

VII: ENVIRONMENTAL IMPACTS

7.0 INTRODUCTION

Prediction of Impacts is the most important component in the Environmental Impact Assessment studies. Several scientific techniques and methodologies are available to predict impacts of developmental activities on physical, ecological and socio-economic environments. Such predictions are superimposed over the baseline (pre-project) status of environmental quality to derive the ultimate (Post-project) scenario of environmental conditions.

The prediction of impacts helps in minimizing the adverse impacts on environmental quality during pre and post project execution.

The study is focused on the significant areas which will have major impact on environment and those areas are addressed in the study.

- Acquisition of Land
- Finalization of Layout
- Air Quality Impacts
- Water Quality Impacts
- Solid Waste Disposal Issues

The above issues are the significant areas.

Considering the issues involved in proposed Integrated Steel Plant development, the activities can be divided into two phases viz;

- ü Construction Phase
- ü Operation Phase

7.1 CONSTRUCTION PHASE

The developmental phase impacts are mostly due to construction related activities of various proposed industries of LIA and also for provision of infrastructure facilities as Roads, Sewerage, Storm Water Network, Water Supply, Streetlights and Landscaping. The impacts are discussed below:

NATURE OF IMPACTS DURING CONSTRUCTION PHASE

Activity	Impact	Net result
Acquisition of land for industrial development	Affect the present land use pattern. The presence of sensitive areas, archeological sites, human settlements may create conflicts.	Moderate
Removing undulating ground to facilitate construction	Affects air quality due to increase in SPM levels, impact on flora and fauna, impact on noise quality.	Negligible
Construction of roads and civil engineering structures	Affects air quality due to increase in SPM and NO _x levels, impact on noise quality.	Negligible
Migration of Labour	Impact on infrastructure like housing, creates health hazards due to poor sanitation problems.	Negligible

AIR ENVIRONMENT

The impact on air quality is primarily due to generation of dust from activities as excavation, construction, lying of roads and plying of vehicles.

Air environment shall also be affected due to noise generated from the construction activities and movement of vehicles. The steps shall be taken to reduce the impact of noise by taking to plantations from the very beginning. No construction activities and plying of vehicles shall be permitted during the night.

Point Source Emissions

There will be no point source emission during construction phase.

Area Source Emissions

Area source emissions are described as the emissions generated during the handling of raw material and other intermediate material in the proposed site. The major area source emissions will be the dust generation during construction activities.

Line Source Emission

During construction phase line source emission will be due to transportation of raw material and other construction related material.

NOISE ENVIRONMENT

There will be marginal increase in noise levels during construction phase which is temporary. No construction activities are planned during night time which may contribute to the existing baseline. Noise pollution will be mainly due to movement of vehicles.

WATER ENVIRONMENT

Industrial requirement of water is 13677.22 KL/day is when the site is fully developed. Summary of water requirement is given below:

S. No	Particulars	MoUs	Proposed	Total
1	Assumed Units	1	88	89
2	Requirement of water (KLD)	9550	4127.22	13677.22
3	Requirement of water (MLD)	9.55	4.13	13.68
4	Requirement of water (MGD)	2.12	0.92	3.03

Source of water will be Sheonath River, which is nearby to the proposed site, During construction activities water will be used in dust suppression.

There shall be no discharge of any waste water during the construction phase.

LAND ENVIRONMENT

As evident from the contour plan the project site is nearly plain. Thus, there is no need to undertake mechanical leveling operations which impacts the land environment. To avoid erosion of the top soil the development is planned in the shortest possible time and and-clearing activity shall be kept to the absolute minimum by working at the specific sites one-by-one where construction is to take place.

The activities that result in soil being laid bare shall be scheduled in such a way that some type of vegetative cover appropriate to the site shall be established prior to onset of monsoons. The solid waste generated from the construction activities shall be effectively recycled within the project. The requirements of construction material for the construction works will be met locally.

ECOLOGY

The project site does not intrude with habitat of any flora and fauna. The site is a vacant land. The proposed site does not have any endangered species of flora and fauna .The construction activities shall not lead to discharge of

any pollutants into surface water bodies nor there such bodies within the impact area to affect the aquatic environment.

SOCIO-ECONOMIC ASPECTS

The project shall provide employment to local villagers in construction activities. It shall support small business activities to meet the requirements during the construction.

7.2 OPERATION PHASE

During the Operation Phase the establishment of the plant results in generation of waste and disposal of waste.

Considering magnitude, the impacts are termed as High / Low and Long-term impacts / Short-term impacts. The activities in construction phase are short term in nature.

NATURE OF IMPACTS DURING OPERATION PHASE

Activity	Impact	Net Result
Air emissions	Affects air quality, ecology due to increase in SPM, SO ₂ , NO _x and HC levels depending upon the type of process and energy requirements of an industry	Moderate to high
Effluent discharges	Affects water quality, soil quality of the region due to release of both organic and inorganic pollutants	Moderate
Noise emissions	Affects community noise environment of the region due to increase in day-night equivalent noise levels	Moderate
Transportation	Impact on existing infrastructure	Moderate

7.3 AIR QUALITY IMPACTS

Siting of industries invariably creates air emissions. It is also very difficult to quantify the total impact in the absence of any specific known development.

As the total picture about the industries, type of process, energy requirement and emission details are not known at this state, the impacts from each of the independent sources can not be quantified at this planning stage. However, an effort has been made to envisage the air pollution impacts based on the available data and the MoU data given by CSIDC.

The Major Air Polluting Sources from the proposed Industrial Area will be from the Proposed Sponge Iron Plant, Mini Steel Plant, Captive Power Plant and Food Processing Units etc.

7.3.1 SPONGE IRON PLANT

The gaseous emissions from the plant include Particulate Matter, Sulphur dioxide and Oxides of Nitrogen. In the plant coal/coke is the main fuel used. The major emissions generated from coal/coke burning are Particulate matter, SO₂ and NO_x.

It is expected that the dust levels may rise due to increased use of raw materials, transportation (internal & external).

Release of Exhaust Gases

The exhaust gases of the kiln with about 950 -1000° C temperature are routed to atmosphere through waste heat recovery boiler. Therefore all the emissions from the kiln routes through waste heat recovery boiler will be released into atmosphere through stacks.

7.3.2 STEEL PLANT

The steel manufacturing process mainly comprises melting of various metallic raw materials in the furnace. The proposed induction furnaces being electrically operated, no fuel will be used. Hence, no major emissions are envisaged.

However, during the loading of raw material into the furnace, the particulate emissions resulting in the form of fugitive dust will be removed through suction and is released into atmosphere through wet scrubbers.

7.4 AIR POLLUTION LOAD

At this preliminary stage, the industries that are going to be located in the Industrial area are not yet finalized. As per MoUs only one industry is proposed (i.e. integrated steel plant) and other industries having potential growth & development are envisaged hence, the pollution load is estimated by considering the likely scenarios after considering the area sources as input. It is considered that the Industrial Area will have long-term impacts on the environment due to its complex and variable set up. In view of this, long term averages are considered in estimating pollution load. However, the short term concentration of air pollutions can be estimated while conducting detailed EIA of Specific Industry.

The background levels obtained during baseline data collection are used to describe the air shed of the area.

The 98th Percentile concentration values obtained during the baseline study are used to create airshed map of the study area. For this purpose Golden Surfer 8.02 software package is used to create contour and air shed map.

7.5 WATER ENVIRONMENT

The proposed Industrial Area will meet the requirement of water for its uses from the Sheonath River flowing from North proposed industrial area. The proposed water requirement is around 2.12 MGD.

7.6 WASTE WATER

Water requirements of the proposed site will be met by Sheonath River. Water consumption in the proposed site is estimated to be about 13677.22 kl/day respectively. In industries basic requirement of water will be in standby power supply system, domestic requirement, greenbelt development and housing facility.

Wastewater obtained from industries is generally much more polluted than the domestic or even commercial wastewater. Industrial wastewater usually contains several chemical pollutants and toxic substances in too large proportion. The characteristic of the produced wastewater will usually vary from industry to industry and also vary from process to process.

Suitable pretreatment to the wastewater of industries before subjecting to biological treatment is thus the prime requirement for designing and planning the treatment plant. Possible large scale reuse of the treated water in the industries is another important factor which must be considered while deciding the sequence of treatment process. Such a possible reuse if can be made possible will help in large scale economy in the industry.

During operation phase waste water will be generated from various industries, Effluent treatment plant will be proposed in the project site for the treatment of waste water. There shall, thus be no adverse impact on the surface water quality.

A common effluent treatment plant is proposed to be constructed in the proposed Industrial Area at Dagori.

7.7 NOISE ENVIRONMENT

The activities, which produce periodic noise, during construction phase, are as follows:

- Foundation construction including pile driving;
- Infrastructure construction, and
- Plant erection

The noise control measures during construction phase include provision of caps on the equipment and regular maintenance of the equipment. Workers working near noise generating equipment would be provided with noise protective equipments like earmuffs and earplugs. Overall, the impact of generated noise on the environment is likely to be insignificant, reversible and localized in nature and mainly confined to the day hours.

7.8 IMPACT ON LAND USE

Presently, the most part of proposed plant site is under dry crop cultivation. The construction of plant would bring in certain immediate changes in the land use pattern of the proposed area as well as in the vicinity. The likely changes in the land use would be in the following areas.

- ü Labour population attraction and construction of temporary hutments.
- ü Pressure on land would increase due to ancillary industries and other service stations.

Overall, there will not be any adverse impact on the surrounding land use during the construction period.

7.9 IMPACT ON TOPOGRAPHY AND CLIMATE

The major topographical changes envisaged would be manmade structures like civil structures and industrial complex. However, it will also invite some positive benefits in the form of land leveling, tree plantations, greenbelt development, etc., in the plant vicinity.

Impact on the climatic conditions from the proposed industrial area will be marginal. Normally, the proposed industries will not cause any thermal imbalance and the proposed plant authorities will implement plantation program in the plant premises to balance the impact generated, if any.

7.10 IMPACT ON SOIL QUALITY (SOLID WASTE)

The waste generated from the proposed site are segregated into Hazardous and non Hazardous wastes. Non hazardous waste will be properly disposed from the proposed site. Organic waste generated from food processing industry contains higher amount of BOD and COD, proper biological treatment will be provided to these kind of waste so the chances of surface water from getting polluted from run-off over waste heaps or groundwater pollution from leachate are minimum.

The disposal of solid wastes will have impact on ground water sources and it has to be considered while setting up such industries. The contamination risk due to release of leachate from solid wastes will be high if ground water table is nearer to the ground and infiltration rates are high. Proper segregation of hazardous and non-hazardous solid waste and disposal of hazardous waste in a Engineered Storage and Disposal facility (TSDF) is recommended. The solid waste generated from construction activities will be used as filling material to level the total site. Thus, no adverse impact on the environment is envisaged due to disposal of solid waste generated from the industries.

Hazardous waste includes metals like zinc, lead, chromium etc that will generate from different industries and are highly toxic. Proper precaution will be taken in disposing such kind of waste, which includes:

- Ø Hazardous wastes are packaged in a manner suitable for safe handling, storage and transport. Labelling on packaging is readily visible and material used for packaging shall withstand physical conditions and climatic factors.
- Ø The generator shall ensure that information regarding characteristics of wastes particularly in terms of being Corrosive, Reactive, Ignitable or Toxic is provided on the label.
- Ø Transport of hazardous wastes shall be in accordance with the provisions of the rules made by the Central Government under the Motor Vehicles Act, 1988 and other guidelines issued from time to time.
- Ø All hazardous waste containers shall be provided with a general label as given in Form 8 in Hazardous Waste (Management & Handling) Rules, 1989, as amended.

Siting a Treatment Storage Disposal Facility (TSDF) for an industrial conglomeration or for an estate in a region is a stupendous task. The ideal zones in this region to identify the possible candidate sites are addressed in the Hazardous Waste Site Identification Chapter i.e chapter IX of this report.

7.11 IMPACT ON TERRESTRIAL ENVIRONMENT

As most of the land identified for the project is dry agriculture, there would not be any loss of trees and shrubs. Proper Rehabilitation package as developed by Government of Chhattisgarh. will be given to farmers for the loss of any agricultural lands.

Therefore, the impact of construction activities on terrestrial environment will be insignificant.

7.12 DEMOGRAPHY AND SOCIO-ECONOMICS

The impact of the proposed plant on demography and socio economic conditions of the study area is as follows.

- √ Increase of floating population.
- √ Additional strain on civic amenities like road, transport, communication, drinking water, sanitation and other facilities to meet the work force requirement
- √ Increase in demand of services includes hotels, lodges, public transport (including taxis), etc.
- √ Employment Opportunities for construction labourers, skilled and unskilled workers, local population,
- √ Economic upliftment of the area.
- √ Raising of Home rents and land prices and increase in Labour rates.
- √ Rapid growth of service sector will result in increase of incomes in the area.
- √ Beneficiation of the civil construction and transportation companies
- √ Expanding of services like retail shops, banks, automobile workshops, school, health care, etc.
- √ Increase in literacy rates.

7.13 IMPACT ON HUMAN SETTLEMENTS

Due to the support services requirement of the guest community in the proposed plant, the host community will be benefited by way of generation of employment opportunities, increased demand for the local produce and services. Hence, there will be rise in the income level of the host community.

The surrounding human settlements are likely to experience migration from outside in view of the increased employment opportunities. Considering this aspect, the impact on human settlements will be beneficial.

7.14 IMPACT ON HEALTH

Adequate air pollution, water and noise control measures will be provided in proposed Industrial Area to conform regulatory standards. The environmental management and emergency preparedness plans are proposed to ensure that the probability of undesired events and consequences are greatly reduced, and adequate mitigation is provided in case of an emergency. The overall impact on Human health is negligible due to the proposed industrial developments.

7.15 ECOLOGY

The proposed area does not intrude with habitat of any flora and fauna. Extensive plantation shall be undertaken to provide green cover all around. The effluent from the site shall be treated to the tertiary level and recycled so as not to discharge of any pollutants into surface water bodies nor there are such bodies within the impact area to affect the aquatic environment.

7.16 SOCIO ECONOMIC BENEFITS

The management has proposed to give preference to local people for recruitment in semi skilled and unskilled categories. A total of about 5000 persons would be given indirect employment during construction and installation.

Socio Economic Status in the study area is found to be moderate with respect to livelihood, amenities etc. Transport and other infrastructure facilities such as market centers, business establishment, recreation etc in the area will be improved.

Employment potential both direct and indirect coupled with business opportunities and strong social commitment of the company in the form of better educational and medical facilities would result in enhancement in the status and standard of living of the local population resulting in positive impact.