the necessity to carry out a census by the borrower to identify the persons who will be affected by the project to determine who will be eligible for assistance, and to discourage inflow of people ineligible for assistance.</p>	<p>The committee in coordination with project technical team have divided the total route (18 Km) to different segments (each segment 2-3 km long), screened the affected lands and prepared a census for the affected lands and identified the PAPs entitled for compensation in each segment (see Annex 5 Lists of project's affected persons).</p>	<p>No corrective measures are required as the full census was completed</p>
<p>Cut-off date is the date the census begins. The cut-off date could also be the date the project area was delineated, prior to the census, provided that there has been an effective public dissemination of information on the area delineated, and systematic and continuous dissemination subsequent to the delineation to prevent further population influx.</p>	<p>Due to segmentation of the line, it was relatively difficult to define a cutoff date. Additionally, the national legislations do not stipulate any cutoff date for agriculture lands. Consequently, no cutoff date was defined.</p>	<p>No corrective measures to be applied as all compensation activities were completed</p>
<p>OP 4.12 stated that “Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.</p>	<p>Meetings were conducted with the PAPs in each segment in order to inform them about the project and compensation arrangements, as well as the value of the compensation and payment procedures. Meetings are being conducted in full cooperation with the Agriculture Association. There is no unified cutoff date in accordance to the procedures followed by Egypt Gas.</p>	<p>No gaps defined</p>
<p>Resettlement assistance is assured by the borrower. Resettlement assistance may consist of land, other assets, cash, employment, and so on, as appropriate.</p>	<p>Egypt Gas provides monetary compensation for the affected crops and assets. There is no time interval between disbursement of compensation and damaging crops. Therefore, no transitional assistance to be applied. However, the PAPs are enabled to harvest their crops and move trees to be replanted in different area as additional remedial actions</p>	<p>No corrective measures to be applied</p>



OP 4.12 requirements	Procedure	Required corrective measures
<p>Arrangements for monitoring of resettlement activities by the implementing agency, supplemented by independent monitors as considered appropriate by the Bank, to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; involvement of the displaced persons in the monitoring process; evaluation of the impact of resettlement for a reasonable period after all resettlement and related development activities have been completed; using the results of resettlement monitoring to guide subsequent implementation.</p>	<p>The PAPs prepared their official documents declaring their legal status with the help of the Agriculture Associations Additionally, consultation activities documentation remains limited</p>	<p>Proper documentation is crucial for monitoring and evaluation process.</p>
	<p>Compensations were paid to all the PAPs within one month, this process was finalized before the construction works within each segment. Annex 5 includes a sample of receipts signed and finger printed by the PAPs. The date is included in most of the signed receipts. The majority of them received their compensation in 2016 (see Annex 5.</p>	
<p>OP 4.12 stipulated that “The borrower is responsible for preparing, implementing, and monitoring a resettlement plan, a resettlement policy framework, or a process framework (the "resettlement instruments"), as appropriate, that conform to this policy. The resettlement instrument presents a strategy for achieving the objectives of the policy and covers all aspects of the proposed resettlement. Borrower commitment to, and capacity for, undertaking successful resettlement is a key determinant of Bank involvement in a project.”</p>	<p>Egypt Gas and EGAS monitor the process of compensation through attending various compensation meetings with the PAPs and maintain all compensation documents (i.e. lists of PAPs, amount of compensation, receipts signed by the PAPs ...etc.) All payments were reimbursed from EGAS after the completion of the construction work in each area as EGAS is the responsible entity to pay the compensation. The Compensation Committee disbursed the compensation value according to the following system:</p> <ul style="list-style-type: none"> • Full compensation was disbursed before the construction works. • The owner/tenant has received any additional amount of compensation needed for further demolishing and impact on the assets irrigation pipelines 	<p>No further corrective measures to be applied</p>



OP 4.12 requirements	Procedure	Required corrective measures
	Complete legal procedures for land acquisition have been documented by the Social Development Officers within Egypt Gas and a copy was shared with EGAS Social Development Officers. EGAS maintained all the records for the purposes of internal and external monitoring and the Bank due diligence. see surveying tools used in Annex 9.	

Table showing Assessment of the Mitigation Measures Applied to Date

Impact	Mitigation measures	Indicators/Evidence	Attachments
Impact on soil and land	<ul style="list-style-type: none"> Decrease erosion by minimizing disturbances and scarification of the surface Good housekeeping to minimize spills/leaks Proper handling and management of wastes 	<ul style="list-style-type: none"> No complaints were detected about damaging soil or spills The project affected persons reported that their lands fertility was retained No evidence of spills or wastes 	Annex 4 includes: <ul style="list-style-type: none"> Environmental mitigation procedures Solid waste management, required PPEs, Spills precautions and storage methods
Economic displacement due to land acquisition	<ul style="list-style-type: none"> Develop and implement a resettlement and economic restoration plan. Rehabilitate the damaged lands after construction Disburse compensation to the affected PAPs 	<ul style="list-style-type: none"> There was no resettlement and economic restoration plan. However, clear compensation procedures are in place Receipts signed by all affected persons Lists of project's affected persons Negotiation and information sharing was applied prior to any compensation took place 	Annex 5: Compensation Documents includes: <ul style="list-style-type: none"> Steps and procedures of land acquisition applied by Egypt Gas Compensation scanned receipt Value of agricultural crop compensation List of affected people
Air emission	<ul style="list-style-type: none"> Management of number of vehicles and equipment in the site. Appropriate maintenance, engine tuning and servicing of construction equipment to minimize exhaust emissions Minimize unnecessary journeys or equipment use Adopt a policy of switching off machinery and equipment when not in use (idle mode). 	<ul style="list-style-type: none"> No complaints were raised about air pollution during the construction 	Annex 6 includes: <ul style="list-style-type: none"> Occupation health and safety
Noise	Worker <ul style="list-style-type: none"> Application of the normal precautions normally taken by construction workers. 	<ul style="list-style-type: none"> Occupational health and safety manual is in place No complaints raised by the workers 	Annex 6 includes: <ul style="list-style-type: none"> Noise measurements



Impact	Mitigation measures	Indicators/Evidence	Attachments
	<p>Neighbor</p> <ul style="list-style-type: none"> • Notification to the surrounding establishment prior to the construction of the HPP • Time management and construction schedule according to the IFC regulation provided by the contractor prior to the construction phase 	<ul style="list-style-type: none"> • No complaints raised by the surrounding communities • All neighbors were informed about the project • The farmers reported watching out drilling and excavations 	<ul style="list-style-type: none"> • Occupation health and safety
Occupational health and safety	<ul style="list-style-type: none"> • The project hired a qualified sub-contractor with the high health and safety standards. In addition, the ToR for the contractor and the ESIA will provide the provision of the health, safety and precaution of the environmental impacts and its mitigation measures to be followed during construction. • Standard protection by placing clear project signs. • Time management for vehicles movement; especially avoiding the peak hours • Standard protection for the workers especially working at elevated heights or trench. • Regular inspection to compelling worker to used their PPE • Training and licensing industrial vehicle operators of specialized vehicles. 	<ul style="list-style-type: none"> • No evidence available • No documentation for capacity building conducted to worker as almost all induction meetings and capacity building were adhering to on the job training approach 	<p>Annex 6 includes:</p> <ul style="list-style-type: none"> • Occupation health and safety
Solid and Hazardous waste management	<ul style="list-style-type: none"> • Temporary storage in areas with impervious floor • Safe handling using PPE and safety precautions • Empty cans of oil-based paint resulting from painting the steel connection pipes to households are to be collected and sent back to nearest LDC depots (Abo Rawash) for temporary storage until disposal at a hazardous waste facility (Nassreya or UNICO in Alexandria). • If hazardous waste quantities generated are too small for isolated transport to the Nassreya landfill, a temporary storage site can be created. Coordination with waste authority will be imperative to secure a location and implement adequate procedures for storage depending on quantities and type of wastes until collection and shipping to Nassreya landfill. • Hand-over selected oils and lubricants and their containers to Petrotrade for recycling 	<ul style="list-style-type: none"> • Temporary storage areas' photos and locations made available • Empty cans were collected and transferred to Abo Rawash 	<p>Annex 4 includes:</p> <ul style="list-style-type: none"> • Environmental mitigation procedures • Solid waste management, required PPEs, Spills precautions and storage methods
Traffic	<ul style="list-style-type: none"> • Time management for transporting the materials, equipment, 	<ul style="list-style-type: none"> • No complaints raised about traffic 	NA



Impact	Mitigation measures	Indicators/Evidence	Attachments
	<p>debris, etc.</p> <ul style="list-style-type: none"> • Clear sign surrounding construction site and the entrance / exit gate. • Coordination with traffic department (ministry of interior) for vehicles route and movement. • Vehicle speed restrictions should be applied across the project site 	<ul style="list-style-type: none"> • No signs were placed in the surrounding sites 	
Grievance and redress mechanism	<ul style="list-style-type: none"> • The detailed grievance mechanism (GRM) is to be shared with the community beneficiaries. • Posters were prepared and made available to the beneficiaries in the contracting office². Additionally, they will be available in the customer services office. Thus, sufficient and appropriate information about the GRM will be disseminated to the communities prior to the construction phase. Information dissemination about the GRM should be shared with the beneficiaries during the process of contracting and disclosed in the contracting office and other publically accessible venues. 	<ul style="list-style-type: none"> • There is a detailed GRM in place that is applicable by the LDC. However, limited information was shared about the GRM. No evidence about sharing information about the GRM. • There is no foreseen proper documentation for received complaints • No tracking for any complaints • The conclusion is that the GRM was not functioning 	<p>Annex 10 includes a detailed GRM</p> <ul style="list-style-type: none"> • The WB in full cooperation with EGAS adopted procedures to have the GRM fully functioning. Procedures are presented in section 5.2.3

The WB in full cooperation with EGAS applied the following:

- The WB assigned a consultant to work on the GRM on December, 2017
- A two days' workshop with the key stakeholders involved in different aspects of the GRM function at EGAS and the LDCs was held during April, 2018. The objective of the workshop was to identify areas of improvement in the GRM process, and reach decisions to draft the project level GRM guidelines.
- The guidelines aim to detail the process of complaint uptake, registration and resolution. Define roles and responsibilities of related actors and stakeholders, and define processes for monitoring and evaluation.
- Issue the guidelines manual (draft) to be reviewed by EGAS and the LDCs and sent comments to the consultant.
- A final workshop was held on 31/10/2018 to issue the final guidelines
- Letters were sent to LDCs chairmen with the final guidelines to start using the new guidelines.

² Falls under the budget of the LDCs



E. Lands needed for the construction of the Associated Facilities

- For the purpose of constructing the off take required a land plot of 25m*25m (625-meter square = 3.6 Qirates). This plot of land represents less than 8% of the land owned by the owner. The land was obtained through willing buyer willing seller approach. The owner of the land accepted to sell the land willingly with no intimidation. There was no official or social pressure on the land owner. The owner was cultivating the land. Therefore, no tenants or customary users of lands were determined. There was only one owner for the plot of land with no other claimers of ownership. The Owner has about 2 Feddans while the the total purchased area is 3.6 Qirate that represents less than 8% of his land. More than one plot of lands was selected. The owners negotiated for the price and asked for more than the prevailing market price. The purchasing committee conducted various meetings and site visits with the owners until an acceptable purchase price was agreed.
- The second set of lands were needed on temporarily basis for the existing HP pipeline of 18 km*20 m of an area of 360,000 square meter that is connecting the off take to the PRS. A full documentation of lands that has been used for installing the pipelines and name of the land owners are included in Annex 5; where it includes some photos of the rehabilitated lands, a sample of land receipt, Steps and procedures of land acquisition applied by Egypt Gas & EGAS, values of agriculture crops compensation, and a list of compensated people.

F. Socioeconomic Baseline conditions

The pipeline passed through two governorates, namely Menofia and Gharbia Governorates:

- In Gharbia Governorate the project was implemented in Zefia District, the pipeline passed through the following hamlets and villages: Damanhour El Wahsh, Hennon, Kafr Fersis and Sandbast.
- In Menofia Governorate, the project passed in Berket El Sabea (Kafr Helal Hamlet and Tokh Tanbasha Hamlet) and Quesna District (in the areas located in Mostay village).

A socioeconomic survey was carried out where the census data collected in February – March 2017 revealed that the total number of PAPs is 524 farmers. However, the total affected plots of lands are 691 plots. The total actual affected areas of lands that were cultivated by crops were 290,305 m².

The project areas accommodate 26,548 households. About 29.0% of the households reside in Sandbast. The households' size is almost the same at all project sites. The biggest households are located in Damanhour El Wahsh 4.4 person/household.



The total labor force that is defined as “*they are the people who are able and willing to work (15+ years old)*” within project areas varies between (44.67%) in Kafr Helal and (37.06%) in Hennon. The total labor force is reduced among females and especially in Damanhour El Wahsh (9.8%) as the community does not appreciate female work. Additionally, females are not willing to work outside their house. The highest percentage of female within labor force reported in Tokh Tanbasha (15.22%). However, the lowest ratio reported was in Kafr Fersis.

G. Legislative and Regularity Framework

Applicable Environmental and Social Legislation in Egypt:

- _ Law number 10 of year 1990 pertaining to involuntary land acquisition
- _ Law 217 of year 1980 for Natural Gas Activities
- _ Law 4 of Year 1994 for the environmental protection, amended by Law 9/2009 and law 105 for the year 2015
- _ Law 38 of year 1967 for General Cleanliness
- _ Law 93 of year 1962 for Wastewater
- _ Traffic planning and diversions laws
- _ Work environment and operational health and safety
- _ Land acquisition decree No 503 /Year 2016 that is based on
- _ Law number 53 of year 1966 pertaining to agriculture and its amendments
- _ Approval of the Army Force dated 5th of August 2015
- _ Approval of the Local Council of Gharbia and Menofia Governorates dated 9th of November and 3rd of December 2015

World Bank Safeguard Policies:

This due diligence document was prepared against two operational policies applicable to the associated facilities in Zefta City. They are as follows: Environmental Assessment (OP/BP 4.01), and Involuntary Resettlement (OP/BP 4.12).

OP/BP 4.12 was not applicable to the land obtained for the off-take in Zefta city as the process of obtaining the land for the off-take was based on mutual consent between the seller and buyer (willing buyer willing seller). With regards to the high-pressure pipeline that necessitated 18 km length * 20-meter width, it crossed the agricultural land in Zefta and accordingly compensation activities were applied.

The high-pressure pipeline was an associated facility for the proposed project. The line has been installed and temporary land acquisition activities were applied. OP/BP 4.12 was not applicable to temporary land acquisition activities as the line was previously funded by the national fund. Upon WB request, the pipeline is subject now to a Due Diligence reflecting the involuntary resettlement activities pertaining to the existing associated facility. The Due Diligence assess land acquisition against WB OP 4.12 that was not applied to project activities.



Gap analysis for key environmental and social issues concerns: Egyptian laws and WB Policies were conducted in the Environmental and Social Impact Assessment Framework of the project and disclosed on EGAS website as per the following link:

<http://www.egas.com.eg/docs/RPF%20for%20NG%20connections%20project%20for%2011%20Governorates.pdf>”

World Bank Group General Environmental, Health, and Safety Guidelines, WBG Environmental, Health and Safety Guidelines for Gas Distribution Systems:

The General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines, which provide guidance to users on EHS issues in specific industry sectors.

The WBG EHS Guidelines on Gas Distribution is found under the **World Bank Operational Policies** and is disclosed as per the following link:

<http://documents.worldbank.org/curated/en/429401496127411698/Environmental-health-and-safety-guidelines-for-gas-distribution-systems>

Overall, Egyptian legislation provides environmental compliance procedures and emission limits which are at least comparable with WB/international requirements, if not more stringent. 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 for specific issues or pollutants, WB requirements will be adopted.

However, EGAS and the local distribution companies are committed to comply with the more restraining legal requirements.

H. Mitigation measures taken to address project impacts

There was no standalone Environmental impact assessment conducted on the pipeline. However, an ESIA was prepared for Zefta PRS and the offtake and obtained Environmental Approval dated 21/05/2014 Annex (2)

(<http://www.egas.com.eg/docs/Zefta%20PRS%20ESIA.PDF>) Additionally there is an ESIA developed for the Natural Gas Connection in Gharbia Governorate, that covered the LP network in some districts in Gharbia Governorate in addition to Zefta and Kafr El Zayat PRSs. Environmental Approval dated 26/04/2018 attached in Annex (3)

(<http://www.egas.com.eg/docs/EX.%20Summary%20ESMP%20Gharbia%20.pdf>)



Lack of documentation of the evidences and indicators was one of the barriers faced the DD team, as most of evidence documents were not made available.

The site visits conducted during the DD report preparation showed no waste accumulation along the pipeline route and rehabilitation of the agricultural lands regaining the soil fertility were evidenced.

There was evidence of solid and hazardous wastes management, temporary storage areas were in place and empty cans were collected and transferred to Abo Rawash temporary storage site until transfer to the disposal site.

The interviews and meetings with PAPs along the pipeline route showed no complaints or concerns of the project adverse impacts during construction or unfair compensation for the damaged assets (crops and other infrastructure that were damaged during the Construction activities). Interviewees also reported that they were well notified of the project before construction works through the LDC in cooperation with the Agriculture Association. PAPs also reported that compensation was disbursed immediately and before starting any construction works and were allowed to cultivate their crops.

I. Consultation Activities

Public consultation meetings were held during the Framework preparation on the Governorate level (Gharbia Governorate) and disclosed on EGAS and Bank websites. The inquiries and comments raised during the consultation were considered during the compensation activities.

As part of the construction of the off-take room and the HP pipelines, large number of meetings and interviews were conducted by Egypt Gas. However, none of the meetings have been properly documented. Farmers reported that Egypt Gas Staff and the Agriculture Association have conducted meetings with them to inform about the project and compensation mechanism.

J. Grievance Redress Procedures

With regards to the Grievance and Redress Mechanism, there is a GRM that people were partially informed about. However, there was no documentations kept to date of complaints pertaining to project activities. The complaints were raised verbally and resolved immediately by the site foreman and the compensation committee, any others complaints could be raised to the company head office. Reference to meetings conducted with the PAPs and the LDC, they raised verbal complaints about compensation value, measurements of the affected areas and requested avoiding passing in the middle of the land. There was a prompt response taken by the site engineer and the compensation committee where the affected lands were re-measured



and re-calculated the compensation value. Moreover, the LDC managed to avoid passing in the middle of the land.

K. Recommendations:

Given the fact that the associated facilities construction phase was completed, it is recommended to follow the recommendations below during operation phase:



Table 4: Recommended Corrective Actions Plan

Key aspects	Gap assessment (defined in 2016)	E&S Policies	Recommended corrective action after conducting the study in 2016	Implemented tasks to date	Implementation's indicators	Deadline	Responsibility	Method of monitoring
Grievance and redress mechanism	- The grievance mechanism is not fully functioning	OP 4.01 requirements OP 4.12 requirements	<ul style="list-style-type: none"> - The SDO should be assigned to manage the GRM - Information about the GRM should be shared with the community located in the proximity the pipeline - Communication channels should be made available to community people - Posters should be placed and disclosed in the LGU informing about GRM - Grievance management system to be prepared and all complaints should be documented in this system 	<ul style="list-style-type: none"> - The WB managed in full cooperation with EGAS and the LDC to develop a GRM. - EGAS and the LDCs received trainings on the adopted GRM. - The GRM now is implemented - Monitoring and reporting of GRM is in place 	<ul style="list-style-type: none"> - Recording the meetings with the community people (minutes of meetings to be documented) - Posters to be placed - Grievance management system to be in place - Monitoring reports of grievances 	Completed and further follow up will be required	Egypt Gas	<ul style="list-style-type: none"> - Reviewing periodic reports submitted by the LDC to EGAS - Reviewing grievance management system



Key aspects	Gap assessment (defined in 2016)	E&S Policies	Recommended corrective action after conducting the study in 2016	Implemented tasks to date	Implementation's indicators	Deadline	Responsibility	Method of monitoring
Capacity building	- Occupational health and safety training	OP 4.01 requirements	- Develop and implement capacity development plan for Egypt Gas E & S staff., in coordination with EGAS.	- A list of training sessions was implemented by EGAS (See Annex 11) - Another list of trainings was prepared by Egypt Gas and will be implemented (See Annex 12)	- Number of workers trained on occupational health and safety	End of 2019 and to be implemented regularly (ongoing process)	Egypt Gas	- Training reports that includes, list of participants, photos and feedback - Training modules
Emergency response plan	- EGAS has operational manual that contains emergency response procedures. However, an emergency response plan including measures for the high-pressure pipeline should be developed	OP 4.01 requirements	- Develop an emergency Response Plan including measures for the high-pressure pipeline	- Egypt Gas developed a comprehensive Emergency Response Plan (See annex 13)	- Emergency Response Plan document has been developed	Completed	Egypt Gas	NA



Key aspects	Gap assessment (defined in 2016)	E&S Policies	Recommended corrective action after conducting the study in 2016	Implemented tasks to date	Implementation's indicators	Deadline	Responsibility	Method of monitoring
Monitoring activities	- Lack of monitoring	OP 4.01 requirements	<ul style="list-style-type: none">- Commitment to implement the activities in full compliance with the EHS manual prepared by Egypt Gas.- Documenting and reporting results of pipeline patrolling and leakage survey.- Incident/accident reporting	<ul style="list-style-type: none">- Egypt Gas carried out monitoring activities on patrolling and leakage (See Annex 13)- Egypt Gas develop an OHS that contains sufficient information about accidents and incidents management (see Annex 6)	<ul style="list-style-type: none">- Monitoring reports developed by Egypt Gas every 6 months- OHS includes but not limited to all safety measures, and description of procedures required to achieve zero accidents.	Completed	Egypt Gas	<ul style="list-style-type: none">- EHS manual indicators- Reviewing the incident/accident report



1 INTRODUCTION

1.1 Preamble

The Government of Egypt (GoE) recognizes the importance of the residential household natural gas connection program to improve the delivery of natural gas to households with affordable prices, high safety measures and the replacement of costly and troublesome LPG cylinders. In this regard, the GoE is implementing an expansion program for domestic natural gas connections to an additional 1.5 million households across 11 governorates between 2016 and 2019 with the assistance of the World Bank loan of up to US\$500 million, and the Agence Française de Développement (French Agency for Development) financing up to €70 million. The program is estimated to cost US\$850 million.

A new pressure reduction station (financed through the World Bank) was constructed in Zefta City under the jurisdiction of Gharbia Governorate. The PRS was connected to the natural gas grid through an 18-km high pressure pipeline (the high-pressure pipeline financed by the local fund), and is classified as an associated facility. The World Bank's Environmental and Social Safeguard policies require an Environmental & Social Impact Assessment (ESIA) to be conducted for the proposed pressure reduction station (PRS). **However, the high-pressure pipeline and the off-take land, as an associated facility, were subject to a Due Diligence Assessment (DDA). This DDA has been prepared based on the Terms of Reference prepared by EGAS and cleared by the World Bank.**

Concerning the lands needed by the project, following is a summary about land required:

- For the purpose of constructing the off take a plot of 25*25-meter 625-meter square = 3 Qirates). This plot of land represents less than 8% of the land owned by the owner. The land was obtained based on a willing buyer willing seller approach. There was relatively limited information about the purchasing process as Maya Gas, the LDC that preceded Egypt Gas, purchased the land three years ago and there was relatively partial documentation for the process. The owner of the land accepted to sell the land willingly with no intimidation. There was no official or social pressure on the land owner. The owner was cultivating the land. Therefore, no tenants or customary users of lands were determined. There was only one owner for the plot of land with no other claimers of ownership. More than one plot of land was selected. The owners negotiated for the price and asked for more than the prevailing market price. The purchasing committee conducted various meetings and site visits with the owners until an acceptable purchase price was agreed.
- More than one plot of land was selected. Each plot of land had specific criteria and level of fertility. As such the value of lands and price varied. The owners



negotiated for the price and asked for more than the prevailing market price for the lands of the same nature and fertility in the same project area. The purchasing committee conducted various meetings and site visits with the owners until an acceptable purchase price was agreed on.

- The second set of lands that were needed temporarily for the existing HP pipeline 18 km*20 m (360,000 square meter connecting the off take to the PRS). The HP pipeline has been installed by end of 2016 and temporary land acquisition activities were applied. Therefore, it was recommended to develop a due -diligence report reflecting the involuntary resettlement activities pertaining to the existing associated facility. A full documentation of lands obtained and name of the land owner is included in Annex 5; where it includes some photos of the rehabilitated lands, a sample of land receipt, Steps and procedures of land acquisition applied by Egypt Gas & EGAS, values of agriculture crops compensation and a list of compensated people.

1.2 Due Diligence Objectives and Methodology

1.2.1 Due Diligence objectives

The main goal of the Due Diligence is to assess on field the key environmental impacts i.e. the rehabilitated land, the compensation activities and remedial actions applied to mitigate adverse environmental and social impacts pertaining to laying down the pipelines and land acquisition. Environmentally, factual evidence of compliance will be assessed. With regards to social aspects, land acquisition process was assessed in addition to addressing gaps and recommendations for future implementation and follow up.

Regarding asset loss and/or restrictions of land use through the social Due Diligence for (a) the provision of appropriate compensation and/or livelihood opportunities (regardless of the legality of existing land tenure arrangements), and (b) ensuring that resettlement measures are implemented with meaningful consultation and the informed participation of the affected people; as well as to outline measures to effectively assist the PAPs in improving their living standards and to improve, or at least restore, their former livelihood.

1.2.2 Due Diligence methodology

In order to achieve this goal, the following activities have been developed:

For social assessment

1. Description of the size of damage to assets and livelihoods that was encountered by the farmers
2. Evidence that the Project used avoidance strategies both in the design and the actual implementation of the activities;
3. Description of the affected groups and their socioeconomic conditions;



4. The type of measures taken to address those damages, including compensation to farmers for pipeline installation and the documentation kept to support that those measures were taken;
5. Assessment of the Grievance redress mechanism that people are aware of.

For environmental assessment

1. The compliance with environmental mitigation measures should be addressed
2. Define any corrective procedures to be adhered to

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/BP4.11 was not be applicable to Zefta city. OP/BP 4.12 was not applicable to the land obtained for the off-take in Zefta city as the process of obtaining the land for the off-take was based on mutual consent between the seller and buyer.

The local distribution company responsible for project implementation in Zefta is Egypt Gas.(غاز مصر)

It was relatively challenging to conduct this Due Diligence as there was limited documentation of all activities conducted. Given the absence of any proper documentation, the team relied on conducting meetings with some of the PAPs and conduct site visits to the route of the pipeline in order to verify the status and conditions of the affected lands. With regards to EEAA approvals on constructions, there were no ESIA or scoped ESIA for the pipeline in place. Yet, there was a scoped ESIA for the PRS that obtained an Environmental Approval

1.3 Contributors

The Due Diligence Assessment report has been prepared by EcoConServ Environmental Solutions with collaboration and facilitation from EGAS, Egypt Gas HSE and Engineering Departments. The names of EcoConServ experts who have participated in the preparation of the DDA study are listed in **Annex 1** of this report.

1.4 Description of the project areas

The off-take is an area of land that was obtained to install a valve room that connects the Natural Gas national grid to the PRS. The off take in Zefta connected the new PRS by a high-pressure pipeline. At the off-take location, valve rooms/valve ditching is constructed so as to control the flow of the natural gas through the pipeline (branch). These valves work like gateways for the Zefta area.



The off-take is about 18 km far from Zefta PRS. It was connected to Shebsheir- Banha high pressure pipeline. Zefta high pressure pipeline has been completely installed. The path starts with a pipeline of 28" diameter from the off-take. It extended in parallel to El Atf drainage in the western area. It diverts south towards Izbet Naqra El Bahary. Thereafter, it extends south towards Izbet Saba' Regal until reaching the boundaries between Menofia and Gharbia Governorates. It extends south of Hannoun village. Thereafter, it moves to the north in order to avoid Damanhour El Wahsh village. Thereafter, it extends in agriculture lands until reaching the graveyards. Then it passes by el Khadrawya canal, Kafr El Hadedy Fersis and Izbet El Eslah avoiding El Gahsh hamlet. It goes left until reaching the PRS.

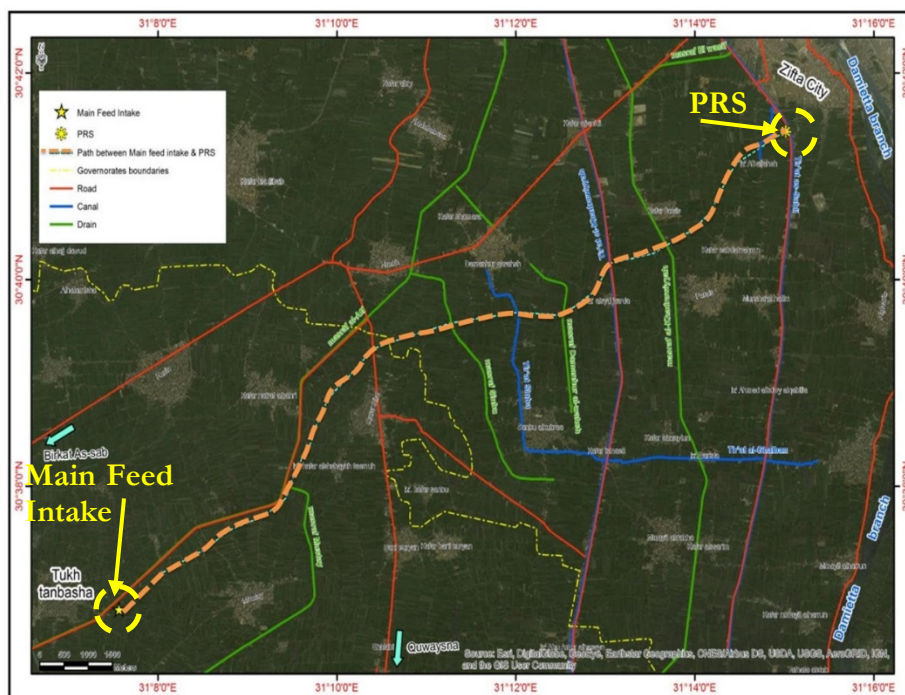


Figure 1-1: Existing Zefta inlet connection /pipeline “70bar system”



Figure 1-2: Hennon Kafr Helal road



Figure 1-3: Small roads in the project areas



The pipeline is administratively located in three districts, two in Menofia governorate and one in Gharbia. The following table shows project sites.

Table 1-1: Administrative territories to be traversed within Gharbia and Menoufia Governorates

District	El Gharbia				Menofia		
	Zefta District				Berket El Sabea District		Quesna District
Area	Damanhour El Wahsh	Hennon	Kafr Fersis	Sandbast	Kafr Helal	Tokh Tanbasha	Mostay
Population	11500	9923	6188	34208	12151	26339	15947

Source: Poverty Mapping, CAPMAS 2013

1.5 Project Work Packages

As mentioned above, the Off-take from the national grid and the HP pipeline (70 bar system) already exists. The Off-take is the point on the HP national grid pipeline where a branch of the pipeline is constructed to connect a new PRS to the national grid. At the Off-take location, valve rooms/valve ditching is constructed so as to control the flow of the natural gas through the pipeline (branch). These valves work like gateways for the Zefta area.

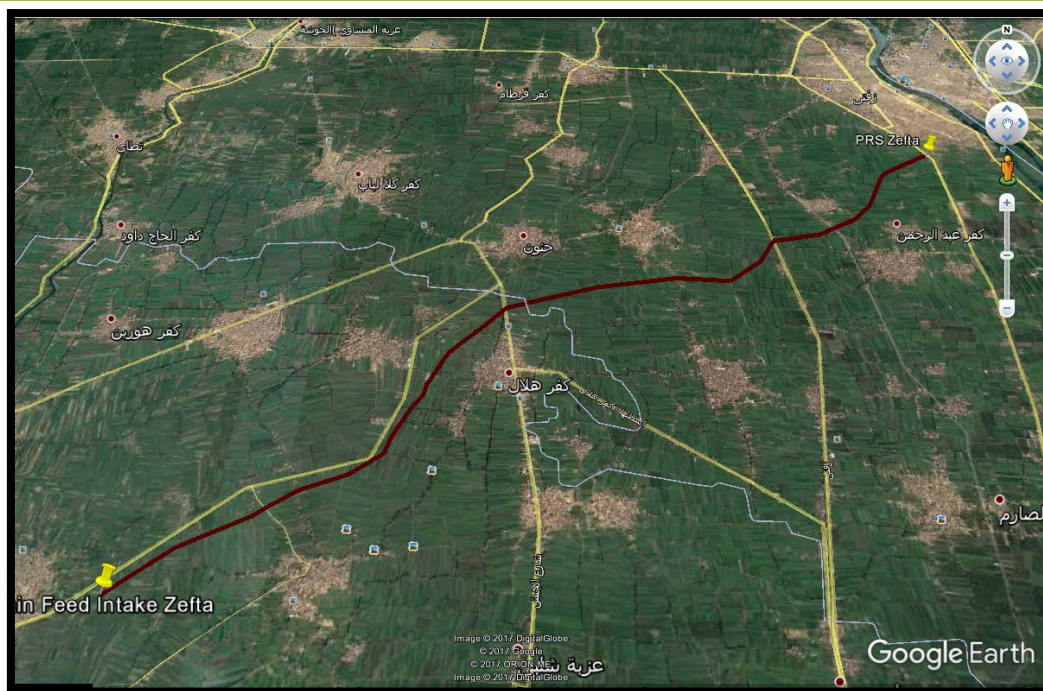


Figure 1-4: Off-take location



1.6 Project Activities of Construction Phase

Construction carried out by qualified and approved contractors under the supervisions and monitoring of Egypt GAS “LDC”. The work broadly split into the following phases:

1.6.1 Right of Way Activities

Egypt Gas managed its access for the Right of Way (ROW) through governmental permits from the relevant ministries/organizations. The contractor implemented the ROW activities to clear any obstacles that may interrupt the excavation activities. Before any excavation activities, the contractor coordinated with the different authorities to determine the existing infrastructure in the project’s area (e.g. water lines, sewage lines, electrical cables and telecommunication lines) so as to avoid any undue damage. In case of lacking sufficient information on the available infrastructure, the contractor carefully excavated a trial pit.

In case of the asphalt roads, an excavator was used to remove the asphalt layers. The contractor excavated the trench in which the pipeline was laid with the following dimensions with a possibility of having 10% excess where required by works in some areas

- Depth to the pipe top elevation below the general ground level
 - 1 m for all land types other than rocky lands
 - 0.7 m for rocky lands.
- Width of trench
 - Pipe outside diameter “with coating” + 0.4 m
- Angle of trench
 - Rocky area- vertically cut
 - Compacted soil - 40° to vertical
 - Running soil - 70° to vertical

At locations with irregular ground elevations, additional excavation was applied to avoid undue bending of the pipe. In addition, and in case of having crossing with other underground infrastructure lines/cables, the trench was deepened so that the pipeline is installed below or above the existing lines/cables.

1.6.2 Pipe Laying and Trench Backfilling

After ditching, the pipes were laid in the trench. The pipes “originally coated with polyethylene” are generally stored and stacked in a devoted area in a way that ensures their protection from any effects that may damage the pipes or their coatings. Storing areas were owned by the LGU and allowed to be used by the LDC. In addition, the contractor set quality control procedures during the transportation and handling of pipes for the same reason. The pipes were welded together, and a quality control test using x-rays was applied to ensure the welding effectiveness.



1.6.3 Hydrostatic Testing

To ensure that the pipeline can withstand pressures higher than the operating natural gas pipeline, the natural gas flow was not started before applying the hydrostatic pressure test. The test was conducted by introducing pressurized water into the pipeline (150% of operating pressure) for 24 hours and checking whether there were any pressure losses. This was detected by the pressure recording instrument connected to the pipeline during the test.

The water used in the test was estimated at 800 cubic meters. It was clean fresh water and free from any substance which may be harmful to pipe material (including high levels of salinity). The water used in the hydrostatic test of this project was sourced from water trucks. A filter of sufficient capacity was accordingly installed between the water source and the suction side of the pump. Hydrostatic testing was followed by dewatering and gauging.

Before introducing the water, a 'bi-directional pig' was placed in the beginning of the pipeline. Then the pipeline was filled with fresh clean water, where the 'bi-directional pig' was moving in the entering water direction, and came out from the other side guaranteeing that there were no air pockets inside the pipeline. After raising the water's pressure, and ensuring the test's success, another 'bi-directional pig' was introduced to discharge the water. Used water was discharged into small drainages. There is no evidence of any tests applied for water before discharging it.

1.6.4 Dewatering

The 'bi-directional pig' used was based on foam or rubber. Pigs continue operation until there was no evidence of having water in the pipeline as determined by the tests. Such tests were either the calculation of the gain in weight of the pig or measuring of the dew point of the compressed air entering and exiting the pipe line.

1.6.5 Magnetic Cleaning and Geometric Pigging

To ensure that the pipeline is free of any solid materials which may cause erosion to the pipeline, pipeline cleaning was conducted using 'pigging' technique. A series of magnetic cleaning pigs were run until the pipeline was judged by the company to be free of magnetic debris. After that, the contractor ran a geometric pig. After a successful operation by the geometric pig, the pipeline was left with positive pressure of at least 2 bar using either dry air or dry nitrogen as determined by the company so as to discharge any metallic components still present. The resulting solid waste from the pigging operation was disposed by applying LDC's specific solid waste management procedure.

1.6.6 Purging and Commissioning

Before starting the flow of Natural gas, the pipeline was purged by flushing with dry nitrogen at ambient temperature to ensure that no operational problems arise from air or water left in the pipeline. The pressure of Nitrogen was gradually increased till it reached



the operating pressure, and then the operation started by replacing the Nitrogen with Natural gas.

1.6.7 Pipeline Crossings

To install a natural gas pipeline beneath the ground level, this can either be done by digging a trench or using trenchless technologies. Trenchless technologies can be further classified as guided methods and non-guided methods. In this analysis, the most famous technology in each category (which are generally employed by LDC) were considered; namely, horizontal directional drilling (HDD) representing the guided trenchless technology, auger boring representing the non-guided trenchless technology, and the open-cut representing the trench technology.

1.6.8 Construction work in the valve room

The construction of the valve room includes some structural work (reinforced concrete installation) in addition to the electromechanical components and the commissioning activities.

1.7 Activities of Operational Phase

Such kinds of projects do not include much operational activities while the natural gas flows through the pipeline. The main activities are the monitoring of the pipeline and the routine checking for the occurrence of gas leaks. The following sub-sections present more details about these activities.

1.7.1 Pipeline Patrolling

Pipeline patrolling is carried out in order to identify activities (e.g. construction activities nearby) or actions (e.g. trespass) that could damage the pipeline, and accordingly cause safety problems that may reach to explosion. Patrolling also identifies areas of concern such as land slippage etc. in the general area of the pipeline that could cause subsequent problems. Written reports showing the results of the pipeline patrolling are reported to the sector office. Along the whole pipeline route, 3 pipeline classes make up the path of the pipeline which are classes 2, 3, and 4. The number of buildings is usually accounted in a zone of 200 meters wide on either side of the pipeline route, and in section of 1 km lengthwise. As the location class increases, the patrolling frequency increases as well.

1.7.2 Leakage Survey

Leakage Survey is conducted to protect the population against the effects of escaping natural gas and to early detect any damage to the pipeline or the components of the valve room. The Cathodic protection system is also inspected weekly to ensure its effectiveness. Written reports showing the results of the leakage survey are reported to the sector office, and in case of detecting any leakage, the maintenance department quickly perform the required procedures to fix the leakage source. The staff undertaking patrolling and leakage surveys must be fully trained before carrying out such duties.



1.7.3 SCADA (Supervisory Control and Data Acquisition System)

LDC Company is working with SCADA system, which is a highly sophisticated integrated system used to control the national natural gas pipeline network. The SCADA system performs remote controlling of the valve rooms to adjust the operating pressure, and if necessary change the flow of natural gas by bypassing the main route. The SCADA system can also detect natural gas leakage if a pressure drop was observed in certain pipeline. The SCADA system is connected with the fiber optics system installed in the pipelines.

1.8 Resources Consumption

1.8.1 During Construction Phase

i) Water

Water was mainly used during the construction phase in the hydrostatic testing in addition to the domestic uses by the workers and engineers. The water used for construction activities was sourced from trucks, while water used for the hydrostatic testing was sourced from the water company. Drinking water was bottled. The amount of water used during the construction phase of this project was about:

- Domestic uses by the workers and engineers: 4 m³/day
- Construction activities: 3500 m³
- Hydrostatic testing: 800 m³

ii) Fuel

Diesel fuel was mainly used for diesel generators that supplies electricity to the different construction activities including welding. In addition, diesel was the fuel used by the trucks and excavators.

During Operation Phase

i) Electricity

The electricity consumption in the operation phase was sourced from the generators. It was mainly consumed at the control room.

1.9 Waste Generation

1.9.1 During Construction Phase

Solid waste during construction phase comprised of domestic waste, construction waste and some hazardous wastes from the project activities. The waste included the following waste streams:

Hazardous wastes:

- Used oil waste



- Asphalt
- Miscellaneous containers, paint cans, solvent containers, aerosol cans, adhesive, and lubricant containers

Non-hazardous wastes:

- Soil (excavated or surplus)
- Packaging materials
- Damaged products (pipes, etc.);
- Packing timber;
- Paving materials;
- Electrical cable off-cuts;
- Concrete;

1.9.2 During Operation Phase

The pipeline operation did not result in any solid waste during the operation phase.

1.10 Avoidance mechanism of unfavorable land related impacts

It is the policy of the LDC to minimize the unfavorable impacts, particularly, impacts related to crop damage and land taken. The following procedures have been adopted in order to avoid the occurrence of resettlement and minimize its impacts if unavoidable:

- The high-pressure pipeline was designed after screening the areas in order to avoid any dense area i.e. El Gahsh hamlet, and Damanhour el Wahsh.
- The project tried to avoid damaging trees and constructions as they are of permanent impact. Additionally, the loss of trees takes at least 3-5 years to be restored. Therefore, no trees were reported in the compensation lists provided by Egypt Gas.
- The pipeline passes through the agriculture lands. All equipment was transferred in the path of pipeline to transfer construction materials. This managed to reduce the affected areas.
- Reference to stakeholder engagement activities results, the farmers were allowed to harvest their crops as long as the time plan of the pipeline construction will not be affected.
- The duration of construction did not exceed few days. The limited construction period enabled the farmer to restore their income shortly, especially, in case they plant clover.



2 CHAPTER TWO: PROJECT IMPACT ASSESSMENT AND SIZE OF DAMAGE TO ASSETS & LIVELIHOODS

There was no standalone Environmental impact assessment conducted on the pipeline. However, an ESIA was prepared for Zefta PRS and the offtake and obtained Environmental Approval dated 21/05/2014 Annex (2)

(<http://www.egas.com.eg/docs/Zefta%20PRS%20ESIA.PDF>) Additionally there is an ESIA developed for the Natural Gas Connection in Gharbia Governorate, that covered the LP network in some districts in Gharbia Governorate in addition to Zefta and Kafr El Zayat PRSs. Environmental Approval dated 26/04/2018 attached in Annex (3)

(<http://www.egas.com.eg/docs/EX.%20Summary%20ESMP%20Gharbia%20.pdf>)

The consultant tried to define the impacts resulted from the pipeline and assessed how they were managed. The below impacts were defined in full cooperation with the site teams from Egypt Gas and supplemented by meetings with the surrounding communities.

2.1 Project impacts

The installation of high pressure pipeline project is predicted to have resulted in some adverse impacts in the project areas that can be summarized as follows:



Table 2-1: Relevant environmental and social risks, impacts and status of compliance

Potential Impact Significance (Duration, Difficulty to mitigate)												
Activity	Air emissions	Noise	Reduction of traffic flow	Ground water	Solid, hazardous wastes and liquid waste	Community health and safety	Labor conditions and occupational health and safety	Labor influx	Child labor	Soil pollution	Crop damaging	Land acquisition
Negative impacts during construction phase												
Mobilization	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	N/A	Temporary, medium	Temporary, extremely low	Temporary, low	N/A	Temporary, low	Temporary, low
Excavation	Temporary, medium	Temporary, low	Temporary, low	Temporary, medium	Temporary, medium	Temporary, low	Temporary, medium	Temporary, low	Temporary, low	Temporary, low	Temporary, low	Temporary, low
PE Pipe laying	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	N/A	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	Temporary, low
Leakage testing	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	N/A	Temporary, medium	Temporary, low	Temporary, low	N/A	Temporary, low	Temporary, low
Impact Assessment	Medium	Minor	Low	Low	Medium	Low	Medium	Low	Low to medium	Medium	Low	Low
Compliance status	Compliance	Compliance	Not verified	Not verified	Compliance	Not verified	Compliance	Not verified	Not verified	Compliance	Compliance	Compliance
Negative impacts during operation phase												
Pipeline and off take operation	N/A	No impact	N/A	N/A	No impact	Permanent low	Permanent low	N/A	N/A	N/A	N/A	No land needed
Repairs	N/A	No impact	N/A	N/A	No impact	Permanent low	Permanent low	N/A	N/A	N/A	Extremely minor	Extremely minor
Impact Assessment	Of no significance	Of no significance	Of no significance	Of no significance	Of no significance	Medium	Minor	Of no significance	Of no significance	Of no significance	Of no significance	Of no significance
Compliance status	Compliance	N/A	N/A	N/A	N/A	Compliance	Compliance	N/A	N/A	N/A	N/A	N/A



Below is a table reflecting a summary of received evidences related to the associated facilities:

Table 2-2: Available indicators and evidence of compliance

Impact	Indicators/Evidence	Attachments
Soil and land	<ul style="list-style-type: none"> - No complaints were detected about damaging soil or spills - The project affected persons reported that their lands fertility was retained 	Annex 4 includes: <ul style="list-style-type: none"> - Environmental mitigation procedures - Solid waste management, required PPEs, Spills precautions and storage methods
	<ul style="list-style-type: none"> - Clear compensation procedures are in place - Receipts of all affected persons - Lists of project's affected persons who received compensation and the value of compensation - Negotiation and information sharing was applied prior to any compensation took place 	Annex 5: Compensation Documents includes: <ul style="list-style-type: none"> - Steps and procedures of land acquisition applied by Egypt Gas - Compensation scanned receipt - Value of agricultural crop compensation - List of affected people
Air emission	<ul style="list-style-type: none"> - No complaints were raised about air pollution during the construction 	Annex 6 includes: <ul style="list-style-type: none"> - Occupation health and safety
Noise	<ul style="list-style-type: none"> - Occupational health and safety manual is in place - No complaints raised by the workers 	Annex 6 includes: <ul style="list-style-type: none"> - Noise measurements - Occupation health and safety
	<ul style="list-style-type: none"> - No complaints raised by the surrounding communities - All neighbors were informed about the project - The farmers reported watching out drilling and excavations 	
Occupational health and safety	<ul style="list-style-type: none"> - The workers were watching the construction areas. - No documentation for capacity building conducted to worker as almost all induction meetings and capacity building were adhering to on the job training approach 	Annex 6 includes: <ul style="list-style-type: none"> - Occupation health and safety
Solid and Hazardous waste management	<ul style="list-style-type: none"> - Temporary storage areas were in place - Empty cans were collected and transferred to Abo Rawash 	Annex 4 includes: <ul style="list-style-type: none"> - Environmental mitigation procedures - Solid waste management, required PPEs, Spills precautions and storage methods
Traffic	<ul style="list-style-type: none"> - No complaints raised about traffic - No signs were placed in the surrounding sites 	NA



2.2 Impacts due to Land acquisition and Size of Damage to Assets & Livelihoods

2.2.1 Temporary project's adverse impacts

The project resulted in a temporary impact on the agriculture lands due to the following activities:

- Damaging crops during the installation of high pressure pipeline

The installation of pipelines resulted in removing of the vegetation along the 18-km pipeline's route. **The total affected land is 691 plots that are owned by 524 people. The total actual affected land (from official documents developed by the agriculture association is 290306-meter square. 92% of the affected groups are males, whereas, 8% are females. The main crops cultivated by the PAPs are clover, corn, wheat, cabbage, soybeans and vegetables (see Annex 5 sample of compensation scanned lists)**

- Damaging crops within access roads

This impact resulted due to passing through agriculture lands either on foot or using a vehicle. Access roads' impacts are limited as the contractors tend to use the affected lands that were excavated during the installation of pipelines.

2.2.2 Permanent project impacts:

No impacts pertaining to land are anticipated after the pipeline is installed and it is under operation. There was no restriction of land use in the route of this project since the PAP continued cultivating all kinds of crops they were cultivating. It is also normal for the trees cultivation to be made in rows with about 12 m distance left between the rows. So, the farmer will put into consideration the location of the pipeline and ensure it is in the middle of the 12-m distance. Moreover, the types of trees with deep roots (e.g. wood trees) which are restricted above the gas lines are not normally cultivated in this area.

2.3 Conclusion

The installation of the pipeline resulted in adverse impacts that have required proper management systems to be applied by Egypt Gas.

Generally speaking, impacts related to land acquisition was important to be highlighted, as it should adhere to the World Bank safeguard policy OP 4.12 pertaining to land acquisition. However, considering fact that the project was financed by Egyptian fund and all compensation activities were completed prior to the WB, it is relatively difficult to apply any remedial actions to the HPP's land acquisition activities.



Impacts related to health and safety of workers and community was of high importance as the national legislation, particularly, labor law number 12 of year 2003 pays attention to workforce health and safety.



3 CHAPTER THREE: SOCIO ECONOMIC BASELINE CONDITIONS OF THE AFFECTED AREAS

This section presents a summary of the main findings of the socio-economic survey conducted in February 2017. The households' head sex, their educational level, source of income and land tenure are the main socioeconomic characteristics to be presented.

3.1 The rationale of survey

Based on the Operational Policy of the WB (OP 4.12), *“the involuntary resettlement resulting from developmental projects, if unmitigated, will give rise to difficult economic, social, and environmental risks. Therefore, it is crucial to investigate the socioeconomic conditions of the PAPs during the RAP preparation. The collected information will be the baseline required for the monitoring and evaluation activities”*.

The Study team prepared a list of questions in form of a guideline. It was utilized in order to cover the main socioeconomic conditions of those who were affected by the project. The collected data was of qualitative nature. Additionally, a census structured form was utilized in order to collect quantitative data about all project affected people. Additionally, a full formal census was developed by the agriculture associations in the project areas. The census was not developed at the same time. The project sites were segregated into segments. Each segment takes between three to four weeks to prepare its census.

3.2 Results of a census survey

The census data collected in February – March 2017 revealed that the total number of PAPs is 524 farmers. However, the total affected plots of lands are 691 plots. The total actual affected areas of lands that were cultivated by crops were 290,305 m².

3.3 Socioeconomic conditions of the project sites

The pipeline passed through two governorates, namely Menofia and Gharbia Governorates.:

- In Gharbia Governorate the project was implemented in Zefia District, the pipeline passed through the following hamlets and villages: Damanhour El Wahsh, Hennon, Kafr Fersis and Sandbast.
- In Menofia Governorate, the project passed in Berket El Sabea (Kafr Helal Hamlet and Tokh Tanbasha Hamlet) and Quesna District (in the areas located in Mostay village).

3.3.1 Population

The secondary data collected showed that the pipeline was implemented in two governorates and three districts:

- 1- Zefia District in the jurisdiction of Gharbia Governorate.



- 2- Berket El Sabeia District and Quesna in Menofia Governorate. The pipeline passed across seven sub-districts namely, Damanhour El Wahsh, Hennon, Kafr Fersis, Sandbast, Kafr Helal, Tokh and Mostay. The total population of the five areas are estimated at 116.256 people in 2013 in accordance to Poverty Mapping 2013.

Table 3-1: Project areas population

Governorate	El Gharbia				Menofia		
District	Zefta District				Berket El Sabea District		Quesna
Sub-district	Damanhour El Wahsh	Hennon	Kafr Fersis	Sandbast	Kafr Helal	Tokh Tanbasha	Mostay
Population 2013	11500	9923	6188	34208	12151	26339	15947
Population 2006	10146	8755	5460	30177	10577	22926	13877

Source: Poverty Mapping 2013- CAPMAS

3.1.1. Household size

The project areas accommodate 26,548 households. About 29.0% of the households reside in Sandbast. The households' size is almost the same at all project sites. The biggest households are located in Damanhour El Wahsh 4.4 person/household as shown in table 3-2.

Table 3-2: Project areas households' number and size

Governorate	El Gharbia				Menofia		
District	Zefta District				Berket El Sabea District		Quesna
Sub-district	Damanhour El Wahsh	Hennon	Kafr Fersis	Sandbast	Kafr Helal	Tokh Tanbasha	Mostay
Household 2013	2316	2337	1460	7709	2767	6071	3888
Household size	4.4	4.2	4.2	4.4	4.4	4.3	4.1
Households % distribution	8.7	8.8	5.5	29.0	10.4	22.9	14.6

Source: Poverty Mapping 2013- CAPMAS

3.1.2. Illiteracy rate

The illiteracy rate tends to be high in all project areas. The highest percentage reported in Damanhour El Wahsh village (37.7%) whereas the least ratio reported was in Kafr Helal (24.67%). There is a significant gap between males and females, as females' illiteracy rate is higher than males in all project areas. The highest percentage reported is (48.8%) in



Damanhour El Wahsh. This can be attributed to the reluctance of rural residents to educate females, especially, those above 30 years old.

Table 3-3: Project areas illiteracy rate (%)

Governorate	El Gharbia				Menofia		
District	Zefra District				Berket El Sabea District		Qesna
Sub-district	Damanhour El Wahsh	Hennon	Kafr Fersis	Sandbast	Kafr Helal	Tokh Tanbasha	Mostay
Illiteracy rate	37.70	26.24	27.78	32.68	24.67	25.36	36.72
Illiteracy rate among females	48.80	36.26	37.03	40.04	33.58	35.24	48.02

Source: Poverty Mapping 2013- CAPMAS

3.1.3. Labor force and unemployment

The total labor force that is defined as ***“they are the people who are able and willing to work (15+ years old)”*** within project areas varies between (44.67%) in Kafr Helal and (37.06%) in Hennon. The total labor force is reduced among females and especially in Damanhour El Wahsh (9.8%) as the community does not appreciate female work. Additionally, females are not willing to work outside their house. The highest percentage of female within labor force reported in Tokh Tanbasha (15.22%). However, the lowest ratio reported was in Kafr Fersis.

Agriculture areas tend to be of lowest unemployment rate than urban areas as agriculture activities can absorb unskilled and semi-skilled laborers aside from their skills and educational level. The percentage of the unemployed people in the labor force is called the unemployment rate. Unemployment rate is the highest in Kafr Fersis (21.25%).

Unemployment rate among females is the highest in Sandbast (41.15%).

Table 3-4: Project areas labor force and unemployment rate

Governorate	El Gharbia				Menofia		
District	Zefra District				Berket El Sabea District		Qesna
Sub-district	Damanhour El Wahsh	Hennon	Kafr Fersis	Sandbast	Kafr Helal	Tokh Tanbasha	Mostay
% of individuals 15 years + who joined labor force	43.04	41.40	37.06	44.94	44.67	44.50	44.90
% of females 15 years + who joined labor force	9.80	14.70	9.14	14.25	13.01	15.22	10.15



Governorate	El Gharbia				Menofia		
District	Zefta District				Berket El Sabea District		Quesna
Sub-district	Damanhour El Wahsh	Hennon	Kafr Fersis	Sandbast	Kafr Helal	Tokh Tanbasha	Mostay
% of adult 24+ employed from the total labor force	49.57	48.46	42.60	50.50	49.89	52.13	51.82
Unemployment rate	8.80	16.46	21.25	16.45	12.39	7.35	6.11
Females unemployment rate	24.92	32.88	27.97	41.15	37.69	20.72	20.12

Source: Poverty Mapping 2013- CAPMAS

Aside from information provided about females' unemployment, women tend to work in their houses and their fields. They don't consider this as a work as it is unpaid. The majority of residents in all project areas work in agriculture sector. This is consistent with the primary data collected from the PAPs.

3.1.4. Expenditure, income and poverty rate

According to the Poverty Mapping developed by CAPMAS in 2013, the number of poor people in Mostay is (17.41%) in Mostay. The lowest percentage of poor people reported is (7.45%) in Hennon.

Per Capita Consumption reflected that Hennon is of the highest consumption (6486.16 EGP/year). However, the least consumption value was reported in Mostay (5387.63 EGP/year).

Female headed families tend to be poorer than the male headed families in accordance to the Expenditure, Income and Consumption report 2012. The female headed families ration was the highest in Kafr Fersis village (14.36%), while the least reported ratio was in Kafr Helal (4.60%).

Table 3-5: Poverty index

Governorate	El Gharbia				Menofia		
District	Zefta District				Berket El Sabea District		Quesna
Sub-district	Damanhour El Wahsh	Hennon	Kafr Fersis	Sandbast	Kafr Helal	Tokh Tanbasha	Mostay
Percentage of poor people	8.33	7.45	11.44	11.06	12.17	11.00	17.41
Poverty gap	1.07	0.91	1.49	1.59	1.55	1.45	2.32
Gini	0.17	0.17	0.16	0.18	0.17	0.17	0.15



Governorate	El Gharbia				Menofia		
District	Zefta District				Berket El Sabea District		Quesna
Sub-district	Damanhour El Wahsh	Hennon	Kafr Fersis	Sandbast	Kafr Helal	Tokh Tanbasha	Mostay
coefficient							
Per capita consumption	6443.27	6486.16	5978.51	6294.13	5895.74	6048.51	5387.63
Number of poor in 2013	958	439	708	3783	1479	2897	2776
% of female headed household	12.86	13.62	14.36	12.20	4.60	11.12	8.75

Source: Poverty Mapping 2013- CAPMAS

3.4 Socioeconomic conditions of the PAPS

- The total number of project affected people is 524 (Annex 5) presents a list of all PAPS. The highest percentage of PAPS reported in Damanhour El Wahsh (24.7%), whereas, the least percentage reported in Kafr Helal (2.7%)

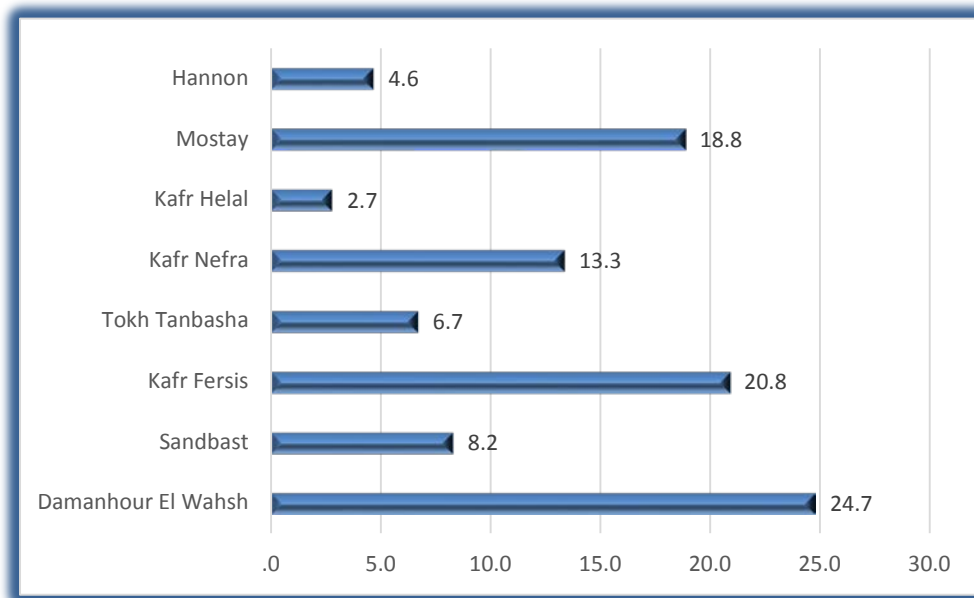


Figure 3-1: % Distribution of PAPS by Area

- The analysis of all owners of lands that are affected by the project reflected that about (92.0%) of them are males, whereas, only (8.0%) are females.
- (29.7%) of the affected lands are cultivated with clover, whereas lands cultivated with corn is estimated at (25.6%). The following figure represents the distribution of lands by crop type.

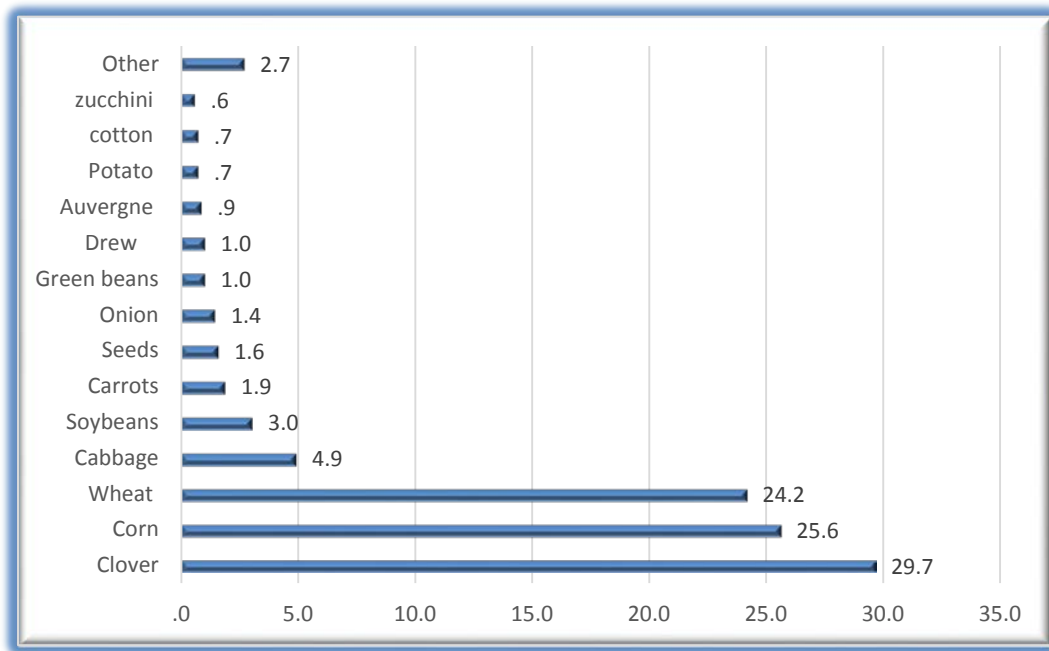


Figure 3-2: % Distribution of lands by crop type



4 CHAPTER FOUR: LEGISLATIVE AND REGULATORY FRAMEWORK

4.1 Applicable Environmental and Social Legislation in Egypt

- _ Law number 10 of year 1990 pertaining to involuntary land acquisition
- _ Law 217 of year 1980 for Natural Gas Activities
- _ Law 4 of 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 of year 1967 for General Cleanliness
- _ Law 93 of year 1962 for Wastewater
- _ Traffic planning and diversions
 - o Traffic Law 66/1973, amended by Law 121/2008 traffic planning
 - o Law 140/1956 on the utilization and blockage of public roads
 - o Law 84/1968 concerning public roads
- _ Work environment and operational health and safety
 - o Articles 43 – 45 of Law 4/1994, air quality, noise, heat stress, and worker protection
 - o Law 12/2003 on Labor and Workforce Safety
- _ Land acquisition decree No 503 /Year 2016 that is based on
 - o Law no 53 of year 1966 pertaining to Agriculture Law
- _ Law number 53 of year 1966 pertaining to agriculture and its amendments
- _ Law number 43 of year 1979 pertaining to the local administration and its amendments
- _ Law number 217 of year 1980 related to the Natural Gas and its executive procedures
- _ Law Number 203 of year 1991 related to the formation of Business Sector and its executive procedures
- _ The decree of the prime minister number 1009 of year 2001 pertaining to the establishment of EGAS
- _ Approval of the executive entities (Gharbia Governorate) dated 28th of January 2016
- _ Approval of the Army Force dated 5th of August 2015
- _ Approval of the Local Council of Gharbia and Menofia Governorates dated 9th of November and 3rd of December 2015

4.2 World Bank Safeguard Policies



This due diligence document was prepared against two operational policies applicable to the associated facilities in Zefta City. They are as follows: Environmental Assessment (OP/BP 4.01), and Involuntary Resettlement (OP/BP 4.12). It worth mentioning that OP/BP 4.12 was not applicable to the land obtained for the off-take in Zefta city as the process of obtaining the land for the off-take was based on mutual consent between the seller and buyer (willing buyer willing seller). With regards to the high-pressure pipeline that necessitated 18 km length * 20-meter width, it crossed the agricultural land in Zefta and accordingly compensation activities were applied.

The high-pressure pipeline was an associated facility for the proposed project. The line has been installed and temporary land acquisition activities were applied. OP/BP 4.12 was not applicable to temporary land acquisition activities as the line was previously funded by the national fund. Upon WB request, the pipeline is subject now to a Due Diligence reflecting the involuntary resettlement activities pertaining to the existing associated facility. The Due Diligence assess land acquisition against WB OP 4.12 that was not applied to project activities.

Gap analysis for key environmental and social issues concerns: Egyptian laws and WB Policies were conducted in the Environmental and Social Impact Assessment Framework of the project and disclosed on EGAS website as per the following link:

<http://www.egas.com.eg/docs/RPF%20for%20NG%20connections%20project%20for%2011%20Governorates.pdf>”

The WBG EHS Guidelines on Gas Distribution is found under the **World Bank Operational Policies** and is disclosed as per the following link:

<http://documents.worldbank.org/curated/en/429401496127411698/Environmental-health-and-safety-guidelines-for-gas-distribution-systems>

Table 4-1: Ambient Air Quality limits in the Egyptian legislations and WBG standards

	Requirements of Egyptian Legislation	Requirements of World Bank
Gap analysis	Outdoor Air Pollutants (in urban and industrial areas) as per Article 34 of Law No. 4/1994 amended by Law No. 9/2009 and Annex 5 of the Executive Regulations amended by Decree No. 710/2012.	Ambient Air Quality as per OP 4.01 WBG General EHS Guidelines (Table 1.1.1 ³⁴)

Table 4-2: Indicative limits for air quality

Ambient	air	Egyptian legislations µg/m ³	WB Requirements µg/m ³
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³World Health Organization (WHO). Air Quality Guidelines Global Update, 2005.

⁴ IT stands for Interim Target, which are the increment values that should be targeted by an organization during the implementation of a project leading to the recommended guideline values.



parameters	Ambient air pollutants threshold				WBG Ambient air pollutants threshold (based on WHO limits)			
	1 hr	8 hr	24 hr	1 year	1 hr	8 hr	24 Hr	1 year
Exposure period	1 hr	8 hr	24 hr	1 year	1 hr	8 hr	24 Hr	1 year
Carbon monoxide CO µg/m ³	30	10	N/A	N/A	N/A	N/A	N/A	N/A
Sulfur dioxide SO ₂ µg/m ³	350	N/A	150	60	N/A	N/A	125	N/A
Nitrogen oxides NO _x µg/m ³	300	N/A	150	60	200	N/A	N/A	40
Particulates PM ₁₀ µg/m ³	N/A	N/A	150	70	N/A	N/A	150	70
Particulates PM _{2.5} µg/m ³	N/A	N/A	80	50	N/A	N/A	N/A	N/A
TSP µg/m ³	N/A	N/A	230	125	N/A	N/A	230	80
Ozone	180	120	N/A	N/A	N/A	160	100	N/A

Table 4-3: Egyptian legislations and WB standards concerning Noise levels

Requirements of Egyptian Legislations		Requirements of World Bank Group	
Reference	Requirements	Reference	Requirements
Law No. 4/1994 amended by Law No. 9/2009 and its ERs amended by Decree No. 1095/2011 and 710/2012	Maximum allowable limit for ambient noise intensity	OP 4.01 WBG General Guidelines: Environmental Table 1.7.1	Limit of noise beyond the property boundary of the facilities.
Law No. 4/1994 amended by Law No. 9/2009 and its ERs amended by Decree No. 1095/2011 and 710/2012	Maximum noise limits in work environment	WBG General Guidelines: Occupational Health and Safety Table 2.3.1	Limit of noise exposure inside the work environment

Table 4-4: Standards and Limits for Ambient Noise

Type of area	Egyptian Law 4 Requirements		Receptor	Requirements of WB	
	DAY 7 a.m. to 10 p.m.	Permissible limit for noise intensity (decibel)		NIGHT 10 p.m. to 7 a.m.	One-hour L _{Aeq} (dB _A)
				Day time From 10 pm to 7 am	night time from 22:00-7:00
Sensitive Areas (schools- hospitals- public parks- rural areas)	50	40	Residential	55	45
Residential areas in with limited traffic and public services are available	55	45	Industrial	70	70
Residential areas in the city where commercial activities are available	60	50			
Residential areas located adjacent to roads which width is less than 12m, and workshops or commercial or entertainments activities are found	65	55			
Areas located adjacent to roads which width is 12m or more, or light industrial areas.	70	60			



Egyptian Law 4 Requirements			Requirements of WB		
Type of area	Permissible limit for noise intensity (decibel)		Receptor	One-hour LAeq (dBA)	
	DAY 7 a.m. to 10 p.m.	NIGHT 10 p.m. to 7 a.m.		Day time From 10 pm to 7 am	night time from 22: 00-7:00
Sensitive Areas (schools- hospitals- public parks- rural areas)	50	40	Residential	55	45
Residential areas in with limited traffic and public services are available	55	45	Industrial	70	70
Residential areas in the city where commercial activities are available	60	50			
Residential areas located adjacent to roads which width is less than 12m, and workshops or commercial or entertainments activities are found	65	55			
Industrial areas (heavy industries)	70	70			

Table 4-5: Standards and Limits for Noise Levels in the Work Environment

Egyptian Law 4/1994 Requirements		WB Requirements		
Type of place and activity	Maximum permissible noise [level equivalent to decibel (a)]	Location /activity	Equivalent level LAeq,8h	Maximum LAmax,fast
Work place with up to 8 hour shifts and aiming to limit noise hazards on sense of hearing*	85	Heavy Industry (no demand for oral communication)	85 dB(A)	110 dB(A)
Hospitals, clinics, public offices, etc.	80	Light industry (decreasing demand for oral communication)	50-65 dB(A)	110 dB(A)
Administrative offices – control rooms	65	Open offices, control rooms, service counters or similar	45-50 dB(A)	N/A
Work rooms for computers, typewriters or similar equipment	70	Individual offices (no disturbing noise)	40-45 dB(A)	N/A
Work rooms for activities requiring routine mental concentration	60	Hospitals	30-35 dB(A)	40 dB(A)
Hotels, bedrooms, and similar residential units	35			

* At the workplace, exposure time (8 hours) is halved for every additional 3 dBA over the maximum allowable limit. Above the maximum limit (85dBA for 8-hour shifts), wearing proper ear muffs is a must.

- Noise level at any time at the work place shall not exceed 135 dBA
- Noise shall be measured inside working environment in LAeq unit in accordance with ISO 9612/ ISO 1996 or Egyptian standards



Table 4-6: Egyptian legislations and WB standards concerning Biodiversity and Natural Protectorates

	Requirements of Egyptian Legislation	Requirements of World Bank
Gap analysis	<p>Law No. 102/1983 was created to allow for the protection of areas of special natural attractions, natural landscape, natural habitats and wildlife.</p> <p>Article 28 of Law No. 4/1994 and Article 23 of its ERs forbid the hunting, shooting or catching the types of birds and wild animals specified in Annex 4 of the Law. The Articles also forbid damaging the nests or the eggs of these birds.</p>	<p>As per OP 4.07, Natural Habitats , identifies the measures required in order to protect and enhance the environment.</p>

Table 4-7: Egyptian legislations and WB standards concerning worker health and safety

	Requirements of Egyptian Legislation	Requirements of World Bank
Gap analysis	<p>Law No. 4/1994 amended by Law 9/2009 and 105/2015 and its ERs amended in 2005, 2011, 2012, 2015, 2016 and 2017</p> <ul style="list-style-type: none"> • Annex 6-point source emissions • Annex 7 noise intensity • Annex 8 workplace emissions • Anne 9 maximum and minimum limits of temperature and humidity, exposure period, and means of protection 	<p>WBG General Guidelines: Occupational Health and Safety Guidelines:</p> <ul style="list-style-type: none"> • General Facility Design and Operation • Communication and Training • Physical Hazards • Chemical Hazards • Biological Hazards • Radiological Hazards • Personal Protective Equipment (PPE) • Special Hazard Environments • Monitoring

Overall, Egyptian legislation provides environmental compliance procedures and emission limits which are at least comparable with WB/international requirements, if not more stringent. 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 for specific issues or pollutants, WB requirements will be adopted.

However, EGAS and the local distribution companies are committed to comply with the more restraining legal requirements.



4.3 World Bank Group General Environmental, Health, and Safety Guidelines, WBG Environmental, Health and Safety Guidelines for Gas Distribution Systems ⁵

The General EHS Guidelines are designed to be used together with the relevant Industry Sector EHS Guidelines, which provide guidance to users on EHS issues in specific industry sectors.

In addition to the above mentioned safeguards policies, the Directive and Procedure on Access to Information ⁶ was followed by the Project. As such, the Due Diligence report would be disclosed on EGAS website.

4.4 Permits Required

- Approval from the Ministry of Agriculture to install the pipelines on agriculture land in accordance to the presidential decree Number 615 of year 2016.
- Army force permits install the pipelines
- Installment permit to be obtained from the Local Governmental Unit in Zefia-Gharbia.
- Environmental permit: according to Egyptian Law for the Environment, Law 4/1994 amended by Law 9/2009. EEAA approval on ESIA is considered the environmental permit.
- Utility installation permission to the pipelines
- Permission from the High Council of Antiquities in accordance to Law No 117 of year 1983 and its amendment No 12 of year 1991

⁵ <http://documents.worldbank.org/curated/en/429401496127411698/Environmental-health-and-safety-guidelines-for-gas-distribution-systems>

⁶ <https://policies.worldbank.org/sites/ppf3/PPFDocuments/Forms/DispPage.aspx?docid=3694>



5 CHAPTER FIVE: MITIGATION MEASURES TAKEN TO ADDRESS PROJECT IMPACTS

This section identifies the measures taken to mitigate adverse impacts. It presents the organizations and/or agencies primarily responsible for resettlement implementation.

5.1 Institutional Framework for ESMP Implementation

5.1.1 Environmental and Social Management Structures

EGAS is the supervisory body. **Egypt Gas** is the implementing body. Below is the management structure of **Egypt Gas**.

Being the implementing body of the natural gas network in project areas, **Egypt Gas** has a direct involvement with the environmental management and monitoring of the natural gas network. **Egypt Gas** has limited environmental and social background. Therefore, an upgrade in their environmental and social capacity was necessary. EGAS is responsible for providing **Egypt Gas** staff with the needed information.

One of the standard tasks of the HSE Departments of **Egypt Gas**, supervised by EGAS, is to ensure that the Environmental and Social Management Plan of the project is implemented in all the phases of the Project.

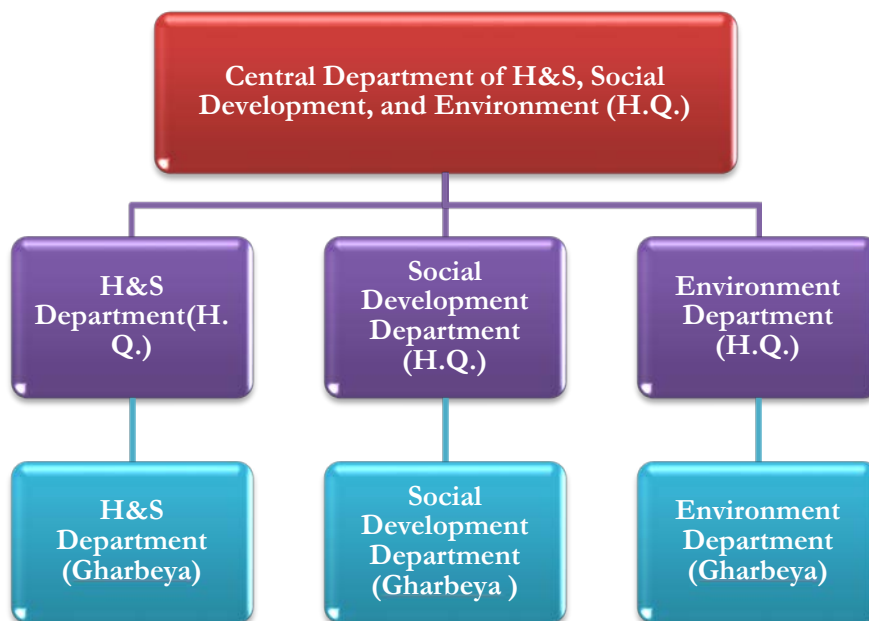


Figure 5-1: Egypt Gas ESMP organogram

The above mentioned staff attended various capacity building events conducted by EGAS, EcoConServ and the World Bank. The certificates pertaining to WB training are attached in **Annex7** World Bank certificates.



5.1.2 Compensation committee structure

A Compensation Committee is initiated in Decree 26/2016 (see **Annex 8** Committee formation in Gharbia Governorate) to handle land acquisition procedures. Members of the committee are presented as follow:

Name	Affiliation	Title
Eng. Hany Ramadan Abd el Gawad Awad	Egypt Gas	Head of Committee
Mr. Ahmed Said Ibraheim El Sayed	Egypt Gas	Member
Mr. Magdy Saleh Soliman Mosa	Egypt Gas	Member
Mr. Mohamed Abd El Rahman Ibraheim Farag	Egypt Gas	Legal member
Mr. Ahmed Ameir Zaky El Sheikh	Egypt Gas	Financial Member
Eng. Sayed Ahmed Sayed	EGAS	Member
Mr. Maged Fayd	EGAS	Member
Mr. Mohamed Abd El Moneam Omar	EGAS	Legal Member
Mr. Ahmed Gamal Aziz	EGAS	Financial Member

In addition to the above mentioned members, the committee can cooperate with any entities e.g. agriculture association in Gharbia Governorate.



Figure 5-2: Current status of lands



Figure 5-3: Discussion with one of the residents about the project impacts

5.2 Summary of Due Diligence Performance Assessment

This section presents the gap assessment results against OP 4.12 and World Bank Group General Environmental, Health, and Safety Guidelines, WBG Environmental, Health and Safety Guidelines for Gas Distribution Systems.



The presentation of gap assessment result is segregated into:

- 1- Procedures of land acquisition and compatibility with the WB OP 4.12
- 2- Adherence to environmental, social and health & safety mitigation measures during construction phase that has been already completed
- 3- Adherence to environmental, social and health & safety mitigation measures during operation phase until 2018

Afterwards, recommended corrective actions plan will be developed to be implemented during operational phase .

5.2.1 Assessment of compliance with OP 4.12

The LDC applied a procedure to temporary obtain the route of the high-pressure pipeline that was compared to the Bank policy OP 4.12 as follows:

Table 5-1: Assessment of compliance with OP 4.12

OP 4.12 requirements	Procedure	Required corrective measures
OP 4.12 stipulated the necessity to carry out a census by the borrower to identify the persons who will be affected by the project to determine who will be eligible for assistance, and to discourage inflow of people ineligible for assistance.	The committee in coordination with project technical team have divided the total route (18 Km) to different segments (each segment 2-3 km long), screened the affected lands and prepared a census for the affected lands and identified the PAPs entitled for compensation in each segment (see Annex 5 Lists of project's affected persons).	No corrective measures are required as the full census was completed
Cut-off date is the date the census begins. The cut-off date could also be the date the project area was delineated, prior to the census, provided that there has been an effective public dissemination of information on the area delineated, and systematic and continuous dissemination subsequent to the delineation to prevent further population influx.	Due to segmentation of the line, it was relatively difficult to define a cutoff date. Additionally, the national legislations do not stipulate any cutoff date for agriculture lands. Consequently, no cutoff date was defined.	No corrective measures to be applied as all compensation activities were completed
OP 4.12 stated that "Where it is not feasible to avoid resettlement, resettlement activities should be conceived and executed as sustainable development programs, providing sufficient investment resources to enable the persons displaced by the project to share in project benefits. Displaced persons should be meaningfully consulted and should have opportunities to participate in planning and implementing resettlement programs.	Meetings were conducted with the PAPs in each segment in order to inform them about the project and compensation arrangements, as well as the value of the compensation and payment procedures. Meetings are being conducted in full cooperation with the Agriculture Association. There is no unified cutoff date in accordance to the procedures followed by Egypt Gas.	No gaps defined
Resettlement assistance is assured by the borrower. Resettlement assistance may	Egypt Gas provides monetary compensation for the affected crops and assets.	No corrective measures to be



OP 4.12 requirements	Procedure	Required corrective measures
<p>consist of land, other assets, cash, employment, and so on, as appropriate.</p>	<p>There is no time interval between disbursement of compensation and damaging crops. Therefore, no transitional assistance to be applied. However, the PAPs are enabled to harvest their crops and move trees to be replanted in different area as additional remedial actions</p>	<p>applied</p>
<p>Arrangements for monitoring of resettlement activities by the implementing agency, supplemented by independent monitors as considered appropriate by the Bank, to ensure complete and objective information; performance monitoring indicators to measure inputs, outputs, and outcomes for resettlement activities; involvement of the displaced persons in the monitoring process; evaluation of the impact of resettlement for a reasonable period after all resettlement and related development activities have been completed; using the results of resettlement monitoring to guide subsequent implementation.</p>	<p>The PAPs prepared their official documents declaring their legal status with the help of the Agriculture Associations Additionally, consultation activities documentation remains limited</p> <p>Compensations were paid to all the PAPs within one month, this process was finalized before the construction works within each segment. Annex 5 includes a sample of receipts signed and finger printed by the PAPs. The date is included in most of the signed receipts. The majority of them received their compensation in 2016 (see Annex 5).</p>	<p>Proper documentation is crucial for monitoring and evaluation process.</p>
<p>OP 4.12 stipulated that “The borrower is responsible for preparing, implementing, and monitoring a resettlement plan, a resettlement policy framework, or a process framework (the "resettlement instruments"), as appropriate, that conform to this policy. The resettlement instrument presents a strategy for achieving the objectives of the policy and covers all aspects of the proposed resettlement. Borrower commitment to, and capacity for, undertaking successful resettlement is a key determinant of Bank involvement in a project.”</p>	<p>Egypt Gas and EGAS monitor the process of compensation through attending various compensation meetings with the PAPs and maintain all compensation documents (i.e. lists of PAPs, amount of compensation, receipts signed by the PAPs ...etc.)</p> <p>All payments were reimbursed from EGAS after the completion of the construction work in each area as EGAS is the responsible entity to pay the compensation.</p> <p>The Compensation Committee disbursed the compensation value according to the following system:</p> <p>Full compensation was disbursed before the construction works.</p> <p>The owner/tenant has received any additional amount of compensation needed for further demolishing and impact on the assets irrigation pipelines</p> <p>Complete legal procedures for land acquisition have been documented by the Social Development Officers within Egypt Gas and a copy was shared with EGAS Social Development Officers. EGAS maintained all the records for the purposes of internal and</p>	<p>No further corrective measures to be applied</p>



OP 4.12 requirements	Procedure	Required corrective measures
	external monitoring and the Bank due diligence. see surveying tools used in Annex 9	

5.2.2 Assessment of environmental, social and health & safety mitigation measures during construction phase ⁷

Given the fact that the WB financed the Natural Gas connection project, a full list of mitigation measures was developed for similar projects implemented in the same area.

Below is a list of impacts and mitigation measures, as well as , the evidence of mitigation measures.

⁷ It should be noted that during conducting the due diligence, the construction phase was completed. Accordingly, there were no much data available



Table 5-2: Assessment of the Mitigation Measures Applied to Date

Impact	Mitigation measures	Indicators/Evidence	Attachments
Impact on soil and land	<ul style="list-style-type: none"> Decrease erosion by minimizing disturbances and scarification of the surface Good housekeeping to minimize spills/leaks Proper handling and management of wastes 	<ul style="list-style-type: none"> No complaints were detected about damaging soil or spills The project affected persons reported that their lands fertility was retained No evidence of spills or wastes 	Annex 4 includes: <ul style="list-style-type: none"> Environmental mitigation procedures Solid waste management, required PPEs, Spills precautions and storage methods
Economic displacement due to land acquisition	<ul style="list-style-type: none"> Develop and implement a resettlement and economic restoration plan. Rehabilitate the damaged lands after construction Disburse compensation to the affected PAPs 	<ul style="list-style-type: none"> There was no resettlement and economic restoration plan. However, clear compensation procedures are in place Receipts signed by all affected persons Lists of project's affected persons Negotiation and information sharing was applied prior to any compensation took place 	Annex 5: Compensation Documents includes: <ul style="list-style-type: none"> Steps and procedures of land acquisition applied by Egypt Gas Compensation scanned receipt Value of agricultural crop compensation List of affected people
Air emission	<ul style="list-style-type: none"> Management of number of vehicles and equipment in the site. Appropriate maintenance, engine tuning and servicing of construction equipment to minimize exhaust emissions Minimize unnecessary journeys or equipment use Adopt a policy of switching off machinery and equipment when not in use (idle mode). 	<ul style="list-style-type: none"> No complaints were raised about air pollution during the construction 	Annex 6 includes: <ul style="list-style-type: none"> Occupation health and safety
Noise	Worker <ul style="list-style-type: none"> Application of the normal precautions normally taken by construction workers. 	<ul style="list-style-type: none"> Occupational health and safety manual is in place No complaints raised by the workers 	Annex 6 includes: <ul style="list-style-type: none"> Noise measurements Occupation health and safety
	Neighbor <ul style="list-style-type: none"> Notification to the surrounding establishment prior to the construction of the HPP Time management and construction schedule according to the IFC regulation provided by the contractor prior to the 	<ul style="list-style-type: none"> No complaints raised by the surrounding communities All neighbors were informed about the project The farmers reported watching out drilling 	



Impact	Mitigation measures	Indicators/Evidence	Attachments
	construction phase	and excavations	
Occupational health and safety	<ul style="list-style-type: none"> The project hired a qualified sub-contractor with the high health and safety standards. In addition, the ToR for the contractor and the ESIA will provide the provision of the health, safety and precaution of the environmental impacts and its mitigation measures to be followed during construction. Standard protection by placing clear project signs. Time management for vehicles movement; especially avoiding the peak hours Standard protection for the workers especially working at elevated heights or trench. Regular inspection to compelling worker to used their PPE Training and licensing industrial vehicle operators of specialized vehicles. 	<ul style="list-style-type: none"> No evidence available No documentation for capacity building conducted to worker as almost all induction meetings and capacity building were adhering to on the job training approach 	Annex 6 includes: <ul style="list-style-type: none"> Occupation health and safety
Solid and Hazardous waste management	<ul style="list-style-type: none"> Temporary storage in areas with impervious floor Safe handling using PPE and safety precautions Empty cans of oil-based paint resulting from painting the steel connection pipes to households are to be collected and sent back to nearest LDC depots (Abo Rawash) for temporary storage until disposal at a hazardous waste facility (Nassreya or UNICO in Alexandria). If hazardous waste quantities generated are too small for isolated transport to the Nassreya landfill, a temporary storage site can be created. Coordination with waste authority will be imperative to secure a location and implement adequate procedures for storage depending on quantities and type of wastes until collection and shipping to Nassreya landfill. Hand-over selected oils and lubricants and their containers to Petrotrade for recycling 	<ul style="list-style-type: none"> Temporary storage areas' photos and locations made available Empty cans were collected and transferred to Abo Rawash 	Annex 4 includes: <ul style="list-style-type: none"> Environmental mitigation procedures Solid waste management, required PPEs, Spills precautions and storage methods
Traffic	<ul style="list-style-type: none"> Time management for transporting the materials, equipment, debris, etc. 	<ul style="list-style-type: none"> No complaints raised about traffic No signs were placed in the surrounding 	NA



Impact	Mitigation measures	Indicators/Evidence	Attachments
	<ul style="list-style-type: none">• Clear sign surrounding construction site and the entrance / exit gate.• Coordination with traffic department (ministry of interior) for vehicles route and movement.• Vehicle speed restrictions should be applied across the project site	sites	
Grievance and redress mechanism	<ul style="list-style-type: none">• The detailed grievance mechanism (GRM) is to be shared with the community beneficiaries.• Posters were prepared and made available to the beneficiaries in the contracting office⁸. Additionally, they will be available in the customer services office. Thus, sufficient and appropriate information about the GRM will be disseminated to the communities prior to the construction phase. Information dissemination about the GRM should be shared with the beneficiaries during the process of contracting and disclosed in the contracting office and other publically accessible venues.	<ul style="list-style-type: none">• There is a detailed GRM in place that is applicable by the LDC. However, limited information was shared about the GRM. No evidence about sharing information about the GRM.• There is no foreseen proper documentation for received complaints• No tracking for any complaints• The conclusion is that the GRM was not functioning	Annex 10 includes a detailed GRM

⁸ Falls under the budget of the LDCs



5.2.3 Proposed corrective actions

Given the fact that the project has been fully operated, the first version of the due diligence report of this project raised some proposed corrective measures related to the GRM implementation. However, The WB in full cooperation with EGAS focused on the GRM to be fully functioning. Below are the procedures taken to date in order to have a robust implementable GRM:

- The WB assigned a consultant to work on the GRM on December, 2017
- A two days' workshop with the key stakeholder's involved in different aspects of the GRM function at EGAS and the LDCs was held during April, 2018. The objective of the workshop was to identify areas of improvement in the GRM process, and reach decisions to draft the project level GRM guidelines.
- The guidelines aim to detail the process of complaint uptake, registration and resolution. Define roles and responsibilities of related actors and stakeholders, and define processes for monitoring and evaluation.
- Issue the guidelines manual (draft) to be reviewed by EGAS and the LDCs and sent comments to the consultant.
- A final workshop was held on 31/10/2018 to issue the final guidelines
- Letters were sent to LDCs chairmen with the final guidelines to start using the new guidelines.

Additionally, below is the corrective action plan table



Table 5-3: Recommended Corrective Actions Plan

Key aspects	Gap assessment (defined in 2016)	E&S Policies	Recommended corrective action after conducting the study in 2016	Implemented tasks to date	Implementation's indicators	Deadline	Responsibility	Method of monitoring
Grievance and redress mechanism	- The grievance mechanism is not fully functioning	OP 4.01 requirements OP 4.12 requirements	<ul style="list-style-type: none"> - The SDO should be assigned to manage the GRM - Information about the GRM should be shared with the community located in the proximity the pipeline - Communication channels should be made available to community people - Posters should be placed and disclosed in the LGU informing about GRM - Grievance management system to be prepared and all complaints should be documented in this system 	<ul style="list-style-type: none"> - The WB managed in full cooperation with EGAS and the LDC to develop a GRM. - EGAS and the LDCs received trainings on the adopted GRM. - The GRM now is implemented - Monitoring and reporting of GRM is in place 	<ul style="list-style-type: none"> - Recording the meetings with the community people (minutes of meetings to be documented) - Posters to be placed - Grievance management system to be in place - Monitoring reports of grievances 	Completed and further follow up will be required	Egypt Gas	<ul style="list-style-type: none"> - Reviewing periodic reports submitted by the LDC to EGAS - Reviewing grievance management system



Key aspects	Gap assessment (defined in 2016)	E&S Policies	Recommended corrective action after conducting the study in 2016	Implemented tasks to date	Implementation's indicators	Deadline	Responsibility	Method of monitoring
Capacity building	- Occupational health and safety training	OP 4.01 requirements	- Develop and implement capacity development plan for Egypt Gas E & S staff, in coordination with EGAS.	- A list of training sessions was implemented by EGAS (See Annex 11) - Another list of trainings was prepared by Egypt Gas and will be implemented (See Annex 12)	- Number of workers trained on occupational health and safety	End of 2019 and to be implemented regularly (ongoing process)	Egypt Gas	- Training reports that includes, list of participants, photos and feedback - Training modules
Emergency response plan	- EGAS has operational manual that contains emergency response procedures. However, an emergency response plan including measures for the high-pressure pipeline should be developed	OP 4.01 requirements	- Develop an emergency Response Plan including measures for the high-pressure pipeline	- Egypt Gas developed a comprehensive Emergency Response Plan (See annex 13)	- Emergency Response Plan document has been developed	Completed	Egypt Gas	NA



Key aspects	Gap assessment (defined in 2016)	E&S Policies	Recommended corrective action after conducting the study in 2016	Implemented tasks to date	Implementation's indicators	Deadline	Responsibility	Method of monitoring
Monitoring activities	- Lack of monitoring	OP 4.01 requirements	<ul style="list-style-type: none"> - Commitment to implement the activities in full compliance with the EHS manual prepared by Egypt Gas. - Documenting and reporting results of pipeline patrolling and leakage survey. - Incident/accident reporting 	<ul style="list-style-type: none"> - Egypt Gas carried out monitoring activities on patrolling and leakage (See Annex 13) - Egypt Gas develop an OHS that contains sufficient information about accidents and incidents management (see Annex 6) 	<ul style="list-style-type: none"> - Monitoring reports developed by Egypt Gas every 6 months - OHS includes but not limited to all safety measures, and description of procedures required to achieve zero accidents. 	Completed	Egypt Gas	<ul style="list-style-type: none"> - EHS manual indicators - Reviewing the incident/accident report



6 CHAPTER SIX: CONSULTATION AND GRIEVANCE & REDRESS MECHANISM (COMMUNITY FEEDBACK MECHANISM)

6.1 Consultation Activities

Egypt Gas has conducted various consultation meetings that were not documented. However, the farmers reported that Egypt Gas Staff and the Agriculture Association have conducted meetings with them to inform about the project and compensation mechanism.

The consultant conducted meetings with the PAPs. They reported that Egypt gas informed them about the project before any construction took place.

The consultation process was a dynamic and evolving process which adapted with the nature and expectations of the host community. In order to establish a more profound understanding of the local communities' perceptions and perspectives of the project, stakeholders' engagement and public consultation activities involved a broad base of community members; namely PAPs residing in the areas surrounding the PRS station, and farmers whose crops were affected by constructions.



Figure 6-1: FGD with PAPs in Zefta



Figure 6-2: Panel meeting at Zefta's LGU headquarters

The following table summarizes the main groups consulted during the consultation and the engagement tools used.



Table 6-1: Summary of Consultation Activities in Gharbia Governorate

Participants	Number		Methods	Date
	Male	Female		
During the framework				
Potential beneficiaries and governmental entities	5	5	FGD	January – February 2017
Governmental and public sector	5	1	In-depth interview	January – February 2017
LPG Street vendors	2	0	In-depth interview	January – February 2017
Governmental, NGOs and community people	11	1	Group meeting	16 th of February 2017
Total	23	7		
Public Consultation event	Male	Female		
Community people, all other stakeholders	72	30	Public consultation	11 th of April 2017

6.2 Summary of Consultation Activities Conducted during the Due Diligence Preparation

Table 6-2: Key comments and concerns raised during the different consultation activities

Subject	Questions and comments	Responses
Compensation Value	The engineers visited our lands and informed us about the land needed. They provided us with the compensation immediately. They have lists that contain crops value.	The LDC is committed to provide compensation to affected people prior to any implementation. In case if they damaged more lands than what was compensated for, they must provide additional compensation (after re-measuring of land). The compensation committee pay a visit to the affected land to define the exact crop cultivated in this land. Additionally, a member from the Agriculture Association (basin supervisor) would attend in order to verify the type of crop. He is responsible for monitoring the cultivated crops. Therefore, his opinion will be useful to the committee. In case if defining any crops in the affected land during the installation of the pipeline. A full compensation will be paid to the PAP.
Affect the productivity of land	My land was damaged and I managed to cultivate it after the project. I cultivate clover as before. I wonder if I can cultivate cotton and wheat.	Based on previous pipelines installation, all affected lands productivity was restored. The quality of crops and the type of soil have not been affected by the project. It was extremely difficult to define where the pipeline was installed as the crop was of the same quality in the project sites.
Long time of activities	This project was implemented in our lands a long time ago. Are you willing to install another pipeline?	This is the same project. The study team tries to investigate what has been done during the installation of the pipeline.



Subject	Questions and comments	Responses
Additional compensation	Are you going to provide us with additional compensation?	The project has already disbursed the compensation. The team try to understand how the process was done.

6.3 Grievance and Redress Mechanism applied to date

With regards to the Grievance and Redress mechanism, no documentations were kept to date to complaints pertaining to compensation activities. The complaints were presented verbally and solved immediately by the compensation committee. Reference to meetings conducted with the PAPs and the LDC, they raised verbal complaints about the following:

1. Complaints were raised about compensation value
2. Complaints related to the measurements of the affected areas
3. Request to avoid passing in the middle of the land

All complaints were solved immediately without being documented. The site engineer and compensation committee re-measured the affected lands and re-calculated compensation value. Regarding avoiding passing in the middle of the land. The LDC managed to avoid passing in the middle of the land.

All complaints were informed to the site engineer. However, Egypt Gas adopts an organized GRM that was informed to PAPs. Egypt Gas GRM relies upon three tiers.

The proposed mechanism is built on three tiers of grievances:

- 1- On the level of site engineer and the regional branch of Egypt Gas
- 2- On the level of LDC headquarter
- 3- On the level of EGAS

The Social Development Officer in Gharbia is Mr. Hany Ramadan
His cell phone is 01000826262

6.4 Grievance channels

Due to the diversity of the context in different Governorates and the socioeconomic characteristics of the beneficiaries, the communication channels to receive grievances were locally tailored to address all petitioners concerns and complaints. Following are the main channels through which grievances should be received:

1. Foremen act as the main channel for complaints. They are always available on the construction sites. However, complaints raised to him/her are mostly verbal. Thus, s/he should document all received grievances in writing form using a fixed serial number that the complainant should be informed about to be able to follow up on the complaint
2. Hotline: 129 is the hotline in Egypt Gas.
3. The SDO within the LDC and EGAS



6.5 Grievance mechanism corrective procedures

In 2016, the documentation of GRM actions and procedures were not properly documented. Therefore, the consultant proposed that the complaints related to the high pressure pipeline should be documented. Additionally, the procedures taken to solve the complaints should be documented. However, in 2017 to 2019 corrective measures were institutionalized in EGAS by implementing the following:

- The WB and EGAS worked closely with the LDCs to improve grievance mechanism. The WB assigned a consultant to work on the GRM on December, 2017
- A two days' workshop with the key stakeholder's involved in different aspects of the GRM function at EGAS and the LDCs was held during April, 2018. The objective of the workshop was to identify areas of improvement in the GRM process, and reach decisions to draft the project level GRM guidelines.
- The guidelines aim to detail the process of complaint uptake, registration and resolution. Define roles and responsibilities of related actors and stakeholders, and define processes for monitoring and evaluation.
- Issue the guidelines manual (draft) to be reviewed by EGAS and the LDCs and sent comments to the consultant.
- A final workshop was held on 31/10/2018 to issue the final guidelines
- Letters were sent to LDCs chairmen with the final guidelines to start using the new guidelines.



7 CHAPTER SEVEN: BUDGET

The total budget disbursed to people is EGP 708,203. This is equivalent to US\$ 39,127. Egypt Gas has disbursed the compensation and refunded it from EGAS. In addition to that about EGP 45,000 were paid for the damaged water irrigation pipelines' replacement.

Egypt Gas kept records for the disbursed compensation. Receipts and inventory were shared by Egypt Gas. (**Annex 5**)