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Impact Of Industrial Projects on Environment

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ABSTRACT

The drive towards industrialization in emerging countries has a considerable impact on both natural and manmade environments. The quality of the air and water is severely impacted locally, regionally, and globally due to the rates of population growth and urbanization. Environmental pollution and degradation are also rapidly escalating as a result of changing lifestyles, increased urbanization, and industrialization. This environmental impact caused significant harm to the air, water, and land, which resulted in biodiversity losses and associated health risks. In this study, an effort was made to examine the different industrial projects in and near the Pune region that have a significant impact on the socioeconomic, physical, and biological environments. To comprehend the effects that industrial projects, in the planning, building, and operation phases, have on the environment, references have been selected from a variety of literature reviews and book case studies. They are the effects of industrial initiatives on the physical, biological, and socioeconomic realms. In this research an attempt had been made to study the various types of industrial projects in and around Pune region, which are highly responsible for creating a major impact on the socio economical, physical, and biological environment. References had been taken from various Literature reviews; Book case studies to understand the effects that are caused on the environment by the Industrial projects, in design, construction and operation phase. They are the effects of industrial initiatives on the physical, biological, and socioeconomic realms. The effects of the industrial projects—both beneficial and detrimental—are examined. In order to lessen the effects of the studied industries on the environment, reduce biodiversity losses, mitigate potential health risks, and make industrial projects more socioeconomically and environmentally friendly, more emphasis is placed on specific types of industries and mitigations.

Keywords: socio-economic environment, urbanization, industrialization, water, air, health, biodiversity

1. INTRODUCTION (11PT)

The idea of environmental safety has historically been given due emphasis which teaches human beings to stay in best concord with nature. Changing lifestyles styles, growing tempo of urbanization, industrialization and infrastructure improvement have induced environmental pollutants and degradation. The losses show up as pollutants in air, water and land main to biodiversity losses and ability fitness hazards. Consequently, rules, legal guidelines and regulations on environmental safety have been introduced, with inside the shape of EIA

(Environmental effect assessment), with an goal and goal to optimize trade-off among developmental sports and socio-ecological losses, to layout developmental tasks and sports contemplating the environmental perspective. SEIA (Socio-Economic Impact Evaluation) bureaucracy part of the environmental effect assessment (EIA) that's obligatory for sure commercial initiatives in India which can be probably to have an effect on the socio-financial cloth of a phase of people, normally referred to as the challenge-affected people (PAP). The most important levels of the challenge addressed are preconstruction, creation and operation. The present tendency of industrialization in growing nations has an significant effect on herbal and man-made environments. Unprecedented developing fees of world human populace and concrete improvement make splendid strain on local, regional, and worldwide air and water quality. A strive has been made on this studies to pick out and examine a few commercial initiatives which can be maximum dangerous to surroundings and mitigation and hints are cautioned which might also additionally assist to lessen the effect of those industries on environmental elements inclusive of socio-economical, bodily and organic to a few extents.

1.1 AIM

To study the various impact of Industrial Projects on the Environment in Pune Region and to suggest mitigations to reduce the impacts by these industries on Environment.

1.2 OBJECTIVES

- To study various socio-Economical and Bio-Physical environmental impacts of industrial projects.
- To study impact industrial projects during construction and operation stages,
- To identify and analyze the factors responsible for these impacts by the industrial buildings.

1.3 SCOPE & LIMITATIONS

To study and to analyze the impact of industrial project on the Environment. Study area is limited to Pune Region. To concentrate on typical type of Industrial projects (Hazardous), to analyze the impact and propose recommendations in its construction and operational stage.

2. METHDOLOGY

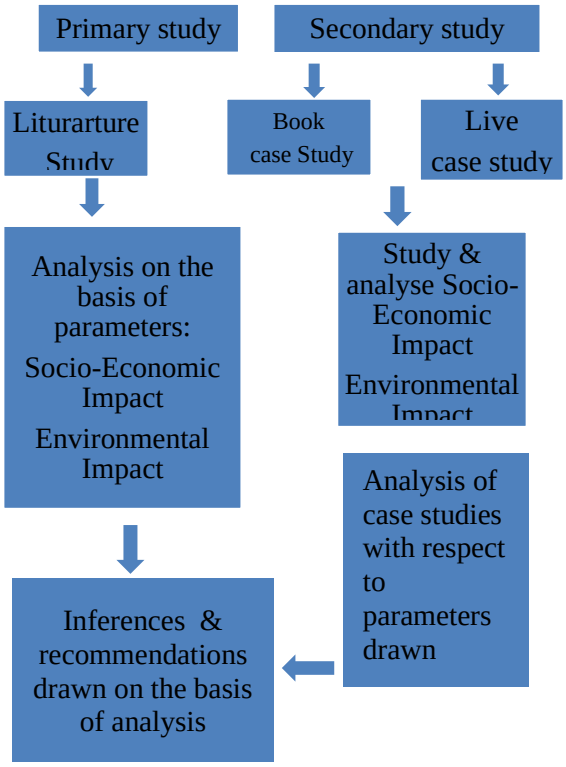

Figure 1: Author

2.1 LITURATURE STYDY

The continual process of urbanization and industrialization in emerging countries has a significant impact on both natural and man-made surroundings. The growth of pollution sources poses a severe danger to the quality of air, water, and land as cities continue to grow. The lack of appropriate urban environmental planning and management systems exacerbates the problems connected with future urban growth. The quality of the air and water is under a great deal of stress due to unprecedented rates of urbanization and population growth worldwide. Natural habitats can be destroyed as a result of urbanization and land use changes, causing the displacement and extinction of many species and lowering overall biodiversity. As cities grow in size, they split ecosystems, limiting species mobility and gene flow. Pollution, changed hydrology, and non-native species introduction all contribute to the destruction of the natural environment in metropolitan regions. To assess and address any possible impacts of human activities and developments on biodiversity, appropriate tools and metrics must be developed. Environmental impact assessment (EIA), a component of physical planning, is crucial in predicting and evaluating the effects of proposed activities on

biodiversity. Environmental Impact Assessment (EIA) is a process to understand and minimize the negative environmental effects of human activities. EIA can be defined as "a process by which information about the environmental effects of a project is collected, both by the developer and from other sources, and taken into account by the relevant decision-making body before a decision is given on whether the development should go ahead." The goal of Environmental Impact Assessment (EIA) is to ensure that before beginning a project, we thoroughly consider how it will impact the environment. This involves considering any good outcomes, such as economic or social gains. Before making a decision on the planning application, this should be taken into account. The primary goal of Environmental Impact Assessment (EIA) is to thoroughly evaluate and comprehend how a project will impact the environment before it begins. This entails considering both good results, such as economic or social advantages, as well as potential detrimental effects on the environment. The use of geographic information systems (GISs) offers the chance to improve foreseeable evaluation methods, such as matrix-based evaluations. GIS is a tool that helps us better understand the environment. It uses maps and statistics to show how objects are related in space and time. It has the ability to increase information sharing, raise environmental awareness, and deliver fair and reliable assessments. Simply put, geographic information systems (GIS) help us better understand and protect the environment. The creation of policy tools is a challenging undertaking for monitoring industrial pollution in developing nations. In theory, the regulator has a variety of tools at their disposal, including financial, legal, and other powers. Many small industries a pollution sources in certain areas do not follow waste treatment norms and requirements since they lack the knowledge, money, technology, and skills needed to properly handle and treat their waste before releasing it into the environment, hence pollution remains a problem in many areas, and efforts to solve it fail because these businesses are unable to handle their trash properly. Environmental attitudes for adequate environmental protection are essential for future generations, and they are currently receiving attention from authorities due to the random expansion of companies in developing countries. In order to manage industrial activity and reduce environmental pollution, the government has made an effort to build and develop several industrial estates across the nation. The project and its activities has a variety of impact on the environment. The magnitude of the effects varies and can be either positive or negative for the environment and society. The Industrial Zone Corporation of Iran has special strategies for organizing industrial units, according to its policies. Each site has offices for several industries. However, the potential impact of these sectors on people, plants, air, land, water sources, climate, cultural heritage, and valuable materials must be assessed. This involves examining how these industries' emissions of solid waste, liquid waste, and gases may harm the environment and society.

2.2 BOOK CASE STUDY

2.2.1 RWANDA STONES & CONSTRUCTION (RSC) Ltd Co

This is one of the most important industry in Rwanda, which produces crushed stones of different dimensions depending on the needs and which is used as raw material for various type of construction works.

Biological Environment:

The area lacks natural plant life, and when the project began, only native crops were produced there. The site also has a variety of shrubs that can provide protection for rodents and lizards from a wildlife perspective, or act as an ecological market for different types of birds.

Socio Economical Environment:

The quarry is mainly surrounded by farmland and domestic animals.

Negative Impacts:

- Risk of excessive soil erosion during mining and deposition down and eventually into the wetland.
- Clearing vegetation in mining areas causes habitat loss and biodiversity loss by forcing animal and plant species to relocate.
- Bad quality of air due to crushing stones and its dust.
- Danger of accidents during the digging phase.
- Contamination effect of human waste used in the factory.
- Impact of generated solid waste.
- Groundwater pollution due to oil produced during machine maintenance.
- Increased risk of traffic accidents in traffic.

- Noise pollution due to machinery and vehicles and air pollution has increased in this area.

Impact on Human Environment		
S. No.	Impacts	Nature of Impact
1	Employment opportunities	Positive
2	ncrease in income of Population	Positive
3	Possibilities of meeting the fundamental social needs	Positive
4	Possibility of Saving	Positive
5	Risk of Transmitted Deceases	Negative
6	Risk of Accidents on Site	Negative
7	Provision of stones to the entire area	Positive

Table 1

Impact on Bio-Physical Environment		
No.	Impacts	Nature of Impact
1	Air Pollution	Negative
2	Risk of Excess Soil erosion	Negative
3	Loss of Habitat due to Clearing of the Site	Negative
4	Erosion of soil due to exposure after removal	Negative
5	Effect of Generated Soil waste	Negative
6	Rise of Noise Pollution	Negative
7	Increase in road accidents	Negative

Table 2

S No.	Impacts	Mitigation Measures
1	Air Pollution due to entire process of producing in query.	Watering process of soil to be done to reduce dust.
2	Erosion of Soil	torm water harvesting, terraces, grass and trees plantation.
3	Bio diversity reduction due to clearing of site.	Implementation of argo-forestry techniques.
4	Risk of Accidents on site by inexperienced labours.	To bring awareness among the workers to use the protective equipment while at work.
5	Possibility of ncrease in diseases, due to unsafe behaviour	Work force from local area, awareness campaign conducted free of charge on site.
6	Effect of produced Solid wastes	Garbage will be dealt separately. The site will be inspected on a regular basis. Degraded soil will be collected and reused, with any excess disposed of in a specified place.
7	Pollution of Ground water due to use of oil for machine maintenance.	Regular inspections, Provide site mitigation equipment, double wall storage tanks.
8	Risk of increase in road accidents, due to increased road traffic.	Proper road network, with use of adequate humps and traffic signals.
9	Possibility of Noise pollution	High end technologies to be used to minimize the noise levels while blasting the rocks. Use of public address system to make the population aware of the Blast earlier

Table 3

Environment Management Plan:

An environmental control plan is a proposal that details how to handle and mitigate a project's potential negative impacts. It includes particular methodologies, institutional duties, implementation indicators, a monitoring timetable, and anticipated expenses.

Negative Impact:

- Mitigation Measures.
- Implementation indicators.
- Time Frame.
- Responsibility.
- Estimated Cost.

Inferences:

- The environmental impact study found that the stone crushing factory, which uses no chemicals, will have no detrimental influence on the environment during its operation.
- Employment opportunities, income of working population, contributing to the poverty reduction of the country in general, shall be some positive impacts on the human environment.
- Several strategies have been proposed to decrease the detrimental effects on both the socioeconomic and natural environment. This can also be achieved by following the guidelines mentioned in the environmental plan, which can also be adapted to the whole life cycle of the project.

2.2.2 Cement Grinding Unit for Zuari Cement Limited, at Aherwadi, Solapur, M.S.

This company is one of the largest cement producer in the world. It is proposed to grind and produce various types of cements.

Environment Management Plan:

Air Pollution Control: The emission from the Unit will comply to the Pollution Control Boards Norms, by provision of some necessary arrangements at feeding and discharge points. Loading and unloading of Trucks in covered shades. Provision of water sprays arrangements to reduce the dust formation.

Green Belt: An effective green belt of about 33% of the total area shall be developed with trees having thick canopy cover.

Rain water Harvesting:

Rainwater harvesting will be effectively performed, and the collected water will be used efficiently for a variety of uses within and around the unit.

Socio Economic Measures: Direct and indirect opportunities to local people. Free Medical camps, extended Medical Facilities.

Inferences:

The EMP need to in reality endorse mitigation, tracking and institutional measures to eliminate, compensate or lessen the results of sports at some stage in the development and operation levels to a suitable level. Improving performance relies upon at the electricity of included decision-making, ok tracking and enforcement. The EIA gadget ought to be often reviewed for incremental upgrades that now no longer best deal with current constraints however additionally meet destiny challenges. Good environmental tracking exercise now no longer best creates baseline statistics for the area, however additionally will increase information of the cause-impact relationships among sports and environmental adjustments and verifies the accuracy of the EIA forecast, which will increase the information base for destiny EIA upgrades.

2.2.3 Industrial Development around Lumbini, Nepal, Birth Place of Lord Buddha (WHS)

Lumbini, Lord Buddha's birthplace and a UNESCO World Heritage Site, draws pilgrims and visitors from Nepal and beyond. To conserve and sustainably manage cultural assets, an environmental impact assessment (EIA) is conducted under the Environmental Protection Act (EPA) of 1997, to evaluate the environmental impact of industrial development at the Lumbini World Heritage Site.

Physical Environment:

Impact on Air.
Impact on water.
Impact on soil.
Impact of Noise.

Socio-Economic, Cultural & Health Environments.

Socio - Economic.
Health Environment

Biological Environment.

Loss of Vegetation.
Loss of Wild life and Habitat (of rare species).

Impact on Archaeological remains of Lumbini.

Mitigation Measures:

- Air Pollution Control Management.

Plantation of green belts and Trees.

- **Noise Control Management**
  Green Belts and trees plantation.
  Low noise components and equipment's.
  Use of sound proof materials in construction.
- **Water Management.**
  Rain water Harvesting Measures.
  Waste water prevention measures.
  Water pollution prevention measure (Sewer systems)
  Pre treatment of effluents in factories.

Environmental Management Plan:

- Considering various environmental problems related to industrial activities, an environmental management plan (EMP) is prepared, which includes schedules and responsibilities of a manager.
- The Industrial Promotion Board (IPB) and Lumbini Development Trust (LDT) are in charge of ensuring that the Environmental Management Plan (EMP) is successfully implemented. The LDT, in particular, is in charge of the environment's development and upkeep.
- To maintain proper environmental management in the industrial sector, legislative requirements and instructions, in addition to the conditions indicated in the Environmental Management Plan (EMP), must be established and followed.

Environmental Monitoring Plan:

- The environmental control plan specifies who is responsible for completing monitoring reports and carrying out monitoring activities. Its mission is to mitigate the harmful consequences of industrial activity while maintaining environmental quality.
- Monitoring environmental quality entails evaluating air and water quality, noise levels, vegetation, wildlife, and other environmental aspects. The monitoring strategy attempts to avoid any detrimental effects on overall environmental quality. It is created by the analysis of key data and the identification of themes based on field visits and research activities.
- The environmental impact monitoring plan evaluates the actual level of influence on the field during industrial operations.

Inferences:

- The conclusion is that the rural area is mostly impacted by the industries. Laws were clearly violated by industry players and this violation of law had significant negative effects on biodiversity, water resources, air quality, cultivation and environmental conditions, and the health of local residents.
- The largest industries provided employment mostly to non-locals. Farming is the main occupation of people in the industrial area.

The lack of mitigation measures directed by the Environmental Impact Assessment (EIA) resulted in the spread of air, noise, and water pollution throughout the LPZ area, especially near industrial zones.

- As part of the zoning system, the LPZ region has been divided into five distinct zones, each with its own set of precise criteria to be monitored by the respective designated authorities.

2.2.4 Involute Technologies Private Ltd, Automobile Industry: (Green Category)Heat Treatment Plant at Gat.No.35, Charoli.K, Pune.

Above Project is an Industrial Project, by the name, " Involute Technologies Private Ltd", at Charoli-Khurd, Pune and it deals with the Heating Treatment for Automobile Gears for various types of Vehicles(LMV and HV).

The Plot Area for the above project is 8 Acres (Approx.) with a Built up Area of 10,000 sqm (Approx).

At Present the H.T. Shop (2350 sqm) and Machine Shop-2(3691.20sqm) are completed. The above

Project is also having a Propane Gas Yard which covers an area of 1760 sqm.

Physical Environment:

The project site which initially was a farm land converted into industrial plot with an area of 8 Acres, surrounded by farm lands, no vicinity of wildlife sanctuaries, national parks. There is a Petrol Pump within a distance of 500mm from the site.

There are no companies or factories nearby, nor are there any residential houses. The site is located with longer side on North-South, having a slope of almost 25 meters, with soft murrum,

and hard rock at a depth of 15 feet and above in ¾th of its length.

Biological Environment:
Though it is surrounded by Agricultural Lands on East and West Side. At present the Site have very less Flora, it is been cleared for the construction of the above industrial building.

Socio Economic Environment:
The Site is at 3 Km from Alandi and 2 Km from Shel-Pimpalgaon. So near the vicinity of the Industrial project, there is no human settlement. Hence there is no direct impact on health but scope for economical development due to the industry.

Analysis:

Biological Environment:
Though it is surrounded by Agricultural Lands on East and West Side. At present the Site have very less Flora, it is been cleared for the construction of the above industrial building.

Socio Economic Environment:
The Site is located at a distance of 3 Km from Alandi and 2 Km from Shel-Pimpalgaon. So near the vicinity of the Industrial project, there is no human settlement. Hence there is no direct impact on health but beneficial impact on the economy due to the industry.

2.5 Pragati Paints and Allied Products: (Red Category) at Gat No:77, Jyotiba nagar, Talwade, Pune.

Above Industry produces paints and primers for Industrial use and supplies it to various manufacturing units such as Boilers, Machines, Heat exchange systems and fabrication work. The Industry manufactures various types of paint products such as enamel, epoxy, polyurethane, chloro rubber based and PVC based paints and primers. It has a monthly production of approx. 30,000 Liters per month.

Sr.No.	Environmen-tal Component	Environmental Impact
1.	Physical Environment	Impact on **Air** during the paint manufacturing process, due to emission of VOC during equipment handling, packing and during periodical cleaning of equipment's. Impact of **Noise**, when the equipment's, machines are at work. Moving the raw materials and finished goods containers. Impact on **Water** at the time of cleaning the equipment's, is contaminating the surface soil.
2.	Socio-Economical, Health Environment.	The solid waste and the effluent produced from the manufacturing process are highly hazardous. Handling of Equipment's in the entire manufacturing process and cleaning the equipment's, may harm the labor's working in such environment, causing deceases related to eyes, skin and lungs. Also there are chances of Fire hazards if related precautions are not taken at the work place.
3.	Biological Environment	As the above Paint Industry is in a dedicated Industrial area, there is hardly any plantation done in its periphery.

Table 4

Sr. No.	Environmental Impact	Mitigation Measures
1.	Air emission from solvents, pigments, additives, chemicals during Manufacturing process.	Using modified equipment's, where less air emission occurs. Use the pigments in paste form rather than powder form. Implementation of some automated technology where human interference can be minimized. The entire workspace to be properly ventilated.
2	Impact of Noise	To use modified milling equipment's, with less noise levels and vibrations.
3	Socio-Health Environment	Use of well-trained or experienced labor's. Signage to be provided at sensitive locations. Firefighting facilities to be properly located at reachable locations. Regular health check for the employees. Less spillage of paints(raw material and paints) Good quality safety equipment's for employees.
4	Hazardous Solid Waste	To be collected at a safe location in the premise and disposed of periodically to the CETP.

Table 5

2.2.5Pharmaceutical Company(STP/ETP): (Red Category) Emcure Pharmaceuticals,(R&D) at Bhosari Industrial Area, PCMC, Pune.

The Existing Industrial building is a Research and Development unit for M/S Emcure Pharmaceuticals Ltd. As per the requirement of the Company all the research work for new products of the company is carried out at this unit, which brings use of Chemicals, which are harmful for environment and hence as per the MOEF requirement an ETP is necessary for the treatment of the Effluent disposed of from the Industry. As this unit also comprises of Working staff and administration space required for them, there are requirements such as Work stations, Laboratories, admin office, toilet facilities etc. provided at this place.

At the initial stage it was decided to have a combined ETP and STP for this unit. So that the effluent and waste water can be treated at the same location. The ETP is provided for a maximum capacity of 10KLD, out of which 7 KLD is the requirement for the STP and 3 KLD is the requirement of the ETP.

Analysis:

Sr.No.	Environmental Component	Environmental Impact
1.	**Physical Environment**	Impact on **Air** during the Treatment process of Effluent from the Industrial unit. Most of the Process is in tanks which are open to sky, where the untreated water

		is agitated continuously. The Tanks at ground level are open where the most polluted effluent is in process. Hence the maximum foul smell is at this location. The sludge collection bed is on the rear side of the premises, hence creating the air pollution on the work space of the above unit in this area.
2.	**Socio-Economical, Health Environment**	The assembly of this ETP is at the Entrance of the industry, which is not ideal. As during the continuous water treatment process, the foul smell of the effluents, have a direct impact on the people entering or leaving the premises during the working hours and also an indirect impact on the people passing on road abutting the Industry. As the above unit is a R&D for a Pharmaceutical Industry, many chemicals(effluent) used can be harmful for Human health.

Table 6

Sr.No.	Environmental Impact	Mitigation Measures
1.	**Air emission from ETP unit-Physical Environment.**	The location of the ETP is not ideal, but as per the space available it has been provided in the above unit. As a mitigation measure, provisions can be made to provide leads or covers on the open tanks or areas of the ETP which is a source of bad air, for which a frequent control and display systems can be adopting which will minimize human interference.
2.	**Health Environment**	As the location of the ETP cannot be changed, provision of an enclosure can be thought of. Further the entire set up of ETP can be enclosed and provision of a centralized ventilation shaft can be done, which will lead the foul air away from the working area and can help minimize the impact of the effluents on Human health.

	Hazardous Solid Waste	An alteration can be done by closing the openings on the walls facing the sludge bed tanks, which can reduce the impact of effluents to certain extent.

Table 7

Air Pollution Control:

The emission of foul air from the Industries to comply with the Pollution Control Board Norms, by provision of proper ventilation to the Industrial unit, which will minimize the presence of harmful air s in places where the production process is undergone and there is maximum human interference (if not automated). Hence these places to be more ventilated. This can be done by providing openings at upper levels or exhaust fans.

Harmful raw materials used in the production can be replaced by the less harmful materials which will minimize the air pollution and reduce its effect on the employees.

Noise Control:

All the industries studied under goes manufacturing process which is carried out with the help of heavy equipment's and machineries. These machineries can be taken care of by properly monitoring the noise levels by adopting a provisional maintenance system to identify the noise levels and the wear and tear of the machineries. This maintenance can be carried out monthly, quarterly, depending on the type of production process or the machineries used. The machineries to be replaced with new and advanced machineries, if found outdated, creating more noise and vibrations or old, as it will harmful and unhealthy for the employees.

S.No.	Environmental Factors	Live Casestudy-1	Live Casestudy-2	Live Casestudy-3	Remarks
1.	Physical Environment	Negative Impact	Negative Impact	Negative Impact	Causing Damage to Bio-Diversity.
2.	Biological Environment,	Negative Impact	-	-	Need scope for green belts and vegetation.
3.	Socio-Economical Environment.	Positive/ Negative Impact	Positive/ Negative Impact	Positive/ Negative Impact	Financial Stability, relocation.
4.	Human Environment.	Negative Impact	Negative Impact	Negative Impact	Cause for accidents, diseases.

Table 8

S.No.	Environmental Factors	Book Casestudy-1	Book Casestudy-2	Book Casestudy-3	Remarks
1.	Physical Environment	Negative Impact	Negative Impact	Negative Impact	Causing Damage to Bio-Diversity.
2.	Biological Environment,	Negative Impact	Negative Impact	Negative Impact	Need scope for green belts and vegetation.
3.	Socio-Economical Environment.	Positive/ Negative Impact	Positive/ Negative Impact	Positive/ Negative Impact	Financial Stability, relocation.
4.	Human Environment.	Negative Impact	Negative Impact	Negative Impact	Cause for accidents, diseases.

Table 9

3. Comparative Analysis:

With reference to the Comparative Analysis on Book and Live case studies, data analysis is done considering the impact of the Industrial projects on the Physical, Biological, and Socio Economical Environment, at all the three stages of the Industrial Project.

Physical Environment:

The research process demonstrates that the formation of industrial development has an impact on the physical environment, including air, water, soil, and noise. These are the basic ingredients of the environment which are necessary for the significant growth of its Socio Economical, Human and Biological factors. If precautions are not taken at the planning stages by providing mitigations or management plans in the construction as well as the operational stage of a project, these are the factors which get affected initially, and are negatively impacted.

Socio-Economic and Human Environment:
For any Industrial development there is an involvement of manpower especially during construction work and operational stages of the project. There is a positive and negative impact on the socio-economic and human environment. The positive impacts being employment, financial savings, meeting the basic human needs etc. simultaneously negative impacts such as health issues, diseases, accidents etc.

Findings:
Based on the analysis in earlier chapter there are some findings or observations in all the three stages of the Industrial projects. These as per the book and live case studies studied earlier.

In planning stage:
Finalization of Site for Industrial project, to be preferably in the Industrial Zone. Purchasing agricultural property for an industrial project has a larger socioeconomic impact. Proper payment of Compensation by the Government, for the lands that are acquired for any proposed industrial development, followed by rehabilitation of the project affected people (Additional efforts for tribal groups)

In construction stage:
The creation of new jobs and new construction activity have an influence on local infrastructure, resulting in higher costs. At this stage there will be lot of movement of persons and material, leading to additional transport requirement, also disturbing the Physical and Biological environment in and around the site, Air pollution, water contamination, erosion of soil etc. Also there will be an excess use of local infrastructure such as water and electricity, during the construction activity on site.

In operational stage:
The operational phase of an industrial project lasts for the duration of its lifecycle, resulting in long-term consequences. In many cases it is found that there is an extension work carried out in the industries, which is a construction activity and if both the operation and construction activities are carried out simultaneously on site, it will have a great impact on the environment, as well as the employees working in the industries Because of the long-term consequences during the operational period, more attention is required for good socioeconomic planning and management. This will be related to the regular maintenance of equipment's used n the industries and the health and financial security of the employees working in the industries.

- **Recommendations:**

- Use of alternate raw materials against the conventionally used materials, which shall have less or no impact on environment.
- Use of more upgraded machineries in manufacturing industries and adapting progressive maintenance systems, which will be part of the Management Plan for the Industries. These systems shall enable to monitor the wear and tear of the equipment's used in the industries. Use of advance (automation) technologies to be given priority, so as to minimize human involvement, which will result in less harm to the social-economic environment.
- Along with the active industries which create certain impact on the environment, there are mitigations derived and adapted, but care has to be taken for the passive industries, which remain unnoticed and still it possesses harm to the environment, certain rules should be set for such industries or to be relocated. Such passive industries should be identified by the statutory bodies and should be enforced to follow the EIA guide lines. This shall enable to reduce its impact on the surrounding environment to some extent.

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