
BAZIAN POWER PLANT PROJECT



Power Plant constructed by Unit Group in Gebze, Kocaeli / Turkey

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) REPORT NON-TECHNICAL SUMMARY



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BAZIAN POWER PLANT PROJECT

ESIA REPORT

NON-TECHNICAL SUMMARY

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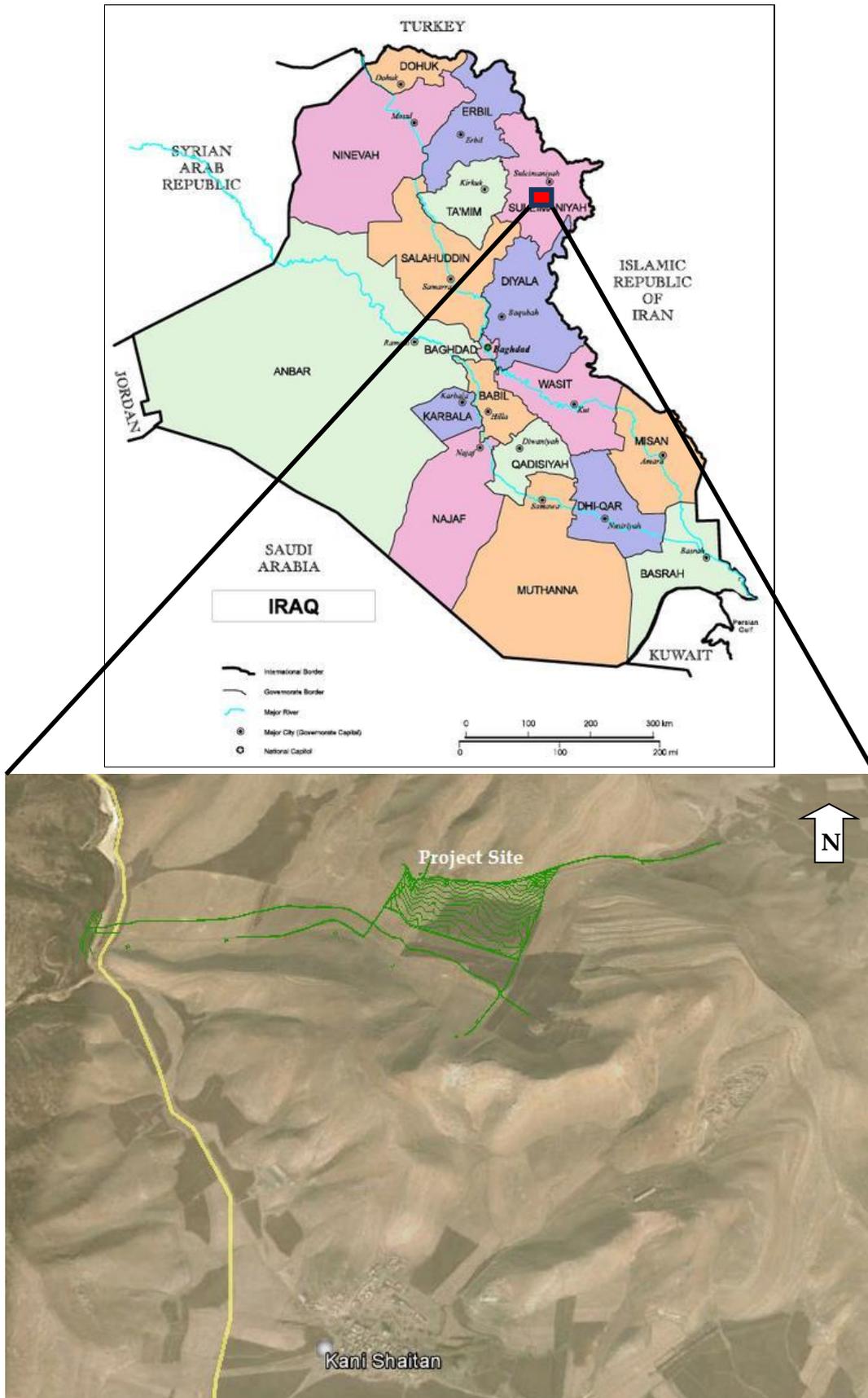
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1. INTRODUCTION

This document is a Summary of the Final Environmental and Social Impact Assessment (ESIA) Report for the ‘*Bazian Power Plant Project*’ (hereinafter ‘the Project’). The Project will be a large urban development on a total of approximately 400,000 m² (40 ha) of land in Bazian District of Sulaymaniyah Province of the Kurdistan Regional Government (KRG). The Project has been formulated as a two-phase project. Phase-1 includes the installation of a 460 MWe simple cycle power plant. In Phase-2, a 230-MWe steam turbine will be added, and the power plant will become a combined cycle power plant with higher efficiency. The Project location is shown in Figure 1-1.



Source: Google Earth, 2002

Figure 1-1. Location of the Project in Iraq

The ESIA is a study into the effects of the construction and operation of a Project on the physical, biological, social and cultural environment. The ESIA Report describes the Project, and the impacts that are predicted to be incurred on environmental and social baseline conditions, the impacts on these conditions, and explains how the Project has been designed and how it will be implemented in order to minimize its adverse impacts and maximize its benefits. This document is a summary of the main ESIA Report.

1.1 Who Has Commissioned the ESIA

The Project Company, Qaiwan Group has signed a Power Purchase Agreement (PPA) with the Ministry of Energy of the KRG to design, construct and operate the Project. In this respect, the Project Company assigned 2U1K Engineering and Consultancy Inc. (2U1K) to conduct the ESIA study for the Project.

Under the terms of the contract the Project, it is estimated that the construction period will span a total of 29 months, with Phase-2 starting two months after Phase-1. The Project Company will control the power plant during its 15 year operational period. Yet, the life-span of the Power Plant is not certain at this time. This is due to the fact that the state has agreed to purchase electricity from the plant during the first 15 years of its operation. After these 15 years have passed, this contract may be continued, if not, the facilities may either be sold or dismantled. It should be remembered that projects of this nature are part of the regional government's plan to supply electricity for the short-term, whereas larger infrastructures are planned for long-term energy production. Thus, the actual life time of this Project will depend on the progress made by the government in terms of energy distribution infrastructure and the demand for electricity in the future.

1.2 The Requirements for an ESIA

An EIA process is being implemented for the Project according to local legislation. Law No. 1, Article 1 in Section 13 of the KRG's EPI in 2008 requires that "No proponent of a project shall commence construction or operation unless he has filed with the KRG an initial environmental examination or, where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained approval in respect thereof."

The principal regulatory body, the Environmental Protection and Improvement Board (EPIB), in the KRG attaches special importance to EIAs, which are tools for combining both environmental protection and sustainable development. In its long-term strategy, the Board will require developers of major projects to carry out EIAs in order to be granted project approval/permits. The former Ministry of Environment developed a guideline defining the scope and aspects that need to be covered under an EIA study. This EIA study is carried out in line with the aforementioned guidelines and also takes into consideration recognized international guidelines, in particular those outlined by the IFC/WB for oil and gas operations.

The financing of the Project will be sourced from export credit agency (ECA)-supported lenders guided by the principles of IFC, which is a part of the World Bank Group. Thus, the Project must meet its Performance Standards (PS) as well as international lending requirements of IFC, which include:

- the International Finance Corporation (IFC) Performance Standards on Social and Environmental Sustainability (2012);
- the International Finance Corporation (IFC) Environmental, Health and Safety General Guidelines (2007); and
- the IFC specific Environmental, Health and Safety Guidelines for Thermal Power Plants (2008).

2. PROJECT DESCRIPTION

2.1 Need for the Project

In the KRG and the Republic of Iraq, power consumption has rapidly increased especially due to the increase in population. Therefore, new power infrastructure is necessary to meet the increased demand. Currently, households are heated by electricity. However, many of them still face blackouts.

The KRG has developed short-term and long-term strategies to help supply the demanded energy to the region, quickly with long-term solutions. Details of these strategies are provided below:

Short-term Strategy:

- Electricity Production will be sourced from gas and oil residues.
- Overhead Transmission lines will be installed.
- The electricity grid infrastructure will be updated and improved.
- More electricity will be provided to citizens.

Long-term Strategy:

- Electricity Production from hydro-electric dams.
- Household heating will be sourced from gas and oil.
- Natural gas power stations will be increased.
- Solar power and wind power will be utilized.

Source: (Kareem, 2012)

The aim of the Project is to supplement the short-term strategy. The electricity generated from this power plant will power homes and businesses in the KRG for a total of at least 15 years, giving the KRG a chance to increase its permanent energy generation infrastructure. In addition to increased electricity, having more production of electricity in the KRG means less dependence on foreign electricity and from the rest of Iraq, giving the KRG more stability and freedom.

2.2 Project Facilities

The Project is a large development. Its main components will be a natural gas-fired power plant, a water treatment plant, light fuel oil tanks, a switchyard and the Air Cooled Condenser (ACC). Another large component of the Project, albeit temporary, is the construction campsite that will be established to house workers. The general layout showing the Project components is presented in Appendix – B of the ESIA Report .

The Project is planned as a two-phase development. In Phase-1, the power plant will first be constructed to include four gas turbines which shall have a total installed nominal capacity of 500 MWe, with an actual capacity of 460 MWe. In Phase-1, the power plant will be a simple cycle power plant.

In Phase-2, four heat recovery steam generators (HRSG) and a steam turbine will be added. With the addition of the HRSGs and steam turbine, the power plant will be a combined cycle power plant with increased efficiency. The steam turbine will bring about an additional installed nominal capacity of 250 MWe with an actual capacity of 230 MWe.

Yet, when other factors are taken into consideration, such as altitude and temperature the overall predicted actual capacity of the power plant will be 688 MWe during Phase-2.

The investment phases are explained in Table 2-2 below.

Table 2-2 Investment Phases of the Project

Investment Phase	Units to be Constructed	Installed Nominal Capacity	Planned Year of Investment	Duration of Construction (months)
Phase-1	Four Gas Turbines	500 MWe	2014	24 months
Phase-2	Four HRSG and One Steam Turbine	250 MWe	2014	34 months
Total Nominal Capacity		750 MWe		
Total Actual Capacity		688 MWe		

2.3 Construction and Operation of the Bazian Power Plant

Construction periods for the Phase-1 and Phase-2 investments of the Project are projected to take 17 months and 27 months, respectively. Phase-1 is expected to commence in August 2014. Phase-2 will run concurrently with Phase-1, starting in October, 2014.

The Project Company has signed a contract with the KRG Ministry of Energy (MoE) for operation of the power plant for 15 years. Ensure that the life-span of the power plant is at least 15 years, however, this could be extended. This is due to the fact that the state has agreed to purchase electricity from the plant during the first 15 years of its operation. After these 15 years have passed, this contract may be continued, if not, the facilities may either be sold or dismantled. As the design life of power plant is 25 years, and can be extended, it is feasible and likely that this Project's life span will be extended in some form.

2.4 Area of Influence and Associated Facilities

Area of Influence (AoI) is an important element in assessing environmental and social impacts of a proposed development since it lets us know the physical and/or social extent in which the assessment should be performed. According to the definition given in PS 1, AoI encompasses.

- The area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project ; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.
- Associated facilities, which are facilities that are not funded as part of the project and that would not have been constructed or expanded if the project did not exist and without which the project would not be viable .
- Cumulative impacts that result from the incremental impact, on areas or resources used or directly impacted by the project, from other existing, planned or reasonably defined developments at the time the risks and impacts identification process is conducted.

The most important aspect that was considered determining the AoI is the impact area regarding air emissions. In this respect, a 20 km x 20 km impact area was selected to perform the air quality modeling for emissions that will be emitted from the power plant. In addition, the nearest settlement, i.e. Kani Shaitan Village, will be taken into consideration for assessing impacts resulting from construction dust and noise as well as operational noise. In regard to soil and water quality, the plant site and the watershed it is located in are included in the AoI. This 20 km x 20 km impact area has also been taken into consideration for collection of baseline data regarding surface and groundwater quality and social baseline data. Settlements that fall into this area were visited for interviews.

In terms of waste management activities in the context of the Project, the surrounding communities and facilities, i.e. the excavated material dump site and the solid waste landfill are also included in the AoI.

A natural gas pipeline will be constructed to convey natural gas to the Power Plant. According to the power purchasing agreement (PPA), the KRG-MOE shall construct a natural gas pipeline to the boundary of the Plant upstream of the GPRS (Gas Pressure Reducing Station) and provide natural gas at the inlet of the GPRS. The diameter and length will be determined later.

The natural gas pipeline is considered as an associated facility according to the definition given above. Impacts related with the natural gas pipeline have been scoped out in this study since the route and other details of the pipeline have not been determined yet. For instance, it is stipulated that the natural gas will come from a natural gas field that is to be developed in Bazian, but that cannot be confirmed at this point. However, the ESIA will be amended accordingly when the pipeline planning has been completed.

Another associated facility of this Project is a 35-km water pipeline which is to be constructed from the Little Zab River to Bazian. In total, five different companies will consume the water that this pipeline is to transfer, including the power plant.

2.5 Alternatives Considered

2.5.1 Energy Alternatives

Electricity can be generated for public use in residential areas and industry by using various resources including thermal power, hydropower, tidal power, geothermal energy, wind power and solar energy. Not all of these resources can be used to supply reliable and continuous energy. Hydropower, wind and solar power use renewable resources and they are highly dependent on the availability of the respective natural resource, and this availability condition may show even daily variations. Thermal power, on the other hand, can be used to generate electricity more reliably provided that a certain amount of fuel, i.e. annual demand, is secured. Hence, it is the primary source of energy in any country. Some other ways of energy generation depend on geographical conditions. These include geothermal energy and tidal power.

Governmental policies and long term planning are of utmost importance in selecting which ways to generate electricity. This is a complex process, and decision parameters such as local demand, transmission losses and site alternatives are also considered.

In this Project, the primary reason to take the decision of electricity generation is the need to meet the growing local demand in the KRG. In addition, due to frequent power cuts in these provinces, the KRG needs to develop its primary energy supply. For the sake of reducing its reliance on foreign energy sources, it is desirable that the KRG be able to use its own natural resources to generate electricity rather than importing. Hence, a thermal Power Plant option using natural gas and light fuel has been selected, since both are found in the KRG.

2.5.2 Site Alternatives

A site selection process has been conducted for the Project, resulting in two different sites being contemplated and one being chosen. The Project Site is the newly acquired property of the Qaiwan Group, and it is located next to the refinery which will supply light fuel oil to the power plant.

This site is actually the second considered for the Project. Ultimately this site was chosen due to the fact that it is closer to the refinery, which will most likely supply the secondary fuel, and as it is flatter, meaning that it will require less excavation, which can be a major source of financial burden. Another small benefit of being closer to the refinery is that it will be easier to transport oily residue wastes from the power plant to the refinery, which can use these wastes as fuel in some of their small boilers and heaters. Furthermore, despite being closer to the refinery, this site has a separate access road, unlike the previous site considered. Therefore, traffic incurred during the construction phases and operational phase will not affect the operational activities of the refinery.

2.5.3 Technology Alternatives

There are two main alternative technologies in a natural gas-fired power plant. These are simple cycle vs. combined cycle power generation options. Efficiency of simple cycle systems is just below 40% whereas that of combined cycle system is around 60 % since they use wasted heat in steam turbine.

In this Project, both of these technologies will be used. The plant will be erected as a simple cycle power plant. It will be converted to a combined cycle power plant with the addition of HRSGs and steam turbine in Phase-2.

3. REGULATORY FRAMEWORK

3.1 Local Legislation

3.1.1 Environmental Protection and Improvement Board

With the onset of increased developmental activities in the Republic of Iraq, including the exploitation of oil and mineral resources, pollution of the air, water and soil have become a significant environmental concern. The Environmental Protection and Improvement Board, which was formerly known as the Ministry of Environment, aims to disseminate information on pollution concerns and to generate awareness of the environment in order to promote the conservation of resources and biodiversity. Topics which are of concern include issues related to waste management, water and river management, capacity building, institutional development and EIAs. The duties of the former ministry evolved as lessons being learned from the experiences of the region along with those of other countries and regions similar to the conditions of Kurdistan.

The EPIB in the KRG attaches special importance to EIAs, which are tools for combining both environmental protection and sustainable development. In its long-term strategy, the Board will require developers of major projects to carry out EIAs in order to be granted project approval/permits. The former Ministry of Environment developed a guideline defining the scope and aspects that need to be covered under an EIA study. This EIA study is carried out in line with the aforementioned guidelines and also takes into consideration recognized international guidelines, in particular those outlined by the IFC/WB for oil and gas operations.

To be precise, the General Directorate of Technical Affairs and Protection from Radiation of the EPIB is in the process of establishing an overall system for the prevention and remediation of soil, water and air pollution. It will also formulate plans and programs for this purpose, monitor companies and provide them with guidelines based upon the review of their proposed Project's EIA. Furthermore, if required, site visits will also be carried out. The intent of an EIA is to alert and provide guidance to the relevant stakeholders to environmental protection measures that are necessary to control degradation of the environment and natural resources.

3.1.2 Environmental Law

- In 2008, the EPIB defined environmental impact assessments as the determination, analysis and evaluation of the effects of any project, establishment, or activities on the environment. This law identifies methods of preventing or limiting the negative effects on the environment and natural resources on which the approval of a project depends upon or does not. The EPI 2008 Law is the basic legislative tool empowering the government to frame regulations for the protection of the environment. The act is applicable to a broad range of issues and extends to air, water, soil, marine, and noise pollution, as well as to the handling of hazardous wastes. A

number of rules and regulations have been promulgated under the EPI Law of 2008 and 2010. The aforementioned have been presented below.

- Essential Principles and General Rules
- Council of Environmental Protection and Improvement of Regional Governorates
- Environmental Planning
- Evaluation of the Environmental Impact and Environmental Consequences
- Environmental Observation and Controls
- Incentive Procedures
- Responsibility and Compensation of Damages
- Water Protection and Improvement
- Air Protection and Improvement
- Soil Protection and Improvement
- Preserving Biodiversity
- Recycling of Wastes and Dangerous Substances
- Pesticides and Chemical Compounds

3.1.3 Environmental Impact Assessment

Law No. 1, Article 1 in Section 13 of the KRG's EPI in 2008 requires that "No proponent of a project shall commence construction or operation unless he has filed with the KRG an initial environmental examination or, where the project is likely to cause an adverse environmental effect, an environmental impact assessment, and has obtained approval in respect thereof."

Article 13 of Law No. 20 of the KRG's EPI reveals that after execution of this law any person that is to perform an activity which will have effects on the environment must prepare a study to assess the environmental impact of activities and projects that are to be constructed. These are then sent to the Ministry for approval or critique. Critiques or comments of these impact assessments will include whether or not they are positive, negative or neutral. Furthermore, they can include instructions and controls, statements regarding the possible pollution emergencies that may emerge from the project and what can be done to prevent them. Suggestions regarding possible options for cleaner environmental techniques, for minimizing, recycling and reusing wastes and for assessing the cost of environmental interest and impairment may all be included. Article 13, 14 and 15 of Law No. 1 are related to the procedures and conditions of EIAs.

Hence, an EIA process is being implemented for the Project according to local legislation.

3.1.4 Local Environmental Standards

Recent interviews held with the EPIB in Erbil by a local EIA that the ESIA team worked with for another development in KRG, indicated that currently the environmental laws and regulations are being drafted. Most of these regulations and the environmental standards are likely to be adopted from international regulations as those promulgated by the International Finance Corporation (IFC)/World Bank (WB), United States Environmental Protection Agency (USEPA), and World Health Organization (WHO). Hence, such international guidelines have been referred in this study.

3.2 Lender Guidelines

The financing of the Project is likely to be sourced from ECA-supported lenders guided by IFC principles. The IFC requires the Project Company to carry out an environmental and social assessment of Project-related impacts according to the PSs. In addition to the PSs, IFC General EHS Guidelines as well as EHS guidelines regarding, thermal power plants, electric power transmission and distribution and IFC's standards of worker's accommodation to be followed.

3.3 Gaps between Local Legislation and International Guidelines

The most prominent topic which requires further elaboration in national EIA legislation is "Social Impact Assessment (SIA)". Additional studies and implementations are required in this topic for internationally financed projects to achieve alignment with international standards. For example, implementation of detailed socio-economic surveys at Project Site and the establishment of a Grievance Mechanism are not stipulated by the national EIA legislation. However, these are required by international standards.

All these requirements will be considered and fulfilled within the scope of the Project.

4. ESIA PROCESS AND APPROACH TO THE ASSESSMENT

The methodology for predicting impacts of the Project consisted of a multi-stage, iterative approach in order to predict and evaluate the potential effects the Project could have on the physical, biological and social environment. Measures were then identified that the Project will take to avoid, minimize, mitigate or compensate for any adverse impacts; and to enhance positive impacts where possible. Results will continue to be revisited and modified as the assessment progresses and as Project effects are monitored. Details on each of the individual stages within the ESIA process can be found in Section 4.2 of the main ESIA Report.

In summary, potential Project interactions with the environmental and social environment are identified and the significance of resulting impacts rated as Positive, Negligible, Minor, Moderate or Major. Once the significance of a given impact has been characterized; appropriate mitigation or enhancement measures are identified, and the significance of resultant 'residual impacts' are assessed. Residual impacts are also rated as Negligible, Minor, Moderate or Major. Positive impacts are not assigned a degree of significance, but simply stated as being positive.

4.1 Screening

The screening stage of the impact assessment process looks at the type of project and the applicable framework of legislation and standards to determine what type of impact assessment requirements apply to the Project.

Screening for this Project was undertaken through a review of applicable national legislation and international financing requirements. The outcome of screening established the requirement for an ESIA that meets EIA requirements of KRG and international financing standards of the IFC.

The basic methodology of an ESIA has been outlined in Figure 4-1.

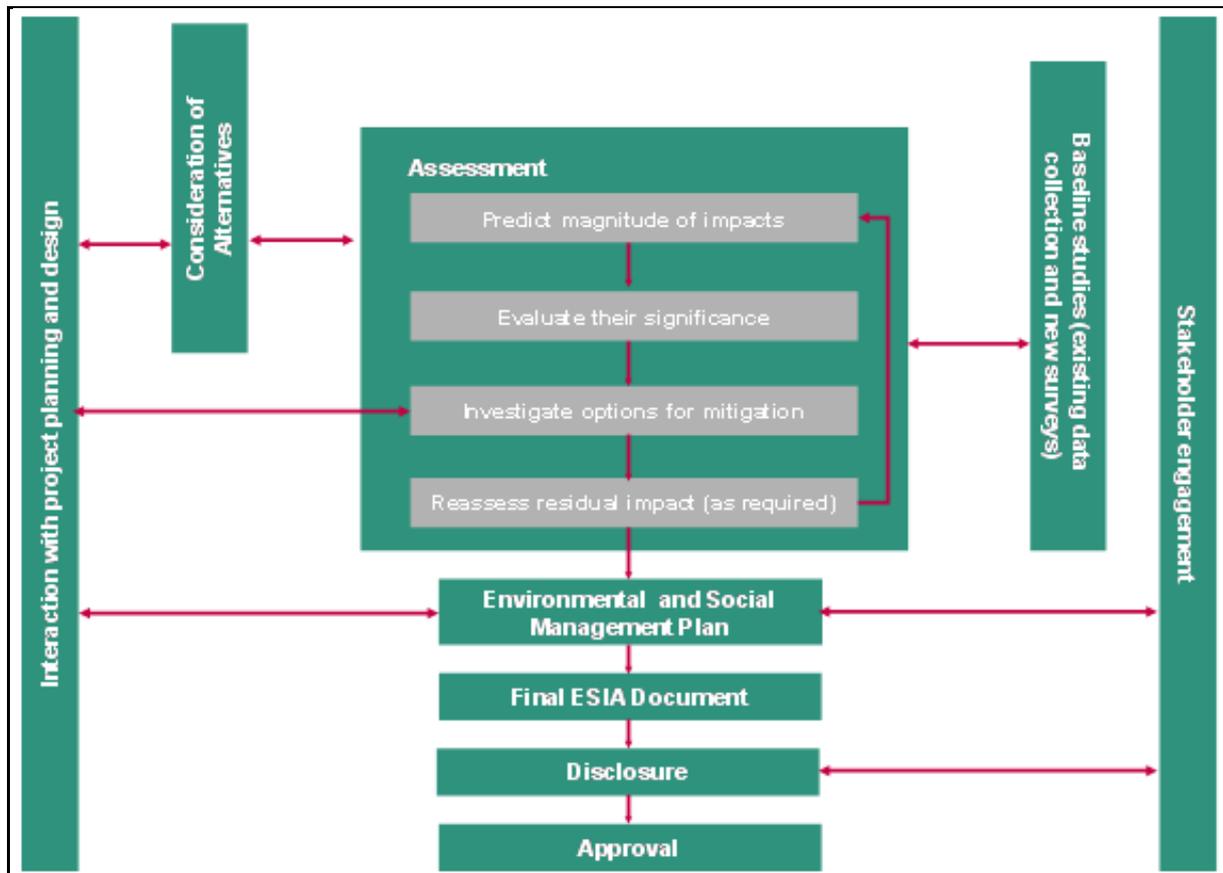


Figure 4-1. ESIA Methodology

4.2 Scoping

Scoping is a vital early step in the preparation of the ESIA (see Figure 4-1). The scoping assessment identifies issues that are likely to be important during the process and eliminates those that are not. Effective scoping will ensure that the ESIA focuses resources on those areas where significant effects are likely. It also ensures that cumulative impacts are identified at an early stage and addressed so far as is practicable in the early stages of Project development. Good design practice dictates that alternatives are considered and the advantages and disadvantages of all options investigated.

The approach to the scoping is based on EPs and IFC's and MIGA's PSs on Environmental and Social Sustainability, key process elements of the ESIA process generally consist of:

- i. project definition;
- ii. (initial) screening of the project and the scoping of the ESIA process;
- iii. stakeholder identification and gathering of social and environmental baseline data, where relevant;
- iv. impact identification and analysis; and;
- v. generation of mitigation or management measures and actions.

The PSs of the IFC were utilized for the identification of internationally acceptable ESIA scope. Given the tight project timetable, the initial scoping was based on the professional experience and expertise of the ESIA Team formed for the Project, discussions with the wider project team, reviews of the existing project documents including initial Project design, and assessment of the current environmental and social conditions of the Project Site and potential impacts of the Project. Scoping was undertaken for the Project to identify the AoI for the Project, to identify interactions between the Project and resources/receptors and impacts that could result from these interactions. A number of decisions regarding the location, scale, layout and design of the development were made during the proposal identification process. Characteristics of the Project as a large-scale energy project and operation of the facility are taken into account to identify key environmental and social issues to be assessed. The key environmental issues that were recognized during scoping have been taken into account in the ESIA study.

4.3 Baseline Studies

This stage comprises the collection of baseline data representative of the Study Area in order to provide a baseline against which the impacts of the Project can be assessed. The baseline takes into account current conditions, as well as those changing conditions (i.e. trends) apparent in the baseline. It takes into consideration other developments in the area which are underway or certain to be initiated in the near future.

The baseline description has the following main objectives:

- To focus on receptors that were identified during scoping as having the potential to be significantly affected by the Project;
- To describe and where possible quantify their characteristics (nature, condition, quality, extent, etc.);
- To provide data to aid the prediction and evaluation of possible impacts; and
- To inform judgments about the sensitivity, vulnerability and/or importance of resources/receptors.

4.4 Stakeholder Engagement

Stakeholder engagement is a critical requirement underpinning the impact assessment process, which requires engagement with relevant stakeholders throughout key stages of the Project. This assists in informing stakeholders about the Project as well as understanding stakeholder views on the Project, which should be taken into account in the prediction and evaluation of impacts. Stakeholder engagement activities are planned and recorded in a stakeholder engagement plan (SEP). A description of stakeholder engagement activities are presented in *Section 4.4* of the ESIA Report and the SEP can be found in Appendix-E of the ESIA Report as well.

4.5 Assessment of Impacts

Impact identification and assessment commences with scoping and continues through the remainder of the impact assessment process. This is a largely objective exercise to determine what could potentially happen to the environment as a consequence of the project and associated activities. During scoping, potential interactions between the project and baseline environment are identified. The potential impacts resulting from any potential interactions are then explained. As the range of potential impacts is diverse, a wide range of prediction methods are used including quantitative and qualitative methods. The principal steps include:

- Impact prediction: to determine what could potentially happen to resources/receptors as a consequence of the Project and its associated activities.
- Impact evaluation: to evaluate the significance of predicted impacts by considering their magnitude and the sensitivity or importance to the affected resource/receptor.

- Mitigation and enhancement: to identify appropriate and justified measures to avoid, minimize, or mitigate negative impacts and enhance positive impacts.
- Impact evaluation: to evaluate the significance of residual impacts assuming effective implementation of mitigation and enhancement measures.

5. SUMMARY OF IMPACTS AND MITIGATION MEASURES

5.1 Impacts on Physical Environment

5.1.1 Air Quality

Construction Phase

The two major sources of potential impacts on air quality during construction phase of the Project are the generation of dust from earthworks (i.e. drilling and vehicle movement) and the release of exhaust emissions (i.e. nitrogen oxides (NOX), sulfur dioxide (SO₂) and carbon monoxide (CO)) from construction equipment and vehicles at the construction sites and workers accommodation areas.

Key receptors for these impacts will be the nearest villages to the construction site of Power Plant which are Kani Shaitan, Bazian Gubala and Serchaway villages, respectively.

In order to predict the impact of the construction activities on ambient air quality, dispersion modelling was carried out for construction activities of the power plant. The results of these modeling studies indicated that the impacts of the construction activities will be at local level and in the close vicinity of the construction sites. The closest villages, namely Kani Shaitan, Bazian Gubala and Serchaway villages within the impact area will not be negatively affected from the construction activities.

The following mitigation measures will be put in place to minimize impacts on air quality during construction:

- All inner roads (with the Project site) and areas where trucks move including excavated and leveled areas will be watered regularly under warm, dry and windy weather conditions;
- Material will be loaded and unloaded without sluing;
- 30 km/hour speed limit will be set and enforced on non-paved roads; and
- The exhaust emissions of the heavy machinery will regularly be measured, controlled and recorded by site staff.

Following the implementation of mitigation measures, the residual impacts on ambient air quality during the construction period are assessed as “**low**”.

Operation Phase

During the operation period of the Project, the major and continuous emission sources will be the stacks of the gas turbines. The Project has been formulated as a two-phase project.

Phase-1 includes erection of four gas turbines as simple cycle power plant with a total capacity of 500 MWe while capacity of 250 MWe steam turbine will be added, and the power plant will become a combined cycle power plant with higher efficiency in Phase-2. The power plant will utilize natural gas as primary fuel. In circumstances, when natural gas is not available light fuel oil (i.e. a type of diesel) is planned to be utilized as backup fuel. It is envisaged that utilization of backup fuel will be in limited times during the operation period of the power plant.

NO_x, CO and greenhouse gas (GHG) emissions will be originated from the stacks of power plant during operational phase with primary fuel. In order to predict the impact of the Project's emissions on ambient air quality during operation of Phase-1 and Phase-2, an air quality modeling study was undertaken for the stacks of four gas turbines by considering utilization of main fuel.

According to the results of the modeling study, GLC values calculated by using design data are in compliance with IFC guideline values for ambient air quality. Moreover, GLC values calculated in the residential areas within the impact area of the Project are in compliance with IFC stringent recommendation. In this context, it is said that the proposed power plant will not cause negative impacts within its impact area. Therefore, the impacts on ambient air quality during the operation period for both Phase-1 and Phase-2 are assessed as “**minor**”.

5.1.2 Noise

Construction Phase

Construction phase of the proposed Project has the potential to create noise through the use of equipment and increased road traffic. Noise may cause temporary nuisance to the people living in the surrounding settlements.

IFC guideline values stipulated in the EHS Guidelines on Environmental Noise Management are 55 dBA for daytime (07:00-22:00) and 45 dBA for nighttime. Noise that will be generated by construction machinery and equipment is calculated using their sound power levels. Calculated potential noise levels due to construction of power plant show that noise levels decrease significantly at a distance of 50 m – 100 m from the construction site. Since, the closest sensitive receptors are in a distance of 1.6 km or further from the construction site, the closest residential areas will not be adversely affected by the construction noise. Therefore, the significance of the impact is assessed as “**low**”.

Operation Phase

As the Phase-2 of the Project has been realized, the sources of noise will be the gas turbines, the HRSG, the steam turbine, the ACC system and the generators in the Power Plant. They will be continuous sources of noise, and information regarding noise level obtained from the supplier.

IFC guideline values stipulated in the IFC EHS Guidelines on Environmental Noise Management are 55 dBA for daytime (07:00-22:00) and 45 dBA for nighttime. It is observed that there is a hill in between the Project Site and the village. From satellite images, it is identified that the nearest settlement to the Project Site, i.e. Kani Shaitan village, is 1600 m away and around 900 m a.s.l. whereas the Project Site is about 940 m a.s.l. and the hill is elevated about 970 m. Hence, there will be no sight of the Power Plant from the village. Considering also the barrier effect of the hill in between, the expected noise level at the closest village, Kani Shaitan will be considerably lower than both the daytime and the nighttime noise limit values. Therefore, the significance of the impact is assessed as “low”.

5.1.3 Water, Soil and Groundwater

Construction Phase

During construction phase of the Project, drinking and potable water will be required for usage by construction staff and for cleaning of construction equipment. In addition, water will be used in construction activities such as dust suppression. There will be also limited use of water in hydro-testing of the plant equipment (e.g. HRSG).

The number of construction workers will vary during the construction phase, with the number of workers peaking at 1,200. Assuming a daily water use of 150 L/cap-day, in the worst-case scenario, water consumption will be 180 m³/day during construction of the power plant at its maximum flow. The amount of wastewater can be assumed to be equal to this amount as nearly all water consumed by personnel will be converted to wastewater.

The embedded mitigation measures to be taken in order to protect existing water, soil and groundwater quality are summarized in the following paragraphs.

Wastewater will be treated to satisfy the relevant national standards and IFC standards, and discharged to receiving media since there are no wastewater collection and treatment infrastructure of the municipality.

Oil change and refueling of only heavy machinery will be made at the site by specially equipped trucks with placing drip pans to prevent spills. In addition, there will be spill kits on those trucks for immediate action in case of fuel or oil spills. Hence, soil and subsequent groundwater contamination is not expected due to oil change and refueling at the site.

Secondary containment tanks will be built around the chemical and fuel tanks. In case of any spills on the ground despite all measures, contaminated soil will be immediately stripped, and taken to the hazardous waste temporary storage area.

Following the implementation of these mitigation measures, impacts on water, soil and groundwater during construction are assessed as “**minor**” significance.

Operation Phase

Wastewater to be generated during operational phase will include domestic wastewater and process wastewater composed of solute from the reverse osmosis system and system losses from the condensate tank. The Project Company has estimated the future work force of the operational phase to range from 50-70 employees. If it is once again assumed that the daily use will be 150 L/capita, then the domestic wastewater generated will range from 7.5 m³/day to 10.5 m³/day. This wastewater is to be treated through anaerobic septic systems. Its effluent will be allowed to slowly percolate down through the local valley’s natural watershed, partially replenishing the groundwater. The amount of solute (backwash) from the reverse osmosis system will be 44.8 m³/h at maximum.

Leakages and spills of fuel, oil, chemicals, waste oil and hazardous waste have the potential to result in soil and subsequent groundwater contamination if not suitably stored. In this regard, the fuel oil tanks in the power plant are of great concern. In addition to actual oil leaks, oily wastewater is also of concern.

As previously mentioned, the power plant will be equipped with rudimentary domestic wastewater treatment facilities. It has been confirmed that the pH of this water will be naturalized and sent to plant drains collection ponds. Thus, serious pollution from the backwash is not expected. Sludge resulting from both of the aforementioned will be removed by third parties to be disposed of.

Oily wastewater will also be treated so that the oily portion of the wastewater is removed and the remaining water will be discharged to the plant drains collection pond. Treated domestic wastewater will be discharged to the plant drains collection pond once it satisfies the limit values set in the EHS General Guidelines by the IFC . Stormwater will be discharged to the plant drains collection pond where the overflow will go to the channel.

The Power Plant design includes dykes (i.e. secondary containment tanks) around the fuel-oil tanks in order to prevent accidental spills onto ground, and thus prevent soil and subsequent groundwater pollution.

Additional mitigation measures are summarized below:

- Hazardous chemicals and wastes will be stored in concrete-sealed areas;
- In line with the PS3 of the IFC, in order to eliminate soil and subsequent groundwater pollution, pesticides will be handled, stored, applied and disposed of in accordance with good international industry practice such as the Food and Agriculture Organization International Code of Conduct on the Distribution and Use of Pesticides; and

- The products that fall in World Health Organization Recommended Classification of Pesticides by Hazard Classes 1a (extremely hazardous) and 1b (highly hazardous); or Class II (moderately hazardous) will not be used.
- Following the implementation of these mitigation measures, impacts on water, soil and groundwater during operation are assessed as “minor” significance.

Following the implementation of these mitigation measures, impacts on water, soil and groundwater during operation are assessed as “**minor**” significance.

5.1.4 Geo-Hazards

The most significant geo-hazard during the operational phase is earthquake, and thus was a focus for the design team. Although the Project Site is located in a minor-damage earthquake zone, a detailed geotechnical survey will be carried out. The design of all the structures in the power plant will be made accordingly. The design will incorporate the necessary arrangements for building evacuation and escape routes in case of such incidents. Each piece of rotating equipment will be equipped with vibration sensors, and will protect itself automatically. The operator will manually cut gas flow to turbines in order to eliminate explosion hazards. The long-term nature of the direct impacts on the construction workers and power plant staff are expected to be insignificant, or “**not significant**”, as their extent will only be local and their magnitude negligible due to the low probability of an earthquake at the Project Site, as it is located on a minor-damage earthquake zone.

5.1.5 Solid Wastes

Construction Phase

Solid waste expected to be produced at the construction sites and workers accommodation sites during the construction phase of the Project can be classified as

- (i) domestic solid waste;
- (ii) construction wastes;
- (iii) packaging wastes; and
- (iv) excavated material.

Domestic solid wastes and packaging wastes will be produced by the construction staff at both the workers accommodation sites and the construction sites. Construction wastes, to be produced as a result of construction works of the Project, are expected as cables, copper, empty containers of various size, steel etc. Spoil due to leveling will also be generated during this period.

Domestic solid waste will also be generated by the construction staff. If it is taken that on average, solid waste is generated at a rate of 1.15 kg/cap-day, then at peak construction time, with 1200 employees up to 1380 kg/day will be produced. These calculated figures also include the packaging

waste that is comprised of empty containers of drinks, packages of foods etc. mainly from the construction camp sites. This waste will be transported to the Bazian Municipal Landfill, which is located 10km away from the Project Site.

Dumping of solid wastes in an uncontrolled manner could result in soil and groundwater contamination. Also, if the management of solid waste is not controlled it has the potential to attract vermin and insects and cause bad odor in the environment. Separate collection of packaging waste is important since it may be recycled or recovered to gain additional economic benefits and reduce pressure on raw materials.

Moreover, during excavation works, vegetable top soil is lost if it is not separated from other portion of soil in the excavation site.

There will be also worn-out tires produced due to changing of tires of construction machinery. Worn-out tires will be changed by authorized sellers. Hence, worn-out tires will not be temporarily stored in the Project Site.

Embedded mitigation measures are listed in the below paragraphs.

The Municipality will be contacted to collect solid wastes generated at the construction sites on a daily basis if possible or at least weekly basis, and transport it to the dump site. Solid wastes will be kept at closed containers to prevent leakage onto ground.

As part of the Environmental and Social Management System, a robust site-specific waste management plan will be prepared, and implemented by the construction site management for separate collection of different types of wastes and temporary storage of wastes.

Vegetable top soil will be stored in a separate part of the temporary storage area. Top of vegetable soil piles will be grassed to prevent losses. Vegetable top soil will then be used in landscaping works at the end of construction.

Dumping of excavated material on the other hand mostly damages landscape. In this respect, the excavated material will be used in landscaping works

Following the implementation of these mitigation measures, impacts from non-hazardous wastes during construction are assessed as “**minor**” significance.

5.1.6 Hazardous Wastes

Construction Phase

Hazardous wastes expected to be generated in the construction phase of the Project are oily rags, used air and oil filters, waste fluorescents, used cartridges as well as waste oil, waste vegetable oil, waste batteries and accumulators. Quantification of hazardous waste including waste oil, waste vegetable oil,

waste batteries and accumulators is not possible at this stage since there are no typical figures for that. There will be also medical waste to be generated at the infirmary to be established in the camp sites.

These hazardous wastes might cause soil, water and groundwater contamination if they are not properly collected, stored and disposed of. However, in order to ensure good management practices, hazardous wastes will be stored in a concrete-sealed (or covered with similar leak-proof material), fenced and covered temporary storage area in order to prevent spill and leakages onto soil and protect it from precipitation. The municipality will be contacted for the appropriate handling and transportation of all kinds of hazardous waste to disposal sites. There will be spill response kits to respond to any spill of hazardous materials e.g. lubricants in the construction sites.

The significance of any impacts to be caused by hazardous waste on the Project Site during the construction phase is expected to “**not be significant**”.

Operation Phase

There will be limited amount of hazardous wastes such as empty containers of chemicals, used cartridges, fluorescent lamps, used batteries and oily rags or equipment resulting from maintenance works as well as other types which are waste oil, waste vegetable oil, waste batteries and accumulators and worn-out tires as well as medical waste from the infirmary in the power plant. Amount of hazardous waste will depend on frequency of maintenance activities and also need for repair works. Therefore, it is not possible at this stage to quantify these wastes.

The impacts associated with the hazardous wastes to be generated during operational phase are the same as those associated with the construction phase wastes.

Since this temporary waste storage area will be surface-sealed and closed, it will not allow spills or leakages of hazardous wastes onto soil. The municipality will be contacted for the appropriate handling and transportation of all kinds of hazardous waste to disposal sites.

During the operational phase it is expected that the significance of the impacts of hazardous waste will be “**minor**” as the probability of an undesirable event occurring is low and the severity of such an event is medium.

5.1.7 Traffic

During the construction phase, there will be a significant increase in the number of trucks bringing construction material into site. During interviews with the local people in the context of social baseline data collection study, drivers using the nearby road network) are generally not careful. Therefore, more vehicles in the existing roads in the vicinity of the Project area may bring about increased risk of traffic accidents. During the operational phase, the contribution to the existing traffic load will be very small. Hence, traffic impacts have only been assessed considering the construction phase, and they will be temporary.

A Traffic Management Plan (TMP) has been developed and presented in the ESIA Report.

The TMP is intended to be used as a guideline for the Project Company and/or its subcontractors to prepare site-specific traffic management plans.

Moreover, during interviews with the local people, it was pointed out that many accidents take place due to entering the main roads from villages without care. Hence, in the context of traffic management efforts, site management will ensure adequate signs will be placed at the entrances to construction sites and camp sites.

Provided that the proposed mitigation measures are taken, the impact significance is considered to be “**minor**”.

5.2 Impacts on the Biological Environment

5.2.1 Ecology

It is expected that there will only be limited or no impacts on both flora and fauna of the region during both the construction and operational phase due to the low biodiversity of the project area. While limited, these impacts can be categorized into four main issues:

- Habitat loss due to the permanent land clearance for the plant site;
- Noise disturbance to fauna during the excavation works and land clearance;
- Possible release or introduction of alien or invasive species during the landscape works;
- Clogging of plants’ stomata due to dust emission in association with excavation and transportation of materials;

Apart from these generic impacts that may result from construction activities and permanent land take, there are also impacts specific to the OHTL. OHTL can cause forest fires and electrocution, and can also serve as a potential collision hazard. Forest fires may result when tall trees are located under power lines. In the existing situation, there are no tall trees along the route; however, routine maintenance is required to ensure that these conditions continue. Risk of electrocution and collision are detrimental impacts that may affect birds. Electrocution occurs when a bird sits on the transmission tower, causing a short circuit. Such an incidence generally results in a loss of life

Most of the project site has been degraded by agricultural activities. Terrestrial and aquatic habitat alteration is, at this time, not a concern related with OHTL construction since the final route of the OHTL is not definitive. However, it is doubtful that any aquatic habitats will be altered since surface water is very rare.

Mitigation measures to reduce ecological impacts are listed below:

- Local flora-fauna elements should be used when landscaping activities related with the Project (plant applications, greening efforts etc.) are carried out.
- Precautionary measures should be taken so as not to introduce any kind of invasive species during any phase of the Project.
- Integrated Vegetation Management (IVM) should be employed. Unchecked growth of tall trees under the OHTL will not be allowed to eliminate forest fire. Low growing grasses and shrubs will be encouraged.
- Cross-arms, insulators and other parts of the OHTL should be constructed so that birds find no opportunity to perch near the energized power lines.
- Visibility enhancement objects such as marker balls, bird deterrents, or diverters should be employed to eliminate or minimize bird mortality.
- In order to reduce impacts on vegetation to be formed through landscaping works, an Integrated Pest Management system will be established in line with PR3 of the EBRD. This system will ensure:
 - Minimization or, where possible, elimination of the use of pesticides minimizing the hazards and risks to health and environment from the use of pesticides;
 - Reduction of the levels of harmful active substances by replacing the most dangerous with safer (including non-chemical) alternatives;
 - Selection of pesticides that are low in human toxicity, known to be effective against the target species, and have minimal effects on non-target species and the environment;
 - Use of low-input or pesticide-free planting;
 - Minimization of damage to natural enemies and preventing the development of resistance in pests.

Additionally, based on the site visit and the surveys, fauna species rarely visit the Project site due to its current degraded habitat quality and this makes noise created by the facility not a crucial disturbance factor for the inhabiting faunal community around the region. Effects of the direct impacts on the local flora and fauna structure of the Project Site are to carry a significance of “**minor**”.

5.3 Impacts on the Social Environment

5.3.1 Resettlement

The Project is part of an extensive energy provision Project. The development of the Project will require of 400,000 m² (40 ha) of land (the power plant site) which is located in Kani Shaitan Village of Bazian.

Five families are using the land for agricultural purposes. Resettlement of the agricultural land for the Project site was realized in cooperation with the related governmental institutions. The Project Company was purchased the land by the five owners more than its worth.

Severity of the impact is estimated to be “**minor**”, since the view of the land owners to the land allocation is positive and they have alternative lands to continue their agricultural activities.

5.3.2 Influx

The peak number of manpower will be during the construction period and the construction workers (1200) will be housed in temporary worker accommodation. Furthermore, it is estimated that around 50 – 70 that will be employed during the operation phase of the Project. The worker selection will be local where it is possible and will not employ migrant workers throughout the Project. The nearest settlement to the plant site is Kani Shaitan located 1.5 km from the Project site is expected to experience the impacts related to the Project. There is an expectation of population increase within the region to new job opportunities. Key impacts associated with this influx in people are likely to be traffic noise and price increase in housing market. Also, it is expected to be increase in pressure on local infrastructure as most workers will be sourced from within the local area.

Air quality and noise impacts associated with traffic are assessed in the sections above. This section assesses interactions with construction workers and traffic congestion. Impacts are expected to be reduced to “**negligible**” level with the implementation of the described mitigation measures.

Interactions with Workers during Construction

Stakeholders have expressed concern over construction workers causing social problems within the local communities and impacting on safety and security.

A strict code of conduct will be developed and implemented for construction workers, outlining expected behavior with respect to their daily interactions with local residents and users of public amenities. This will be part of the labor force management plan to be developed for the project;

The labor force management plan will also include requirements for induction and training on expected behaviors and on disciplinary procedures (including dismissal procedures for unacceptable conduct). Construction workers will be made aware of the grievance mechanism and stakeholder engagement process, explaining that stakeholders have the right to register grievances through a formal procedure.

Impacts are expected to be reduced to “**negligible**” level with the implementation of the described mitigation measures.

5.3.3 Local Economy and Local Livelihoods

The Project site is located in the Kani-Shaitan Village of Bazian District of Sulaymaniyah Province. Bazian is one most developing Districts of the Province. The District is attracting public and private investments and receiving migration from the nearby villages. There are water and a cement factory in the borders of the Kani-Shaitan village. The Project will be beneficial for the economic growth of District. In addition, the Project will create employment opportunities during the construction period. Opportunities for local people are most likely to be for unskilled staff positions.

Mitigation measures for local trade and business are listed below:

- The Project will have a Business Ethics Policy/Good Neighbor Policy that commits the Project to ‘Buy Local’;
- The Project Company will have a Human Resources policy which observes wage standards, working hour regulation, freedom of association and staff encouragement. The policy will also eliminate child and forced labor, discrimination on the basis of religion, language, gender or social status, bullying and harassment. This policy will be developed by the Project Company to cover local employment and training of local people.

“**Positive**” impacts will be enhanced with the implementation of the enhancement measures described.

5.3.4 Community Health, Safety and Security

There is an expectation of traffic increase due to the fact that children who attend to high school go to Bazian. The villagers also have concerns related with dust, water quality and noise. These concerns were particularly focused on the construction phase. Key issues associated with traffic include congestion, impacts on air quality, noise and impacts on health and safety which are covered here.

The key receptors for these impacts are the residents of the Kani Shaitan Village. There is an expectation of traffic increase due to the fact that children who attend to high school go to Bazian. The students may be particularly sensitive to impacts associated with community, health and safety.

Following mitigation measures will be implemented for mentioned concerns as;

- A site specific Traffic Management Plan will be developed and implemented by the Project Company to adequately manage traffic within the Project site. Efforts will be made to identify measures to improve traffic flow on busy commuter roads;
- The Project will implement an awareness raising campaign with local stakeholders regarding the risks related to the movement of heavy vehicles and increased traffic in the area. The main focus of this campaign will be during the construction phase and will focus on local residents, children (in schools) and the users of local amenities. It will be implemented in coordination with local community groups and the Mukhtars;
- An Emergency Response Plans is being developed for the Project. This will provide details of what will happen in the case of a major traffic related incident and define roles and responsibilities. This plan will also be disclosed as part of the stakeholder engagement activities;
- Warning signs will be placed at gates through which truck enter and exit from the construction site.

Other impacts identified include security measures in and around the site, issues associated with the poor management of waste and hazardous materials, infectious disease control and impacts associated

with emergency events, such as fire. Security measures, infectious disease control and emergency events are described below and impacts associated with hazardous waste.

Impacts are expected to be reduced to “**minor**” level with the implementation of the described mitigation measures.

5.3.5 Occupational Health, Labor and Working Conditions

The Project Company will be responsible for human resources for the construction period. The Project will comply with national labor, social security and occupational health and safety laws as well as the principles and standards of ILO convention. The national principles embodied in the ILO convention are:

- The abolition of child labor
- The elimination of forced labor
- The elimination of discrimination
- Collective bargaining

Qaiwan Group is yet to develop a formal grievance procedure for workers although an informal procedure is in place. It is expected that Qaiwan Group Human Resources policy will have provisions for:

- Age;
- Wages;
- Working hours;
- Disabled employees;
- Non-employee workers (i.e. sub-contractors);
- Health and safety; and
- Workers camps.

Receptors for occupational health and safety impacts include direct Project Company employees, all sub-contractors.

Construction and Implementation Phase

The impacts in this section are considered together for both the construction and operation phase as similar consequences can arise from both phases. During the construction phase, 850 workers will be employed at peak construction times. A camp site will be established for the construction period:

- Occupational Health and Safety: Construction work involves high risk activities with the potential for accidents that may result in injuries and potential fatalities. While the Qaiwan Group will implement procedures to manage health and safety risks, meeting IFC PS2 standards may be a challenge, especially for some contractors and those in the supply chain. Workers who are in the supply chain may be particularly vulnerable.

- **Workers' Rights:** Although workers employed directly by the Qaiwan Group are likely to have workers' rights in line with the ILO conventions including collective bargaining rights, these need to be clearly written into management practices. In particular, the Qaiwan Group must ensure that direct employees can work free of any discrimination, regardless of race, religion or belief, gender, disability, age, nationality, sexual orientation or ethnicity. In addition, Responsible Procurement processes must work to ensure the supply chain do not violate workers' rights, do not use child labor or forced labor and allow freedom of association and collective bargaining.
- **Retrenchment:** Retrenchment of workers is likely to be required across the lifespan of the Project, particularly during the transition from construction to operation. Retrenchment of workers will be undertaken in line with national law and international best practices, and will include providing skills to enable individuals to secure alternative employment.
- **Workers' Accommodation:** The Project is planning to build a construction camp on site for construction workers. Workers' living conditions need to be of international standard to ensure on-site living conditions provide adequate sanitary and waste management and the provision of potable water. These standards will be maintained for the lifespan of workers' accommodation.

The following mitigation measures will need to be implemented to avoid impacts to receptors related to workers' rights, health and safety, retrenchment and workers' accommodation.

- The Project will develop an occupational health and safety management plan which will be a subset of the overall ESMMP system, tailored to the needs of the Project and the construction and operation phases. This plan will set standards that will be met by the Qaiwan Group and all contractors and sub-contractors. It will include the following:
 - o Measures will be outlined to prevent accidents, injury and illness / disease;
 - o Provision of personal protective equipment will be outlined along with its uses;
 - o Provision of preventative and protective measures relating to the modification, substitution or elimination of hazardous conditions or substances; and
 - o Documentation and reporting of occupational accidents, illness / disease and incidents, emergency prevention, preparedness and response arrangements.
- The Project will create and implement a health and safety management system for the Project. It will include mandatory health and safety training courses for the Qaiwan Group workers and contractors, including handling hazardous material and medical waste. The training will take place prior to work starting on construction and operation. Training course attendance will be recorded and monitored by the Project. The Project will also monitor the implementation of occupational health and safety regulations by contractors through twice yearly audits by health and safety specialists. If contractors are found to be breaching the laws on occupational health and safety, it will result in the loss of the contract.

- The Project will abide by IFC standards and ILO conventions when gaps are identified between national legislation and international standards. The Project will monitor the implementation and compliance to these standards by contractors and sub-contractors across the supply chain.
- The Qaiwan Group will require all contractors to sign an anti-corruption and responsible procurement policy. Thus for all contractor contracts, the Project will make explicit reference to the need to abide by IFC standards and ILO conventions in relation to labor and welfare standards, freedom of association and reference must be made to child and forced labor. Emphasis will also be placed on anti-discrimination measures. Where young people below the age of 18 years are employed, it will be made clear that they will not be employed in hazardous work and their work will be subject to an appropriate risk assessment.
- Workers will have contracts which clearly state the terms and conditions of their employment and their legal rights. Information will include, but not be limited to, entitlement to wages, hours of work, overtime arrangements and overtime compensation, and any benefits (such as leave for illness, maternity / paternity or holiday). All workers will be able to join trade unions of their choice and have the right to collective bargaining. Contracts will be verbally explained to all workers where this is necessary to ensure that workers understand their rights prior to any employment contract to be signed.
- Wages, benefits and conditions of work offered will be comparable to those offered by equivalent employers in Sulaymaniyah.
- Although an informal grievance mechanism is in place, the Project and all contractors will put in place a formal worker grievance mechanism. The Qaiwan Group grievance mechanism will be open to all the Qaiwan Group staff and their contractors. The grievance mechanism will be publicly advertised by the Project in the workforce. It will be easily accessible by workers, free of retribution and will allow anonymous complaints to be raised and addressed.
- In the case where contractors are unable or unwilling to address issues raised through their grievance mechanism or through the Qaiwan Group grievance mechanism, the Qaiwan Group will take actions to remedy the situation which might result in the loss of the contract by the contractor.
- A management plan will be put in place for the construction camp, outlining not only a code of conduct for construction workers but also measures for managing the camp to ensure adherence to international standard for providing a safe environment that is clean and with adequate sanitary and waste management and the provision of potable water. Provisions will also be made for outlining the minimum amount of space for each worker, laundry and cooking facilities, the provision of first aid and medical facilities, heating and ventilation. The management provisions will also make it clear that workers are free to move to and from employer provided accommodation in accordance with a code of conduct with respect to the surrounding community.
- A retrenchment plan will be put in place to mitigate adverse effects of job losses on the workers concerned.
- All management plans described above much clearly outline key roles and responsibilities and a monitoring framework.

If all workers related management plans and practices are put in place and international conventions are abided by and monitored, then the overall residual impact to working conditions will be “**positive**” with mitigation measures providing a secure and safe working environment free of discrimination.

5.3.6 Cultural Heritage

There are no archaeological assets that need to be protected in the site.

A Chance Find Procedure will be prepared, and it will be implemented as part of the ESMS to be established in the context of the Project.

5.3.7 Indigenous People

Indigenous people issue covered in IFC PS 7 is not applicable to the Project since the Assyrians, who are the only determined indigenous group in the borders of the KRG, do not live in the province of Sulaymaniyah.