

EXECUTIVE SUMMARY

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INTRODUCTION

This executive summary presents an overview of the main findings of the Environmental Impact Assessment (EIA) report for Ahmed Pyrolysis Plant situated at Bhimbawali Saim Naali, Bhatti Bhangwan Road, Tehsil Sadar, District Gujranwala. Ahmed Pyrolysis Plant aim to derive Tyre Pyrolysis Oil (OPT) carbon black powder, steel wires and gas.

The assessment examined the potential impacts of the proposed project on the immediate surroundings with due regard to all the phases of establishment through to operation and decommissioning. It encompassed all aspects pertaining to the physical, economical, ecological, socio-cultural, health and safety conditions at the site and its environs. The assessment was based on laid down scientific qualitative procedures with the most recent methodologies and analysis required in EIA and strictly adheres to the relevant legislative framework governing the agriculture and production industry.

SALIENT FEATURE OF PROJECT

Title and Location of Project:

Title of proposed project is Ahmed Pyrolysis Plant at Bhimbawali Saim Naali, Bhatti Bhangwan Road, Tehsil Sadar, District Gujranwala.

About Proponent:

Name of Proponents: Muhammad Adeeb is proponent of said project

Address of the Proponent: Post Office Quaid-a-bad, Shareef-a-bad No. 2,
Peshawar

Environmental Consultants

An Environmental Impact Assessment (EIA) report has been prepared to identify and predict the significant environmental impacts likely to arise from the commencement of the project along with environmental impact statement followed by delineation of appropriate Environmental Management Plan and Environmental Monitoring Plan to check the implementation of the EMP. Proponent of Ahmed Pyrolysis Plant has decided to conduct EIA study through Environmental Consultants, M & Y Environmental Consultants at 3rd floor Khan Arcade Mouj Darya Road Lahore.

A Brief Outline of Proposal

The proponent proposes to establish 10 Ton waste tyre pyrolysis plant. The primary objective of the plant is to derive Tyre Pyrolysis Oil (TPO), carbon black powder, steel wire and gas. Pyrolysis involves subjecting tyres to high temperature of 400 to 450 degree Celsius, in absence of oxygen. It is a great way of recycling waste tyres as it's a challenge in the country. During the process scrap steel is produced while tyre breaks down into smaller molecules of pyrolysis oil, pyrolysis gas and carbon black.

TPO is used as liquid fuel in industrial burners. Carbon black is a valuable feed stock for the manufacture of tyres, rubber products, paints, pigments, ink, powder coating, toner, etc. The gas generated by tyre pyrolysis will be effectively used to fuel the process. The scrap steel generated will be sufficiently clean to be sold to scrap metal processors.

Said project will make the above mentioned product in environment friendly manners. The solid waste at the project site will be Domestic that will be collected by sanitary workers of that area. Wastewater at the project site will be domestic and for tree plantation. Thus project will work in environment friendly manners. Project is environment friendly in all aspects.

The Major Impacts & Recommended Mitigation Measures

Keeping in view, all the findings of the baseline study, and through general observation and desktop study, and understanding of the activities and processes involved in the project, environmental impacts have been anticipated. Following impact assessment methodology; i.e. defining the criteria for evaluation of the impacts, identification of mitigation measures (all possible options), evaluation of the residual impacts and identification of the monitoring requirements, adequate and effective mitigation measures have been proposed for all operation related likely environmental impacts of the project. These mitigation measures are proposed in order of attempts to eliminate or minimize the impact, provide some compensation or rehabilitate the environment by some means.

Weather describes an impact as having both spatial and temporal impacts, which can be described as the change in an environmental parameter over a specified period and within a defined area, resulting from a particular activity compared with the situation which would have occurred had the activity not been initiated.

The expected impacts from the project are mostly insignificant and others are of limited nature. In this regard possible improvements and mitigation measures have been taken. The study also shows that there will be no exploitation and consequential depletion of the local natural resources.

The general approach to Environmental Management Plan for the Project, for the operational phase of the Project Ahmed Pyrolysis Plant has been presented, along with an outline plan for the Project Environmental Management Plans (EMPs). Site specific and practically suitable mitigation measures are recommended to mitigate the impacts.

Proposed Monitoring:

Monitoring at the project has been conducted for ambient air, water and noise and the reports demonstrated that results are within the limits prescribed by PEQS (2016).

Conclusion The Environmental Impact Assessment (EIA) contains description of the project, description of the environmental baselines, potential environmental impacts and suggested mitigation measures. An implementation mechanism for mitigation measures in the form of an Environmental Management Plan (EMP) is included in the study.

While the objectives of this study have been to describe the project and its environmental impact, it also identifies adverse environmental factors associated with the project. Appropriate mitigation measures as explained in the environmental study should reduce, if not eliminate, these impacts so that these are within acceptable limits.

It is further concluded that all potential environmental concerns associated with the project have been adequately addressed, and no further study is required in this context.

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CHAPTER I: **INTRODUCTION**

CHAPTER I: INTRODUCTION

1.0 Purpose

Project that is Ahmed Pyrolysis Plant at Bhimbawali Saim Naali, Bhatti Bhangwan Road, Tehsil Sadar, District Gujranwala is about to construct the building for manufacturing of Tyre Pyrolysis Plant (TPO). The study has been carried out to estimate the potential environmental and social impacts, positive and negative, on the environment as well as socio-economic of the surrounding environment during operational phase. This report intends to provide satisfactory mitigation measures to avoid/eliminate any chance of adverse environmental impact on the socio-cultural, economic and environmental components. This report also intends to fulfill the regulatory requirements set under Punjab Environmental Protection Act 1997 (Amended 2012) and its consequent legislative framework for IEE/EIA including the IEE/EIA Regulations 2022 and the guidelines drafted for IEE and EIA under numerous sartorial heads. The entire set of legislative framework requires any new development project to undergo an IEE or EIA based on the categorization of the project under Schedule I and/or Schedule II.

1.1 Identification of the Proponent

Name of Proponent: Muhammad Adeeb is proponent of said project

Address of the Proponent: Post Office Quaid-a-bad, Shareef-a-bad No. 2, Peshawar

1.2 Environmental Consultants

The Environmental Impact Assessment (EIA) has been carried out by aptly skilled and duly qualified group of professionals working for the environmental consulting Services Namely **M/S M & Y Environmental Consultants Pvt. Ltd.** 3rd Floor Khan Arcade Mou0j Darya Road, Lahore. The consulting team can be approached through the following contact details:

1.3 Nature and Size of Project

The project is Ahmed Pyrolysis Plant at Bhimbawali Saim Naali, Bhatti Bhangwan Road, Tehsil Sadar, District Gujranwala intends to make the building for manufacturing of TPO. The project has been planned on the norms of sustainable designs and patterns provided under the legislative and sectorial guidelines of Environmental Protection Agency, Punjab. The total area of the project is 14 Kanal. There is no compromise for

the core value of environment. Efficiency of project is worthy but environment friendly mechanism is preferable.

1.4 Eco-Friendly Features of the Project

Special feature of the project is its eco-friendly design through provision of unique elevation and landscaping. The basic idea of the concept is to create a safe, modern as well as environmental friendly design to ensure improved working conditions required by the potential users. The reason of adopting sustainability or 'bioclimatic' approach to the design provides opportunities to address problems relating to energy usage and air quality.

1.5 Location

The project Ahmed Pyrolysis Plant at Bhimbawali Saim Naali, Bhatti Bhangwan Road, Tehsil Sadar, District Gujranwala has planned to manufacture the TPO.

1.6 Extent/scope of EIA Study

EIA is conducted under the legal framework of Punjab Environmental Protection Agency (PEPA). As per legal requirements, the Project will be reviewed in light of the provisions of Punjab Environmental Protection Act, (PEPA-2012) and IEE/ EIA Regulations 2022, issued by Pakistan Environmental Protection Agency (Pak EPA) and adopted by the EPA Punjab.

Secondary information for this Study was collected from the relevant departments and literature to identify physical, socio-economic and environmental issues of the Project Area. Relevant information available with the proponent on the physical, technical and institutional aspects of the Project was also utilized.

The EIA process followed all the complementary stages described in the guidelines for IEE/EIA preparation and review.

The format of this EIA covers the followings:

1.7 Structure of the Report

EIA report comprises following chapters:

Chapter 1: Introduction (A description of the project, proponent and consultants, the need for the project and the report and method of preparing it).

Chapter 2: Project Description (Full description of the relevant parts of the project and summary of project inputs and outputs).

Chapter 3: Policy, statutory, and institutional Framework (A description of the pertinent national & provincial legislations, regulations and policies that are relevant and applicable to the project and a demonstration of how the project conforms to these aspects).

Chapter 4: Description of the environment (Description of project area's existing physical, biological and socio-economic condition, including geomorphology and soils, water resources, air quality, flora, fauna and demography).

Chapter 5: Stakeholders Consultation (Presents details about stakeholders consultation and their views and concerns regarding the project)

Chapter 6: Project Impacts and mitigations (Presents an assessment of the project's impacts, suggested mitigation measures on the Physical, Biological and Socioeconomic environment, residual impacts and the monitoring requirements).

Chapter 7: Environmental Management Plan (Provides Environmental Management Plan & Environmental Monitoring Plan for the construction & operational phase of the project).

Chapter 8: Conclusions & Recommendations (Concludes the EIA report with a few recommendations to conduct the project in environment-friendly manner).

Chapter II: DESCRIPTION **OF THE PROJECT**

CHAPTER II: DESCRIPTION OF THE PROJECT

General

This section of the study renders a detailed account of the project and its salient features, such as location and various phases, Inputs and discharges relevant to different phases of the project, such as electricity & materials etc. have also been examined as a response to possible environmental concerns.

2.1 Type and Category of Project

As per Review of initial Environmental Examination (IEE) and Environmental Impact Assessment (EIA) Regulations, 2000 the project falls in Schedule II for environmental assessment studies due to the cost, size and nature and overall severity and frequency of impacts. This report is required to fulfill the legal requirements set under section 12 of the Punjab Environmental Protection Act, 1997 (Amended 2012).

2.2 Mission Statement

To be Leader in markets we serve by providing quality products and superior service to our customers, while learning from their feedback to set even higher standards for our products. To be a Company that continuously enhances its superior technological competence to provide innovative solutions to customer needs. To be a company that attracts and retain outstanding people by creating a culture that fosters openness and innovation, promotes individual growth and rewards initiative and performance. To be a company with combine its people, technology, management systems and market opportunities to achieve profitable growth while providing fair returns to its investors. To be a company that endeavors to set the highest standards in corporate ethics in serving the society.

2.3 Alternatives Considerations

The motivation behind establishment of Ahmed Pyrolysis Plant is with efficiency and provides the demand to customers at the time. These factors include availability of access roads, communication facilities, electricity, gas, basic infrastructure, sewer etc. Of course neat and clean environment is also priority consideration.

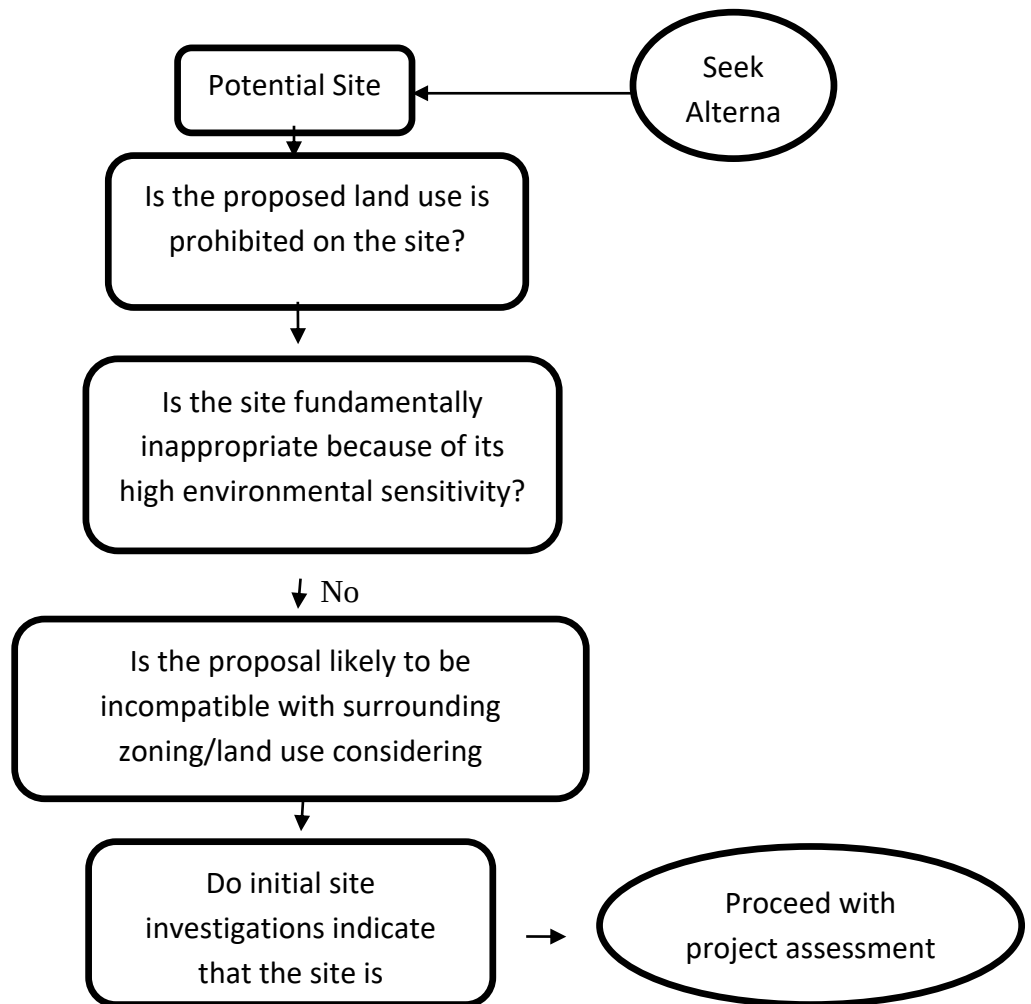


Figure 1.2: Site Selection Principles

There are certain Alternatives due to which Ahmed Pyrolysis Plant is about to establish after NOC from EPA, Punjab.

Alternative I- No Project Option

There is always 1st option that there should be no project which cause any sort of pollution in the environment but with increasing demand of the production and energy crises this option was not valid anymore.

Alternative II- Land Availability

Land for Ahmed Pyrolysis Plant is on rent and in located within the agricultural area. Said project is working in environment friendly manners and will keep all SOPs of working. Thus issue of land and location for working has been resolved.

Alternative III - Basic Infrastructure and Facilities

All the basic infrastructure like roads; transport; water; communication facilities like telephone, fax and e-mail; utilities required to run the unit smoothly exist in the project vicinity. Thus availability of all resources required for the implementation of the projects are present in the project vicinity that ensuring the establishing of the project in the site.

Alternative IV - Environment Sustainable Factor

Environmental considerations are of utmost importance in selecting site. Being in the premises of industry there is no sensitivity in the area from environmental setting point of view. Thus there is no ecologically sensitive or declared protected area such as territorial waters, forest or biodiversity parks within a 5 km radius of the project site, requiring the proponent to look for site alternatives by considering all environmental factors it has been considered project is source prosperity for in context of energy.

2.3 Location Plan/Map

Project is in the ideal location that is in the industrial activities are going on in surrounding. Map of Ahmed Pyrolysis Plant is attached herewith this report as an Annexure.

2.4 Land use on the site

The project that is Ahmed Pyrolysis Plant at Bhimbowali Saim Naali, Bhatti Bhangwan Road, Tehsil Sadar, District Gujranwala.

2.5 Road Access

Bhatti Bhangwan road will be used for transportation.

2.6 Vegetation Feature on the site

Ahmed Pyrolysis Plant is committed to environment friendly activities and for this purpose there is indigenous flora in the industry. The tree plantation involves as following kind of plantation;

Sr. #	Plant Species	Number of Species Planted
1	Amaltas	25
2	Mango Trees	10
3	Jaman	10
4	Sufaida	10
5	Peeple	10

6	Fan Palms	40
7	Bottle Palms	30
8	Roses	200
9	Motia	200
10	Other flowery plants	<1000

Plant Species at Ahmed Pyrolysis Plant

2.7 Cost and Magnitude of operation and Associated Activities

Cost of the project is approximately is 20 Million from the construction to the implementation and operational machinery, instruments & equipment's included. The Environmental Budget set for this project is 1 million annually. Project is environmentally friendly and is operating in sustainable way to reduce and minimize the harmful impacts generated during operational phase. So any adverse distresses should be removed or reduced at the level of PEQs.

Schedule of Implementation

Ahmed Pyrolysis Plant is about to construct the building for manufacturing of TPO. The concerned documents as mentioned below attached herewith this EIA report.

- Land acquisition
- Lay out plan of project

2.8 Process Description

Project that is Ahmed Pyrolysis Plant at Bhimbawali Saim Naali, Bhatti Bhangwan Road, Tehsil Sadar, District Gujranwala is about to construct the building for manufacturing of Tyre Pyrolysis Plant (TPO).

2.8.1 Project Raw Material

2.8.1.1 Waste Tyres

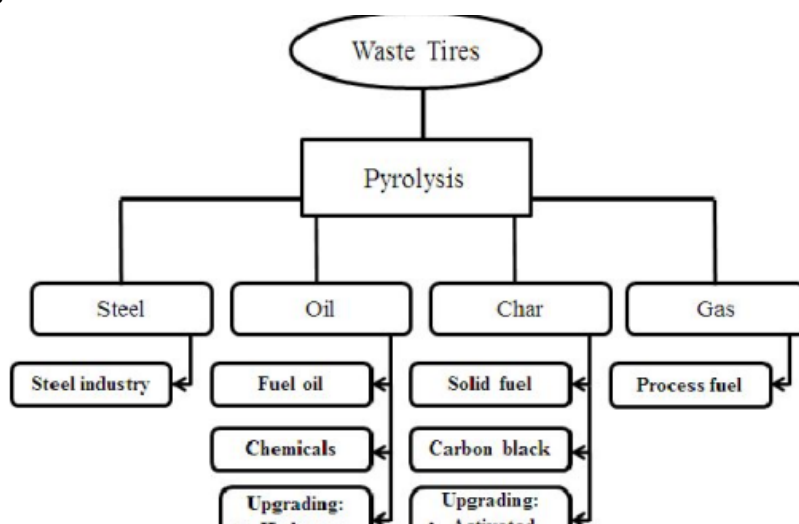
Waste Tyres (WT) will be primary raw material. The table below shows the typical composition of WT.

Typical Composition WT (Source: Ryan K. 2015)

COMPOSITION OF WASTE TYRES	
Rubber	38%
Fillers (Carbon black, silica, carbon chalk)	30%
Reinforcing material (steel, rayon, nylon)	16%
Plasticizers (oils and resins)	10%
Vulcanisation agents (Sulphur, zinc oxide, various chemicals)	4%
Antioxidants to counter ozone effect and material fatigue	1%
Miscellaneous	1%
Elementary Composition	
Carbon	86%
Hydrogen	8%
Nitrogen	1%
Sulphur	2%
Oxygen	3%
Proximate Analysis	
Volatiles	62%
Fixed carbon	30%
Ash	7%
Moisture	1%

Waste tyres will be produced from tyre dealers across the country. The WT will be stored in a covered area.

2.8.2 Pyrolysis



2.8.3 Pyro Products & Uses

All products of the tyre pyrolysis process will be handled as guided by the relevant Material Safety Data Sheet (MSDS).

2.8.4 Pyrolysis Gas

The approximate yield of gas from waste tyre pyrolysis is about 10-30% by weight and it increases with increasing pyrolysis temperature. The pyrolysis derived gas has calorific value of approximately 30-40MJ N/m³ and can be sufficient to provide the energy required for a small scale process plant. The gas generated by tyre pyrolysis will therefore

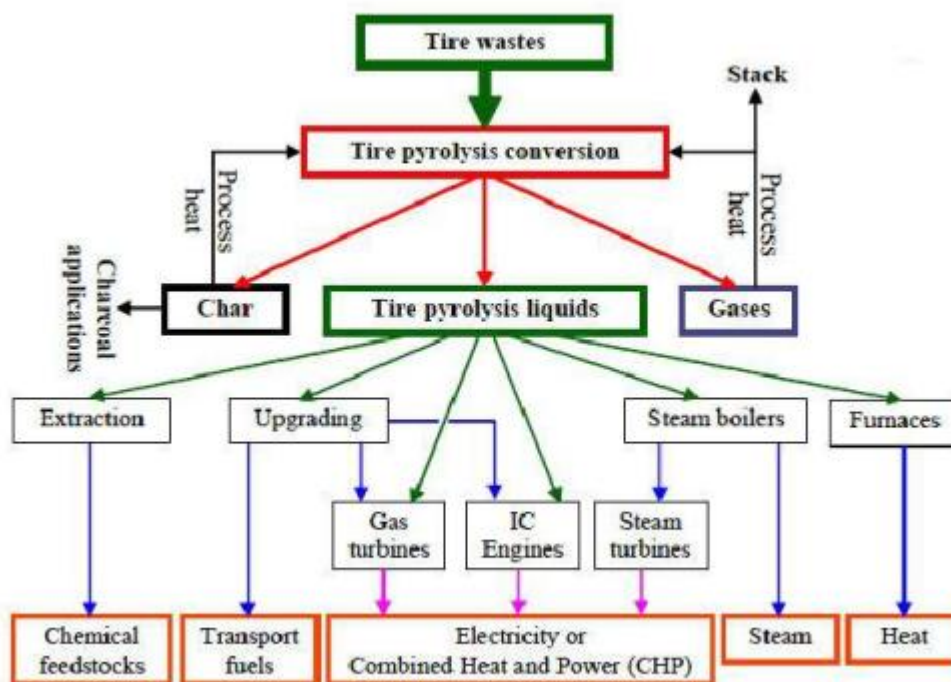
be effectively used to fuel the process. The following table shows waste tyre pyrolysis gas constituents.

Gas Composition from the Pyrolysis of Scrap Tyre

Constituent	Volume Percent (%)	Density (kg/m ³)	Weight Percent (%)
Hydrogen	35.83	0.0899	4.22
Methane	29.62	0.668	25.92
Ethane	18.52	1.264	30.67
Propane	5.70	1.882	14.05
Propylene	8.82	1.748	20.20
Isobutylene	0.73	2.504	2.39
Isobutane	0.34	2.489	1.11
Butane	0.23	2.489	0.75
Butene-1	0.14	2.504	0.46
Trans-Butene-2	0.07	2.504	0.23
Iso-butene-2	trace	2.504	-

2.8.5 Tyre Pyrolysis Oil (40 to 45%)

The main oil product produced by pyrolysis technology is the fuel oil that is widely used for industrial and commercial purposes. There is need for greener fuel alternatives due to fossil fuel depletion, increasing oil prices and emission challenges, Tyre Pyrolysis liquids production pathways production pathways with their wide range of potential applications are as shown in following figure;



2.8.6 Activated Carbon (30 to 35%)

Activated carbon from pyrolytic char can be used for water purification and air purification, as well as in batteries and fuel cells. Pyrolytic char has a calorific value

comparable to high-grade coal and may therefore be used as fuel either in pulverized or briquetted form. The application of pyrolytic char includes manufacturing of thermoplastics and low cost adsorbents for the treatment of industrial effluents. Active carbon can be used to absorb phenols, basic dyes, metals, p-chlorophenols, butane and natural gas.

2.8.7 Scrap Steel (10 to 15%)

Waste tyre pyrolysis can also generate scrap steel wire due to the fact that steel wires can be used as reinforcement agent for tyre. The scrap steel generated will be sufficiently clean to be sold to scrap metal processors.

2.9 Energy System

WAPDA energy will be utilized and backup generators will also be in project site.

2.10 Land Ownership

The land is taken on rental basis and property documents are attached herewith this report as an Annexure.

2.11 Man Power

The man power working on this powerhouse is approximately 30. In this man power labor, mechanical engineers, maintenance staff, data recording staff, technician etc are included.

2.12 Wastewater

Wastewater from the powerhouse is not a big issue because at the project site there will be some quantity of wastewater which will domestic and would be tackled by septic tanks.

2.13 Air Emission

The Ahmed Pyrolysis Plant is very conscious about Environment and this powerhouse is well mechanized and in the closed hall. The monitoring is also carry out on monthly basis. The laboratory reports are attached herewith this report showing all parameters are within the limits set by EPA, Punjab.

2.14 Solid Waste Generation

At the Ahmed Pyrolysis Plant, there is only domestic waste which is collected by sanitary team of Ahmed Pyrolysis Plant.

2.15 Noise

All the machinery installed and operated in a closed hall and operation of machinery does not generate any noise problem in the area. Further Administration of the Ahmed Pyrolysis Plant will take the precautionary measures to avoid the noise emission. There is no possibility of Noise pollution.

2.16 Supplies

Water

The water requirement for the project includes water for drinking purpose, water for cooling purpose during process and water for fire hydrants. Ground Water will be used for the all purposes.

2.17 Staffing

The staff is hired with respect to concerned department according to their qualification.

2.18 Evacuation Plan

Management has planned a proper evacuation plan at the project site.

2.19 Security and Emergency Exits

The project site is designed keeping view of security and it would be maintained according to policy of the company executing the project. Emergency exit passages are made and maintained. A proper evacuation plan is formulated to cope with any emergency situation. Assembly points are set and displayed and proper training provide to the workers and staff.

Only the Area Manager or the Plant Manager (or his designee) can authorize an emergency lock removal. In the event any locks are left on and the individual who placed the lock is not on the plant site. The appropriate Operations Manager and the craft person's Manager will complete a lock accountability form. Denote the time and date of removal, reason for removal, and sign the form. The craft person's Manager is responsible for notifying the individual of the lock removal. Lock accountability forms will be attached to appropriate Tag out Order. Maintain these records for one (1) year.

Training

All people involved in Work shall be trained and knowledgeable in the program elements; i.e. fire prevention techniques, fire extinguisher uses and limitations, radiation hazards, eye protection requirements, clothing requirements, types of fumes and gases, ventilation techniques, and respiratory protection methods.

Electrical safety precautions

- The Confined Space Entry Permit shall specify the type of electrical equipment that may be used when performing work inside the Permit Required Confined Space.

- Electrical equipment supplied from the mains should only be used where there are no practicable alternatives.
- Battery powered electrical equipment or pneumatic powered equipment shall be used whenever possible.
- Electrical equipment supplied from the mains should contain Ground Fault Circuit Interrupters / Residual Current Devices.
- Power tools must not be used, unless the concentration of flammable gas is reduced below 1% of the lower explosive limit.
- Electrical equipment supplied from the mains shall have a valid Portable Appliance Test (PAT) certificate.

2.20 Fire Fighting System

The firefighting system included water and gas devices/ extinguishers. Project established a proper firefighting system. Indoor and outdoor fire hydrants are installed according to the codes and standards.

2.21 Restoration and Rehabilitation Plan:

Project is located within the industrial area no population around the project. Thus restoration and rehabilitation factor is nil at the project site. However proponent is committed to plant native flora round the project and there is also native plants in the Ahmed Pyrolysis Plant.

2.22 Government Approvals:

Project is going to apply for NOC from EPA and line departments will be visited like TMA etc.

Chapter III: **STATUTORY** **REQUIREMENTS**

CHAPTER III: STATUTORY REQUIREMENTS

3.1 General

Sustainable development and green economy is a concept that has emerged over the past decades to describe a new framework aimed at economic and social development while maintaining the long term integrity of the ecological system and environmental resources. The principal of sustainable development is in the process of being incorporated into the national policy and legislation through various statutory instruments. This chapter describes the current legal responsibilities of the proponent in context of environmental and sustainable development, and the institutions that exist in the country that may influence the environmental management of the project.

This section deals with the current policy as well as legal and administrative framework related to carrying out of Environmental Impact Assessment (EIA) of the project. An efficient and effective organizational structure is essential for successful implementation of the mitigation measures identified for the project. Like other projects, the project, before its implementation, is required to go through an Environmental Assessment, in accordance with the provisions of the Punjab Environmental Protection (Amendment) Act 2012.

3.2 Existing Legislation and Legal Framework

The Federal Ministry of Environment was responsible authority for policy making on environmental protection in Pakistan but after 18th Amendment in the Constitution, the Provincial Governments have taken over the subject of Environment. This EIA study has been carried out in the light of the policy guidelines of the Preparation of IEE/EIA Reports under the procedures and practices formulated by the Pak EPA and adopted by the Punjab Environmental Protection Agency (EPA).

3.3 Institutional Setup

3.3.1 Environmental Protection Councils

The Punjab Environmental Protection Council (PEPC) is the apex decision-making body of Punjab. It has been developed under the provision of Punjab Environmental Protection (Amendment) Act 2012. It is headed by Chief Minister of Punjab with other members. The purpose of E is basically to obtain Environmental Approval from the Environmental Protection Agency (EPA), Punjab in compliance with Pakistan

Environmental Protection Act (PEPA) - 1997, now having been replaced by Punjab Environment Protection (Amendment) Act 2012.

3.3.2 Environmental Protection Agencies

Pak EPA has been established at the Federal level and EPAs are established at Provincial level also. In Punjab an independent Environmental Protection Agency is constituted headed by the Director General.

3.3.3 Environment Protection Department, Punjab

The Punjab Government has established Environment Protection Department (EPD) administratively controlled by the Secretary, Government of Punjab. The EPD has its independent Minister. According to the provisions of the Punjab Environmental Protection (Amendment) Act, 2012, EPD has a significant role in policy making and implementation of the environmental laws in the Punjab Province.

3.3.4 Relevant Legal / Institutional Framework

The applicable laws for the environmental study of the project are briefly given below. The proponent of the project will abide by the applicable laws and regulations.

A number of laws have been promulgated by the Government of the Pakistan to deal with the environmental and social aspects related to the implementation of various development projects in the country. In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO) that was replaced by the PEPA, 1997, through an Act of Parliament. According to the 18th Amendment in Constitution, the PEPA 1997 has been confined to Federal Area and provinces have been allowed to formulate their own environmental legislation in the subject of environment.

Under the PEP Act, it is mandatory to carry out IEE or EIA for all development projects. The Pak EPA has also framed guidelines for environmental assessment of projects in various developmental sectors, According to PEPA 1997; the National Environmental Quality Standards (NEQS) were established for effluents discharges and gaseous emissions of various Municipal and Industrial sources. The latest revision of NEQS as carried out in year 2000.

Provincial Environmental Protection Departments are also working on the formulation and enforcement of environmental statutes and by-laws. The Pak EPA has issued

several policies guidelines and adopted measures for streamlining the environmental assessment. Though, the need for environmental screening and assessment has received some weight during the recent past, strict implementation of the NEQS is still a dream to be realized. The applicable laws for the environmental study of the Project are briefly described below:

3.4 Pakistan Environmental Protection Order (PEPO) 1983

In 1983, the Government of Pakistan issued an Environmental Protection Ordinance (EPO) 1983. It was the first legislation promulgated for the protection of environment. According to PEPO, 1983 it was necessary to carry out IEE / EIA for all development projects, but there were no IEE / EIA regulations under that ordinance.

3.5 Punjab Environmental Protection (Amendment) Act 2012

Section 12 of the Punjab Environmental Protection (Amendment) Act 2012 makes it mandatory for the proponent of a project to file with the Environmental Protection Agency either an Environmental Impact Assessment (EIA) or Initial Environmental Examination (IEE), as the case may be, in respect of the project.

As per definition given in the Punjab Environmental Protection (Amendment) Act 2012, Environmental Impact Assessment (EIA) means an environmental study comprising collection of data, prediction of qualitative and quantitative impacts, comparison of alternatives, evaluation of preventive, mitigatory, and compensatory measures, formulation of environmental management & training plans & monitoring arrangements, and framing of recommendations and such other components as may be prescribed. The provision of Section 12 has been incorporated “as it is” in the new Punjab Environmental Protection (Amendment) Act, 2012.

3.6 National Environmental Policy 2005

Government of Pakistan has notified National Environmental Policy 2005, for different projects/aspects in which guidelines/priorities have been given to undertake/commence the projects having significant environmental impacts.

The National Environmental Policy (2005) provides a framework for addressing the environmental issues (particularly pollution of fresh water bodies and coastal waters, air pollution, lack of proper waste management, deforestation, loss of bio diversity, desertification etc.) confronting Pakistan. It recognizes the goals and objectives of the

Pakistan National Conservation Strategy (PNCS, 1992), National Environmental Action Plans, and other existing environment related national policies, strategies, and action plans. It also provides broad guidelines to the Federal Government, Provincial Governments, federally administrated territories and local governments to address their environmental concerns and to ensure effective management of their environmental resources.

3.7 Review of IEE / EIA Regulations 2022

The Pak EPA has issued Review of the Initial Environmental Examination and Environmental Impact Assessment Regulations 2022, to review the Initial Environmental Examination (IEE) / Environment Impact Assessment (EIA) reports. Categorization of the projects for IEE and EIA is one of the main components of the Regulations. Projects have been classified on the basis of expected degree of adverse environmental impacts. Projects type listed in Schedule I are designated as potentially less adverse effect, schedule I projects require an IEE and projects given in schedule II require EIA to be conducted.

Salient features of the Regulations are listed below:

- Categories of project requiring IEE and EIA are issued through two schedules attached with the regulations.
- A fee depending on the cost of the project has been imposed for the review of IEE and EIA.
- The submittal is to be accompanied by an application in prescribed format included as Schedule IV of the Regulation.
- The EPA is required to issue conformation of compliance within 15 days of receipt of request and complete documentation.
- The IEE / EIA approval for construction of the project will be valid for three years from date of accord.

3.8 Guidelines for the Preparation of IEE/EIA Reports

The Pak EPA has also framed Guidelines for the Preparation of IEE / EIA of projects in various developmental sectors.

3.9 The Punjab Local Government Ordinance, 2001

Schedules 4 and 8 of this Ordinance pertain to environmental pollution. There are not withstanding any specific provisions, every local government may perform functions conferred by or under the Punjab Local Government Ordinance, 2001, and in performance of such functions may exercise such powers, which are necessary and appropriate. Under the ordinance, the local councils are authorized to restrict projects causing pollution to air, water or land. They may also initiate schemes for improving the environment.

3.10 Pakistan Penal Code, 1860

This defines the penalties for violations concerning pollution of air, water bodies and land. Sections 272 and 273 of this Act deal with the adulteration of food or drink. Noise pollution has been covered in section 268, which defines and recognizes noise as a public nuisance. "A person is guilty of a public nuisance who does any act or is guilty of an illegal omission which causes any common injury, danger or annoyance to the public or the people in general who dwell or occupy property in the vicinity, or which must necessarily cause injury, obstruction, danger or annoyance to persons who may have occasion to use any public right".

3.11 The Land Acquisition Act, 1894

The Land Acquisition Act (1894) deals with the acquisition of private properties for public purposes. There are 55 sections in this Act mainly dealing with area notification, surveys, acquisition, compensation, apportionment awards, disputes resolution, penalties and exemptions.

Although quite old, this act laid out the legal basis for any property affected by a project and for compensating the effected owners of the land.

3.12 Factories Act, 1934

The clauses relevant to the project are those that concern the health, safety, and welfare of workers, disposal of solid waste and effluent and damage to private and public property. The Factories Act also provides regulations for handling and disposal of toxic and hazardous materials. Given that construction activity is classified as 'industry', these regulations will be applicable to the project contractors.

3.13 Labor Laws

Construction and operational activities during the course of construction may affect occupational health of workers. Employers are required to abide by labor laws in respect of their own employees and also to ensure that contractors to follow the relevant labor laws and rules relating to safety of the workforce and creating a healthy working environment. The proponents shall ensure that the labor force engaged at the project site is not exposed to any danger by monitoring the contractor's work frequently.

CHAPTER IV: **DESCRIPTION OF THE** **ENVIRONMENT**

CHAPTER 4: DESCRIPTION OF THE ENVIRONMENT

4.1 GENERAL

This section covenants with the prevailing environmental conditions of the project area. Information that has been collected from different sources, including public literature, reports of other studies conducted in this area, knowledge with the proponent and the concerned government departments and the first-hand surveys and field measurements has been presented in this section. This chapter of Initial Environmental Examination (IEE) encompasses all the important aspects of local environment; such as biological resources, socioeconomic development and quality of living values.

4.2 PHYSICAL ENVIRONMENT

This part examines the physical resources such as topography, soil, climate, surface and ground water resources and quality, ambient air quality and geology of not only the Project site but also the city as a whole to assess whether the project under assessment can or does have any impacts on any of these parameters. The description of physical environment of Gujranwala and the project site is presented in the following sub sections.

- **Physiography and Geology**

Gujranwala sits at the heart of the so-called Rechna Doab - a strip of land between the Chenab in the north, and Ravi River in the south. Gujranwala is also part of the Majha - a historical region of northern Punjab. The city was built upon the plains of Punjab, and the surrounding region is unbroken plain devoid of topographical diversity. Gujranwala is 226 metres (744 ft) above sea level, sharing borders with Ghakhar Mandi and several towns and villages. About 80 kilometres (50 mi) south is the provincial capital, Lahore. Sialkot and Gujrat lie to its north. Gujrat connects Gujranwala with Bhimber, Azad Kashmir, and Sialkot connects it with Jammu. About 160 kilometres (99 mi) southwest is Faisalabad. To its west are Hafizabad and Pindi Bhattian, which connect Gujranwala to Jhang, Chiniot and Sargodha.

- **Hydrology & Water Resources**

- **Groundwater Resources**

No rivers exist in the vicinity; but the surrounding countryside, irrigated by the lower Chenab River, has allowed for the production of cotton, wheat, sugarcane, vegetables and fruits, which form 55% of Pakistan's exports.

○ **Groundwater Quality**

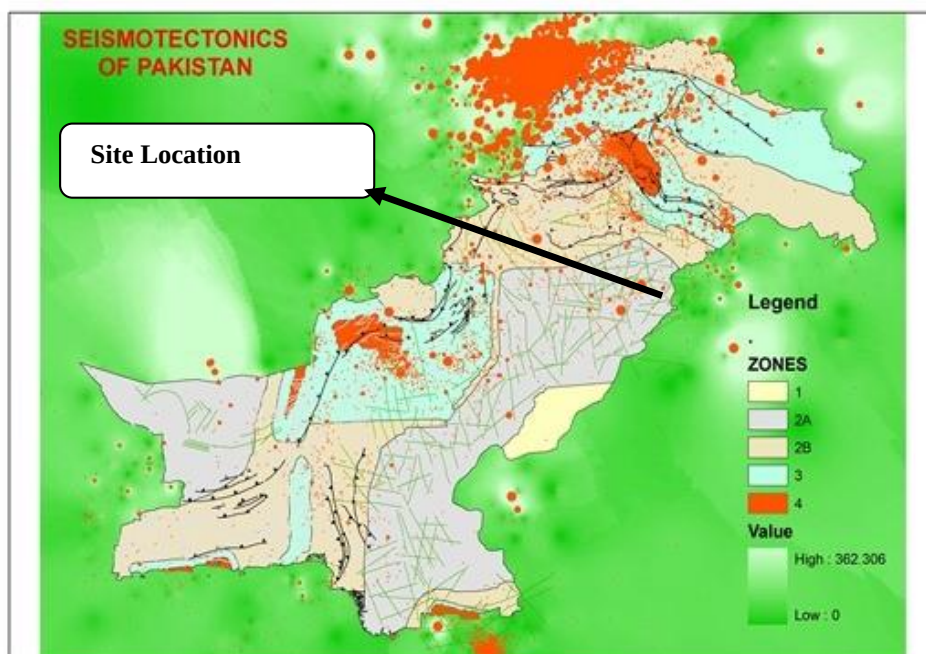
The ground water of the city Gujranwala is quite saline, hence, not acceptable for human intake. A limited quantity of potable water is accessible to the citizens from different scarce resources. In the absenteeism of proper sweet water sources, the WASA Gujranwala has to pump and bring the sweet water from the city district(Chiniot) where ample quantity of drinking water is available. During development of the project, the construction contractor will manage the provision of safe drinking water for the workers. For establishment of baseline data and to assess the ground water quality, samples of ground water were collected from Site and got tested from HSE Lahore, an EPA approved Lab. (Refer to Environmental Monitoring Results attached as Annex).

• **Soil**

These are river-transported deposits (alluvium), which are quite thick and homogeneous in extent. The top soil consists of brown, soft to firm clayey silt / silty clay having slight plasticity and contents of dissolved salts. The top layer is likely to extend about 3 to 6 meter below natural ground, where silty fine sand/fine sand. This layer underlies it generally continues to deeper depths. These layers of silty clay and sandy gravel may also exist below 10 meter depth.

• **Seismicity**

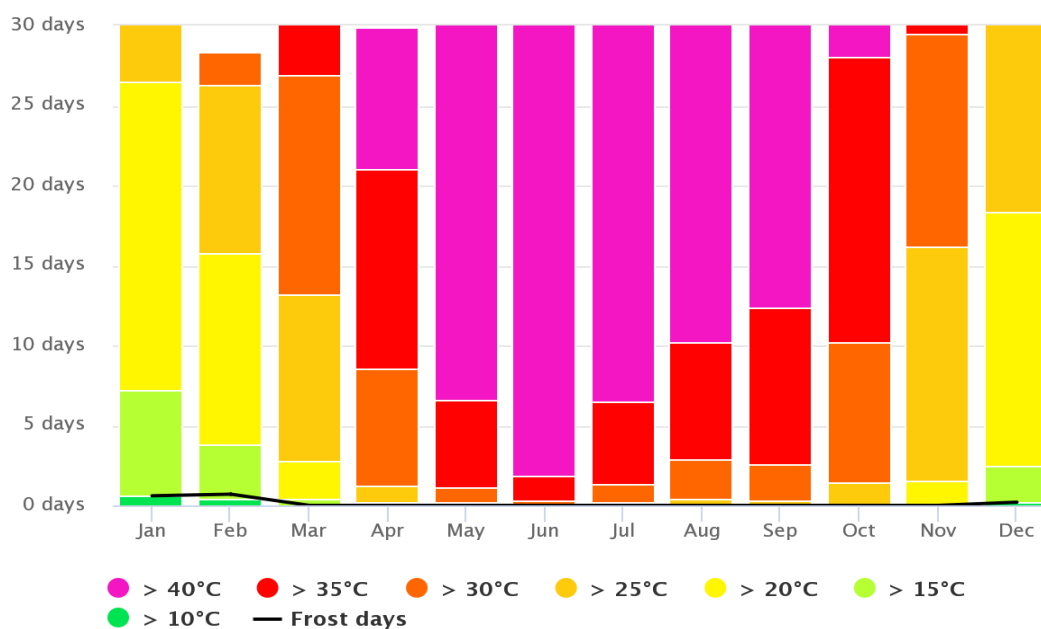
The area has no history of any serious damages due to earthquake. The area lies in Zone 2A which is a Minor Hazard Region. Seismic Zoning Map of Pakistan showing Project site area is presented in Figure 1.



• Temperature

Project area falls in Punjab. Being flat topography, essential climate features are the same. The maximum temperature in summer reaches 50 °C (122 °F) in the summer. In winter, the minimum is 1°C. The mean maximum and minimum temperatures in summer are 41°C and 27°C; and in winter 19°C and 4°C respectively. The summer season starts from April and continues until October. May, June and July are the hottest months. The winter season on the other hand starts from November and continues until March, December, January and February are the coldest months. Detail description of the seasons is as under:

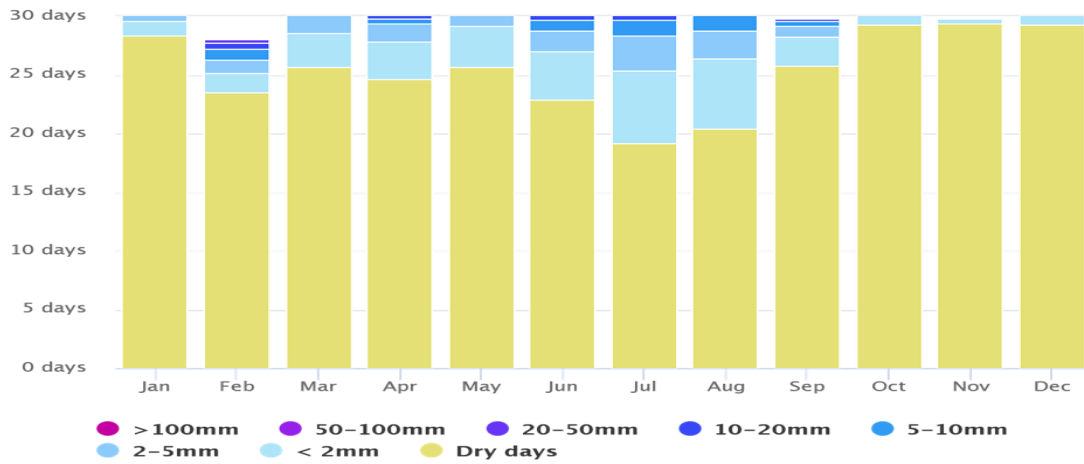
Figure 2: Average temperature per month



• Rainfall

The rainy season starts in July and ends in September. More rains occur in July and August than any other months. Most of the winter rains are received in the months of January, February and March. Yearly precipitation is 400 mm.

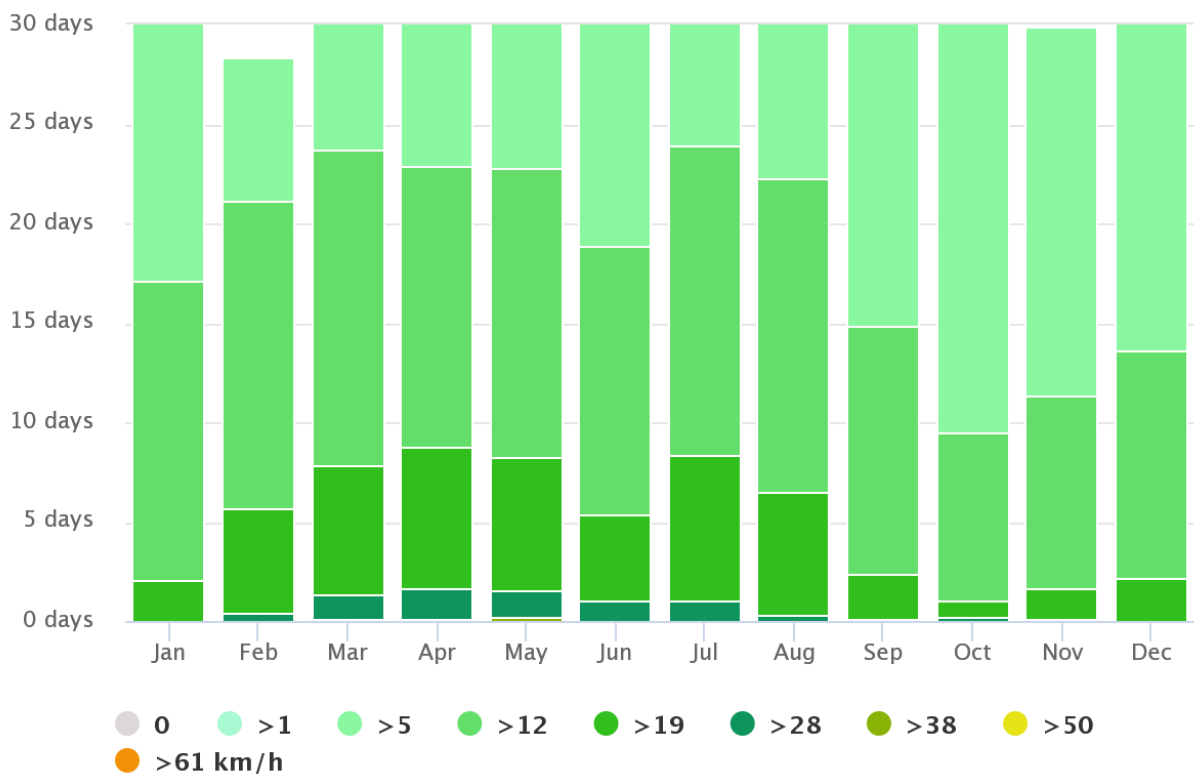
Figure 3: Precipitation amounts



• Wind

This region experiences westerly and north westerly winds during the winter and spring seasons, known usually as the dry stable times of year and southerly and south easterly winds during summer and monsoons. Wind speeds are low during winter picking up during spring season and peaking during the summer months. The prevalent wind speed ranges from 10-25 km/h, however on some days; there appear storms of 60 km/h.

Figure 4: Wind speed



- **Noise Level**

At project the main source of noise emission are the construction activities. Noise from vehicles and other powered mechanical equipment is intermittent. Use of power equipment's at project is just once during unloading of material and is being of temporary nature. Maintenance vehicle came only on requirement basis. As such, there is no noise threat at the subproject sites, where construction activities are being .

- **Ambient Air Quality**

The primary source of air pollution at the project sites is the vehicular emissions, and the key pollutants likely to be found at project locations are carbon monoxide (CO), oxides of nitrogen (NOX), sulfur dioxide (SO₂), and particulate matter (PM). Other source of air pollution is dust arising from construction activities. In order to determine the air quality of the area, air quality monitoring was carried out by the HSE Services; Lahore being EPA approved Lab and has the requisite air-sampling device and expertise for collection of samples. The project location is well outside the metropolitan center. There does not exist any large industry or any other significant pollution source near these sites/routes. As a result, the ambient air quality of these sites is expected to be well within the acceptable limits, and no major criteria pollutants are likely to be found in excess of the limits prescribed by national and international standards. Copy of detail Report is annexed at the end.

4.3 ECOLOGICAL RESOURCES

- **Wildlife, Fisheries & Aquatic Biology**

The wildlife in the project area is jackals, dogs and snakes etc. Common species of birds found in the project area are sparrows, crows, pigeon, dove, tiliar (starling), parrot, quail, pintail and humming bird etc.

- **Terrestrial Habitats, Forests and Protected Species**

Vegetation cover and trees: The district's trees consist of jand (*Prosopis spicigera*), karir (*Capparis aphylla*), beri (*Zizyphus jujuba*), van (*Salvadora oleoides*), kicar (*Acacia nilotica*), shisham (*Dalbergia sissoo*) and aak (*Calotropis spp*). Various herbs can also be found including harmal, akrey and bathoo.

Protected areas / National sanctuaries: In Pakistan there are several areas of land devoted to the preservation of biodiversity through the dedication of national parks and wildlife sanctuaries. There are no protected areas near site.

4.4 SOCIOECONOMIC ASSESSMENT

Socioeconomic Assessment is represented by the human and economic development and quality of life values. For the study of socio-economic environment of the project area, field surveys were conducted and interviews were held with the general public and neighbors.

- **Health Facilities**

Sufficient medical and health facilities are available in the districts. District Headquarter Hospital and Tehsil Headquarter Hospital are established at District & Tehsil Headquarters respectively. In rural areas, dispensaries & rural health centers are functional. There are also other hospitals of voluntary organizations, which provide health cover to the general public. Table shows the no of health institutions of Faisalabad. The said project also proposed a hospital.

- **Educational Facilities**

Gujranwala city's adult literacy rate in 2008 was 73%, which rose to 87% in the 15-24 age group throughout Gujranwala District, including rural areas. The city is also home to the Gujranwala Theological Seminary was established in Sialkot in 1877, and moved to Gujranwala in 1912. The Army Aviation School of the Pakistan Air Force was moved to Gujranwala in 1987 from Dhamial.

- **Transportation and Communication**

Gujranwala is situated along the historic Grand Trunk Road that connects Peshawar to Islamabad and Lahore. The Grand Trunk Road also provides access to the Afghan border via the Khyber Pass, with onwards connections to Kabul and Central Asia via the Salang Pass. The Karakoram Highway provides access between Islamabad and western China, and an alternate route to Central Asia via Kashgar, China. Gujranwala will be connected to Lahore by way of the under-construction Sialkot-Lahore Motorway, due to open in 2018. The motorway will pass east of the Grand Trunk Road, and will terminate near the Sialkot International Airport. Plans for the motorway's extension farther north to Kharian near Gujrat City were announced in late 2017.

- **Cultural Heritage and Community Structure**

There are no official heritage sites or historic, religious or archeologically important sites located in the project work area. There are no major historic or archaeological feature of note but there a few places of worship i.e. mosques within about 15Km of the works.

4.5 ECONOMY

Gujranwala is the Pakistan's third largest center of industrial production, after Karachi and Faisalabad. Gujranwala, along with the nearby industrial cities of Sialkot and Gujrat City, form what is sometimes referred to as the Golden Triangle in reference to their relative prosperity and export-oriented industrial base. The city's industries employ up to 500,000 people, while the city's GDP makes up 5% of Pakistan's overall economy. In 2010, Gujranwala was rated number 6 out of Pakistan's top 13 cities in order of ease of doing business by the World Bank, and was ranked the second best in Pakistan for construction permits. Pakistan's electric shortages of the 2010s severely stymied the city's growth. Industrial units in the city suffered an average of 2872 hours per year in Gujranwala in 2012. By the end of 2017, the supply of electricity had drastically improved with augmented electric generation as a result of new power-stations coming online. Improved supplies of electricity contributed to the country's double-digit rise in exports in the second half of 2017.

4.6 LAB REPORTS OF ENVIRONMENTAL ANALYSIS

Testing of different parameters was done from an EPA certified laboratory to check the quality of different environmental parameters. The copy of the lab reports of these parameters (ambient air analysis, water quality analysis) is given in annexure.

CHAPTER V: **STAKEHOLDER** **CONSULTATION**

CHAPTER V: STAKEHOLDERS CONSULTATION

5.1 General

Consultation with the stakeholders is a tool for managing two-way communication between the project sponsor and the affected public. Its goal is to improve decision-making and build understanding by actively involving individuals, groups and organizations, which have a stake in the project. This involvement increases project's long-term viability and enhances its benefits to locally affected people and other stakeholders.

In order to evaluate the socioeconomic and environmental impacts, field surveys are extremely essential. In addition to the surveys at the preliminary stage, consultation with the community and their active participation plays a vital role in successful implementation of the project. To identify the different types of stakeholders and ascertain their perceptions about the project were measured. A social impact assessment survey was conducted. Informal group discussions were also held as an additional tool for obtaining feedback from the stakeholders that are being discussed in the following pages.

5.2 Objectives of Consultation

Public consultation plays a vital role in studying the effects of the project on the stakeholders and in the successful implementation and execution of the project. Public involvement is a compulsory feature of environmental assessment, which leads to better and more acceptable decision-making. The objective of the consultation with stakeholders is to help verify the environmental and social issues that have been presumed to arise and to identify those which are not known or are unique to the operation of the project.

The important general objectives of the consultation process are:

- Information dissemination, education, and liaison
- Identification of problems and needs
- Collaborative problem solving
- Reaction, comment and feedback on the Project;
- Documenting mitigation measures proposed by the stakeholders

5.3 Methodology

The EIA Team carried out public consultations at various locations within and around the project site. The stakeholder's consultation during this phase of the work targeted the project area, administrative and private offices etc. near the project area:

- Selection of the stakeholders for consultation, reconnaissance of the project site and initial discussions with the neighboring villagers, drivers etc.
- Appraising the targeted stakeholders initially for the purpose of consultation and working out a schedule for holding regular consultation meetings
- Distribution of questionnaires to obtain opinions and concerns
- Meetings with the stakeholders through the participation of environmental consultants and social specialists and documenting the opinions of the stakeholders expressed during the meetings etc.

5.4 Categories of Stakeholders Consulted

The stakeholders contacted during the survey belonged to different categories of people as shown in the Table 5.1.

Sr. No.	Stakeholder Category
1	Villagers
2	Project workers
3	Potential Distributors

Table 5.1: Categories of Stakeholders Interviewed in the Project Area

5.5 Issues Discussed

Following issues were discussed during the stakeholder consultation:

- Overall activities of the project operational phase
- Possible impacts on natural vegetation, land and properties
- Possible mitigation measures
- Benefits or implications of the project specifically for the local people

5.6 Findings of the Overall Discussion

- After making complete feasibility the site is being used for industrial activities.

- The project helps to provide a safe and environment friendly area for manufacturing of gray cement. It enhance the socioeconomic conditions/values of the area
- Project increases revenue generation for the Government
- It create employment opportunities
- Local people should be given preference for employment in the project

Since the project is planned to be established in an existing mine area. Majority of people favored the project in a sense that the project overcome the increasing need cement in market.

5.7 Socioeconomic Trends around the Project Site

Socioeconomic status (SES) is an economic and sociological combined total measure of a person's work and of an individual's or family's economic and social position in relation to others, based on income, education, and occupation.

5.7.1 Study Population

The target population was comprised of households around the project site which was a around the project site. The site does not operate in population. The project site is approximately 5-7 km away from the mining site.

5.7.2 Study Size

Therefore, approximately a total of 25 households of different socio-economic conditions were surveyed and their heads of households were our main respondents.

Sr. #	Variables	Frequency	Percent (%)
1	Name & Address	-	-
2	Date	-	-
3	Address & CNIC	-	-
4	Age	89 (above 30 years)	89%
5	Education	93 (under matric)	92.8
6	Occupation	96 (Private jobs)	95.9
7	Marital Status	99 (married)	99
8	If married then no. of children	87 (> 4)	86.7
9	Total Family members	90 (< 5)	90
10	Religion	97 (Islam)	96.8
11	No. of earning members in family	88 (< 3)	88
12	Total income	97 (> 25 PKR)	96.3
13	Source of income	99 (Private jobs)	99
14	Experience of Diseases	67 (no disease)	67
15	If Yes, then nature of disease	37	

5.7.3 Study Instrument

Data collection tool was questionnaire; it was a 17- items based semi structured questionnaire.

5.8 Sampling Procedure for Questionnaire

5.8.1 Procedure

Before filling the questionnaire respondents were fully assured that their data will not be disclosed. They were told about the purpose of study. They were also told if they have any problem to understand the questions in questionnaire can ask.

5.8.2 Statistics Measures

After preparing the questionnaire, field surveys were conducted. The data selected from questionnaire was analyzed by using SPSS version 16. The data collected with the

help of questionnaire was analyzed in SPSS to get the descriptions of current study. A part of questionnaire has been adopted from SF-36, a standard question to evaluate physic-social-health status.

5.8.3 Study Areas

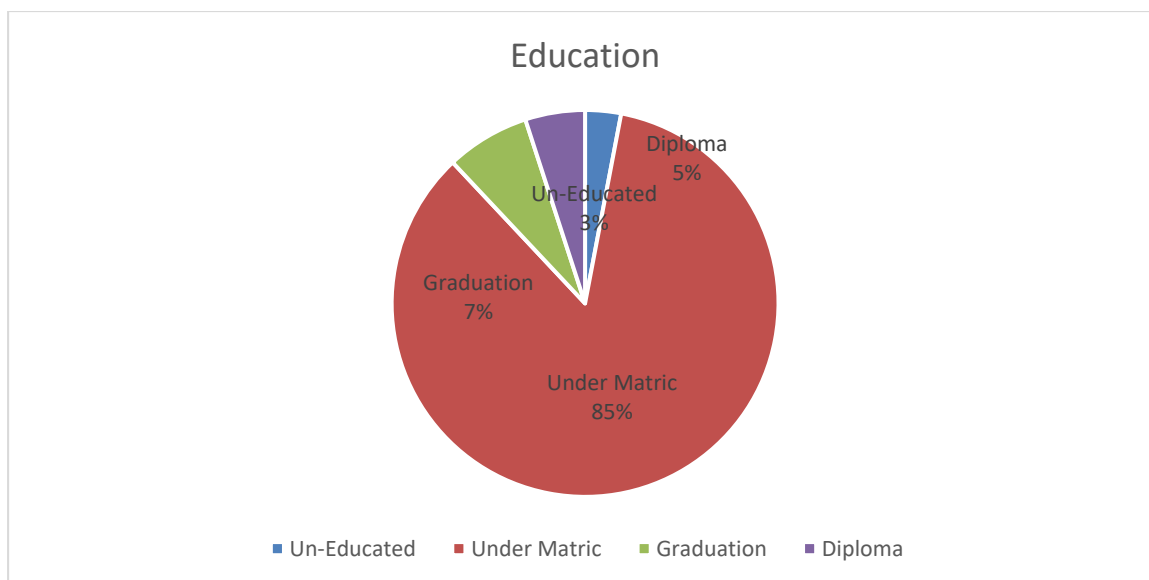
Somehow at surrounding the project site surrounding workers and potential people were visited for socio-economic aspects. Detail of these sited are discussed below. These areas were surveyed by team.

5.8.4 Description of Tables:

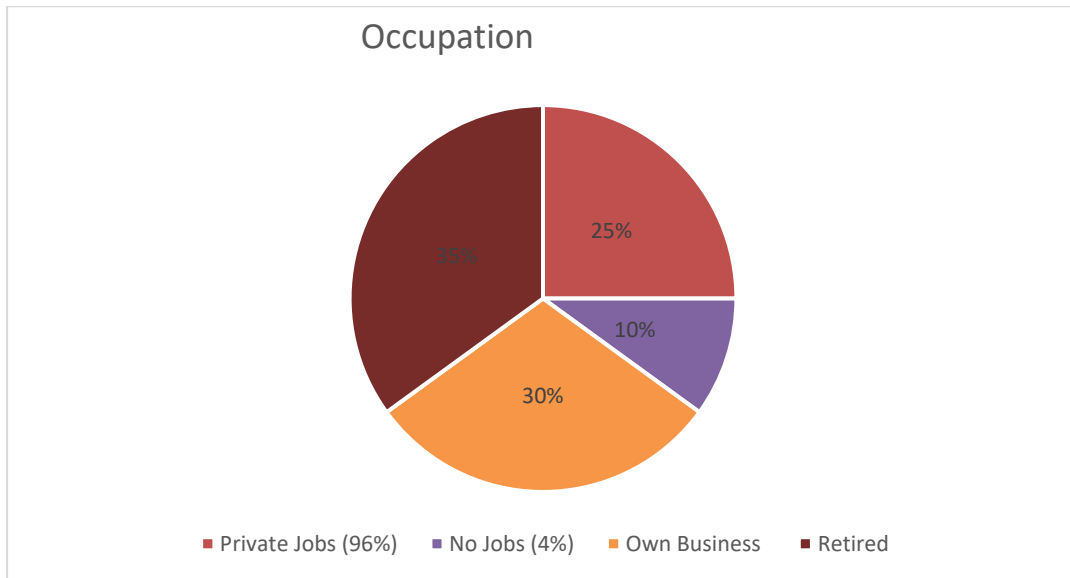
In the following table, only frequency and percentage has been measured (by SPSS) of those parameters which are probably present in maximum quantity.

5.8.5 Site: Around the Project Site

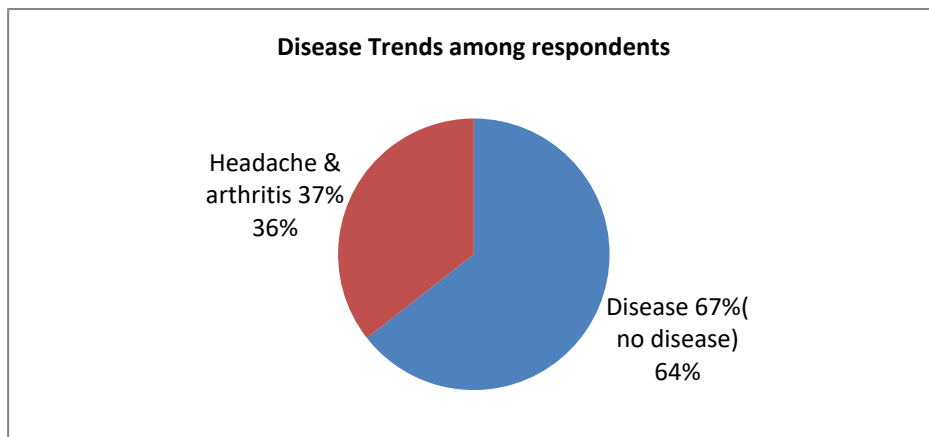
Table 5.1 Socioeconomic Questionnaire



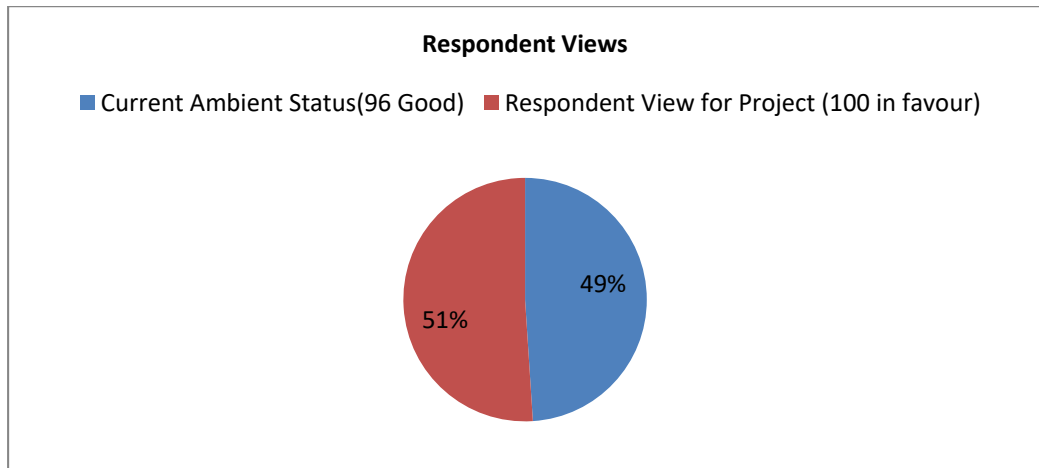
5.1 Graphical Presentation of Education around the Project Site



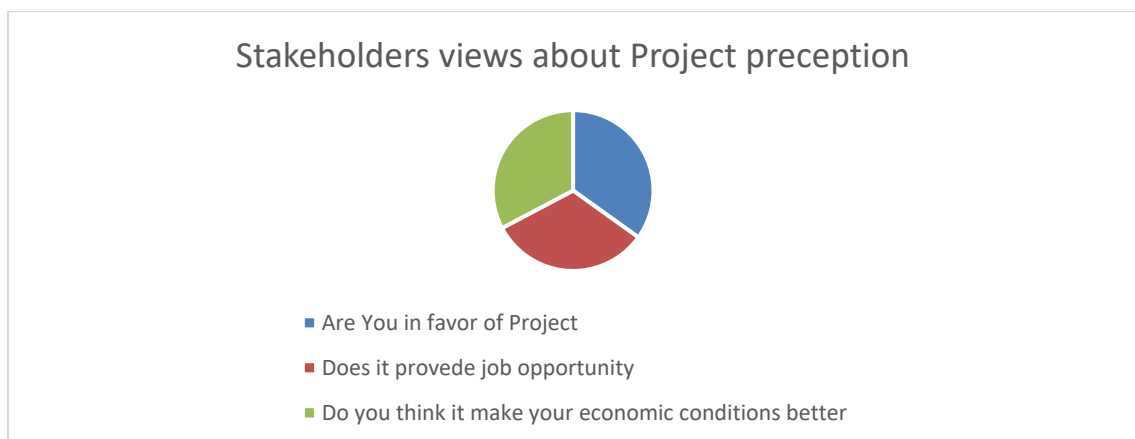
5.2 Trends of jobs around the project site



5.3 Health Status of Respondents



1.4 Respondent View about Project



1.5 Locals View about project perceptions

5.9 Stakeholder Concerns and Recommendations

The findings of the community consultation have been addressed in various sections of EIA. Mitigation plan has been incorporated into EMP. The summary of consultation with various stakeholders is given below:

5.9.1 Project Approval

The community consultations demonstrated that goodwill towards the project proponent indeed exists. Approval for project activities by communities was evident. The consultations were considered a good gesture and were appreciated; especially by men and women. The poverty level is such that communities are looking forward to any project proponent to improve their financial well-being to a great extent. Benefit from the project should be distributed judiciously and equitably among the primary stakeholders in the

project area, and the proponent will continue to ensure that this principle is followed in this project and community development program.

5.9.2 Local Employment

Communities in the project area emphasized that local inhabitants should be given priority when employing people for related works and activities according to their skills.

Chapter IV: SCREENING **OF POTENTIAL** **ENVIROMENTAL** **IMPACTS AND** **MITIGATION MEASURES**

CHAPTER V1: SCREENING OF POTENTIAL ENVIROMENTAL IMPACTS AND MITIGATION MEASURES

6.1 General

The potential environmental impacts related to the establishment of the project have been studied related to design, construction and operational stages of the Project. Environmental protection measures are recommended to eliminate adverse impacts on environment or to reduce them to an acceptable level within the prevailing legislative and regulatory framework. These Impacts are evaluated on the basis of magnitude, immediacy and sustainability. A careful consideration of project aspect, their potential environmental impacts and mitigation measures are proposed in this chapter. Evaluation criteria are as follow:

- **Magnitude:** Type of impact (direct, indirect, and cumulative)
- **Immediacy:** Temporal extent (during construction, after construction)
Spatial extent (local, widespread)
- **Sustainability and Reversibility:** Mitigability (fully, partially)
Monitoring (fully, partially)

6.2 Environmental Problems Due to Project Location

The potential impacts assessed due to project location are change in land use pattern, pressure on the existing natural resources, natural hazards like floods, earth quake, changes in the socio-cultural patterns of the local community, local community displacement issues, and obstruction of accessibility to the community already residing in the locality. A detailed explanation of each potential impact is given hereunder in tabulated form:

Table 6.1: Environmental Problems/Mitigation Measures Due to Project Location

	POTENTIAL IMPACTS	MITIGATION MEASURES
1.	Change in Land Use Pattern	
	Any new intervention has its first and foremost impact of changing the land use pattern of the area. The impact of this nature is irreversible therefore site selection needs to have careful consideration of the impacts that may arise due to the changes in land use patterns.	Prior to selection of site, the project proponent had careful consideration of site alternatives and hence due to current land use nature, price, and comparatively less environmental impacts the site was selected out of the two alternatives. Another factor adding to the feasibility of the proposed site was that it involved no displacement of local

		community, closeness to existing commercial hub and less energy consumption for transportation.
2.	Pressure of Resources	
	Yet another impact to be considered prior to site identification is the availability of already existing resources e.g. water, gas, electricity, etc. any new intervention can exert pressure and marginalize the existing community. This could eventually create a sense of deprivation among the already existing community and may eventually result in social unrest.	Considering this very important factor, the site identification was done after evaluating the extent of provision of resources. The water requirements, energy requirement, social services (identified in the previous chapters) was done and based on the availability of resources to meet the present and future demand, the mentioned site was identified.
3.	Natural Hazards	
	It is very important to assess the extent of damage any natural hazard e.g. earthquake, floods, landslides may cause. The geological formation of the capital territory is such that it has been categorized into earthquake zones.	The site identified within environmentally /geologically safe and does not fall in any of the earthquake zones in which the capital territory is divided.
4.	Displacement of Local Community	
	Displacement of local community can tend to create social issues and aggravate negative feelings from the existing population towards the project.	The project is planned on a site which has already been acquired by the proponents after going through its socio-culture, environmental and economic considerations. The land falls in the premises of AHMED PYROLYSIS PLANT and hence does not require local community displacement.
5.	Accessibility Issues to the Local Community	
	Another important impact considered was obstruction or changes in the patterns of transportation and increase travel time/distance for the local community.	The project site is within the premises of AHMED PYROLYSIS PLANT and didn't involve damage to any roads. Nature, size and scope of work also limit the extent of activities during construction as well as operational phases.
6.	Presence of Sensitive Areas	

	Development interventions can degrade the quality and life expectancy of ecologically, socially and historically sensitive areas.	There are not sensitive areas of any nature be it ecological, social or historical around the project site.
7.	Availability of Existing Infrastructure and Services	
	Unavailability of infrastructure can render the entire project void and impractical due to absence of important community infrastructure.	The project is well connected to the rest of the city through major asphalt roads e.g main road and has hospitals, clinic and transport facilities available hence location of project is ideal.

Table 6.2: Environmental Problems/Mitigation Measures Due to Project Design

	POTENTIAL IMPACTS	MITIGATION MEASURES
1.	Increased Energy Consumption	
	The design of project site plays a vital role in determining the energy demand. Unplanned design may lead to overall rise in energy demand.	The design of project site is in the manners of sustainable way for its operation.
2.	Traffic Congestion	
	Unplanned traffic management and traffic infrastructure development may lead to traffic related issues such as accidents and traffic congestion.	The said project is located within the industrial area and currently an open land where sustainable structure for engine will be constructed. During construction there will be specific time by which vehicles will be allowed for transportation of construction material. Due to all managed scheme, there will be not congestion of Ahmed Pyrolysis Plant inside.
3.	Fire Exits /Emergency Evacuation Plan	
	Emergency evacuation plans especially for the said project which is about to install engine for energy manufacturing. Fire issues due to electric short circuit, gas leakages etc.	The project proposes Emergency Evacuation Plans in events of fire hazards. Quality of wiring work and gas lines will be ensured through installation of good quality wiring during construction and proper monitoring during operational phase. The site will be equipped with

		proper fire fighting materials to ensure increased safety.
4.	Accessibility to Public Utility / Services	
	Inaccessibility to public utilities will render the project uninhabitable.	Resolving the issues of accessibility to public utilities / services will be resolved through proper design planning of infrastructure.
5.	Careful Planning of Greenbelts/Horticulture Plan	
	Unavailability of greenbelts would create aesthetic nuisance.	The design of proposed project involve establishment of green belts and develop aesthetically flowery and somehow indigenous flora around the project site to increase its aesthetic value as well as to reduce the noise pollution.
6	Underground Sewer /Drinking Water Lines	
	Wires and pipelines laid open and above surface may consequently give rise to leakages, contamination and short circuits in the lines.	There will be no any such issue at the said project site because water will be gained from ground. As per requirement water will be gained by tabs as Ahmed Pyrolysis Plant has its own water turbine for in house usage.

Environmental Problems Associated With Project Construction Stage

The unit is already operational so there is no question of discussing environmental problem associated during construction stage.

6.3 Environmental Problems Associated With Project Operations

Table 5.3 provides a detailed overview of the environmental aspects and subsequent environmental impacts that might be arising during project operational phase. Appropriate mitigation measures are also proposed for the remedy of any such potential impacts.

Table 6.3: Environmental Impacts/Mitigation Measures during Operational phase

	POTENTIAL IMPACTS	MITIGATION MEASURES
1.	Solid Waste Management	

	Improper and unplanned solid waste dumping can cause environment, health and safety issues. It also can potentially deteriorate the living quality of the residents besides reducing the aesthetic quality of the entire project site.	At the project site, solid waste will be only domestic which will be tackled by the Ahmed Pyrolysis Plant. The solid waste will be collected by sanitary workers of Ahmed Pyrolysis Plant.
2.	Wastewater Disposal	
	Wastewater generated due to operational activities will result in the spread of vector borne diseases like dengue, malaria, as well as spread the nuisance of foul smell.	There is only domestic wastewater at the project site which would be easily tackled by septic tanks.
3.	Energy Conservation	
	Excessive use of energy will exert more pressure on the already dwindling energy resources of the city/country.	The workers/employees are encouraged to follow energy conservation strategies producing during operational phase. Over the timing of working, it is discouraged to use extra electricity.
4.	Noise Generation	
	Noise emissions due to traffic and any activities will create issues to the residents. There will be noise regarding operation of this engine.	Any activity that leads to noise emission is restricted. Moreover, machinery will not making the noise and for its mitigation there are proper plans like; 1. Regular inspection of whole powerhouse is done 2. All machineries are made of latest design producing less exhaust and noise 3. All machinery is grouted properly 4. Moreover thick plantation is done in the Packages and around the project site
5.	Emergency/Fire Hazards	

	Emergencies e.g. fire incidents may lead to environmental, health and safety issues to the local residents.	There are strategies regarding emergency and fire hazards. The fire extinguishers are installed at the vertically 6 feet height. There will be 10-12 large fire extinguishers and fire hydrants for any emergency conditions.
7.	Training of Staff	
	Unskilled personnel will not be able to tackle environmental, health and safety related situations which may further aggravate any such issues and cause loss of human life and property.	Regular training of the workers regarding this power supply mechanism and its mitigation measures are planned. Proper monitoring and reporting mechanism are developed where every office honor is responsible to communicate/report any illegal or hazardous situation to maintenance team of this power supply system. .
8.	Groundwater Consumption	
	The groundwater will be used for domestic use at the project site. Water storage will also be required for emergency response in case of a fire. Prolonged water consumption may in the long run lower/deplete the underground water table. This will be a permanent and moderate negative impact.	An effective 'Water Conservation Plan' is developed and for domestic purpose water is gained by tabs on need. Following operational measures are adopted for water conservation: • It made sure that all faucets, tabs etc. do not leak and are in good repair; • Any leaking or dripping faucet, tabs or toilet is reported immediately; • All the utility bills are kept in a safe place to track the consumption of water; and • Purchase and use of water-saving equipment are being practiced.
9.	Social Impacts	
	Problems regarding privacy of local community may arise due to invasion of outside population.	Though the chance of any improper social conduct are negligible due to the fact that the project is within the premises of project site. 1) Care is being taken to properly ground and insulate all equipment

		2) Standard procedures for confined space entries are displayed in written form 3) Head, arms and foot PPE's are provided Emergency Eye wash equipment are placed in chemical room. 4) Firefighting equipment are available in the form of ABC fire extinguishers as a minimum, and their locations are clearly marked. 5) Fire water are located throughout the powerhouse in well-marked piping. Housekeeping is frequent and thorough to prevent slips, trips, and falls 6) SOPs are established for all the activities and are also displayed wherever required. Training on observation of SOPs provided to the employees and the visitors, as may be required. 7) Workers are told and encouraged to use PPEs as may be standardized 8) Workers' awareness and safety wall chart showing safety symbols are displayed. First Aid Box is kept in easy approach of all in case of any injury or mishap. 9) Basic medical and health facilities are provided to all employees Safety, health and educational drive given to residents living near the project site.
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		10) Safety and warning devices such as reflectors, lights, etc. are installed at designated spots. Earthing network around the engine room to avoid exposure to electromagnetic fields. 11) However, having a proactive approach, improper social behaviors e.g. staring and teasing are discouraged and any such incident reported to the site in-charge. 12) Workers hired from the local community to avoid social issues.
10	Transportation	
	Transportation for bringing the fuel to the plant or taking away sludge may cause the irritation within the premises of Ahmed Pyrolysis Plant site.	Transportation is restricted for only work scenario otherwise no extra transportation is allowed inside the Ahmed Pyrolysis Plant toward the project site. Twice in a week fuel transported towards the project site, it is average tendency of project.

The impact associated and their risk score was calculated for each impact type to get an overall probability of severe impact that the project might cause during any stage of its existence. The stages have been categorized according to the guidelines and the Risk Analysis Matrix method has been employed to obtain the overall impact in terms of probability, likelihood, severity and overall magnitude of impact.

Impacts	Design Of Project				Risk Level
	Probability	Frequency	Severity	Risk Score	
Change in land use pattern	0.1	0.1	0.1	1	
Pressure on resources	3	6	3	54	
Natural hazards	0.1	0.5	7	0.35	
Displacement of local community	0.1	0.5	7	0.35	

Disruption to accessibility and infrastructure	3	1	3	9	
Disturbance to sensitive areas	0.1	0.5	10	0.5	
	Project Operation				
Solid waste generation	10	6	1	03	
Wastewater generation	10	6	1	02	
Pressure on energy	10	6	1	20	
Pressure on existing utilities and services	10	6	1	20	
Disturbance to biodiversity	0.5	0.5	0.0	0.11	
Noise generation	10	6	1	60	
Emergencies and fire hazards	0.5	0.5	15	3.75	
Damage to infrastructure	0.5	0.5	3	0.75	
Damage to exiting environmental setting/resources	0.5	0.5	3	0.75	
Transportation	3	0.5	15	22.5	
Social impacts	0.1	0.5	15	0.75	

6.6 Potential Environmental Enhancement Measures

In order to enhance the environment the following measures adopted:

- The important positive impact of the powerhouse has been generation of electricity, which reduce gap between supply and demand of electricity for Ahmed Pyrolysis Plant. The other important positive impacts of the project operation are employment for skilled and semi-skilled workforce. In this regard, it is expected that Ahmed Pyrolysis Plant considers deploying local people as many as possible.
- Due to demolition work, is temporary employment opportunity for local people as well as outside experts. In addition, the project site can be used as an industrial estate for a new industrial venture because it would be enriched with the basic utilities and infrastructures.
- Trees are kept within the premises to beauty the Ahmed Pyrolysis Plant around the project site.

CHAPTER VII: **ENVIRONMENTAL** **MANAGEMENT &** **MONITORING PLAN**

CHAPTER VI1: ENVIRONMENTAL MANAGEMENT AND MONITORING PLAN

7.0 Background:

The purpose of developing this Environmental Management and Monitoring Plan (EMMP) is to provide a dynamic guideline to the concerned stakeholders to define details of who, what, where and when environmental management and mitigation measures are to be implemented besides providing the contractors and proponents better on-site environmental management control over the life of the project. The scope of this Environmental Management and Monitoring Plan includes the activities during operational phase of project. However, to ensure the compatibility of the Environmental Management and Monitoring plan in accordance with the changing socio-cultural, economic and environmental factors, it is used as a dynamic tool which means that the EMMP would undergo necessary modifications to keep catering to the changing environmental needs of the project.

Table 7.1: Users of this EMMP would include but not be restricted to the following:

Sr. #	EMMP Elements	End Users
1	Background	All stakeholders – internal and external Approval or consent authority e.g. EPA Punjab
2	Environmental Management	The management, honor of each office and supervisory staff of Ahmed Pyrolysis Plant. EPA Punjab
3	Implementation	The management, honor of each office and supervisory staff of Ahmed Pyrolysis Plant. EPA Punjab
4	Monitor and review	The management, honor of each office and supervisory staff of Ahmed Pyrolysis Plant. and EPA Punjab

7.1 EMMP Context:

Being an environment conscious and law abiding entity, Ahmed Pyrolysis Plant has decided to identify, develop and implement an EMMP that identifies the environmental aspects of their project besides providing them a guideline to tackle any environmental issues that may arise in the future. Under the Punjab Environmental Protection Act, 1997 (Amended, 2012), conducting an IEE/EIA prior to commencement of a project is

obligatory. This is further reinforced through the IEE/EIA Rules 2000. A more elaborated guideline for Environmental Report Writing further provides a step by step procedure for drafting of an IEE/EIA report. An Environmental Management and Monitoring Plan has been made a compulsory part of the IEE/EIA report under the same guidelines. It is for this reason that Ahmed Pyrolysis Plant has planned to meet pre-requisite of the Environmental Approval by drafting a meticulously planned EMMP.

7.2 EMMP Objective:

The objectives underlying the EMMP Ahmed Pyrolysis Plant are:

1. To provide guideline to the management and supervisory staff for conducting their activities in an environmentally responsible manner
2. To mitigate potential risks during operational phase of the project
3. To coordinate with the responsible approval authorities regarding the environmental efforts
4. To identify roles and responsibilities for the implementation of EMMP
5. To meet the regulatory obligation put forth by Punjab Environmental Protection Act, 1997 (Amended 2012)

7.3 Environmental Policy

Ahmed Pyrolysis Plant strives for environmental reverence which is why it has devised its environmental policy stating vision Ahmed Pyrolysis Plant towards environmental conservation. Our policy is:

1. to provide a modern yet sustainable and environmental friendly working condition to its employees
2. conserve natural resources through adopting less waste policy
3. energy conservation through promoting environment friendly designs
4. to provide trainings to all employees to meet our environmental objectives

7.4 Environmental Management and Monitoring Plan Structure and Responsibility

Table 7.2: Roles and Responsibilities

Sr. #	Positions	Significance	Stage	Environmental Responsibilities
1	Proponent / Owner	Critical	Operations	• Oversee Environmental Policy and EMMP

				• Serve as primary contact to the regulatory authorities • Commit resources to achieve environmental objectives
2	All Employees	Critical	Operation	• Attend training and understand their roles in the implementation of EMMP • Understand the Environmental Policy / Objectives and act accordingly • Participate in the review of EMMP • Coordinate with the responsible authorities within the project to report any noncompliance to their Environmental Policy
3	Maintenance Manager	Critical	Operation	• Understand the environmental policy of the project • Operate in accordance with the environmental policy • Ensure reducing the chances of increased solid waste • Reduce water and energy wastage • Ensure all machineries /equipment are in good conditions • Ensure health and safety of the workers during construction / operational phase • Provides health, safety and environmental awareness trainings to the staff
4	Administrative Person Deal with Environment Issues	Critical	Operational	• Understand the environmental policy of the project • Operate in accordance with the environmental policy • Ensure reducing the chances of increased solid waste • Reduce water and energy wastage

				• Ensure all machineries /equipment are in good conditions • Ensure health and safety of workers during operational phase • Receive health, safety and environmental awareness trainings • Prepare and maintain accidents/environmental risk records • Timely coordination with the responsible authority
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7.5 Environmental Management Plan for Ahmed Pyrolysis Plant

Ahmed Pyrolysis Plant believes in sustainable resource management which is why it has developed a comprehensive Environmental Management and Monitoring Plan for its operational phase.

Table 7.3: Environmental Management Plan

Sr. #	Environmental Element	Operational Phase
1	Sewage	There would be no wastewater during operational because said project is an energy providing scheme. Domestic wastewater is managed by septic tanks in Ahmed Pyrolysis Plant.
2	Civil water supply	• It is ensured that no activity tempers with the civil water supply system at the project site except cleaning and washing.
3	Solid waste	• During operational phase, solid waste is only domestic which Ahmed Pyrolysis Plant collect it.
5	Noise	• Any activity that generates noise is prohibited and limited. No noise generating activities are allowed after five in the evening. • Machinery is in closed hall where noise is not out • Machinery regular monitoring and inspection done

		Plantation done around the project site to make the project site environmental friendly as well as to reduce the noise pollution.
6	Gaseous emissions and particulate matters / dust generation	During operational phase, no activity is envisaged to take place which may generate dust of particulate matter of any significance. Under the control of the management all care is taking to keep the activities environmentally sound and sustainable.
7	Floor sweepings	Floor sweepings is collected in bags and disposed of with solid waste which is ultimately collected by sanitary workers of that area.
8	Trash burning	Trash burning is discouraged within the premises of the project.
09	Dust	The project is not involved generating the dust because regular practices will be done for control the dust of sweeping by sprinkling of water.
10	Environment quality enhancement measures	Environment quality enhancement measures like flower pots, green belts, planting of trees are provided around the said project.
11	Staff for environmental management plan	Special staff is recruited to implement this Environmental Management Plan on regular basis. Administration is responsible for establishment of successful implementation of EMMP.

7.6 Environmental Monitoring Plan

Environmental monitoring is undertaken in accordance with the requirements of the environmental authority (EPA, Punjab) to ensure compliance to the Pakistan Environmental Quality Standards (PEQS) as and when required. Approximately 1 million PKR per year budget is reserved for the Environmental Monitoring and measures.

Environmental monitoring includes parameters that will be mentioned in the Environmental Approval accorded by the Environmental Protection Agency, Punjab for its operational phase.

7.7 Institutional Arrangement

Administration under the supervision of the maintenance manager reports directly to the proponent. The administration consists of skilled personnel with expertise in health, environment and safety issues. Roles and responsibilities for the implementation of EMMP are further explained earlier under the head Roles and Responsibilities.

7.7.1 Reporting

The proponent aims to provide timely, relevant and appropriately presented information to the concerned government authorities, local community surrounding the project site on the environmental, health and safety performance of the project. The commitment would be met by record keeping and presenting it to the concerned authorities as and when required.

7.7.2 Staff Training

Staff training is important parameter that needs to be fulfilled adequately in order to ensure the successful implementation of environmental objectives. Keeping this fact under consideration, Ahmed Pyrolysis Plant ensures that the employees and honor of each office receive appropriate environmental awareness training. This is obtained through a variety of methods including training sessions, formal/informal meetings and discussion and formal presentations. Environmental awareness training takes place at various stages of the persons concerned with the project. This occurs at the induction of any new employee/contractor/workers and makes a regular on-site feature. Records of training content and attendance maintained on regular basis.

There is proper staff and administration for maintaining the equipment's of the powerhouse.

1. Their roles and responsibilities (including environmental incident reporting)
2. The environmental impacts (potential and actual) of their activities during operation
3. Natural hazards such as earth quake and floods etc.
4. The potential consequence of poor environmental performance
5. Site emergency plans and their execution procedures

#	Description	Responsibility	Who will be involved	Outcomes
1	Air Quality	Administration	All employees	• Better understanding of the health impacts associated with air pollution • Develop a monitoring and reporting system for air pollution • Third party involvement especially EPA approved labs will be decided under potentially harmful circumstances
2	SWM	Administration	Staff	• Improved understating regarding health impacts associated with unplanned waste management • A monitoring and reporting system that would enable the supervisor to keep control of all unnecessary scattering
3	Wastewater	Administration	Employees but specific attention to the staff	• Improved understanding of the conservation techniques • Quality assurance through lab analysis if need be found
4	Noise	Administration	All employee	• Monitoring and reporting system for noise related issues if detected • Appropriate measures would be identified and implemented • Guidance to the employee on adopting good practices for noise and any other practice that otherwise could lead to environmental nuisance.
5	Firefighting	Administration	All employee	• Improved understanding of keeping a tab on all potential threats that could lead to fire hazards

				• Understanding on how to use the firefighting equipment • Understanding regarding emergency exits and use of fire point
6	Landscaping	Administration	Staff	• Improved efforts for maintaining the green belts and tree plantations
7	Accidental Spills	Administration	All staff	• Improved understanding regarding how to react during minor and major spills according to the measures identified

7.8 Environmental Audits and Reviews

Ahmed Pyrolysis Plant ensures conducting environmental audits to assess compliance with the conditions set under the environmental legislation and those mentioned by the EPA, Punjab during grant of Environmental Approvals. The objective of the environmental audit and review is to monitor and report both compliance and non-compliance with the statutes, EMMP and the conditions set under Environmental Approval. This is for operational phase of the project under the supervision of the administration.

7.9 Public Consultation

Social survey was held with the surroundings from the project area. They were of the view that the project is income opportunities for the surrounding community ultimately helping in the reduction of poverty in the area to a greater extent. A sample of the questionnaire used for public consultation is attached along as **Annexure**.

Emphasis was placed on community awareness and perception about the project. This was an important component of the entire study as social assessments are complementary part of environmental assessment. By and large, the people of the project area are well aware of the project and can well anticipate the activities that would entail once the project enters its operational phase. All of the respondents who participated in the public consultation process welcomed the project considering it beneficial both economically and socially. According to their point of view that the project is boosting their income by providing small income generating opportunities. People foresee this project as a positive precursor that would give rise to employment

opportunities and small vendor's activities. No opposition from the public was confronted for the project.

7.10 Compensation in Money Terms

There is no cutting of flora and no harm to fauna by project. There is no any structure or residence which is going to be damaged by project so there is no need for money compensation. Project is environment friendly.

7.11 Replacement, Relocation and Rehabilitation

Proposed project is done within the domain of Ahmed Pyrolysis Plant where there is neither any population nor any structure. So there is no need for replacement, relocation and rehabilitation of project.

CHAPTER VIII: **CONCLUSION &** **RECOMMENDATIONS**

CHAPTER VIII: CONCLUSIONS AND RECOMMENDATIONS

Ahmed Pyrolysis Plant is a manufacturing concern that is involved in the production and sale of TPO, carbon black, steel wires and gas to consumers across the country. The project requires an Environmental Impact Assessment (EIA). In order to ensure compliance with the lawful provision of section 12 of PEPA 1997 (Amended 2012) read with IEE/EIA Regulations 2022, the Initial Environmental Examination (IEE) Report has been prepared and is being filed to the Environmental Protection Agency, Lahore for issuance of environmental approval.

Accordingly, this EIA report describes social, environmental, physical and other relevant aspects of the project during operation and at its regular occupancy. The report also specifies necessary measures to be adopted for mitigation of environmental impact on the environment. It also provides information as desired under the format used for the preparation of this EIA Report.

A detailed impact assessment was discussed associated with the operational phase under the head “Impact Assessment and mitigation Measures”. All infrastructure e.g., road, sewerage, water supply, electric supply, gas etc. already exist in the project area. The project is an environmental friendly site and working since 2005. Total solid waste generated from the project comprise mainly of paper, plastics organic matter and food waste. The municipal waste ultimately collected by sanitary workers of Ahmed Pyrolysis Plant from where sanitary workers collect of that area and manages according to their practices. The project is its own administration set up for environmental monitoring and maintenance of site at operation stage. In order to handle fire hazards, fire hydrants and sprinklers are provided at many locations within the premises.

The baseline study has been conducted reviewing the available literature. The overall impact of the project is considered positive.

At the operational stage, traffic management, wastewater and solid waste generation, and emergency response are the significant impacts that are being managed. Mitigation measures and their responsibility for each of the mitigation have been given in the report. Emergency Response Plan is developed. The mitigation measures are strictly implemented to save the environment.

For the effective implementation and management of the mitigation measures, an outline Environmental Management and Monitoring Plan (EMMP) has been developed.

The project is also based on the principles of sustainable development.

8.1 Conclusion

In view of the above it has been concluded project that is Ahmed Pyrolysis Plant which manufacture TPO, Steel Wires, carbon black and gas which will work is environment friendly at all aspects. All mitigation measures are predicted and are managed and make the project environment friendly. It is therefore requested to issue the environmental approval under section 12 of PEPA 1997 (Amended 2012) for project.