ADDIS ABABA UNIVERSITY

COLLEGE OF DEVELOPMENT STUDIES

CENTER FOR ENVIRONMENTAL & SUSTAINABLE DEVELOPMENT

EFFECTIVENESS OF THE ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) OF BOLE LEMI INDUSTRIAL PARK, ADDIS ABABA

BY

ADDISMERAF AYALEW

A THESIS SUBMITTED TO CENTER FOR ENVIRONMENT AND SUSTAINABLE DEVELOPMENT, COLLEGE OF DEVELOPMENT STUDIES OF ADDIS ABABA UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF ARTS IN ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

ADDIS ABABA, ETHIOPIA

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DECLARATION

I, Addismeraf Ayalew, Registration number GSE/0242/13 do hereby declare that this thesis is my original work and that it has not been submitted partially; or in full, by any other person for an award of a degree in any other university/institution. All the sources I used or quoted have been indicated and acknowledged by complete references.

Name of participant…….

Signature…….

Date…….

This thesis has been submitted for examination with my approval as college supervisor.

Name of advisor……

Signature……

Date……

ADDIS ABABA UNIVERSITY

The undersigned certify that they have read and hereby recommend to Addis Ababa University to accept the thesis submitted by Addismeraf Ayalew, entitled Effectiveness of The Environmental and Social Impact Assessment (ESIA) of Bole Lemi Industrial Park, Addis Ababa, in partial fulfillment of the requirements for the award of a master's degree in environment and sustainable development.

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Abstract

This study assesses the effectiveness of the environmental and social impacts of Ethiopia's Bole Lemi Industrial Park, the nation's first public industrial park, established in collaboration with the government and the World Bank's International Development Association (IDA). The primary focus is on scrutinizing the implementation of the Environmental Social Impacts Assessment (ESIA) and understanding the community's perception of the park's impact. The research employs a mix of primary methods, including interviews, questionnaires, and observations, with key informant interviews involving representatives from the Industrial Park. Findings highlight a thorough examination of potential environmental and social risks, evaluating the effectiveness of follow-up measures. Progress in waste management and resource utilization is acknowledged, but gaps in chemical waste disposal, water quality monitoring, worker compensation, and community engagement are identified. The study emphasizes the need for enhanced engagement with employees and the community for sustainable social development. The research also scrutinizes the Environmental and Social Management Plan (ESMP), it emphasizes the need for involving stakeholders like IPDC, regulatory bodies, and factory owners. The study indicates the importance of stronger Environmental and Social Management Practices. The community's perception of environmental pollution underscores the necessity for increased awareness, institutional capacity, and enforcement mechanisms. Despite positive impacts on social well-being and economic growth, concerns about water pollution and inadequate commitment are identified. Stakeholder engagement and awareness are deemed crucial for addressing gaps in ESIA implementation and follow-up improvements. In conclusion, the study emphasizes the importance of optimizing benefits and promoting sustainable development in the Bole Lemi Industrial Park, with recommendations for continuous stakeholder dialogue, further studies, and capacity-building initiatives. Policymakers, the government, and stakeholders in industrial park development can benefit from the study's insights.

Key Words: Bole Lemi Industrial Park, Environmental Social Impacts Assessment, Community perception, Environmental and Social Management Plan, Sustainability

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Abbreviations

BLIP	Bole Lemi Industrial Park
CRGE	Climate Resilient Green Economy
CSA	Central Statistics Agency
EHIA	environmental health impact assessment
EIA	Environmental impact assessment
EIP	Eco-industrial parks
EMP	Environmental Management Plan
EPA	Environmental Protection Authority
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMS	Environmental and Social Management System
ETB	Ethiopian Birr
FDRE	Federal Democratic Republic of Ethiopia
GHG	Greenhouse Gases
GOE	Government of Ethiopia
GOTS	Global Organic textile standards,
GPS	Global Positioning System
GTP	Growth and Transformation Plan
HR	Human Resources
ICSU	International Council of Scientific Unions
IDA	International Development Association
IISD	International Institute for Sustainable Development
IP	Industrial Park
IPDC	Industrial Park Development Corporation
ISID	Inclusive and Sustainable Industrial Development
IZDP	Industrial Zone Development Project
KII	Key Informant Individuals
MDGs	Millennium Development Goals, The Millennium Development Goals
MoI	Ministry of Industry
NEPA	National Environmental Policy Act
SIA	Social Impact Assessment
SMEs	Small and Medium-Sized Enterprises
SPSS	Statistical Package for Social Science
UNEP	United Nations Environment Programme
UNIDO	United Nations Industrial Development Organization
WCED	World Commission on Environment and Development
WCP	World Climate Programme
WMO	World Meteorological Organization

Chapter One: Introduction

1.1.Background of the Study

Bole Lemi Industrial Park is Ethiopia's first public industrial park which was established with the support of the government of Ethiopia in collaboration with the International Development Association (IDA) of the World Bank prepared Industrial Zone Development Project (IZDP) (GOE, 2014).

This project was in line with the 5 years Ethiopian growth and development plan and is one of the major large-scale industrialization processes of Ethiopia. Large-Scale development refers to infrastructure which has the potential to impinge on the integrity of the natural environment or the aesthetic quality of the landscape. (GOE, 2014) Changes in the global economy allow countries to look at large-scale development projects to restructure land uses and stimulate the local economy. (van Koppen, 2018). The Growth and Transformation Plan (GTP) is directed towards achieving Ethiopia's long term vision and sustaining the rapid and broad based economic growth anchored on the experiences that has been drawn from implementing development policies and strategies and undertaking policy measures for the challenges that has been surfaced in the course of implementation. ((MoFED), 2010)

The Bole-Lemi Industry Zone Development Project is located in the southwestern part of Addis Ababa City administration in Woreda 11 of Bole Sub-city. It is bounded by two rivers (Lemi and Weji) which drain to Big Akaki River locally known as Tiliku Akaki River. The topography is predominantly flat agricultural with elevation decreasing towards the two rivers. (GOE, 2014)

Industrial Parks Development Corporation owns and operates Bole Lemi Industrial Park. The Bole Lemi Industrial Park is separated into two major phases:

Bole Lemi Phase 1 industrial park is a (172 hectares) IP that is located in Addis Ababa. which was started in 2014 G.C with over 20 factory sheds producing mainly apparel and textile, which are exported and sold in international markets. The main investors in this park Asian occupants. Bole Lemi Phase 2 (181 hectares) is located in Addis Ababa which is being developed in collaboration with the World Bank Group in the year 202. The IPDC provides developed land so investors can build their manufacturing sheds, unlike the first phase where investors sublease manufacturing sheds.. (IPDC, 2021)

The industrial park has a vison to be innovative and leading eco-industrial parks developer and operator in Africa by 2025. There are 13 major industrial parks under the IPDC namely the Adama IP, Addis Industry Village, Bahir-Dar IP, Bole Lemi IP, Debre Birhan IP, Dire Dawa Free Trade Zone, Hawassa IP, ICT Park, Jimma IP, Kilinto IP, Kombolcha IP, Mekelle IP, Semera IP. (IPDC, 2021).

The focus industrial park in the study is the Bole Lemi industrial park which is a mix of factories will be operating within the industrial zone in 22 modern industrial sheds having two types of sizes of 5,777m2 and 11,217m2, with their common facility and parking area. The textile and leather

factories are expected to use semi processed materials for nit to fit types of work therefore the factories will not be engaged in the dyeing and tanning processes which generally release heavy pollutants into the environment. (Fesseha Mulu , Bizuayehu Daba , 2019)

The park employes 24 percent of the total employment from industrial parks and is the highest foreign currency generating Industrial Park in Ethiopia with highest export figures $32mn 44% of total, followed by Hawassa $20mn, and Eastern Industrial Zone $14mn, (CEPHEUS , 2019) On top of economic and social impact the park has a 30 hectare of land dedicated for green area in the park is also contributing towards building a well sustained and conducive work environment leading it contribution to sustaining the eco industrial park. (DEGAGA, 2020)

Environmental and Social Impact Assessment (ESIA) is a comprehensive document of a Project's potential environmental and social risks and impacts. An ESIA is usually prepared for greenfield developments or large expansions with specifically identified physical elements, aspects, and facilities that are likely to generate significant environmental or social impacts" (IFC, 2012)

The purpose of an ESIA is to identify the positive and negative impacts caused by project implementation. This is assessed through an analysis of the effects resulting from interaction between environmental and social components and the various activities of a project and its development. A ESIA should be seen as a process that starts at the conceptual design stage of a project and continues throughout project construction, operation, and decommissioning. (WBCSD, 2016).

The ESIA report for Bole Lemi Industrial Park was conducted by MH Engineering plc on behalf of the Ministry of Industries. It followed established guidelines and standards, providing an introduction, background information, and baseline data collection through previous studies, field surveys, and stakeholder consultations. The assessment covered the project area's biophysical and socio-economic environments, including landscape, soils, land use, settlements, water bodies, wildlife, and trees. Stakeholders, especially those directly affected by the park's development, were actively involved in decision-making to ensure inclusivity. Ethiopian citizens have a constitutional duty to protect the environment and natural resources, and the responsible party for any environmental damages during the project's lifespan is the IPDC, as per the constitution.

In addition to assessment BLIP is working towards becoming an eco-industrial park. An eco-industrial park is a community of businesses located on a common property in which businesses seek to achieve enhanced environmental, economic, and social performance through collaboration in managing environmental and resource issues. (UNDO, 2021).

An industrial zone, sector or park can turn into an eco-industrial park through the combination of plant level efficiency resulting in minimization of waste and emission generation from individual enterprises collective synergies resulting in optimized resource exchanges between companies. environmental and utility systems proper zoning and planning, environmental management of park operations the aim is to be zero net generation of waste, effluents and emissions. (UNIDO, 2016)

1.2. Statement of the Problem

ESIA is a procedure used to examine the environmental consequences or impacts, both beneficial and adverse, of a proposed development project and to ensure that these effects are taken into account in project design. (Ogola, 2007). The Bole Lemi Industrial Park is a project that covers a total of 353 ha of land and was an area that was occupied by people that were leading their lives by using a mixed farming with agriculture dominated by rain-fed farming as a basic economic activity. (GOE, 2014) The impact of such projects will bring forth both positive and negative impact to the society and the environment. Ethiopia being a developing country looks more into the development and economic gains from projects of industrialization and creation of industrial parks, but the environment and social aspect should be put into consideration when conducting any form of industrialization agendas.

The main agenda of the Federal Democratic Republic Government of Ethiopia is to eradicated poverty. One of the several strategic directions to realize this National agenda is to promote the industrialization process to play its role in the development of the country's economy. (Ethiopia U. , 2018). The role of the ESIA is to gage the impact and to make sure the positive aspect of the industrial park outweighs the negative impact in addition to proper reimbursements and mitigation and follow up to the environment and society affected by the project. Additionally, it needs to make sure the focus of the industrial park is not only for economic gain but for the positive impact of the project to be a sustainable and continues for the park to have proper justification.

Until recently, ESIA as a new concept was not readily understood and accepted as a tool in developing countries. Developers resisted and argued that it was anti-development because laws and policies supporting it dictated that lands developments causing negative impacts should be discontinued. (Ogola, 2007). Even though Ethiopia has made significant progress in accepting and integrating ESIA as a necessary step in major projects it is still lacking in monitoring and following up on the ESIA. The factors that influence the ESIA system performance in low- and middle-income countries were connected to weak regulatory frameworks, the performance of actors, awareness of ESIA actors, weak public participation, and socio-economic factors (Arend Kolhoff, P.P.J. Driessen, Hens Runhaar, 2018). The low level of the capacity of the environmental protection staff and private consultants, lack of effective ESIA procedures, and political interferences were the main cause of poor ESIA implementation and follow-up in developing countries. (McCullough, July 2017).

Ethiopia faces and shares similar problems when it comes to ESIA to other developing countries. The major gaps include the lack of a well-structured environmental protection authority, lack of information exchange, and lack of qualified ESIA consultants. (Mellese Damtie, Mesfin Bayou, 2008). The Ethiopian government states the Authority, or the relevant regional environmental agency shall monitor the implementation of an authorized project in order to evaluate compliance with all commitments made by, and obligations imposed on the proponent during authorization. (Ethiopia G. o., 2002). An important challenge facing the existing industrial parks and zones in Ethiopia is the lack of an effective management system. In relation to the Ethiopian Investment Commission, both capacity and organizational issues can be critical in regulating and implementing IPD in Ethiopia. (Xiaodi Zhang, 2018).

The Bole Lemi Industrial Park and The Industry Zone is expected to construct all on-site infrastructure works such as sanitary installation, electrical installation, domestic water supply system, fire hydrant, sewerage, drainage as well as temporary storage for water and fuel. The IZ will also include the development of other infrastructures that will provide support for the day-to-day operation of greenery, parks, and recreational areas such as gymnasium and football field. Common shower and toilets will also provide in the factory buildings. The project is justified on the grounds that it will reduce the prevailing high unemployment rate while it will also address the trade deficit and lack of foreign exchange for importing required items and running development activities that rely heavily on imported technologies, (GOE, 2014) The positive impacts stated in the ESIA of the bole lemi industrial park include Contribution to reduction of the prevailing high unemployment rate while it will also address the trade deficit and lack of foreign exchange for importing required items and running development activities that rely heavily on imported technology and facilities. (GOE, 2014).

The negative impact on pre-construction phase includes loss of housing and agricultural land for the community that has settled in the area. The migration and compensation method laid out on the ESIA includes Compensation for the loss of housing, Compensation for the loss of agricultural production for a duration of 10 years, training for individuals Project Affected Population, Restoration of ecology and establishment of buffer zones. On the operational phase of the industrial park some of the potential negative impacts include Release of wastewater and associated pollutants, Generation of solid waste (hazardous /non-hazardous), release of gaseous waste and other suspended particles causing air pollution, Noise pollution, impact on health and safety in the IP.

The main problem to be investigated is the evaluation of the ESIA and see its gaps, understand the effectiveness of the follow up systems put in place by the stockholders and to see the society agreement with the effectiveness and impact. In addition to study the mitigation methods for the negative impacts laid out was properly followed upon and implemented.

1.3. Objective of the Study

To assess the effectiveness of the Environmental and Social Impacts Assessment, and thereby to evaluate the Bole Lemi Industrial Park impact on the Environment and Society.

To assess the

1. Evaluate the ***Environmental and Social Impacts Assessment*** for the ***Bole Lemi Industrial Park*** and identify gaps.
2. Follow up on the effectiveness of ***Environmental and Social Impacts Assessment*** of the ***Bole Lemi Industrial Park***.
3. Assess the perception of the community on the implementation and follow up of environmental and social impact by the proponents of ***Bole Lemi Industrial Park.***

1.4. Research Question

1. What is the evaluation of the Environmental and Social Impacts Assessment conducted for the Bole Lemi Industrial Park, and what are the identified gaps in the assessment?
2. How effective has the Environmental Social Impacts Assessment of the Bole Lemi Industrial Park been?
3. What is the community's perception of the implementation and follow-up of environmental and social impact assessment by the proponent of Bole Lemi Industrial Park?

1.5. Significance of the Study

This study holds significant importance as it aims to gain a comprehensive understanding of the societal and environmental impacts of the industrial park in Bole Lemi, which is one of Ethiopia's major industrial parks. The assessment of the Environmental and Social Impact Assessment (ESIA) conducted for this project, along with the evaluation of the effectiveness of the proposed mitigation measures, will shed light on the key stakeholders responsible for overseeing the ESIA process. Moreover, the study will uncover valuable insights from both positive and negative learnings.

An essential aspect of this research is to investigate the community's perception of the industrial park. By understanding the community's viewpoint, it becomes possible to bridge the gap between stakeholders and foster sustainable development practices. The findings of this study will not only be applicable to other major projects but will also contribute to the ongoing discourse surrounding issues pertaining to industrial parks in Ethiopia. The investigation of environmental and social impacts associated with industrial parks aligns with the country's development goals, making it a topic of utmost importance.

The study seeks to explore the intricate interactions between industrial parks and their environmental and social ramifications. By accomplishing this research, policymakers and the government will be provided with valuable insights to illuminate the ESIA process and enhance the positive impacts of industrial parks. Ultimately, this research endeavor contributes to addressing fundamental questions surrounding the development and industrialization of Ethiopia while ensuring the preservation of the environment for future generations.

1.6. Limitation of the Study

This study offers valuable insights into the effectiveness of the environmental and social impact assessment conducted on the Bole Lemi Industrial Park. However, it is crucial to acknowledge some limitations that may affect the interpretation of the findings. The reliance on survey research introduces potential biases due to the voluntary participation of respondents, shaping the study within the context of participants' willingness to engage. This factor could impact the generalizability of the results. Additionally, data availability and participants' willingness to share information may limit the overall comprehensiveness of the study. Furthermore, a notable constraint lies in the absence of Environmental and Social Management Plans (ESMPs) for all factories, leading to a lack of data for a comprehensive understanding. Moreover, authorities in the area appear to lack tracking methods for relocated individuals before the investment, hindering the ability to gather perspectives from those affected. These limitations underscore the need for cautious consideration when interpreting the study's outcomes.

Chapter Two: Review of Related Literature

2.1. Theoretical Review

2.1.1 Basic concepts of ESIA

The fundamental objective of an ESIA is to ensure that the proposed development is environmentally sound and socially acceptable, and hence contributes to the development of environmental and social functions of local communities. ((ZGEC), 2020) Environmental impact assessment (EIA) is a planning and decision-making process to assess and mitigate the negative environmental impacts of developing and developed projects, plans policies, programmes, and legislative actions. The environmental health impact assessment (EHIA) process has been investigated. (Iyer, 2020).

It is important to understand what the steps are to the proper process of Environmental and social impact assessment. The key process elements of an ESIA generally consist of initial screening of the project and scoping of the assessment process, examination of alternatives, stakeholder identification, focusing on those directly affected, and gathering of environmental and social baseline data, impact identification, prediction, and analysis, generation of mitigation or management measures and actions, significance of impacts and evaluation of residual impacts, and documentation of the assessment process. (Stefano Corsi, 2015)

Each step of an ESIA needs to be properly followed upon, and the first step is screening. Screening is the first step in the assessment process. It confirms the need or otherwise for an ESIA by appraising the type of project and its associated activities throughout the project lifecycle in the context of its biophysical, socio-economic, policy and regulatory environments. (SWAP, 2015). The next step in a properly monitored and prepared environmental and social impact assessment is searching for and offering for alternatives. Consideration of alternatives is one of the most critical elements of the environmental assessment process.

Its role is to provide a framework for sound decision-making based on the principles of sustainable development. Key criteria for consideration when identifying alternatives are that they should be “practicable”, “feasible”, “relevant”, “reasonable” and “viable”. A range of alternatives exists, not all of which are necessarily appropriate for each project under consideration. (Diab, 2004)

In the stack holder is mainly to understand and minimize the impact on the environment and the society at the location selected. It is one of the major steps that needs to be taken in any ESIA conducted. The purpose of the stakeholder identification and analysis is to understand potential impacts on stakeholders and to clarify who should be involved in the ESIA process and how. This is done by listing all relevant stakeholders – based on any existing stakeholder analysis developed during the project design process and on general knowledge about the project context. (ESMS, 2020).

The stakeholder identification and the description of the environmental and social baseline are crucial for identifying potential impacts and defining mitigation or management measures and actions. The analysis of territorial vulnerability combined with the analysis of local conflicts’ intensity could reinforce this step, providing a complete as well as synthetic overview of

weaknesses and strengths of the projects are from environmental, economic, and social perspectives. (Stefano Corsi, 2015)

During the assessment of the stakeholders and creation of and gathering of environmental and social baseline data the report and assessment should consider direct, indirect, cumulative, and induced impacts of the project. Consider all direct and indirect social and environmental risks and impacts that may be caused by project activities not just in the immediate project area but also in the project's area of influence. Also consider cumulative impacts from the project or from other relevant past, present and reasonably foreseeable developments in a geographic area. (UNDP, 2020).

Impact prediction and evaluation is the heart of the S&EA and involves analyzing the impacts identified in the scoping and baseline work to determine their nature, temporal and spatial scale, reversibility, magnitude, likelihood, extent, and effect. Such detailed impact analysis requires professional judgment, and will require input from relevant experts, including ecologists, biologists, sociologists, and economists. (IFC, 2021). Impact analysis is carried out in the detailed phase of the ESIA; it involves identifying the impacts more specifically, predicting the characteristics of the main impacts and evaluating the significance of the residual impacts. (P. M. Omenge, 2020).

2.1.2 Environment Policy of Ethiopia

The first comprehensive statement of Environmental Policy of Ethiopia was approved by the Council of Ministers in April 1997 and was based on the policy and strategic findings and recommendations of the Conservation Strategy of Ethiopia. The policy is aimed at guiding sustainable social and economic development of the country through the conservation and sustainable utilization of the natural, man-made, and cultural resources and the environment at large. The overall policy goal is to improve and enhance the health and quality of life of all Ethiopians and to promote sustainable social and economic development through the sound management and use of natural, human-made, and cultural resources and the environment to meet the needs of the present generation without compromising the ability of future generations to meet their own needs. The GoE has recently initiated updates to the Environmental Policy of Ethiopia. The technical committee under MoEFCC was formalized to oversee updating the National Environmental Policy to fill gaps identified in addressing climate change and other environmental issues. (World Bank , 2019)

Some of the policies and proclamation of Ethiopia include:

Proclamation No. 295/2002 A Proclamation Provided for The Establishment of Environmental Protection Organs: Assigning responsibilities to separate organizations for environmental development and management activities on the one hand, and environmental protection, regulations and monitoring on the other is instrumental for the sustainable use of environmental resource, thereby avoiding possible conflicts of interests and duplication of efforts. to establish a system that fosters coordinated but differentiated responsibilities among environmental protection agencies at federal and regional levels (GOE, Federal Negarit Gazeta, 2002)

Proclamation No. 300/2002 Environmental Pollution Control Proclamation: some social and economic development endeavors may inflict environmental harm that could make the endeavors counter-productive, the protection of the environment, in general, and the safeguarding. of human health and wellbeing, as well as the maintaining of the biota and the aesthetic value of nature, in particular, are the duty and responsibility of all; it is appropriate to eliminate or, when not possible. to mitigate pollution as an undesirable consequence or social and economic development activities. (GOE, Federal Negarit Gazeta, 2002)

The proclamation considers has considered control of pollution; management of hazardous waste, chemical and radioactive substances; management of municipal wastes; the importance and need to respect environmental standards; and punitive and incentive measures. As a follow-up to this proclamation a regulation to prevent industrial pollution was developed to ensure compatibility of industrial development with environmental conservation called prevention of Industrial Pollution Regulation (Proclamation 159/2008). (World Bank , 2019)

Proclamation No. 299/2002 Environmental Impact Assessment Proclamation: An environmental impact assessment is used to predict and manage the environmental effects which a proposed development activity as a result of its design sitting, construction, operation, or an ongoing one as a result of its modification or termination, entails and thus helps to bring about intended development. The proclamation is an effective means of harmonizing and integrating environmental, economic, cultural, and social considerations into the planning and decision-making processes, thereby promoting sustainable development. Moreover, it serves as a basic instrument in bringing about administrative transparency and accountability, to involve the public and the communities, in the planning and execution of development programs that may affect them and their environment. (GOE, Federal Negarit Gazeta, 2002)

Industrial Parks Act (the 'Act') was promulgated on March 12, 2021 (International): Owner of an industrial park Industrial parks under the Act may be established and owned by the state and / or one or more municipalities, as well as by companies and their associations. In terms of ownership, industrial parks are state - when the state is the owner; municipal - when the owner is one municipality; joint - when the owner is the state and one or more municipalities, as well as when the owner is two or more municipalities; private - when the owner is a legal entity registered as a trader or association. The owner of the industrial park is assigned to provide the organizational, structural and technical conditions for the creation, construction, operation and development of the park. (Baldzhieva, 2021) Investor, partner, user The Act regulates the status of three other categories of entities, which are assigned a role in the activities of industrial parks: The investor is a trader, who carries out production activities in the park on the basis of a business contract concluded with the operator; The partner is a person, who supports the functioning and development of the industrial park under a contract with the operator. Owners of units of technical infrastructure other than the internal technical infrastructure owned by the owner of the industrial park are not partners; Users are investors and partners, who operate in the park. (Baldzhieva, 2021)

The below figure demonstrates the ownership of the Ethiopian Industrial parks.

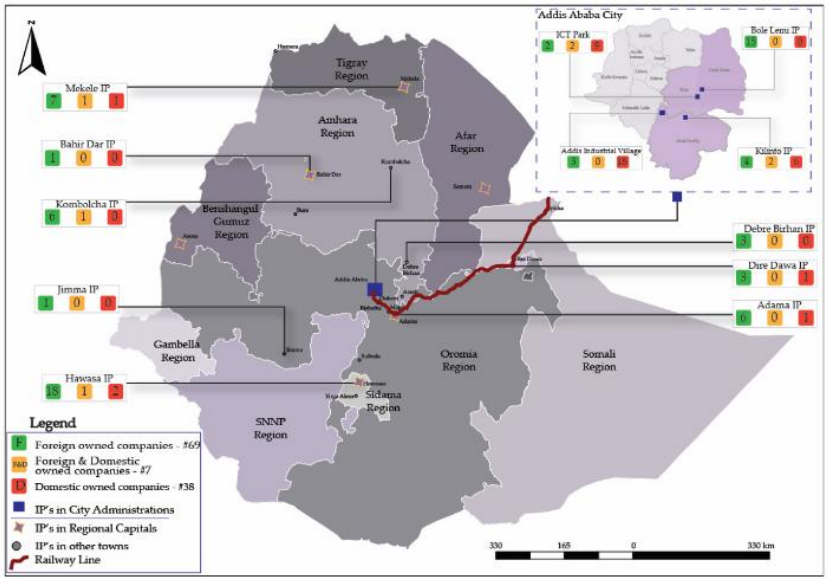

Figure 1. Ownership of the Ethiopian Industrial parks

(Daniel Tesfaw Mengistu, 2022)

Ethiopia's Climate-resilient Green Economy Strategy

The 'vision' of the strategy is to build a Climate Resilient Green Economy (CRGE) by 2025. This economy would be middle-income, resilient to the negative impacts of climate change and achieved with no net increase in greenhouse gas emissions. (FDRE, 2015)

Ethiopia is planning to develop the green economy strategy based on four pillars:

Improving crop and livestock production practices to increase food yields, hence food security and farmer income, while reducing emissions. Protecting and re-establishing forests for their economic and ecosystem services, including as carbon stocks. Expanding electric power generation from renewable sources of energy fivefold over the next five years for markets at home and in neighbouring countries. Leapfrogging to modern and energy-efficient technologies in transport, industry, and buildings. Through detailed analyses, initiatives have been selected in each pillar to enable Ethiopia to meet the economic development goals outlined in its Growth and Transformation Plan while reducing emissions and strengthening climate resilience. (Environmental Protection Authority, 2011)

2.1.3 The Evolution of the ESIA System

The Environmental and Social Impact Assessment (ESIA) system has evolved significantly over the years, driven by the need to address environmental and social concerns related to development projects. This literature review will examine the evolution of the ESIA system and its status, focusing on the changes that have occurred over the past few decades. The concept of environmental impact assessment (EIA) emerged in the United States in the late 1960s and early 1970s, in response to public concerns about the environmental impact of development projects (Kühnen et al., 2019). The National Environmental Policy Act (NEPA) of 1969 established a framework for environmental impact assessment in the US, requiring federal agencies to prepare

an EIA for any major federal action that could significantly affect the environment (CEQ, 2020). This approach was soon adopted by other countries, and the concept of EIA was quickly established as a global environmental management tool.

Over time, the concept of EIA has evolved and expanded to include social impacts as well as environmental impacts. This led to the emergence of the ESIA system, which is now widely used to assess the potential impacts of development projects on both the environment and society (Vanclay, 2003). The World Bank played a key role in the development of the ESIA system, through its adoption of environmental and social safeguard policies in the 1980s and 1990s. These policies required projects funded by the World Bank to undergo an ESIA, and they set standards for the content and quality of the assessment (World Bank, 1998). The ESIA system has continued to evolve over the past few decades, driven by a range of factors. One of the key drivers of change has been the increasing recognition of the need to address the social impacts of development projects, particularly in developing countries (Munoz-Tellez & Fernandez-Maldonado, 2015). This has led to the development of social impact assessment (SIA) as a distinct field, which focuses on the social impacts of development projects and the ways in which these impacts can be mitigated.

Another important driver of change has been the increasing importance of stakeholder engagement in the ESIA process. This reflects a growing recognition of the need to involve affected communities and other stakeholders in the assessment process, in order to ensure that their concerns and perspectives are taken into account (IAIA, 2020). The current status of the ESIA system is characterized by a range of trends and challenges. One of the key trends is the increasing emphasis on sustainability and the need to address climate change and other global environmental challenges (Pilbeam, 2019). This has led to the development of tools and frameworks for assessing the climate and environmental impacts of development projects, and a growing recognition of the need to incorporate these considerations into the ESIA process.

Another challenge facing the ESIA system is the need to address the limitations and criticisms of the current approach. Some critics argue that the ESIA process is too focused on compliance and procedural issues and does not adequately address the substantive issues and concerns of affected communities (Vanclay, 2003). Others argue that the ESIA process is overly focused on technical assessments and does not adequately incorporate social and cultural considerations (Munoz-Tellez & Fernandez-Maldonado, 2015). Overall, the ESIA system has evolved significantly over the past few decades, driven by a range of factors including the increasing recognition of the need to address social and environmental impacts, the importance of stakeholder engagement, and the need to address global environmental challenges. While the system faces challenges and limitations, it remains a critical tool for ensuring that development projects are undertaken in a way that is socially and environmentally responsible. Environmental and Social Impact Assessment (ESIA) is a critical tool for ensuring that development projects are planned and implemented in a way that minimizes their negative impacts on the environment and society. The ESIA process has evolved over the years, influenced by various factors such as international conventions, legal frameworks, and societal values (Vanclay, 2003). The roots of ESIA can be traced back to the 1960s and 1970s when a series of environmental disasters, such as the Minamata Bay mercury poisoning in Japan

and the Santa Barbara oil spill in the United States, drew public attention to the need for better environmental protection (Lee & Colley, 2015). This led to the creation of laws and regulations in many countries that required developers to conduct environmental impact assessments (EIAs) before carrying out certain types of projects (Lee & Colley, 2015). Over time, the focus of EIAs expanded beyond just environmental impacts to include social impacts as well. This shift was partly driven by the recognition that development projects can have significant social impacts on local communities, such as displacement, loss of livelihoods, and cultural heritage (Vanclay, 2003). As a result, the term Environmental and Social Impact Assessment (ESIA) began to be used to reflect this broader scope (Vanclay, 2003).

In the 1990s, the ESIA process was further influenced by the emergence of sustainable development as a concept and the adoption of the agenda 21 action plan at the Rio Earth Summit in 1992 (Cashmore, 2004). This led to a greater emphasis on integrating environmental and social considerations into development planning, which in turn influenced the ESIA process to become more participatory and inclusive of stakeholders (Cashmore, 2004)., the ESIA process continues to evolve, with an increasing emphasis on addressing climate change and biodiversity loss, as well as the need for better monitoring and evaluation of project impacts (Lee & Colley, 2015). Furthermore, the ESIA process is becoming more integrated into overall project planning and decision-making, rather than being seen as a separate or standalone process (Lee & Colley, 2015). The evolution of the ESIA system has been shaped by a range of factors, including international conventions, legal frameworks, societal values, and emerging concepts such as sustainable development. As development projects continue to grow in complexity and scale, it is likely that the ESIA process will continue to evolve and adapt to new challenges and priorities.

2.1.4 Impact Assessment and Methods

Having established the environmental and social baseline, meaning prior to any development taking place, it is necessary to consider the potential impacts that may arise as a result of the proposed project. It is important to emphasize that investment in industrial development has the potential to introduce positive change to the local area. It is essential that this be optimized, wherever possible, as part of the planning and design process and highlighted within the ESIA. (CSI, 2011)

EIA methods range from simple to complex, requiring different kinds of data, different data formats, and varying levels of expertise and technological sophistication for their interpretation. The analyses they produce have differing levels of precision and certainty. All of these factors should be considered when selecting a method. (EIA for Developing Countries , 1997). The term sustainability is broadly used to indicate programs, initiatives and actions aimed at the preservation of a particular resource. that there are three pillars of sustainability economic viability, environmental protection, and social equity. (RMIT, 2017).

Economic sustainability implies a system of production that satisfies present consumption levels without compromising future needs. The ‘sustainability’ that ‘economic sustainability’ seeks is the ‘sustainability’ of the economic system itself. (BASIAGO, 1999) economic sustainability means the use of various strategies for employing existing resources optimally so that that a responsible and beneficial balance can be achieved over the longer term. In the outside or stakeholder view,

“strong sustainability” position is emphasized. According to it, economic sustainability means that economic systems support sustainable social and environmental outcomes, where economics is the process through which humans create social and environmental outcomes.

Social sustainability implies a system of social organization that alleviates poverty. In a more fundamental sense, however, ‘social sustainability’ establishes the nexus between social conditions such as poverty and environmental decay. (Ruttan, 1999) Social Sustainability and Inclusion focuses on the need to put people first in development processes. It promotes social inclusion of the poor and vulnerable by empowering people, building cohesive and resilient societies, and making institutions accessible and accountable to citizens. (World Bank, 2021)

Environmental sustainability It is needed by humans and originated by social concerns is itself seeks to improve human welfare by protecting the sources of raw materials used for human needs and ensuring that sinks for human wastes are not exceeded in order to prevent harm to humans. Humanity must learn to live within the limitations of the biophysical environment. (Dr.A.R.Nithya, 2016)

2.1.5 ESIA and Social Sustainability

Social sustainability is an important aspect of sustainability that focuses on the social impacts of development and ensuring that development benefits all members of society. (Yang, X, 2021)

Several studies have explored the relationship between EIA and social sustainability. One study by Yang et al. (2021) found that EIA can help identify and address social impacts of development projects, such as displacement of local communities and loss of cultural heritage. Another study by Morrison-Saunders et al. (2014) highlights the importance of including social sustainability in EIA, as it can help ensure that development projects are socially acceptable and equitable. Furthermore, EIA is also closely linked to overall sustainability. (Yang and Zhao 2021) suggests that EIA is a crucial tool for achieving sustainable development goals, as it helps identify potential environmental and social impacts of development and promotes more sustainable practices. emphasizes the importance of considering the long-term impacts of development projects in EIA, as it can help promote sustainable development. (Bond et al. 2019)

EIA plays a crucial role in promoting social sustainability and overall sustainability. By identifying and addressing potential social and environmental impacts of development projects, EIA can help promote more sustainable practices and ensure that development benefits all members of society. (Alves, F. D, 2020) It is essential that social sustainability is included in the EIA process to ensure that development projects are socially acceptable and equitable, as well as environmentally sustainable.

Environmental and Social Impact Assessment (ESIA) has become an increasingly important tool for promoting sustainable development worldwide. The inclusion of social sustainability in ESIA has been a relatively recent development, but it has gained significant attention due to the growing recognition of the importance of social factors in sustainable development (Vanclay, 2002).

The concept of social sustainability and its relationship with ESIA, as well as its importance in ensuring sustainable development. Social sustainability is a relatively new concept, but it has

gained significant attention in recent years due to the growing recognition of the importance of social factors in sustainable development (WCED, 1987). According to the World Commission on Environment and Development, sustainable development is "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Social sustainability is one of the three pillars of sustainable development, along with economic sustainability and environmental sustainability (Sadler, 1996).

It refers to the ability of society to meet its current needs without compromising the ability of future generations to meet their own needs. ESIA is a tool that is used to assess the environmental and social impacts of proposed projects, policies, and programs. The purpose of ESIA is to identify potential impacts and to develop measures to mitigate these impacts. ESIA has been widely used in many countries as a means of ensuring that development projects are carried out in an environmentally and socially responsible manner (Sadler, 1996).

The inclusion of social sustainability in ESIA is a relatively recent development, but it has gained significant attention due to the growing recognition of the importance of social factors in sustainable development (Vanclay, 2002). Social sustainability is important because it ensures that development projects are carried out in a manner that is socially responsible and that promotes social equity. It also ensures that the needs and aspirations of local communities are considered and that they are given a voice in the decision-making process. There are several key principles that should be considered when including social sustainability in ESIA. These include the need to involve local communities in the decision-making process, the need to ensure that the benefits and costs of development projects are shared fairly, and the need to ensure that the social impacts of development projects are carefully assessed and mitigated (IAIA, 2018).

The inclusion of social sustainability in ESIA has been the subject of much debate and discussion. Some argue that social sustainability should be given equal weight to environmental sustainability in ESIA, while others argue that social sustainability should be given greater weight. There are also concerns that the inclusion of social sustainability in ESIA could lead to a dilution of environmental standards, as developers may be tempted to focus on social issues at the expense of environmental concerns. Despite these concerns, there is growing recognition of the importance of social sustainability in ESIA. The inclusion of social sustainability in ESIA can help to ensure that development projects are carried out in a manner that is socially responsible and that promotes social equity (Vanclay, 2002). It can also help to ensure that the needs and aspirations of local communities are considered and that they are given a voice in the decision-making process.

2.2. Empirical Review

2.2.1 Eco-Industrial Parks

An eco-industrial park is a community of businesses located on a common property in which businesses seek to achieve enhanced environmental, economic, and social performance through collaboration in managing environmental and resource issues. This is known as industrial symbiosis, which is a means by which companies can gain a competitive advantage through the physical exchange of materials, energy, water, and by-products, thereby fostering inclusive and sustainable development. (UNIDO, 2016)

Eco-industrial parks (EIP) refer to putting in place serviced industrial infrastructure conducive to attracting new investments, especially in manufacturing, while at the same time promoting environmental sustainability. Although eco-industrial parks have been around for some time, the concept has lacked a solid footing due to competing interpretations as to what qualifies as an EIP. In some cases, the label may signify nothing more than some form of green initiative within an industrial park. (SINEM DEMIR, 2018)

Industrial Park operation involves site and facilities management and maintenance, ongoing investment promotion, performance monitoring and evaluation, and ongoing improvements and reinvestment. Although the development of industrial parks presents many economic and non-economic opportunities, it also presents a number of risks with respect to their planning, development or operation, business interruption, environment or social impacts. (UNIDO, 2019)

The bole Lemi industrial park which is located in the outskirts of Addis Ababa has over 20 shades and has eligible sectors such as Textile, garment and Leather. Textile processes pollute the environment and pose serious environmental and health hazards. Therefore, environmental standards have been established for textile and leather industry to control its pollution. Global Organic textile standards, (GOTS) was introduced which has universal recognition and has more than 3000 certified textile processing, manufacturing and trading people in more than 60 countries. (IPDC, 2021)

Any future economic growth must be decisively decoupled from increased resource use and negative environmental impacts. This decoupling is an integral part of inclusive and sustainable industrial development (ISID) processes. The positive effects of eco-industrial parks are numerous. They can provide employment, improved infrastructure, and increased investment opportunities. They can also provide environmental benefits, such as reduced water pollution, improved air quality, and increased water conservation. Additionally, eco-industrial parks can help to preserve local biodiversity, reduce waste, and encourage sustainable development. Conversely, there are potential negative impacts that should also be considered. These can include increased pressure on local resources, increased traffic congestion, and potential pollution from waste. Additionally, there may be impacts on local culture and traditional ways of life. . (UNIDO, 2016)

2.2.2 Eco-Industrial Park in Ethiopia

The concept of eco-industrial parks is gaining traction in Ethiopia as the country seeks to balance economic growth with environmental sustainability (UNDP Ethiopia, 2018). The first eco-industrial park in the country, the Hawassa Industrial Park, was inaugurated in 2017 (Xinhua, 2017). Since then, the Ethiopian government has been promoting the development of additional eco-industrial parks, particularly in the textile and garment sector (Africa, 2018).

Currently, there are three operational eco-industrial parks in Ethiopia: the aforementioned Hawassa Industrial Park, the Bole Lemi Industrial Park, and the Kombolcha Industrial Park (Ethiopian Investment Commission, 2021). These parks are designed to provide a sustainable and environmentally friendly industrial space that maximizes resource efficiency and minimizes waste and pollution (UNDP Ethiopia, 2018).

The development of eco-industrial parks in Ethiopia has been supported by a number of international organizations, including the United Nations Industrial Development Organization (UNIDO) and the World Bank (World Bank, 2021). These organizations have provided technical assistance and financing to help the Ethiopian government create a conducive policy and regulatory environment for eco-industrial parks and attract private sector investment. Despite progress in eco-industrial park development, challenges remain. One major challenge is the lack of adequate infrastructure and services, particularly in remote areas where many eco-industrial parks are being developed (Ethiopian Investment Commission, 2021).

Additionally, there is a need for further capacity building and training to ensure that the parks are operated and managed in an environmentally responsible and sustainable manner. Looking ahead, the prospects for eco-industrial park development in Ethiopia are promising. The country has a large and growing manufacturing sector, particularly in the textile and garment industry, which could benefit from the creation of eco-industrial parks (Africa, 2018).

Furthermore, the Ethiopian government has demonstrated a commitment to environmental sustainability, as evidenced by its membership in the Paris Agreement and its efforts to increase renewable energy generation (World Bank, 2021). With continued support from international organizations and private sector investors, eco-industrial parks in Ethiopia have the potential to drive sustainable economic growth and environmental conservation. The Hawassa Industrial Park, which was Ethiopia's first eco-industrial park, spans over 1,300 hectares and is designed to accommodate textile and apparel manufacturing, with a capacity to house over 60 factories (Ethiopian Investment Commission, 2021).

The Bole Lemi Industrial Park, located in the outskirts of Addis Ababa, is an eco-industrial park focused on light manufacturing and is intended to promote sustainable industrialization in the city (UNIDO, 2019).

The Kombolcha Industrial Park, located in the Amhara region, is an eco-industrial park that specializes in textile and garment manufacturing and was built with the aim of promoting economic growth and job creation in the region (World Bank, 2019).

The eco-industrial parks in Ethiopia have been praised for their contribution to job creation, particularly for women. For example, the Hawassa Industrial Park has provided employment to over 25,000 workers, 70% of whom are women (UNDP Ethiopia, 2018).

In addition to textile and garment manufacturing, there are plans to develop eco-industrial parks in other sectors such as agro-processing, leather, and pharmaceuticals (Africanews, 2018).

The Ethiopian government has set ambitious targets for the development of eco-industrial parks, aiming to establish 30 eco-industrial parks by 2025 (Ethiopian Investment Commission, 2021).

Overall, eco-industrial parks have emerged as an important strategy for promoting sustainable industrial development in Ethiopia. While there are still challenges to be addressed, such as infrastructure and capacity building, the prospects for eco-industrial parks in Ethiopia look promising, particularly as the country seeks to promote economic growth while preserving its natural resources.

As of 2021, the three operational eco-industrial parks in Ethiopia (Hawassa, Bole Lemi, and Kombolcha) have attracted a total of over 90 investors, mainly from Asia, Europe, and the Middle East (Ethiopian Investment Commission, 2021).

The Ethiopian government has implemented a range of policy and regulatory measures to support the development of eco-industrial parks, including tax incentives, streamlined administrative procedures, and a one-stop-shop service for investors (UNIDO, 2019).

The Hawassa Industrial Park, which is powered by a combination of hydroelectric and geothermal energy, is one of the most sustainable industrial parks in the world, having achieved LEED Gold certification for energy efficiency and environmental design (UNDP Ethiopia, 2018). In addition to the support provided by international organizations such as the World Bank and UNIDO, the development of eco-industrial parks in Ethiopia has also been facilitated by partnerships with private sector companies, such as the China Civil Engineering Construction Corporation (CCECC), which was involved in the construction of the Hawassa and Kombolcha industrial parks (African, 2018).

The creation of eco-industrial parks in Ethiopia has the potential to contribute to the country's broader sustainable development agenda, including poverty reduction, job creation, and climate change mitigation (UNDP Ethiopia, 2018). The development of eco-industrial parks in Ethiopia has also been seen as a way to address some of the challenges facing the country's traditional industrial parks, such as inadequate infrastructure and environmental degradation (UNIDO, 2019). Overall, eco-industrial parks have emerged as a promising approach to sustainable industrial development in Ethiopia, and the government's commitment to their continued development suggests that they will play an important role in the country's economic growth and environmental sustainability strategies in the years to come. The eco-industrial parks in Ethiopia are designed to be "green" and sustainable, incorporating environmentally friendly practices such as waste management, renewable energy, and water conservation (World Bank, 2019).

The establishment of eco-industrial parks is also intended to promote regional economic integration, with some of the parks being located in areas that are strategically positioned to facilitate cross-border trade with neighboring countries (Africanews, 2018). The development of eco-industrial parks in Ethiopia is seen as part of a broader effort to attract foreign investment and increase the country's competitiveness in the global market (Ethiopian Investment Commission, 2021).

Some of the challenges facing the development of eco-industrial parks in Ethiopia include inadequate infrastructure, a shortage of skilled labor, and a lack of financing for small and medium-sized enterprises (SMEs) (World Bank, 2019).

To address these challenges, the Ethiopian government has been working with international organizations and private sector partners to provide technical assistance, capacity building, and financing for SMEs operating in the eco-industrial parks (UNIDO, 2019). The eco-industrial parks in Ethiopia are also expected to have positive social impacts, such as promoting gender equality and empowering women through employment opportunities (UNDP Ethiopia, 2018).

Overall, the development of eco-industrial parks in Ethiopia is viewed as an important strategy for promoting sustainable industrialization, economic growth, and environmental protection. While there are challenges to be addressed, the continued commitment of the Ethiopian government and its partners suggests that the prospects for eco-industrial parks in the country remain promising.

2.2.3 Conferences on Environmental Sustainability

First World Climate Conference in 1979: The world community adopts sustainable development in 1979.Climate change was recognized as a serious problem by the First World Climate Conference in 1979. This scientific gathering explored how climate change might affect human activities. It issued a declaration calling on the world's governments "to foresee and prevent potential man-made changes in climate that might be averse to the well-being of humanity". It also endorsed plans to establish a World Climate Programme (WCP) under the joint responsibility of the World Meteorological Organization (WMO), the United Nations Environment Programme (UNEP), and the International Council of Scientific Unions (ICSU). (IUC/UNEP, 2000)

The First World Climate Conference the science of climate change 1987: In 1987, the World Commission on Environment and Development (WCED), which had been set up in 1983, published a report entitled «Our common future». The document came to be known as the «Brundtland Report» after the Commission's chairwoman, Gro Harlem Brundtland. It developed guiding principles for sustainable development as it is generally understood today. The Brundtland Report stated that critical global environmental problems were primarily the result of the enormous poverty of the South and the non-sustainable patterns of consumption and production in the North. It called for a strategy that united development and the environment – described by the now-common term «sustainable development». (Jim MacNeill, 2000)

Brundtland Report on sustainable development 1992: One of the major international efforts to pursue sustainable development following the publication of the Brundtland report was The Earth Summit held in Rio de Janeiro in 1992. The summit emphasized the importance of global partnership for bringing about sustainability and peace. This partnership did not only refer to nation-states, but also governments and nongovernment organizations at local levels. The most notable achievement of the summit was the endorsement of the proposed Agenda 21 by the 178 government delegations. The agenda consisted of 40 chapters covering varied aspects of the planet Earth and suggestions on how to achieve and implement sustainable development, including moral and political commitments. (R.L.H. Chiu, 2012)

Rio Earth Summit to act and adopt Agenda 21 1993: The Rio de Janeiro conference highlighted how different social, economic, and environmental factors are interdependent and evolve together, and how success in one sector requires action in other sectors to be sustained over time. The primary objective of the Rio 'Earth Summit' was to produce a broad agenda and a new blueprint for international action on environmental and development issues that would help guide international cooperation and development policy in the twenty-first century. (UN, 1997)

The Kyoto Protocol was adopted on 11 December 1997. Owing to a complex ratification process, it entered into force on 16 February 2005. Currently, there are 192 Parties to the Kyoto Protocol. In short, the Kyoto Protocol operationalizes the United Nations Framework Convention on Climate

Change by committing industrialized countries and economies in transition to limit and reduce greenhouse gases (GHG) emissions in accordance with agreed individual targets. The Convention itself only asks those countries to adopt policies and measures on mitigation and to report periodically. The Kyoto Protocol is based on the principles and provisions of the Convention and follows its annex-based structure. It only binds developed countries and places a heavier burden on them under the principle of "common but differentiated responsibility and respective capabilities", because it recognizes that they are largely responsible for the current high levels of GHG emissions in the atmosphere. (UNFCCC, 2012)

Millennium Development Goals: The Millennium Development Goals (MDGs) commit the international community to an expanded vision of poverty reduction and pro-poor growth, one that vigorously places human development at the center of social and economic progress in all countries. (Mayers, 2015).

Goal 7 or MDG 7 Focus on the environment focuses on the objective to "ensure environmental sustainability" and includes specific targets related to issues as diverse as the integration of sustainable development principles into country policies and programmers; the need to reverse the loss of environmental resources; improved access to safe drinking water and basic sanitation; and significantly improve the living conditions in slums worldwide. (John Dupraz, 2005)

2.2.4 Implementation and Follow-up of EIA On Industry

The challenges of implementing EIA, the effectiveness of EIA in minimizing environmental impacts, and the importance of follow-up monitoring and evaluation. (Parker, J. N, 2018) Environmental Impact Assessment (EIA) is a process for evaluating the potential environmental impacts of industrial activities. (Gang, Y. and Zhu, Q, 2016) The purpose of EIA is to identify, predict, and evaluate the potential impacts of industrial activities on the environment and to develop appropriate measures to minimize and mitigate these impacts. Despite the widespread use of EIA, there are challenges in its implementation and follow-up, which can lead to ineffective environmental management and increased environmental risks. (Gunningham, N. 2014)

Challenges in the Implementation of EIA. The implementation of EIA in the industry is often faced with challenges such as inadequate stakeholder involvement, limited resources, and a lack of understanding of the EIA process (Wathern, 1992). In addition, there are concerns about the quality and accuracy of EIA reports, as well as the effectiveness of mitigation measures (Kumar and Kumar, 2017). These challenges can lead to inadequate management of environmental risks and increased environmental impacts. Effectiveness of EIA in Minimizing Environmental Impacts: Despite the challenges, EIA has been effective in minimizing environmental impacts in some cases. For example, EIA was instrumental in identifying and mitigating potential environmental impacts associated with the construction of the Three Gorges Dam in China (Yang et al., 2011). Similarly, EIA was effective in identifying and mitigating potential environmental impacts associated with the construction of the Sardar Sarovar Dam in India (Dholakia et al., 2012).

Importance of Follow-up Monitoring and Evaluation: Follow-up monitoring and evaluation are critical components of the EIA process. These activities ensure that the predicted environmental impacts are being effectively managed and that any unforeseen impacts are identified and

addressed. However, follow-up monitoring and evaluation are often neglected, leading to inadequate management of environmental risks and increased environmental impacts (Morgan and Henrion, 1990). To improve the implementation and follow-up of EIA in the industry, it is recommended that stakeholders be involved in the process from the beginning, adequate resources be allocated for EIA, and capacity-building initiatives be developed to improve understanding of the EIA process. In addition, it is important to ensure that the quality and accuracy of EIA reports are maintained, and that effective follow-up monitoring, and evaluation are conducted. (Parker, J. N, 2018) EIA is a critical tool for identifying, predicting, and evaluating the potential environmental impacts of industrial activities. However, there are challenges in the implementation and follow-up of EIA, which can lead to inadequate management of environmental risks and increased environmental impacts. By addressing these challenges and implementing the recommendations outlined in this review, the effectiveness of EIA in minimizing environmental impacts can be improved. (Glasson, 2012)

Methodological assessment for ESIA: The inclusion of social sustainability in ESIA is an important development that can help to ensure that development projects are carried out in a manner that is socially responsible and that promotes social equity. While there are concerns about the potential dilution of environmental standards, these concerns can be addressed by carefully assessing and mitigating the social impacts of development projects. ESIA can be an effective tool for promoting sustainable development, but it must be used in a manner that takes into account the needs and aspirations of local communities. (IAIA, 2018).

2.2.5 ESIA Methods

Environmental and Social Impact Assessment (ESIA) is a systematic process of identifying and evaluating the potential environmental and social impacts of a proposed project or development activity (Wood, 2003). The aim of ESIA is to inform decision-makers, stakeholders, and the public about the potential environmental and social consequences of a project and to help identify ways to minimize or mitigate those impacts (IUCN, 2015).

ESIA typically involves several stages, including scoping, baseline studies, impact assessment, alternatives analysis, and mitigation and monitoring plans (World Bank, 2019). The scoping stage involves identifying the potential environmental and social issues and impacts that are likely to be associated with the proposed project and determining the scope and level of detail required for the subsequent stages of the assessment (IAIA, 2018).

The baseline studies stage involves collecting and analyzing data on the existing environmental and social conditions of the project site and surrounding areas. The impact assessment stage involves identifying and evaluating the potential environmental and social impacts of the project and assessing the significance of those impacts. The alternatives analysis stage involves comparing and evaluating the potential environmental and social impacts of different project alternatives, including a "no-action" alternative (IAIA, 2018).

The mitigation and monitoring plans stage involves developing and implementing measures to minimize or mitigate the potential environmental and social impacts of the project and monitoring and evaluating the effectiveness of those measures (World Bank, 2019).

ESIA methods and tools vary depending on the type and scale of the proposed project, as well as the legal and institutional frameworks in place in the country where the project is located (Gasparatos & Wiedmann, 2015). In general, ESIA involves a combination of qualitative and quantitative methods, including literature reviews, field surveys, interviews, stakeholder consultations, modeling, and data analysis (OECD, 2017). Key considerations in selecting appropriate methods and tools for ESIA include the availability and reliability of data, the relevance and significance of potential impacts, the effectiveness and feasibility of proposed mitigation measures, and the level of stakeholder engagement and participation in the assessment process (Gasparatos & Wiedmann, 2015).

One of the key challenges in ESIA is the need to address the potential social impacts of a project, in addition to the environmental impacts (Vanclay, 2002). Social impact assessment (SIA) is a component of ESIA that focuses specifically on the potential social impacts of a project, including impacts on community livelihoods, social cohesion, cultural heritage, and human rights (IAIA, 2018). SIA methods and tools include social surveys, community consultations, participatory mapping, social network analysis, and gender and equity analysis (OECD, 2017). ESIA is a critical tool for ensuring that proposed projects and developments are assessed in a comprehensive and systematic way, taking into account both the potential environmental and social impacts of the project. While the methods and tools used in ESIA can vary depending on the specific context, there are generally accepted stages and principles that guide the assessment process. The inclusion of social impact assessment as a component of ESIA is an important step in ensuring that social impacts are given adequate consideration in project decision-making processes. Environmental and Social Impact Assessment (ESIA) is a systematic process of identifying and evaluating the potential environmental and social impacts of a proposed project or development activity (Wood, 2003). The aim of ESIA is to inform decision-makers, stakeholders, and the public about the potential environmental and social consequences of a project and to help identify ways to minimize or mitigate those impacts (IUCN, 2015).

Implementation and Follow-Up Methods: The implementation and follow-up stages of ESIA are critical for ensuring that the proposed project is carried out in a manner that minimizes or mitigates the potential environmental and social impacts identified during the assessment process. The implementation stage involves ensuring that the proposed mitigation measures are effectively integrated into the project design and construction, and that environmental and social management plans are developed and implemented (IAIA, 2018). The follow-up stage involves monitoring and evaluating the effectiveness of the mitigation measures and management plans over time, and making any necessary adjustments to ensure that the project remains in compliance with environmental and social standards and regulations (IAIA, 2018).

Effective implementation and follow-up of ESIA requires clear roles and responsibilities for all stakeholders involved in the project, as well as adequate resources and capacity building for monitoring and evaluation activities (IUCN, 2015). Effective communication and engagement with stakeholders are also critical for ensuring that concerns and feedback related to environmental and social impacts are effectively addressed throughout the project lifecycle (IAIA, 2018). Various methods and tools can be used to support effective implementation and follow-up of ESIA,

including monitoring plans, performance indicators, auditing, and reporting (World Bank, 2019). Key considerations in selecting appropriate methods and tools include the complexity and scale of the project, the potential environmental and social impacts, and the legal and institutional frameworks in place in the country where the project is located (Gasparatos & Wiedmann, 2015).

Implementation and follow-up methods are critical to ensuring the effectiveness of ESIA. While the assessment itself is important, it is the actions taken in response to the assessment that ultimately determine the impact of a project on the environment and society (Hansen & van der Voet, 2015). To this end, ESIA should be integrated into project planning and management, with clear procedures for monitoring and evaluating the implementation of mitigation measures and other actions identified in the assessment (Gomes et al., 2017).

One key element of effective implementation and follow-up is stakeholder engagement. Stakeholders should be involved throughout the process, from the initial scoping and baseline studies through to the monitoring and evaluation of the project's impacts (Baker & White, 2017). This can help to ensure that the assessment is comprehensive and takes into account the concerns and perspectives of all relevant stakeholders, as well as ensuring that the implementation of mitigation measures is effective and responsive to local needs and conditions. Another important element is the use of performance indicators and monitoring systems. Performance indicators should be developed during the assessment process and used to track progress and evaluate the effectiveness of mitigation measures and other actions over time (Gomes et al., 2017). Monitoring systems should be designed to provide timely and accurate information on the status of the project and its impacts, and to enable early detection and response to any unexpected or adverse effects (Hansen & van der Voet, 2015). Effective implementation and follow-up require ongoing review and evaluation of the ESIA process and outcomes. This can help to identify areas for improvement and ensure that the process is continually adapted to changing circumstances and new knowledge (Baker & White, 2017). Regular review and evaluation can also help to build trust among stakeholders and ensure that the assessment is perceived as credible and effective. Effective implementation and follow-up of ESIA requires attention to a range of factors, including stakeholder engagement, performance indicators and monitoring systems, and ongoing review and evaluation. Addressing these factors requires clear procedures and protocols, as well as ongoing investment and attention to ensure that the potential environmental and social impacts of projects are effectively managed.

Determents of ESIA Implementation: Environmental and Social Impact Assessment (ESIA) is an important tool for managing the environmental and social impacts of development projects. However, the success of ESIA depends on effective implementation, which is influenced by a range of factors. Several studies have identified key determinants of ESIA implementation, including institutional capacity, stakeholder engagement, and regulatory frameworks (Bina, 2014; Munguti et al., 2019; Vanclay et al., 2015).

Institutional capacity: refers to the ability of government agencies and other stakeholders to effectively carry out the tasks associated with ESIA. This includes conducting assessments, developing management plans, and monitoring and enforcing compliance (Vanclay et al., 2015). Effective institutional capacity requires adequate resources, including staff, training, and funding

(Bina, 2014). It also requires clear mandates and roles for government agencies, as well as effective coordination among stakeholders (Munguti et al., 2019).

Stakeholder engagement: is another key determinant of ESIA implementation. Effective engagement with stakeholders can help ensure that the concerns and interests of affected communities are adequately addressed in the assessment and management of environmental and social impacts (IAIA, 2018). Stakeholder engagement can also help build support for the project and facilitate effective communication and collaboration among stakeholders (Munguti et al., 2019). However, effective engagement requires clear and transparent processes for stakeholder participation, as well as adequate resources to support stakeholder engagement activities (Vanclay et al., 2015).

Regulatory frameworks: are also an important determinant of ESIA implementation. Effective regulatory frameworks provide clear and enforceable standards and requirements for ESIA, as well as mechanisms for monitoring and enforcing compliance (Bina, 2014). However, regulatory frameworks must also be flexible and adaptable to accommodate the unique circumstances of different projects and contexts (Munguti et al., 2019). Addressing these determinants requires adequate resources, clear mandates and roles for stakeholders, and effective coordination and communication among stakeholders. In addition to the key determinants of ESIA implementation discussed above, several studies have identified other factors that can influence the effectiveness of ESIA. These include the quality of the assessment itself, the involvement of external experts, and the degree of political will and support for ESIA within government and among other stakeholders (Gomes et al., 2017; Klinke et al., 2015).

The quality of the assessment is a critical factor in determining the effectiveness of ESIA. A high-quality assessment should be comprehensive, objective, and based on sound scientific and technical data (May 2015). The assessment should also consider the full range of potential environmental and social impacts, as well as their interactions and cumulative effects (Gomes et al., 2017). However, ensuring the quality of the assessment requires adequate resources and expertise, as well as a clear understanding of the scope and objectives of the assessment (Klinke et al., 2015).

The involvement of external experts is also an important factor in the effectiveness of ESIA. External experts can provide valuable technical and scientific expertise, as well as an independent perspective on the assessment process and outcomes. However, the involvement of external experts can also be costly and time-consuming and requires careful selection and management to ensure that their expertise is effectively utilized (Gomes et al., 2017).

Political will and support for ESIA: within government and among other stakeholders can strongly influence the effectiveness of ESIA. Political support can help ensure that ESIA is adequately resourced and integrated into decision-making processes (Klinke et al., 2015). However, political support can also be influenced by a range of factors, including economic interests, political power dynamics, and public opinion. Effective implementation of ESIA requires attention to a range of factors, including institutional capacity, stakeholder engagement, regulatory frameworks, the quality of the assessment, the involvement of external experts, and political will and support.

Addressing these factors requires ongoing attention and investment, as well as ongoing monitoring and evaluation of the effectiveness of ESIA processes and outcomes. (Gomes et al., 2017).

Sustainability –EIA Assessment Methods: Environmental and social impact assessment (ESIA) is a critical tool for assessing the sustainability of projects and activities. Effective ESIA should incorporate a range of sustainability considerations, including social, economic, and environmental factors. To this end, there are a number of methods available for assessing sustainability in the context of ESIA. One approach is the use of sustainability indicators, which are measures of sustainability performance that can be used to track progress over time (Saraçoğlu et al., 2017). Sustainability indicators can be used to evaluate the potential impacts of a project, as well as to monitor and evaluate the effectiveness of mitigation measures and other actions taken in response to the assessment. Another method is the use of sustainability assessment frameworks, which provide a systematic approach to assessing sustainability across a range of dimensions (Papadopoulos et al., 2018). Sustainability assessment frameworks can be used to identify potential environmental and social impacts, as well as to evaluate the effectiveness of mitigation measures and other actions taken in response to the assessment.

A third approach is the use of scenario planning and modeling, which can help to explore the potential impacts of different project options and identify strategies for achieving sustainability objectives (Fusco et al., 2015). Scenario planning and modeling can also help to identify potential trade-offs between social, economic, and environmental considerations, and to inform decision-making in the context of uncertainty. Regardless of the method used, effective sustainability assessment requires the involvement of stakeholders throughout the process. Stakeholders should be engaged in the scoping and baseline studies, as well as in the development of mitigation measures and other actions taken in response to the assessment (Gomes et al., 2017). This can help to ensure that the assessment is comprehensive and considers the concerns and perspectives of all relevant stakeholders, as well as ensuring that the implementation of mitigation measures is effective and responsive to local needs and conditions. There are various methods available for assessing sustainability in the context of ESIA, including the use of sustainability indicators, sustainability assessment frameworks, and scenario planning and modeling. Regardless of the method used, effective sustainability assessment requires stakeholder engagement throughout the process to ensure that the assessment is comprehensive and responsive to local needs and conditions.

2.3. Conceptual Framework

The interaction between the perception of the community, the environmental and social impacts assessment, and the follow-up of the ESIA is crucial in determining the success and effectiveness processes.

When the community perceives that their concerns and inputs have been taken into account during the ESIA process and that the outcomes have been effectively communicated, it can lead to a positive perception of the implementation and follow-up of the ESIA recommendations (Smith, 2018; Jones et al., 2020). This positive perception can enhance community trust and collaboration, which in turn facilitates the smooth implementation of the recommended measures (Olsen & Saarikoski, 2019). Conversely, if the community feels that their concerns have been disregarded

or if they perceive a lack of transparency and accountability in the ESIA process, it can result in skepticism and resistance towards the implementation and follow-up efforts (Vanclay, 2017; Driessen et al., 2018).

Moreover, the status of the ESIA itself plays a critical role in shaping community perception. If the ESIA is perceived as rigorous, comprehensive, and conducted by independent experts, it can instill confidence in the findings and recommendations, thereby strengthening community support for their implementation and follow-up (Arts et al., 2017; Kibert et al., 2018). However, if the ESIA is perceived as inadequate, biased, or influenced by the project proponent, it can erode community trust and lead to skepticism regarding the subsequent implementation and follow-up (Knox et al., 2021; Bond et al., 2022).

The follow-up of the ESIA is another critical factor in shaping community perception and the subsequent implementation process. Effective follow-up, including regular monitoring, evaluation, and reporting, demonstrates a commitment to addressing potential environmental and social impacts and mitigating any adverse effects. This can contribute to a positive perception of the implementation and follow-up of the ESIA recommendations among the community (Martínez et al., 2020; Cheng et al., 2021).

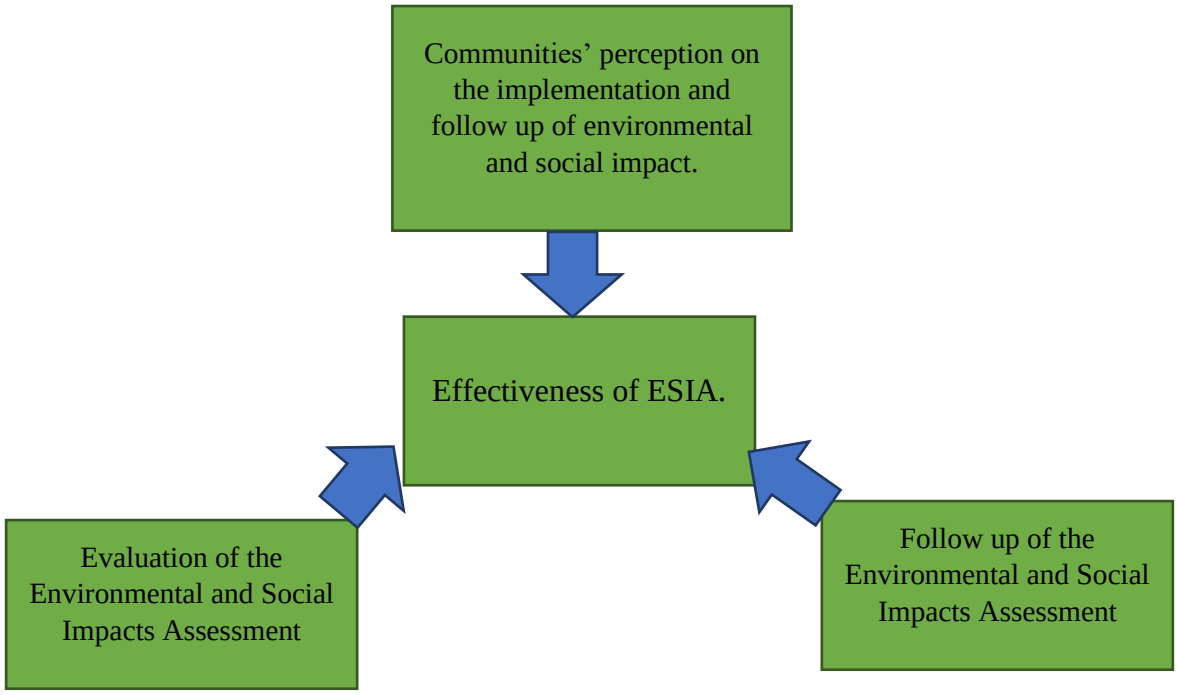

Figure 2. Conceptual Framework

self-drawn

Chapter Three: Research Design and Methodology

3.1. Study Area

The Bole Lemi Industrial Zone is situated on the outskirts of Addis Ababa, Ethiopia. The precise geographical coordinates of Bole Lemi Industrial Park in Addis Ababa are 8.971450° latitude and 38.856808° longitude. It falls within the notable buildings category in Ethiopia, marked by GPS coordinates of 8° 58' 17.2200" N and 38° 51' 24.5088" E. (IPDC, 2021)

It is specifically located in Woreda 11 of the Bole Sub-City under Addis Ababa City Administration. The local name of the site is Lemi Gossu. covering an area of 186 hectares. The site is accessible from the city through the main Asphalt Road up to Kotebe Wastewater Treatment Plant and further down through a small stretch of narrow dry weather road to the site.(DEGAGA, 2020)

Figure 3. The Bole Lemi Industrial Zone

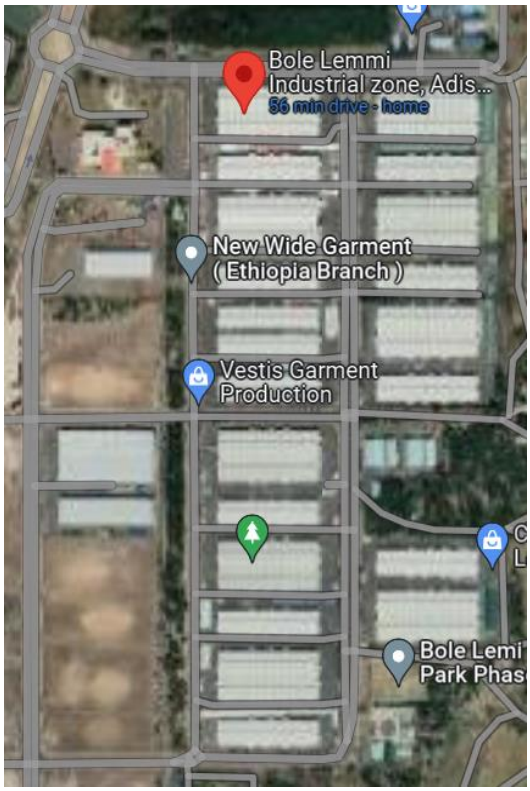

Figure 4 BLIP Google Maps

(Yohannes and Mohammed, 2020)

3.2. Study Design

This study is designed based on the statement of the problem and it is conducted in such a way that it answers the research questions mentioned. It is designed to assess the overall evaluation and perception of the ESIA of the BLIP and sees the impact of the park. The study uses a mixed method of both qualitative and quantitative analysis. The statistical analysis shows the perception of social and environmental impact of the Bole Lemi Industrial Park. This research also employs descriptive analysis and shows its results by using graphs and tables using the software SPSS.

3.3. Methods of Data Collection

The methods used is both primary and secondary data. For the primary data interviews and questionnaires are used as the main source of information together with physical observation and secondary data from the industrial park development corporation (IPDC), Bole Lemi Industrial Park environmental and social safeguarding management, community of Bole Sub-city, Woreda 11. Key Informant Individuals (KII) are also used as major primary methods and sources of data collection. Secondary sources of data including published and unpublished documents. data collected by the BLIP, IPDC, and population data from secondary sources was utilized.

3.4. Sampling Technique

For the study a key informant interviews a structured interview and questionnaire methods was conducted. The KII was conducted with representatives of the environmental and social safeguards department of IPDC. In addition to the KII a structured interview was conducted with an additional 50 people of the woreda 11 community who are highly engaged with the park were conducted to further investigate the perception of the community towards the park.

For the questionnaire since the park employees about 20,000 employees this population will be stratified into 14 groups, each corresponding to one of the 14 factories. This ensures that each factory is adequately represented in the sample.

Random Selection within Strata: For each stratum (factory), a random sampling technique will be employed to select 10% of the employees. The formula for calculating the number of individuals to be sampled from each factory (n_i) is given by:

ni = Population of factory × Sampling Percentage (10%) each factory has an average of 1400 employees, the calculation thus is

ni = 1400 × 0.10 = 140

Thus, 140 employees will be randomly selected from each factory.

Random Selection Process: Within each factory, a systematic random sampling approach will be implemented. A factory has an average of 1400 employees, and the desired sample size is 140, every 10th employee on the employee list could be selected. The starting point for this selection will be randomly determined. During the process of conducting the research out of the 14 factories 9 factories were willing to be part of the study, thus the sample size was 90 with the additional 50 participants for the community 140 sample population.

The below table presents the sampling system used to conduct the study.

Organization	Total	Sample
IPDC main office environmental and social safeguarding department.	6	2
IPDC Bole Lemi branch office	3	3
Bole Lemi workers per factory	1400	140
Bole Sub-city, Woreda 11 community		50

Self-drawn

Table 1. Research Sample

3.4.1 The Key Informants (KII)

IPDC Main Office Environmental and Social Safeguarding Department: This department consists of 6 employees who possess expertise in environmental and social impact assessment. This includes the head of the department, and two environment experts, the social expert, the greenery expert, and the gender expert of the department. At the time of the interview the head of the department and the environmental experts were available for the interview thus conducted the interview with 2 of the experts.

IPDC Bole Lemi Branch Office: This branch office has 3 individuals who were interviewed as Key Informants which include Bole Lemi onsite Senior Environmental and Social Safeguard expert, investors relations expert and the water supply expert.

In addition to the experts for the key informant interview and additional structured interviews via the questions stated in annex 1. It was conducted with 50 people who have high engagement with the park and live around the area to get the view from the community who live in the surrounding area.

3.4.2 Questionnaire

Bole Lemi Factory Workers: A total of 140 factory workers from the Bole Lemi branch was targeted to participate in the questionnaire. During the process of conducting the research out of the 14 factories 9 factories were willing to be part of the study, thus the sample size was 90 from the factories and an additional 50 from the community with a total 140 people. The questionnaire was answered by individuals directly involved in the factory operations and the management of the factories. All the pre-erected factories in Bole Lemi Phase 1 (156ha), which began operations in 2014, have already been rented out to 14 different businesses.

No	Company Name	Country of Origin	Production/Specific Product
1	Arvind Lifestyle Apparel Manufacturing Plc	India	Jeans, Men underwear
2	Vestis Garment production PLC	India	Safety Jackets and medical gowan
3	Jay Jay Textiles PLC	India	infants wear
4	Shangtex Garment Manufacturing Ethiopia plc	China	Sweaters
5	Evertop Sports Wear PLC	S. Korea	Sportswear
6	Top New Ethiopia	China	Child wear and swimming pants
7	Shints ETP Garments PLC	S. Korea	Garment

8	Ashton Apparel Manufacturing PLC	India	Garment
9	Lyu Shoutato Factory PLC	China	Garment
10	BGI	China	COVID 19 test kit
11	Soufflet Malt Ethiopia PLC	France	Beer Malt
12	Afiyan Plc	Ethiopia	Dyeing, Bleaching Fabric Factory
13	KEI Industrial engineering consultancy plc	South Korea	Garment
14	SUMEC Eth. Textile & Manufacturing Plc	China	Garment

(IPDC, 2022)

Table 2. Businesses operational in BLIP

3.5. Data Analysis Method

This study employed a mixed-methods approach, utilizing both qualitative and quantitative data collected from various sources. The data sources included the Environmental and Social Impact Assessment Report (ESIA), interviews, Key Informant Interviews (KII), questionnaires with stakeholders such as IPDC, BLIP, factory managers, workers, and the local community. Observations were analyzed subjectively and quantitatively.

Stratified and descriptive statistical analyses were applied to classify interview transcripts into strata. The collected data were presented through tables, figures, charts, and graphs. Statistical Package for Social Science (SPSS) was used for detailed analysis, employing methods like descriptive statistics, frequency and percentage tables, and cross-tabulations to explore potential associations between variables.

The study aimed to assess the Environmental and Social Impacts Assessment for the Bole Lemi Industrial Park, identify gaps, and evaluate the follow-up activities. The evaluation utilized expert judgment and a descriptive method, comparing the findings to the park's status. Results were communicated through graphs and tables. To gauge the community's perception, structured interviews and questionnaire surveys were conducted. SPSS was used to analyze the data, identifying patterns and themes related to environmental and social impacts. A designed questionnaire assessed the community's views on the Bole Lemi Industrial Park.

3.6. Ethical consideration

The utmost importance is placed on respecting ethical issues in research projects for The Effectiveness of the Environmental Social Impact Assessment (ESIA) of the Industrial Park of Bole Lemi, Addis Ababa. In order to guarantee participant autonomy and protection, informed permission is essential. Explicit consent must be obtained before involving people or communities in the study, and during this process, participants must be fully informed of the goals, methods, potential risks, benefits, and right to withdraw from the study at any time without suffering repercussions (Smith, 2019).

Chapter Four: Results and Discussions

This chapter presents the results and discussions of the study conducted to evaluate the implementation and follow-up of environmental and social impact assessment (ESIA) recommendations in the Bole Lemi Industrial Park. It is divided into several sections, including the response rate of the respondents to closed-ended questions, implementation mechanism of ESIA monitoring and evaluation, the implementation status of ESIA monitoring and evaluation, the adequacy of the legal and administrative framework for implementation and follow-up, and the perception of residents regarding the implementation and follow-up of ESIA recommendations by the proponent.

The data for this study was collected through closed-ended questions, key informant interviews, and document reviews. These methods allowed for gathering information from various professionals and local communities with sufficient awareness of the study. The findings and discussions of each topic are presented in detail below.

The study aimed to assess the industrial park (IP) by approaching all 14 available factories within its premises. Out of these, 9 factories (Jay Jay Textiles PLC, Arvind Lifestyle Apparel Manufacturing PLC, Vestis Garment production PLC, Evertop Sports Wear PLC, Ashton Apparel Manufacturing PLC, Shints ETP Garments PLC, Top New Ethiopia, Lyu Shoutato Factory PLC, and Shangtex Garment Manufacturing Ethiopia PLC) willingly participated in the assessment.

A sample of 10 workers was taken from each factory, resulting in a total of 90 participants. Among these participants, 1 individual from each factory held management positions, such as General Managers or HR Managers, accounting for 9 participants. Additionally, to gain insights into the overall impact of the IP on the community, 50 individuals outside the IP were approached. Out of these, 37 individuals provided responses to the questionnaire, while the remaining 14 did not respond.

Age Range: This research paper examines a sample of 127 individuals, consisting of 90 employees from a factory and 37 individuals from outside the factory. Within the factory, the age distribution reveals that the largest proportion of participants, comprising 52 individuals, falls within the 21-25 years old range, accounting for approximately 57.8% of the factory sample. Moreover, there are 22 participants aged between 18 and 20 years old, representing approximately 24.4% of the factory sample. Additionally, 12 individuals, making up around 13.3% of the factory sample, fall within the 26-30 years old range, while a small group of 4 participants aged between 31 and 35 years old represents roughly 4.4% of the factory sample. Conversely, the age range of individuals from outside the factory spans from 30 to 45 years old.

Age range	Participants
18-25	74
26-30	28
31-40	22
41-45	3

Figure 5. Age Range

4.1. Evaluation of the Environmental and Social Impacts Assessment for The Bole Lemi Industrial Park and Identify Gaps

For the understanding of the status of environmental and social impact assessment of Bole lemi industrial park a key informant interview was conducted with representatives of the Environmental and Social Safeguards Department of IPDC. The interview was conducted with the head of the department, and the environment expert of the department along with the bole lemi onsite Senior Environmental and Social Safeguard expert, Bole lemi investors relations and the Bole lemi water supply expert. To further strengthen the understanding of the status of ESIA for bole lemi an assessment into the official ESIA was conducted.

On paper the ESIA report for the Bole-Lemi Industrial Park project covers various stages, including scoping and baseline assessment. It identifies potential project impacts on the environment, society, and culture. Stakeholder views are considered. The report aligns with guidelines and includes predictions of adverse effects and mitigation measures.

The project aims to develop an industrial zone in Bole-Lemi, Addis Ababa. The ESIA is mandatory and follows national and international guidelines. The study uses a range of methods, including literature review, field surveys, and stakeholder consultations. It assesses biophysical and socio-economic aspects, identifies impacts, and proposes mitigation measures. The report's structure includes sections on policy frameworks, project description, existing conditions, potential impacts, and environmental management plans. Public consultation, conclusions, and recommendations are also part of the report.

In addition to the assessment outlined in the report, it is crucial to ensure that the measures and plans proposed on paper are effectively implemented in practice. Verification and monitoring was essential to confirm that the project aligns with its stated environmental and social safeguarding goals.

4.1.1 Scoping stage

The ESIA report provides a concise description of the project, including its location and contractual data, to provide context for the assessment. This involves defining the project scope, identifying the potential impacts of the project, and determining the scope of the ESIA. Several aspects are covered, starting with the initial examination, and scoping of the project. The report delves into the examination of relevant policy, legal, and institutional frameworks. It provides a comprehensive description of the existing baseline conditions in terms of the environment, society, including biophysical, socio-economic, and cultural resources. Along with the report evaluates the existing physical environment, covering factors such as topography, climate, geology, soil, hydrology, and land use. Additionally, the report discusses measures for mitigating or enhancing the identified impacts, both positive and negative, along with corresponding mitigation or enhancement measures. It emphasizes the implementation of these measures and establishes a Monitoring Program to track the effectiveness of the mitigation efforts. Finally, the report concludes with remarks and recommendations based on the findings.

During the scoping stage of the project, the activity defined the boundaries of the study area and identified valuable ecosystem components within it. Additionally, it assessed and documented the

key activities in which the local society within the area actively participates. In bole lemi, the views and concerns of important stakeholders were carefully evaluated, with particular attention given to the communities directly or indirectly affected by the project.

The ESIA report assesses the biological environment, including flora, fauna, and sensitive areas, highlighting potential impacts on biodiversity. The report considers the socioeconomic environment of the project area, including information on local communities and cultural/historical sites, recognizing social impacts and heritage preservation.

> The head of the environmental and social safeguarding department had to say: I am aware of the ESIA report conducted on BLIP. It was conducted for the ministry of industries by a consultant firm called MH Engineering plc since the Bole lemi industrial park supersedes IPDC, thus the report was conducted for MoI. The overall review of the ESIA follows the guidelines and standards set forth in conducting an ESIA.

The consultant managed to construct the report in a manner that covers all the necessary overview. It has done the necessary part of predicting what the causes might be in the current stage of the park and has set forth the mitigation measures that are necessary to insure the protection of society and environment. The predicted adverse effects include Generation of Solid Waste, Energy and Water Use, the ESIA also put forth the mitigation measures which the park currently uses.

> The environmental expert of the department has to say: The ESIA that is available has done a detailed introduction and background as well as the baseline data collection by field surveys and stakeholders' consultation. The survey team studied the landscape, soil, land use, and identified settlements and water bodies. They also documented the wildlife and trees in both the project area and its general locality. To ensure inclusive decision-making, the team actively engaged with stakeholders, especially those who would be directly affected by the project's development. the consultant put forth what was expected and mandated.

According to the above statement the IPDC specifically the environmental and social safeguarding team are aware of the report conducted by and have an overall understanding of the impact and have a consistent review of the parks according to the plans set forth by the report.

4.1.2 Administrative, Legal and Policy requirements

The Environmental and Social Impact Assessment (ESIA) conducted for the Bole Lemi Industrial Park in Ethiopia demonstrates a detailed observance to legal and regulatory requirements. The report extensively reviews the ESIA Guidelines, Standards, and Procedures, showcasing a commitment to following established environmental impact assessment protocols. Furthermore, it acknowledges and incorporates relevant international conventions and protocols, highlighting Ethiopia's dedication to addressing global environmental challenges. Key guidelines and protocols considered in the ESIA include the EPA's environmental impact assessment guidelines, waste handling and disposal guideline, EIA procedural guideline, draft guideline for environmental management plan, national sanitation protocol, and injection safety guideline.

In Ethiopia, environmental administration operates at both the federal and regional levels. The Federal Democratic Republic of Ethiopia consists of the federal government and nine Regional State members, with power decentralized to the regions and localities. Regional States bear responsibilities for planning, directing, and developing social and economic programs, as well as administering and protecting natural resources within their regions. At the federal level, the Environmental Protection Authority (EPA) ensures compliance with the EIA process, cooperates with sectoral agencies, provides guidance, and evaluates EIA documents. Additionally, the Addis Ababa City Environmental Protection Authority formulates policies and guidelines, regulating and monitoring development activities to prevent environmental damage in the region and maintain ecological balance. These administrative bodies play vital roles in safeguarding the environment and promoting sustainable development in Ethiopia.

4.1.3 Impact Assessment

The report separated the Impact assessment stage of the project into overall assessment, Potential positive impacts which included the positive impact on socioeconomic benefits on both the construction and operational stages and potential adverse impacts which in discusses potential sources of negative impacts, adverse impacts on socioeconomic environment on construction stage, impacts on the biological environment, adverse impacts on the physical environment construction and operation Stages and finally the adverse environmental impacts during project operation.

In addition to the comprehensive Impact Assessment outlined in the report, it's essential to validate the project's real-world impact on the community and environment. This validation involves investigating whether the perceived impacts on the ground align with what was originally documented. Key aspects of this assessment include environmental pollution evaluating the level of pollution compared to what was predicted. Community Perspectives examining how the local community perceives the project's impact on their daily lives, livelihoods, and surroundings is crucial. This involves understanding whether the community's experiences align with the documented impact assessments.

By bridging the gap between theoretical impact assessments and the community's lived experiences, this seeks to provide a more qualitative understanding of the Bole-Lemi Industrial Park's actual effects on the environment, society, and culture. This insight can inform adjustments to project operations and mitigation measures, ensuring that the project genuinely benefits the community while minimizing adverse impacts.

4.1.4 Overall Assessment

The report provides an assessment of the potential environmental impacts of the Bole-Lemi Industry Zone Development Project. It analyzes both the positive and negative impacts of the project during the construction and operation stages. According to the assessment is based on field investigations, consultations with stakeholders, and technical reports.

> The Environmental and Social Safeguards Department Head and the environmental experts had to say: Overall, as an organization we believe the park has a positive impact. This doesn’t mean it doesn’t bring any negative or adverse consequence as

> any big project like this often does. But the positive out weights the negative as is stated in the report. From forex generation which supports the county's growth to employing a young and eager work force, to attracting foreign direct investment the social and economic benefits are far greater than the adverse impact. The negative impact caused is not put aside that is why departments like us exist to support and mitigate and monitor negative impacts.

4.1.5 Positive Impacts

The report states that the socioeconomic beneficial impacts during the construction stage are expected to generate employment opportunities, enhance the local economy, and improve the economic status of the local people. It can also contribute to skill enhancement and gender inclusivity. The socioeconomic Beneficial Impacts during the Operation Stage is that the project will create job opportunities, enhance social services, and increase land values in the project area.

> The IPDC's investor support and follow up director, water supply senior expert and an onsite environmental expert from the Environmental and Social Safeguards Department had to say: Before construction of the park the area was farming area with some houses it was not connected to the main Addis Ababa main metropolitan city during and after the project was constructed the area is now fully connected, there are transportation services along with consistent electricity and water supply. Additionally, since the park hires a lot from the cities and the close areas work force the immediate vicinity social services such as hospitals have increased. On top of social benefits, it also contributes to the economy of not only the people of the area but to the country. The park hires over 21,277 people leading to economic stability of the population and the overall wellbeing of the working force of the county.
>
> Bole lemi is one of the most eco-friendly parks it is also working towards becoming and Eco-industry park, thus, to achieve these requirements it needs to be environmentally conscious and needs to protect the environment not only to meet the needs of the society but as it is a requirement for most of our investors.

that the park has made progress in achieving its intended positive impact. The park's emphasis on hiring from nearby cities and areas has resulted in an increased availability of social services, such as hospitals, in the immediate vicinity. This suggests a positive correlation between the park's presence and the development of essential social infrastructure.

Additionally, the park's employment of over 20,000 individuals has had notable socioeconomic benefits. By offering stable job opportunities, the park has contributed to the overall well-being and economic stability of both the local population and the broader workforce within the county. This highlights the park's role in fostering prosperity and improving living standards in the community. Moreover, the park's commitment to environmental sustainability is evident through its pursuit of eco-friendly practices and aspirations to become an eco-industry park. By prioritizing environmental consciousness and meeting the requirements set by investors, the park demonstrates its recognition of the importance of protecting the environment. This aligns with the park's goal of not only meeting societal needs but also complying with investor expectations.

The park has made substantial strides in creating positive impacts. Its initiatives in employment generation, contribution to social services, and dedication to environmental responsibility exemplify the park's potential to serve as a role model for other industrial parks. Through its multifaceted approach, the park has demonstrated the capacity to foster economic stability, social development, and environmental sustainability.

4.1.6 Adverse Impacts

Potential sources of negative impacts during construction activities from activities such as excavation, waste generation, air and noise pollution, and water demand. And the impacts from operation activities include solid and sewerage waste generation, increased water demand, occupational health and safety issues, and potential pollution of water and air.

The major adverse impacts are related to land acquisition, loss of livelihood, loss of houses and structures, and involuntary resettlement. These impacts can result in economic, social, and psychological challenges for the affected individuals and communities. Various mitigation measures are also proposed to address the identified negative impacts. These include proper waste management, safety training for workers, provision of protective equipment, maintenance of sanitary conditions, and awareness campaigns.

> The head of IPDC's Environmental and Social Safeguards Department had to say: When it comes to garment manufacturing processes, it's a whole journey from receiving the textiles at the factory to shipping out the retail-ready garments to the distributor there are certain key processes involved in creating every garment, such as fabric relaxing, cutting, and sewing. Now, in terms of environmental impact, the garment industry is typically considered to have a relatively low level of contamination. It doesn't discharge harmful substances into the air, soil, or water in significant amounts. We prioritize using electricity as our primary source of energy and only rely on diesel fuel during power outages, thereby minimizing air pollution. Our factories operate with low noise levels, adhering to regulatory guidelines."
>
> "However, there are specific areas that contribute to our environmental impact, such as water usage and the release of hazardous chemicals. To mitigate these effects, we have implemented measures like collecting all water and hazardous chemicals in a central reservoir. Our goal is to ensure that the collected water meets required standards before being released. In terms of solid waste generation, we utilize city landfills while also encouraging investors to recycle materials as a source of income, ensuring compliance with monitoring requirements. These aspects require ongoing attention and mitigation to minimize our industry's environmental impact."

The below is what the onsite Bole Lemi Park environmental management had to say:

> Senior Environmental and Social Safeguard expert: The park is faced with multiple challenges but when it comes to the environment the biggest challenge or negative impact will be the collection of hazardous waste. After the chemicals are cleared out from the water it is then sent into storage where it is stored indefinitely. The park currently contains over 7 years of stored hazardous chemical waste, there are plans to find ways to remove the waste but now it is all stored.
>
> water supply expert: Additional problem we have with settlement is the population that used to live in the area are not properly compensated. This compensation scheme was supposed to be handled by the city management but since it is not properly managed the population blames the park and the management within the park leading to a negative perception within the community.
>
> Investors relations expert: There is a waste treatment plant close to the park vicinity and there is pollution that comes from that facility, specifically air and water but the community usually blames the park. We have tried to create awareness to the community by partnering with organizations like IDH to engage with stakeholders, but these activities are not enough which will lead the community to maintain their negative view.

The Bole-Lemi Project recognizes the importance of effectively managing and mitigating the potential negative impacts discussed. The project's garment manufacturing processes follows to regulatory guidelines and prioritize electricity usage while minimizing air pollution and noise levels.

However, certain challenges persist, particularly regarding water usage, release of hazardous chemicals, and fair compensation for affected populations. Addressing these challenges requires ongoing attention and proactive mitigation efforts. Collaborative initiatives involving organizations and stakeholders can contribute to raising awareness and fostering a more positive perception within the community. Furthermore, the presence of a waste treatment plant near the project area raises concerns about air and water quality. Engaging with relevant authorities and implementing measures to mitigate the facility's impact is essential for ensuring environmental sustainability.

To achieve its goals, the Bole-Lemi Project must prioritize environmental sustainability, social responsibility, and community engagement. By implementing robust mitigation measures and fostering positive relationships with stakeholders, the project can strive for a more sustainable outcome that benefits both the environment and the local community.

The research also conducted a survey review of 127 participants, and it provides insights into how the community views both the positive and negative aspects of the project.

In terms of the positive impacts of the project, a portion of the community, approximately 35% of community members, agree that the project has positive impacts. These positive aspects include foreign exchange generation, the creation of employment opportunities for a young and eager

workforce, and the attraction of foreign direct investment. This group acknowledges the tangible benefits that the project brings to the community and the region.

While 65% expresses a neutral stance. This suggests that they neither strongly agree nor disagree with the notion that the project brings about favorable outcomes.

Regarding the negative impacts, most of the community, accounting for 74%, disagrees with the idea that the project has adverse consequences. This indicates that most community members believe that the negative effects are either minimal or outweighed by the positive aspects. However, a smaller percentage, approximately 9%, agrees that there are negative impacts associated with the project. While this group represents a minority of community members, their concerns highlight the need for careful monitoring and mitigation efforts to address any adverse effects on the environment and society.

The community perception, as reflected, leans towards a generally positive view of the Bole-Lemi. While a significant portion remains neutral, a substantial portion also acknowledges the project's positive contributions. The overall sentiment is that the benefits, such as economic growth and job opportunities, outweigh any potential drawbacks, although a minority does express concerns about negative impacts that warrant attention and mitigation.

Environmental Management Plans, Monitoring, and public consultations: The Environmental Management Plan (EMP), as outlined in the report, says the responsible party thus IPDC as responsible for overseeing and updating environmental management during the project's operational period. Regular inspections will be conducted to ensure effective implementation of the environmental management strategy, with possible involvement of the Addis Ababa City Environmental Protection Authority as an advisory body. During the construction phase, the contractor assumes responsibility for the project's environmental management activities.

The EMP covers a comprehensive range of parameters to be monitored throughout the project's development and operating phases. These parameters encompass various risks and effects, including soil erosion, pollution, sedimentation, landscape quality, ambient air pollution, noise nuisance, drainage, water pollution, waste management, impact on flora, social conflicts, vandalism and theft, competition for water resources, impact on cultural relics and sites, impact on women and children, public health, safety, traffic safety, and coordination of environmental monitoring.

> Bole Lemi Industrial Park water supply expert has to say this: The environmental impact caused by the park is managed by the environmental department and each factory has a responsibility to protect their area. We also have a position as well as a role that is specifically to manage and control the green areas of the park. The resources usually used, water and electricity are managed well, and we are now transitioning to more electricity efficient bulbs to reduce waste. But the department still has its own set of challenges like lack of properly equipped laboratories to test contaminant levels in the water, lack of financial support to manage the facilities.

In terms of social and cultural impacts, the report addresses issues such as social conflicts, vandalism, competition for water resources, and the impact on cultural relics, tourism, archaeological sites, and women and children. Observations, surveys, and consultations are conducted to monitor the implementation of protection measures continuously. The report reflects a comprehensive approach to monitoring various risks and impacts throughout the construction and operation phases of the project. By actively monitoring these parameters and implementing appropriate measures, the project aims to mitigate potential adverse effects, ensure compliance with regulations, and safeguard the environment, public health, and social well-being.

> The IPDC's Environmental and Social Safeguards Department had to say: We used to follow the EMP set but after a while in the operation we now have decided to require all factories within the park to prepare their own EMP. With our follow-up and advice, we have set a requirement for them to hire a consultant and prepare an EMP in which they will adhere to, and we will use to follow up with, most of them have completed EMP and others are in the process. Since we are also working towards eco- industrialization this move will help us achieve our goal.

4.1.7 Monitoring Plan and Implementation Program

The Environmental Management Plan (EMP) is a crucial tool in effectively mitigating the environmental impacts associated with a proposed project. Its purpose is to minimize damage that would otherwise occur by implementing appropriate mitigation measures.

The section discusses various aspects of environmental monitoring and outlines the responsibilities of different stakeholders involved in the project. The monitoring program for the project aims to achieve several objectives, including verifying the effectiveness of mitigation and benefit enhancement measures, identifying, and addressing unforeseen impacts, and providing feedback for future project planning.

Pre-construction and Construction Phase Monitoring: Monitoring during the pre-construction phase focuses on checking whether project designs incorporate appropriate measures to minimize negative impacts and include environmental protection clauses in the contract documents. Environmental monitoring during the construction phase involves reviewing the contractor's plans, method statements, and temporary works designs to ensure compliance with environmental protection measures. It also includes systematic observation of site activities to confirm compliance with environmental requirements and identify any unforeseen impacts. The designated environmental units, including the environmental inspector, the Ministry of Industry (MoI), and the environmental regulatory organ of the Federal and Addis Ababa City, are responsible for monitoring the implementation of mitigation measures during the construction phase.

Operation Phase Monitoring: Monitoring by IPDC and regulatory bodies which conducts periodic monitoring of the project's environmental performance and ensures compliance with environmental requirements. Regulatory bodies also monitor overall performance, provide advice, and support, and facilitate effective project implementation. Monitoring focuses on the operation of dormitories, factories, energy and water use, waste management, and handling of hazardous

chemicals. The responsibility for this monitoring lies with the factory owners and the administration of the zone.

The main departments that do follow ups and monitoring is the investor support and follow up department with the collaboration of the environmental department. Investor support and follow up department mainly follows up with the investors, it looks after the proper management of resources and the proper disposal and deployment of products. While the environment department looks after the surrounding area protection along with the park.

> The IPDC's Environmental and Social Safeguards Department had to say: The park requires all factories that are operational within the park to adhere to the standards set by the EPA of Ethiopia, but the factories go above the requirements as they typically follow the buyer's standard which are international guidelines who put requirements to meet the necessary environmental requirement for them to be able to buy from the factories. These requirements include the level of water used to produce a product, amount of waste generated to produce a product, the waste disposed, proper chemical removal before being released to the environment and many more.

Reporting and Monitoring Systems: According to the report compliance monitoring and progress reports on environmental components are submitted quarterly during the implementation period and capacity Building Training programs are necessary for environmental managers, personnel of the construction supervision consultant, and contractors involved in implementing the Environmental Management Plan (EMP) to enhance their understanding of environmental issues and ensure successful implementation.

> The IPDC's Environmental and Social Safeguards Department had to say: We have followed ups that range from weekly follow up – monthly follow up and we also do a checkup when we suspect or receive reports of wrongdoing, we organize a team and visit the factories. We sometimes make an unscheduled visit to the factories to look at the ways they are disposing of waste, the level of pollution caused and the proper management of resources. We write up our findings and share it with the head office, and if further action is required the department along with IPDC will take the next steps of providing warnings. The department has a monitoring checklist that it will use to follow up with all factories and those who do not fulfil the check list will be reported to the head office for further action. The checklist can be seen in annex 2.

The community's perspective on the implementation of the Environmental and Social Management Plan (EMP) for the Bole-Lemi Industry Park reveals a range of opinions and attitudes. These community viewpoints are essential for understanding how residents perceive the project's efforts to manage and mitigate its environmental and social impacts.

Within the community, approximately 16.5% of individuals strongly disagree with the EMP's implementation. For them, there are concerns or dissatisfaction with the project's environmental and social safeguards. Similarly, about 30.7% of the community expresses a level of disagreement with the EMP, indicating reservations or questions about the effectiveness of certain aspects of the

project's management. On the other hand, a significant portion, around 37.0%, of community members maintains a neutral stance. This neutrality suggests a need for more information or a degree of uncertainty regarding the project's environmental and social management. They may be awaiting further evidence or updates before forming a definitive opinion.

Conversely, approximately 9.4% of community members agree with the EMP's implementation, indicating that they believe the project is making adequate efforts to address environmental and social concerns. Some individuals within the community, about 6.3%, even strongly agree with these efforts, viewing the project's environmental and social management as highly effective and commendable. Combining these opinions, it becomes evident that the community has varying levels of confidence in the project's environmental and social management measures. While some community members express reservations, others are more positive about the project's approach.
It emphasizes the roles of different stakeholders, including the project management authority (IPDC), regulatory bodies, factory owners, and various departments responsible for monitoring and enforcing compliance. Key aspects of the monitoring process, both during the construction and operation phases, are discussed, highlighting the need for continuous oversight to ensure environmental protection and social well-being.

Additionally, it underscores the importance of capacity building and training programs to enhance the understanding of environmental issues among project personnel. It also outlines the reporting and monitoring systems in place, including periodic reporting and checklists used for evaluations and follow-ups. The community's perspective, as well as the comprehensive approach to environmental and social management, demonstrate a commitment to addressing potential environmental and social impacts associated with the Bole-Lemi Industry Park. While there are varying opinions within the community, the project's management structure and monitoring processes aim to ensure compliance with environmental standards and regulations, thereby mitigating adverse effects and safeguarding the well-being of the community and the environment.

4.1.8 Bole Lemi ESIA identified gaps.

The Bole Lemi Industrial Park in Ethiopia has undergone a comprehensive Environmental and Social Impact Assessment (ESIA) to evaluate its effects on the environment and local communities. Through a key informant interview with representatives from the IPDC's Environmental and Social Safeguards Department and an examination of the official ESIA report, valuable insights were obtained regarding the park's environmental and social impact.
The ESIA report provides a detailed overview of the project, including baseline conditions, potential impacts, and proposed mitigation measures. It acknowledges both positive socioeconomic impacts, such as job creation and economic growth, and potential adverse effects, including waste generation and occupational health concerns. The report emphasizes the need for effective mitigation strategies and ongoing monitoring to minimize negative consequences and maximize positive outcomes.
The project's Environmental Management Plan (EMP), along with implemented monitoring activities and public consultations, demonstrates a proactive approach to environmental

management. The IPDC's requirement for factories within the park to develop their own EMPs ensures the adoption of effective environmental practices. This commitment aligns with the IPDC's objective of eco-industrialization and contributes to sustainable development goals.
The ESIA report and the proactive measures taken by the IPDC's Environmental and Social Safeguards Department highlight the importance of effective mitigation strategies, ongoing monitoring, and public engagement in minimizing the Bole Lemi Industrial Park's environmental impacts and promoting sustainable development.
The ESIA report for the Bole Lemi Industrial Park has obtained approval from the relevant authorities responsible for evaluating its execution. The report demonstrates adherence to established guidelines and standards for conducting an ESIA, providing a comprehensive overview of the project's potential environmental and social impacts. Mitigation measures are proposed to address adverse effects such as solid waste generation and energy and water use. The credibility of the assessment is reinforced by the alignment between its findings and the perspectives of park workers.

During the assessment, certain gaps emerged that were not anticipated in the original evaluation, likely due to changes in the park's layout resulting from production and expansion. To address these gaps, investors are required to prepare an Environmental Management Plan (EMP) that proactively mitigates potential impacts. It is recommended that the government updates laws and regulations pertaining to the management of environmental plans to enhance their effectiveness. These measures aim to ensure the sustainable development and environmental protection of the Bole Lemi Industrial Park.

4.1.9 Improvement Measures

Limited information on the effectiveness of mitigation measures: While the ESIA report discusses mitigation measures to address potential negative impacts, there is limited information on the effectiveness of these measures. This is indicated by the need to make all factories reevaluate and reassess to come up with EMP.

Insufficient compensation for affected populations: The report acknowledges adverse impacts related to land acquisition, loss of livelihood, and involuntary resettlement. It is stated in the report that “Payment of full and fair cash compensation, which leaves those, affected by relocation at least no worse off than they were previously.” However, it does not provide detailed information on the compensation provided to affected populations. As per the information obtained from KII the compensation has not been fulfilled properly. The report should include a transparent and fair compensation plan that adequately addresses the economic, social, and psychological challenges faced by the affected individuals and communities. The population that was displaced due to land acquisition and resettlement has not been properly compensated, leading to economic, social, and psychological challenges. The lack of a comprehensive compensation scheme has resulted in a negative perception within the community.

> When it comes to social issues such as compensation for land loss, the city administration has not handled it well, leading to negative perception. Said by the IPDC’s investor support and follow up director.

Lack of coordination with external stakeholders: Although the report mentions engagement with stakeholders, such as consultations with local communities, there is a lack of consistent coordination and collaboration with external organizations or authorities. The project should actively engage with relevant external stakeholders, such as environmental organizations, local authorities, and regulatory bodies, to ensure effective coordination, exchange of knowledge, and accountability.

Pollution Concerns from Waste Treatment Plant: The presence of a waste treatment plant near the park has led to pollution concerns, specifically air and water pollution. The community often blames the park for these issues, which highlights the need for effective communication and mitigation measures.

Hazardous Waste Management: The park currently stores hazardous chemical waste indefinitely, indicating a gap in proper waste management practices. The accumulation of hazardous waste poses environmental risks and needs to be addressed urgently.

4.2. Follow Up on the Effectiveness of the Environmental and Social Impacts Assessment of the Bole Lemi Industrial Park

This section focuses on the follow-up of environmental and social impacts, to assess its effectiveness and categorize them into major impacts in both environmental and social aspects. It aims to identify the follow-up methods employed and the associated shortcomings. By clearly understanding these shortcomings, appropriate measures can be taken to address them effectively.

The Industrial Parks Development Corporation (IPDC) management conducts follow-up evaluation assess Bole Lemi Industrial Park, environmental and social performance. examine the findings of the evaluation and provide insights into the effectiveness of mitigation measures implemented since the initial Environmental and Social Impact Assessment (ESIA).

The park management, specifically the environment and social safeguarding department conduct diligent follow-ups on a regular basis, ranging from weekly to monthly, compliance check ensuring comprehensive oversight. Additionally, whenever reports of wrongdoing arise, the department will conduct thorough investigations. In some cases, unscheduled visits are made to evaluate waste disposal practices, pollution levels, and resource management.

4.2.1 Environmental Performance and Follow Up

Solid Waste Management: The follow-up evaluation revealed that the park has made improvement in waste management. The implementation of proper waste segregation practices and the establishment of recycling facilities in Ethiopia resulted in a notable reduction in the volume of waste sent to landfills.

> The IPDC's Environmental and Social Safeguards Department had to say: Waste disposal and management involve complex systems and observance to established standards. Proper segregation of materials into recyclable and non-recyclable categories is a crucial aspect that was previously not always implemented, except during our follow-up assessments. Moreover, the management of hazardous waste demands careful separation of such materials from other disposable substances, as

> mandated by regulations. It is imperative to highlight that our follow-up evaluations not only contribute to environmental preservation but also align with the requirements set by buyers. Failure to meet environmental protection standards could reduce products manufactured in these factories' ineligible for sale in the international market. Therefore, our follow-up inspections not only foster environmental benefits but also carry economic significance for the factories involved. By ensuring compliance with environmental regulations, we enable them to maintain a competitive edge and successfully meet buyer demands.
>
> Waste management within the parks is not only seen as protection of the environment. It is a topic of discussion for politics and policy making, it is a source of income as it is sold for recycling companies, it is a source of investors reputation and status for international buyers.

Waste management within the factories is not solely seen as an environmental protection measure. It has become a topic of political discussion and policymaking, highlighting its broader significance. Additionally, waste management serves as a source of income through the sale of recyclable materials to recycling companies. It also affects the reputation and status of the factories for international buyers, emphasizing the importance of meeting their waste management requirements. The distribution and regular collection of solid waste containers have been implemented effectively throughout the factories due to the follow-up of the department. Containers collecting solid waste are emptied at least weekly, ensuring proper waste disposal. Recyclable materials are appropriately managed and separated. Hazardous waste is properly labeled, indicating a commitment to safe handling even though the park has not yet implemented a way to dispose of the material and is currently in storage. Solid waste containers are placed in areas that do not pose fire, health, or safety hazards. Also, all solid waste containers are in good condition, which contributes to efficient waste management practices.

The park has made significant strides in waste management, incorporating various aspects such as segregation, recycling, safety, and environmental protection due to the follow up of the department of environmental and social safeguarding.

Energy Consumption and Water Usage: There is a gradual decrease in energy consumption and water usage within the park. This can be attributed to the adoption of energy-efficient technologies and the promotion of renewable energy sources, such as using more efficient light bulbs water conservation measures, including the use of water-saving equipment and the recycling of treated wastewater for non-potable purposes and capacity building of the personnel of the employees.

> The IPDC's Environmental and Social Safeguards Department had to say: Resource utilization, particularly concerning water and energy, requires diligent monitoring and a shift towards more energy-efficient practices. The department has now been required to move to an efficient light bulb and personal training on how to properly use and conserve water. Without our consistent follow-up measures, these essential parts are not often effectively addressed.

There is a positive trend of decreasing energy consumption within the park. This can be attributed to the implementation of energy-efficient technologies and the emphasis on utilizing renewable energy sources. The adoption of energy-efficient light bulbs is a specific example that contributes to this overall reduction. It is worth emphasizing the importance of diligent monitoring and follow-up measures in ensuring effective resource utilization, particularly in terms of water and energy. Without these follow-up measures, it is suggested that these essential aspects may not be addressed.

Overall, the findings indicate that the park has been successful in gradually decreasing its energy consumption through the adoption of energy-efficient technologies and practices. The emphasis on diligent monitoring and follow-up is crucial to sustain and further improve resource utilization within the park. The shift towards more energy-efficient practices aligns with the broader goal of promoting sustainability and reducing environmental impact.

Chemical and Hazardous waste disposal: Even though regular follow up is conducted by the environmental and social safeguarding department about proper labeling and disposal of chemical and hazardous waste most factories comply to the requirements. This is due to the need to meet buyer requirements regarding proper disposal practices.

> The head of the environmental and social safeguarding department had to say: The guidelines set by the EPA are usually met by the factories in fact they usually to meet international buyer's standard leading to the requests of international certificates that indicate proper disposal of hazardous and chemical waste. Since as an organization and as a country it is not fully equipped to meet these demands.
>
> IPDC is coming up with innovative ideas of managing waste, for example some of the waste collected can be used as an input to create bricks, and the organization is trying to expand these plans into different parks under its management.

Figure 6. Brick Material from Waste

from filed visit.

BLIP faces challenges in disposing of chemical waste, despite proper labeling practices from factories since it doesn't have a proper disposal method and is stored. The organization has implemented a water reservoir system to collect and clean the water before releasing it into the environment, indicating efforts to mitigate adverse impacts the park also gets certification from

the Awash Basin Management to validate the absence of adverse effects on the water basin. The IPDC is also coming up with innovative methods to resolve the waste management issue, but it still needs further investigation and input to become a viable solution. An additional challenge faced by BLIP is the availability of laboratories for testing water contamination levels. Due to buyer requirements, BLIP occasionally needs to send samples to different countries for testing, posing logistical and cost challenges.

4.2.2 Social Performance

On the job creation front BLIP has had a significant positive impact on employment opportunities within the park, with a workforce of 21,277 individuals currently employed across 14 factories. Recognizing the importance of worker safety and well-being, the environment and social safeguarding department diligently ensures the implementation of safety measures and proper working conditions for all employees.

> The environmental and social safeguarding department had to say: Worker safety and working conditions are one of the major priorities of the department. We follow up with each factory to ensure safety and proper working conditions of the workers.

By conducting regular follow-ups, the department ensures that safety protocols are in place and adhered to, thereby safeguarding the physical and mental health of the workforce. This commitment to worker safety not only demonstrates a responsible approach but also contributes to the overall productivity and efficiency of the park. The establishment of new factories and the expansion of existing ones have generated a significant increase in job opportunities, thereby stimulating the local economy. The inflow of employment opportunities has not only provided individuals with stable income sources but also encouraged economic growth and development in the surrounding community. Through job creation, BLIP has played a vital role in uplifting the socio-economic status of the local population.

Nonetheless it is indicated that there is a low payment for most operators raises concerns about their financial well-being and job satisfaction. A comprehensive follow-up strategy is crucial to assess the impact of these salary ranges on the workforce and identify opportunities for enhancement. By conducting regular evaluations and engaging with employees, management can gain insights into their experiences and address any challenges related to compensation.

> The IPDC's investor support and follow up director, from the Environmental and Social Safeguards Department had to say: For operators, most salaries fall between 1500 ETB and 3000 ETB, including incentives. A minority of operators have salaries above 3000 ETB. In the case of supervisors, most salaries range from 2000 ETB to 3000 ETB, including incentives. A minority of supervisors earn salaries above 3000 ETB.

The provided salary ranges for both operators and supervisors reveal that many employees fall within a lower pay scale, particularly for operators. With most operators earning salaries between 1500 ETB and 3000 ETB, it becomes essential to address the need for follow-up and potential improvements in compensation.

Follow-up discussions with operators can shed light on their expectations, financial needs, and overall job motivation. This feedback enables management to identify areas for improvement and explore options for enhancing the compensation structure. Implementing such follow-up measures not only demonstrates a commitment to employee welfare but also helps in retaining skilled workers and fostering a positive work environment.

For supervisors, the salary range is slightly higher, with the majority earning between 1500 ETB and 3000 ETB. However, it is still essential to maintain open lines of communication and conduct follow-up discussions to ensure that supervisors feel adequately compensated for their responsibilities. By regularly evaluating their experiences and providing opportunities for feedback, the company can address any issues or disparities that arise.

The salary ranges provided highlight the need for effective follow-up measures to evaluate the impact of these compensation levels, particularly for operators. By engaging in ongoing discussions and assessments, the company can proactively address concerns, identify areas for improvement, and strive towards fair and competitive compensation structures. Ultimately, these follow-up efforts contribute to the overall satisfaction, motivation, and retention of the workforce.

Community Engagement: The community residing near the park comprises small businesses, as well as a condominium compound, with many community members also being employed within the park. However, there exists a negative perception of the park within the community, primarily stemming from a perceived lack of engagement and communication with residents.

> The environmental and social safeguarding department had to say: We tried to create awareness to the community by partnering with organizations like IDH to engage with stakeholders, but these activities are not enough which will lead the community to maintain their negative view.

In recognition of this issue, BLIP has taken steps to address community concerns and bridge the gap between the park and its neighboring residents. By partnering with organizations such as IDH, BLIP has actively sought to engage with stakeholders, increase awareness, and foster positive relationships. These initiatives represent a positive step towards community engagement, aiming to create mutual understanding and address the concerns of the residents.

Nevertheless, it is important to acknowledge that while partnering with organizations is a commendable approach, additional efforts are necessary to establish and maintain strong community relations. By consistently following up and evaluating the impact of community engagement initiatives, BLIP can effectively assess the effectiveness of its efforts and identify areas for improvement. This continuous evaluation ensures that community relations remain a priority and allows for the implementation of strategies that enhance mutual trust and collaboration. BLIP has not only created a substantial number of job opportunities within the park but has also prioritized worker safety and well-being. By actively engaging with the community, BLIP aims to address negative perceptions and build positive relationships. Through consistent

evaluation and improvement, BLIP can reinforce its commitment to job creation, community engagement, and overall sustainable development.

The community's perspective highlights the importance of institutional capacity in ensuring the successful implementation and follow-up of the Environmental and Social Impact Assessment (ESIA) within the Bole Lemi Industrial Park. This significance is expressed in their responses to inquiries regarding financial capacity, human resource capacity, and material resource capacity.

In terms of financial capacity, a substantial segment of the community, 42.5%, acknowledges its role in facilitating the effective execution of ESIA and subsequent monitoring activities. Moreover, a majority, accounting for 57.5% of respondents, assert the critical significance of financial capacity in this specific context. Regarding human resource capacity, nearly 41% of community members recognize its fundamental contribution to the proper implementation of ESIA and the diligent oversight that results. Moreover, a substantial majority, approximately 59.1% of respondents, strongly emphasize the pivotal nature of human resource capacity within this framework. Similarly, when addressing material resource capacity, around 43.3%, affirms its role in ensuring the effectiveness of ESIA execution and the subsequent follow-up processes. Furthermore, a commanding 56.7% of respondents emphatically concur that material resource capacity is indeed indispensable in this context.

The community's perspective aligns with the importance of institutional capacity, encompassing financial, human, and material resources, in guaranteeing the proper follow-up of the ESIA associated with the Bole Lemi Industrial Park.

The community's perspective, as reflected in their responses, highlights the overwhelming agreement on the importance of financial, human, and material resource capacity for the successful implementation and follow-up of the ESIA in the Bole Lemi Industrial Park project.

The Industrial Parks Development Corporation (IPDC) manages the follow-up of environmental and social impacts within the park. IPDC conducts diligent follow-ups and assessments, involving various departments to ensure compliance with environmental regulations and social well-being. resource utilization, such as water and energy, requires careful monitoring and a shift toward more efficient practices, highlighting the importance of human resource capacity in ensuring sustainable resource management. Additionally, the significance of effective waste management, energy conservation, and worker safety within the park, all of which rely on financial and material resource capacity. The park's initiatives, including waste segregation, recycling, and renewable energy adoption, align with the need for material resource capacity to implement these measures effectively.

the community's perspective aligns with the critical role of institutional capacity, including financial, human, and material resources, in the successful implementation and follow-up of the ESIA for the Bole Lemi Industrial Park project. These resources are essential for mitigating

environmental and social impacts, promoting sustainable practices, and fostering positive community relations.

4.2.3 Identified Gaps and Improvement Measures

Lack of proper follow-up for chemical waste, the park does not have a proper disposal method for chemical waste, and as a result, it is stored. This indicates a gap in waste management practices and poses potential risks to the environment.

Limited follow-up regarding laboratories for contamination testing, BLIP faces challenges in testing water contamination levels due to the availability of laboratories. This can hinder their ability to effectively monitor and address water quality issues. this lack of proper follow up and support from IPDC, caused by financial support from the government can also lead to unable to fulfil buyer requirements. This inaction leads to logistics and cost challenges for water testing because of BLIP occasionally needs to send water samples to different countries for testing. This process can be logistically challenging and incur additional costs, which may impact the efficiency of water quality monitoring.

Lack of support for equipment to meet international buyer demands, the organization and the country are not fully equipped to meet the demands of international buyers regarding proper disposal practices for hazardous and chemical waste. This indicates a gap in infrastructure and resources required to comply with international standards.

Low payment for operators, the salary ranges provided indicate that many operators are being paid at a lower scale, which raises concerns about their financial well-being and job satisfaction. This disparity in compensation could potentially impact their motivation and overall job performance.

Lack of comprehensive follow-up strategy while the company emphasizes worker safety and working conditions, there is a need for a more robust follow-up strategy to assess the impact of salary ranges on the workforce. Regular evaluations and engagement with employees are crucial to understanding their experiences and addressing any challenges related to compensation.

Perceived lack of community engagement, despite partnering with organizations to engage with stakeholders, there is a negative perception of the park within the community. The residents feel that the current engagement efforts are insufficient, leading to a maintained negative view.

4.3. Assess the perception of the community on the implementation and follow up of environmental and social impact by the proponents of Bole Lemi Industrial Park

In examining the way industries develop sustainably, it's crucial to look closely at how they assess and handle their environmental and social impacts. The deep dive into understanding how well the plans for the Bole Lemi Industrial Park have been put into action and followed up. It's also explore why having enough resources is important for carrying out these plans in Bole Lemi. The study investigates if the industrial park is causing pollution and what factors contribute to it. It looks at how the park is affecting the environment and the community around it.

4.3.1 Assesses the Effectiveness of The Proponents Implementation and Follow Up of ESIA

To assesses the effectiveness of the proponent in implementing and following up on the Environmental and Social Impact Assessment (ESIA) procedures in Bole Lemi Industrial these questions were asked to the factory workers and the community implementation of environmental and social management plan, regular internal ESIA monitoring, evaluation, and reporting, establishment of environmental unit, addressing unforeseen environmental and social effects.

Implementation of environmental and social management plan

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	21	16.5	16.5	16.5
	Disagree	39	30.7	30.7	47.2
	Neutral	47	37.0	37.0	84.3
	Agree	12	9.4	9.4	93.7
	Strongly Agree	8	6.3	6.3	100.0
	Total	127	100.0	100.0	

Regular internal ESIA monitoring evaluation and reporting

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	9	7.1	7.1	7.1
	Disagree	36	28.3	28.3	35.4
	Neutral	44	34.6	34.6	70.1
	Agree	25	19.7	19.7	89.8
	Strongly Agree	13	10.2	10.2	100.0
	Total	127	100.0	100.0	

Establishment of environmental unit

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	14	11.0	11.0	11.0
	Disagree	16	12.6	12.6	23.6
	Neutral	52	40.9	40.9	64.6
	Agree	35	27.6	27.6	92.1
	Strongly Agree	10	7.9	7.9	100.0
	Total	127	100.0	100.0	

Addressing unforeseen environmental and social effects

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	16	12.6	12.6	12.6
	Disagree	44	34.6	34.6	47.2
	Neutral	43	33.9	33.9	81.1
	Agree	24	18.9	18.9	100.0
	Total	127	100.0	100.0	

Table 3. The Effectiveness of The Proponents Implementation and Follow Up of ESIA

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Implementation_of_environmental_and_social_management_plan	127	1.00	5.00	2.5827	1.07231
Regular_internal_ESIA_monitoring_evaluation_and_reporting	127	1.00	5.00	2.9764	1.08719
Establishment_of_environmental_unit	127	1.00	5.00	3.0866	1.07662
Addressing_unforeseen_environmental_and_social_effects	127	1.00	4.00	2.5906	.93736
Valid N (listwise)	127				

Table 4. Descriptive Statistics of the Effectiveness of The Proponents Implementation and Follow Up of ESIA

The frequency and percentage distribution of responses are as follows:

participants' responses regarding the implementation of the environmental and social management plan, regular internal ESIA monitoring and reporting, the establishment of an environmental unit, and addressing unforeseen environmental and social effects.
Perceptions among participants vary across different aspects evaluated, with most participants expressing a neutral stance, indicating a lack of strong agreement or disagreement. Targeted actions and stakeholder engagement can address concerns and enhance the overall effectiveness of these initiatives. The implementation and follow-up of the Environmental and Social Impact Assessment (ESIA) in Bole Lemi Industrial Park highlights the need for ongoing monitoring and evaluation to ensure compliance with environmental and social standards.

participants' responses to key aspects of environmental and social management, with moderate agreement observed. For the implementation of the management plan, the mean score, indicating a moderate level of agreement, and responses exhibit a clustered distribution around the mean, as reflected in the low standard deviation. Similarly, for regular internal ESIA monitoring and reporting, the mean score is slightly higher, indicating a relatively higher level of agreement. The establishment of an environmental unit, suggesting a generally positive response. Addressing unforeseen environmental and social effects. These statistics provide a concise overview of participants' perceptions, offering valuable insights into the agreement levels and variability across the assessed dimensions of environmental and social management.

The Environmental and Social Safeguards Department plays a crucial role in addressing challenges and unforeseen circumstances. However, the finding indicates the lack of awareness among the community and workers about the department's existence and responsibilities, contributing to their neutral stance. To improve perceptions, transparent communication and active stakeholder involvement are essential. Raising awareness about the department and its role, along with regular

monitoring and reporting, will foster a sense of ownership and shared responsibility among stakeholders, leading to improved environmental and social outcomes.

The implementation and follow-up of the Environmental and Social Impact Assessment (ESIA) in Bole Lemi Industrial Park shows room for improvement in the proponent's effectiveness. Gaps exist in the implementation and follow-up processes. The Environmental and Social Safeguards Department of the IPDC ideally submit monitoring reports annually or biennially during the operational stage as per the plan on the ESIA. This indicates the foresight seen on the report for the importance of ongoing monitoring and evaluation to ensure compliance with environmental and social standards.

The findings suggest a lack of awareness among the community and workers regarding the Environmental and Social Safeguards Department responsible for monitoring and reporting in the Bole Lemi Industrial Park. This lack of stakeholder engagement may contribute to a neutral stance and limited understanding of the processes involved. To improve perception and address these issues, it is crucial to establish regular and transparent communication channels and actively involve stakeholders. Raising awareness about the department's responsibilities, the significance of ongoing monitoring and reporting, and the project's environmental and social aspects is essential. Engaging stakeholders throughout the project's lifecycle will help address their concerns, foster a sense of ownership, and promote shared responsibility for environmental and social matters.

4.3.2 Importance of Resource Capacity for ESIA Implementation in Bole Lemi Industrial Park

Financial_ capacity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	54	42.5	42.5	42.5
	Strongly Agree	73	57.5	57.5	100.0
	Total	127	100.0	100.0	

Human_ resource_ capacity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	52	40.9	40.9	40.9
	Strongly Agree	75	59.1	59.1	100.0
	Total	127	100.0	100.0	

Material _resource _capacity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	55	43.3	43.3	43.3
	Strongly Agree	72	56.7	56.7	100.0
	Total	127	100.0	100.0	

Table 5. Importance of Resource Capacity for ESIA Implementation in Bole Lemi Industrial Park

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Financial_capacity	127	4.00	5.00	4.5748	.49633
Human_resource_capacity	127	4.00	5.00	4.5906	.49368
Material_resource_capacity	127	4.00	5.00	4.5669	.49746
Valid N (listwise)	127				

Table 6. Descriptive Statistics of Importance of Resource Capacity for ESIA Implementation in Bole Lemi Industrial Park

To assess the importance of financial, human, and material capacity for the effective implementation and follow-up of ESIA in the Bole Lemi Industrial Park project, the community and worker were asked the importance of those resources the data gathered can be analyzed as below.

Financial Capacity: A significant majority of participants (57.5%) strongly agree, while 42.5% agree that financial capacity is essential for effective ESIA implementation and follow-up. This indicates a clear recognition of the significance of financial resources in carrying out comprehensive environmental and social assessments, monitoring their impacts, and implementing mitigation measures successfully. The high level of agreement demonstrates a consensus among respondents on the critical role of financial capacity in ensuring the success of ESIA processes. It can further infer from the KII that the importance of finical capacity is crucial in the success of the park as it is a major tool to achieve the goal of becoming an eco-industrial park by funding laboratories for water testing, supporting in waste management. This shows that there is a clear understanding between the community and the actual execution of the park that the finical capacity is crucial to the success of the park.

Human Resource Capacity: A significant percentage of participants (59.1%) strongly agree, and 40.9% agree, that human resource capacity plays a crucial role in the effective implementation and follow-up of ESIA. This finding emphasizes the importance of skilled personnel who possess the necessary expertise to conduct accurate assessments, analyze data, and provide meaningful recommendations for minimizing environmental and social impacts. The recognition of human resource capacity as a critical component indicates an understanding of the need for well-trained individuals who can navigate the complexities of ESIA effectively.

Material Resource Capacity: Similar to the above, a majority of respondents 43.3% agreed with the importance of material resource, while a larger proportion of 56.7% strongly agreed that material resource capacity is vital for effective ESIA implementation and follow-up. This finding highlights the acknowledgment of the significance of having adequate materials and resources to support successful ESIA processes. Adequate resources enable comprehensive data collection, analysis, and reporting, facilitating the formulation and execution of appropriate mitigation strategies.

pertain to three variables: financial capacity, human resource capacity, and material resource capacity, each rated on a scale from 4.00 to 5.00. The mean scores for financial capacity, human

resource capacity, and material resource capacity are 4.5748, 4.5906, and 4.5669, respectively, reflecting a high level of capacity in each category. The small standard deviations (.49633, .49368, .49746) suggest minimal variability among participant responses, indicating a consensus in their assessments. With all values falling within the 4.00 to 5.00 range, it shows that participants consistently perceive strong financial and resource capacities is needed. This implies that the workers and community have an understanding for the need to be well-equipped in terms of financial, human, and material resources, fostering a favorable environment for effective and sustainable operations. The collective findings emphasize the interdependence of financial, human, and material capacities in achieving effective ESIA outcomes. While financial resources provide the necessary funding, human resources contribute their expertise, and material resources facilitate data collection and analysis. These shows that the significance of investing in and fostering institutional capacity within the project framework.

By addressing these factors, the management of the park and the IPDC can enhance their ability to identify and mitigate potential environmental and social risks, fostering sustainable development practices within the industrial park. The findings from the research indicate the interconnectedness of financial, human, and material capacities in driving the success of ESIA in the Bole Lemi Industrial Park project along with the enhancement of positive impact and mitigation and monitoring of adverse impact. The participants' recognition of the importance of these capacities demonstrates a commitment to strong environmental and social standards and supports the sustainable development goals of the project.

4.3.3 Environmental Pollution from The Bole Lemi Industrial Park, and Contributing Factors

	Strongly Agree		Agree		Neutral		Disagree		Strongly Disagree	
	F	%	F	%	F	%	F	%	F	%
Water_ pollution	14	11	98	77.2	15	11.8	0	0	0	0
Air_ pollution	0	0	0	0	90	70.9	37	29.1	0	0
Soil_ pollution	0	0	0	0	80	63	42	33.1	5	3.9
Noise_ pollution	0	0	0	0	25	19.7	44.9	35.4	0	0
Lack of_ responsible_ parties_ commitment	113	89.0	14	11	0	0	0	0	0	0
Lack of awareness of the responsible parties on ESMP	0	0	76	59.8	28	22	22	17.3	1	0.8
Weak institutional capacity of the industrial park	115	90.6	12	9.4	0	0	0	0	0	0
Lack of awareness of the responsible parties on ESIA	67	52.8	37	29.1	21	16.5	2	1.6	0	0
Weak enforcement mechanism by regulatory body	101	79.5	18	14.2	8	6.3	0	0	0	0

Table 7. Environmental Pollution from The Bole Lemi Industrial Park, and Contributing Factors

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Water_pollution	127	3.00	5.00	3.9921	.47968
Air_pollution	127	3.00	4.00	3.2913	.45618
Soil_pollution	127	1.00	3.00	2.5906	.56841
Noise_pollution	127	1.00	3.00	1.8425	.72839
Lack_of_responsible_parties_commitment	127	4.00	5.00	4.8898	.31442
Lack_of_awareness_of_the_responsible_parties_on_ESMP	127	1.00	11.00	3.4803	1.03778
Weak_institutional_capacity_of_the_industrial_park	127	4.00	5.00	4.9055	.29367
Lack_of_awareness_of_the_responsible_parties_on_ESIA	127	2.00	5.00	4.3307	.80726
Weak_enforcement_mechanism_by_regulatory_body	127	3.00	5.00	4.7323	.56972
Valid N (listwise)	127				

Table 8. Descriptive Statistics of Environmental Pollution from The Bole Lemi Industrial Park, and Contributing Factors

Water Pollution: Neutral: 11.8% of the respondents had a neutral stance on water pollution. Agree: 77.2% of the respondents agreed that water pollution is a problem. Strongly Agree: 11.0% of the respondents strongly agreed with the presence of water pollution. The survey data indicates that water pollution is a prominent concern associated with the industrial park. A significant percentage of respondents strongly agreed or expressed agreement with the notion that water pollution is a problem from the park. Innovative methods have been introduced by the factory to address this concern, such as converting pollutants from water into brick building materials, but the community still perceives water pollution as an issue.

Air Pollution: Neutral: 70.9% of the respondents had a neutral stance on air pollution. 29.1% of the respondents disagreed with the presence of air pollution. While most respondents held a neutral stance on air pollution, it is important to note that textile production, the primary focus of the industrial park, has a relatively lower contribution to air pollution compared to other industries. However, the pollution caused by the waste cleaning facility close to the park might have contributed to the indecisive stance the community holds.

Soil Pollution: Strongly Disagree: 3.9% of the respondents strongly disagreed with the presence of soil pollution. Disagree: 33.1% of the respondents disagreed with the presence of soil pollution. Neutral: 63.0% of the respondents had a neutral stance on soil pollution. Respondents had varying opinions on the presence of soil pollution resulting from the industrial park. A significant portion expressed a neutral stance or disagreed with the notion of soil pollution.

Noise Pollution: Strongly Disagree: 35.4% of the respondents strongly disagreed with the presence of noise pollution. Disagree: 44.9% of the respondents disagreed with the presence of noise pollution. Neutral: 19.7% of the respondents had a neutral stance on noise pollution. The survey

revealed mixed opinions on the presence of noise pollution from the industrial park. While a significant percentage of respondents disagreed or strongly disagreed with its existence, a considerable portion expressed a neutral stance. This indicates that while some respondents do not perceive noise pollution as a significant issue, there is still a concern among a portion of the population regarding noise impacts on the environment and local communities.

Lack of Responsible Parties' Commitment: Agree: 11.0% of the respondents agreed with the lack of commitment by responsible parties. Strongly Agree: 89.0% of the respondents strongly agreed with the lack of commitment by responsible parties. This widespread concerns about the lack of commitment and awareness among responsible parties in addressing environmental issues. The respondents expressed a lack of confidence in the commitment of key stakeholders and highlighted the need for greater accountability and involvement in mitigating pollution and promoting sustainable practices.

Lack of Awareness of the Responsible Parties on ESMP (Environmental and Social Management Plans): 59.8% of the respondents agreed with the lack of awareness of responsible parties on ESMP. This suggests that there is a significant proportion of respondents who perceive a lack of awareness among responsible parties, indicating a potential need for improved communication and knowledge dissemination regarding ESMP.

Weak Institutional Capacity of the Industrial Park: Agree: 9.4% of the respondents agreed with the weak institutional capacity of the industrial park. Strongly Agree: 90.6% of the respondents strongly agreed with the weak institutional capacity of the industrial park. Most respondents strongly agreed that the institutional capacity of the industrial park is weak. This finding emphasizes the need for capacity building initiatives, organizational strengthening, and the establishment of effective governance structures to enhance the management and oversight of environmental matters within the park.

Lack of Awareness of the Responsible Parties on ESIA Disagree: 52.8% of the respondents strongly agreed with the lack of awareness on ESIA. Significant perception among the respondents that responsible parties have insufficient awareness regarding ESIA, suggesting a potential need for increased education and information dissemination to enhance understanding and implementation of effective environmental and social impact assessments.

Weak Enforcement Mechanism by Regulatory Body: Neutral: 6.3% of the respondents had a neutral stance on the weak enforcement mechanism by the regulatory body. Agree: 14.2% of the respondents agreed with the weak enforcement mechanism by the regulatory body. Strongly Agree: A significant portion of the respondents (79.5%) expressed strong agreement with the notion of a weak enforcement mechanism by the regulatory body. The data features a widespread perception of inadequacy in the regulatory body's ability to effectively enforce environmental regulations and ensure accountability within the industrial park. This finding indicates a lack of confidence among respondents regarding the regulatory body's efficacy in addressing pollution issues. To address this concern, it becomes crucial to prioritize strengthening regulatory frameworks, enhancing monitoring systems, and improving enforcement mechanisms. These steps are essential for promoting environmental compliance, deterring pollution, and fostering a more

sustainable industrial environment. The findings indicate moderate to high levels of concern regarding various environmental issues. Water pollution, air pollution, and soil pollution received moderate ratings, while social factors were of significant concern. The lack of responsible parties' commitment and weak enforcement mechanisms were highly rated, suggesting serious apprehensions in these areas. However, awareness about Environmental and Social Management Plans (ESMP) and Environmental and Social Impact Assessment (ESIA) showed variability. The findings emphasize the need for targeted interventions and awareness campaigns to address specific environmental concerns among respondents. This emphasize the need for addressing water pollution, enhancing awareness and commitment among responsible parties, strengthening institutional capacity, improving enforcement mechanisms, and mitigating the impact of noise and soil pollution. Collaboration among stakeholders is crucial to creating a sustainable and environmentally friendly industrial ecosystem.

4.3.4 Contributions from Bole Lemi Industrial Park to The Environment and Community

Social

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	41	32.3	32.3	32.3
	Strongly Agree	86	67.7	67.7	100.0
	Total	127	100.0	100.0	

Economical

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	1.6	1.6	1.6
	Neutral	29	22.8	22.8	24.4
	Agree	64	50.4	50.4	74.8
	Strongly Agree	32	25.2	25.2	100.0
	Total	127	100.0	100.0	

Environment

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	77	60.6	60.6	60.6
	Neutral	13	10.2	10.2	70.9
	Agree	24	18.9	18.9	89.8
	Strongly Agree	13	10.2	10.2	100.0
	Total	127	100.0	100.0	

capacity_ building

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	2	1.6	1.6	1.6
	Disagree	26	20.5	20.5	22.0
	Neutral	69	54.3	54.3	76.4
	Agree	22	17.3	17.3	93.7
	Strongly Agree	8	6.3	6.3	100.0
	Total	127	100.0	100.0	

Skill _development_ and_ knowledge_ transfer

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	4	3.1	3.1	3.1
	Disagree	29	22.8	22.8	26.0
	Neutral	62	48.8	48.8	74.8
	Agree	20	15.7	15.7	90.6
	Strongly Agree	12	9.4	9.4	100.0
	Total	127	100.0	100.0	

Increased _land _and_ asset_ value

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Strongly Disagree	1	.8	.8	.8
	Disagree	16	12.6	12.6	13.4
	Neutral	30	23.6	23.6	37.0
	Agree	80	63.0	63.0	100.0
	Total	127	100.0	100.0	

Health_ and_ safety

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	2	1.6	1.6	1.6
	Neutral	9	7.1	7.1	8.7
	Agree	20	15.7	15.7	24.4

	Strongly Agree	96	75.6	75.6	100.0
	Total	127	100.0	100.0	

Table 9. Contributions from Bole Lemi Industrial Park to The Environment and Community

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Social	127	4.00	5.00	4.6772	.46941
Economical	127	2.00	5.00	3.9921	.73997
environment	127	2.00	5.00	2.7874	1.08108
capacity_building	127	1.00	5.00	3.0630	.83331
skill_development_and_knowledge_transfer	127	1.00	5.00	3.0551	.94539
increased_land_and_asset_value	127	1.00	4.00	3.4882	.74393
Health_and_safety	127	2.00	5.00	4.6535	.68287
Valid N (listwise)	127				

Table 10. Descriptive Statistics of Contributions from Bole Lemi Industrial Park to The Environment and Community

To assess various contributions from Bole Lemi Industrial Park to the environment and community related to social, economic, environmental, capacity building, skill development and knowledge transfer, increased land and asset value, and health and safety of Bole Lemi Industrial Park project, the data was gathered from the community and workers and can be analyzed:
Social: The respondents (67.7%) strongly agree that the park has positive social impacts, indicating that it plays a significant role in fostering social well-being and community engagement. A notable proportion (32.3%) agrees with the positive social impacts, although to a lesser extent.

Economic: A substantial proportion of respondents (50.4%) agree, and an additional 25.2% strongly agree, that the park has positive economic impacts. This indicates that the park is perceived as contributing to economic benefits, such as job creation, tourism, or local business opportunities. However, a small percentage of respondents (1.6%) disagreed with the notion of positive economic impacts.

Environment: The respondents (60.6%) disagreed with the notion that the park has positive environmental impacts. However, a notable proportion of respondents (29.1%) expressed agreement or strong agreement with the positive environmental impacts of the park. This suggests that while there may be differing opinions, there is still recognition of some positive environmental effects.

Capacity Building: The respondents (54.3%) held a neutral stance on the park's impact on capacity building. While a significant number disagreed (20.5%), a smaller proportion agreed (17.3%) or strongly agreed (6.3%). This suggests a mixed perception regarding the park's influence on building skills and knowledge within the community.

Skill Development and Knowledge Transfer: A significant proportion of respondents (48.8%) held a neutral stance on the park's impact on skill development and knowledge transfer. While a substantial number disagreed (22.8%), a smaller percentage agreed (15.7%) or strongly agreed (9.4%). This suggests a mixed perception regarding the park's role in fostering skill development and knowledge sharing.

Increased Land and Asset Value: A significant majority of respondents (63.0%) agreed that the park has a positive impact on increasing land and asset value. However, a portion of respondents (12.6%) disagreed, and some (23.6%) held a neutral stance. This suggests that there may be differing perspectives on the park's influence on property values and asset appreciation.

Health and Safety: Most respondents (75.6%) strongly agreed that the park has positive impacts on health and safety. A smaller proportion agreed (15.7%), while a small percentage disagreed (1.6%) or held a neutral stance (7.1%). This indicates a high level of recognition for the park's role in promoting health and safety within the community.

It appears that participants generally hold positive perceptions across the categories, as indicated by the high mean scores in social, economic, increased land and asset value, and health and safety aspects. The low standard deviations in social and health and safety suggest a high level of agreement among participants in these areas. On the other hand, the environment variable exhibits variability in responses, with a wider range of opinions. Overall, these findings suggest a generally favorable outlook, particularly in social and health-related aspects, while recognizing some diversity of opinions in economic and environmental domains.

There is a strong consensus among the respondents regarding the positive social impacts, economic benefits, health and safety aspects, and increased land and asset value associated with the park. These findings indicate the potential for the park to drive local economic growth, create employment opportunities, and contribute to overall community well-being.

However, there is variability in perceptions related to the park's impact on the environment, capacity building, and skill development and knowledge transfer. These areas require further attention and understanding to address any concerns or discrepancies. It is crucial to explore and address issues related to water and soil pollution, as well as other environmental factors, to ensure effective implementation and follow-up of the park's Environmental and Social Impact Assessment (ESIA).

The recognition of the park's positive influence on health and safety is significant, emphasizing the importance of maintaining a safe and healthy environment for the community. Stakeholders can utilize these insights to focus on maximizing the positive impacts, addressing concerns or gaps, and further promoting the park's social, economic, and environmental benefits.

4.3.5 Perception of Environmental and Social Impacts of Bole Lemi Industrial Park

Positive_ impacts_ of_ the_ park

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Neutral	82	64.6	64.6	64.6
	Agree	45	35.4	35.4	100.0
	Total	127	100.0	100.0	

Negative_ impacts_ of_ the_ park

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Disagree	94	74.0	74.0	74.0
	Neutral	21	16.5	16.5	90.6
	Agree	12	9.4	9.4	100.0
	Total	127	100.0	100.0	

Table 11. Perception of Environmental and Social Impacts of Bole Lemi Industrial Park

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Positive_impacts_of_the_park	127	3.00	4.00	3.3543	.48020
Negative_impacts_of_the_park	127	2.00	4.00	2.3543	.64890
Valid N (listwise)	127				

Table 12. Descriptive Statistics of Perception of Environmental and Social Impacts of Bole Lemi Industrial Park

Positive impacts of the park: 35.4% agreed that the park has positive impacts. This suggests that there are perceived benefits associated with the park, although not universally acknowledged by all respondents. The high percentage of respondents who disagreed with the presence of negative impacts suggests that the park is generally perceived in a positive light. This indicates that the park is likely viewed as a beneficial asset by most respondents.

Negative impacts of the park: 74.0% disagreed with the notion that the park has negative impacts, indicating a prevailing belief that the park does not have detrimental effects. A smaller proportion of respondents expressed a neutral standpoint (16.5%), while a minority (9.4%) agreed that negative impacts are associated with the park.

The analysis reveals positive aspects of the park and dentifying strengths and areas of success is important, as is investigating the viewpoints of those who identified negative impacts. Understanding concerns and experiences can address potential issues. Overall, the analysis emphasizes the importance of exploring and addressing varying perspectives to optimize benefits and ensure a positive experience for all park users and stakeholders.

Positive impacts of the park, on average, respondents rated the positive impacts of the park at 3.3543, this suggests that, overall, respondents perceive the positive impacts of the park to be moderately high, as the mean score is closer to the maximum rating. Regarding the Negative impacts of the park, on average, respondents rated the negative impacts of the park at 2.3543. This suggests that, on average, respondents perceive the negative impacts of the park to be relatively moderate, as the mean score is closer to the lower end of the rating scale.

Understanding specific concerns is crucial for mitigating adverse effects on the environment and the community. Further investigation is required to gain a deeper understanding and develop mitigation strategies. Sustainable and responsible practices are essential to balance economic development with environmental and social well-being.

4.3.6 Actions for Effective Implementation and Follow-up of ESIA in Bole Lemi Industrial Park

Strengthening the implementation of ESMP

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	19	15.0	15.0	15.0
	Strongly Agree	108	85.0	85.0	100.0
	Total	127	100.0	100.0	

Strict_ regular internal ESIA monitoring and evaluation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	17	13.4	13.4	13.4
	Strongly Agree	110	86.6	86.6	100.0
	Total	127	100.0	100.0	

Strengthening the institutional capacity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	13	10.2	10.2	10.2
	Strongly Agree	114	89.8	89.8	100.0
	Total	127	100.0	100.0	

Using environmentally friendly technology

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Agree	22	17.3	17.3	17.3
	Strongly Agree	105	82.7	82.7	100.0
	Total	127	100.0	100.0	

Table 13. Actions for Effective Implementation and Follow-up of ESIA in Bole Lemi Industrial Park

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Strengthening_the_implementation_of_ESMP	127	4.00	5.00	4.8504	.35810
Strict_regular_internal_ESIA_monitoring_and_evaluation	127	4.00	5.00	4.8661	.34185
Strengthening_the_institutional_capacity	127	4.00	5.00	4.8976	.30432
Using_environmentally_friendly_technology	127	4.00	5.00	4.8268	.37994
Valid N (listwise)	127				

Table 14. Descriptive Statistics of Actions for Effective Implementation and Follow-up of ESIA in Bole Lemi Industrial Park

Strengthening the implementation of ESMP: The high percentage of respondents who strongly agree (85%) indicates a widespread recognition of the need to enhance the implementation of environmental and social management practices. This suggests that there may be existing gaps or challenges in the current implementation of ESMP that require attention and improvement. It could be beneficial to further investigate the specific areas where improvements are needed and identify potential strategies or measures to address them.

Strict regular internal ESIA (Environmental and Social Impact Assessment) monitoring and evaluation: Most respondents strongly agree with the importance of strict regular internal monitoring and evaluation of ESIA. This signifies a recognition of the value of consistent monitoring and evaluation processes to ensure compliance with environmental and social impact assessment requirements. It implies a desire for robust systems that can effectively identify and mitigate any adverse environmental or social impacts caused by projects or activities. Organizations or institutions should consider prioritizing the establishment or enhancement of internal monitoring and evaluation mechanisms to meet these expectations.

Strengthening the institutional capacity: Agree: The high percentage of respondents strongly agree with the need to strengthen institutional capacity suggests that there is a perceived requirement for organizations or institutions to enhance their capabilities in managing environmental and social aspects. This could involve improving internal policies, training programs, resources, and expertise related to environmental and social management. Strengthening institutional capacity can lead to more effective implementation of ESMP and better overall environmental and social performance.

Using environmentally friendly technology: Strongly Agree: 82.7% with the use of environmentally friendly technology indicates a strong preference for sustainable and eco-friendly practices. This finding aligns with the growing global emphasis on adopting cleaner technologies and reducing environmental impact. Organizations should explore and invest in innovative technologies that minimize resource consumption, emissions, and other negative environmental effects. Promoting the adoption of environmentally friendly technology can contribute to improved environmental performance and sustainability.

The mean scores for strengthening the implementation of Environmental and Social Management Plans (ESMP), strict regular internal Environmental and Social Impact Assessment (ESIA) monitoring and evaluation, strengthening institutional capacity, and using environmentally friendly technology all consistently exceed 4.80 on a scale of 1 to 5. This suggests a high level of agreement among participants in endorsing these practices for sustainable and responsible actions. The low standard deviations accompanying each measure indicate a minimal spread of opinions, further emphasizing the unanimity in participants' perspectives regarding the importance of these environmental and social measures. Overall, the findings reflect a strong collective commitment to effective environmental and social stewardship within the surveyed group.

Based on the responses, it can be concluded that there is a strong consensus among the respondents regarding the importance of strengthening the implementation of ESMP, strict regular internal ESIA monitoring and evaluation, strengthening institutional capacity, and promoting the use of environmentally friendly technology. The insights and analysis of the table highlight the consensus among respondents regarding the importance of various aspects of environmental and social management practices. These findings suggest opportunities for organizations, institutions, and policymakers to focus their efforts on strengthening implementation, monitoring, institutional capacity, and the adoption of environmentally friendly technologies to achieve better environmental and social outcomes.

Chapter Five: Conclusions and Recommendations

5.1. Conclusions

The Environmental Social Impacts Assessment (ESIA) report for the Bole Lemi Industrial Park provides an in-depth analysis of the project's environmental and social implications before its implementation. It recognizes both positive and negative impacts, proposes mitigation measures, and stresses the importance of compliance with legal and policy requirements.

Overall, the evaluation of the Bole Lemi Industrial Park's Environmental and Social Impact Assessment (ESIA) reveals a thorough analysis following national and international guidelines. The scoping stage defines project parameters, assesses baseline conditions, and engages stakeholders. The impact assessment considers positive economic and social impacts, alongside potential adverse effects like land acquisition challenges. Challenges include hazardous waste accumulation and community perceptions influenced by nearby facilities. Positive impacts include job creation and economic growth, while mitigation measures address adverse effects. Ongoing monitoring and mitigation efforts address challenges, and a community survey indicates a generally positive perception with varying levels of confidence.

Findings in the implementation of the ESIA and its effectiveness on the follow-up evaluation reveals progress in areas such as waste management and resource utilization. However, it identifies gaps in chemical waste disposal, water quality monitoring, worker compensation, and community engagement. The management and involved parties demonstrate commitment, but enhanced engagement with employees and community stakeholders is needed for sustainable social development.

The Environmental and Social Management Plan (ESMP) outlines responsibilities and monitoring parameters for construction and operation phases. Stakeholders, including IPDC, regulatory bodies, and factory owners, contribute to compliance monitoring. Environmental and social management plan ESMP implementation and follow-up analysis shows a consensus on the need to strengthen the implementation of Environmental and Social Management Practices. Enhancing internal monitoring and evaluation, institutional capacity, and environmentally friendly technology are crucial steps. Prioritizing sustainable practices, involving stakeholders, and improving environmental and social management can maximize positive impacts and stakeholder experience. Stakeholder engagement and awareness further efforts are required to address ESIA implementation and follow-up improvements. Stakeholder engagement remains crucial due to a lack of awareness among the community and workers about responsible parties and their roles in environmental and social management. Recognizing financial, human, and material resource capacities is essential for effective implementation.

From the assessment of the community's understanding of environmental pollution highlight the need for improved awareness, institutional capacity, and enforcement mechanisms. pollution is a concern, requiring prioritized attention. Despite positive impacts on social well-being and economic growth, certain aspects need further attention, such as addressing concerns, promoting

stakeholder discussion, and investing in capacity building for sustainable development. Water pollution is a major concern, along with perceived deficiencies in commitment and awareness among responsible parties, weak institutional capacity, weak enforcement mechanisms, and concerns regarding soil and noise pollution. Prompt action is necessary for sustainable development. Optimizing Benefits and Sustainable Development to optimize the park's benefits and ensure sustainable development, further studies and continuous dialogue with stakeholders are recommended. This approach will provide a comprehensive understanding of impacts and address potential adverse effects. Investing in capacity building programs and knowledge transfer initiatives can enhance community skill development and contribute to the park's long-term success.

The Bole Lemi industrial park undergoes environmental and social impact follow-ups. The park has shown improvements in solid waste management, energy consumption, and water usage. It complies with guidelines for chemical waste disposal and explores innovative waste management solutions. Socially, the park has positively impacted job creation, emphasizing worker safety. However, concerns arise regarding low wages, requiring follow-up strategies for compensation enhancement. Community engagement initiatives are in place, but there is a need for continuous evaluation to address negative perceptions. The community stresses the importance of financial, human, and material resource capacity for effective Environmental and Social Impact Assessment (ESIA) follow-up. Overall, the IPDC's diligent follow-up measures align with sustainability goals and community development.

The Environmental Social Impacts Assessment (ESIA) for the Bole Lemi Industrial Park provides a comprehensive analysis of the project's environmental and social implications. The assessment recognizes both positive and negative impacts, proposing effective mitigation measures and underscoring the importance of adherence to legal and policy requirements. However, the follow-up evaluation identifies gaps in waste management, water quality monitoring, worker compensation, and community engagement, necessitating enhanced efforts in these areas for sustainable social development.

The implementation of the Environmental and Social Management Plan (ESMP) highlights progress in waste management and resource utilization but emphasizes the need for improvement in chemical waste disposal, water quality monitoring, and community engagement. Stakeholder involvement is crucial for compliance monitoring, and a consensus exists on the need to strengthen environmental and social management practices. The assessment of the community's understanding of environmental pollution underscores the importance of improved awareness, institutional capacity, and enforcement mechanisms. Despite positive impacts on social well-being and economic growth, the findings emphasize the need for addressing concerns, promoting stakeholder discussion, and investing in capacity building for sustainable development, particularly in the context of water pollution, weak enforcement mechanisms, and perceived deficiencies in commitment.

5.2. Recommendations

The recommendations outlined in this section are recommendations from the research and analysis conducted on the Bole Lemi Industrial Park. These recommendations have been produced to address key environmental challenges and promote sustainable practices within the park. With a focus on hazardous waste management, stakeholder engagement, pollution mitigation, monitoring and enforcement, sustainable initiatives, and strategic planning, these recommendations offer a comprehensive framework for enhancing the park's environmental performance and achieving its eco-industrialization goals. By implementing these research-based recommendations, the Bole Lemi Industrial Park improves some of the challenges and can be used as an input for mitigation. The below are some of the recommendations for the challenges that was identified from the study:

Environmental and Social Management Plans (ESMPs): It is a priority for all 14 factories to establish and implement their own Environmental and Social Management Plans (ESMPs). The individualization of the ESMPs allows factories to address the environmental and social challenges associated with their operations. This approach ensures that mitigation measures are specifically designed to minimize the impact of industrial activities on the surrounding ecosystem and communities. Moreover, having an ESMP for each factory raises a positive and responsible culture, promoting adherence to environmental regulations and ethical social practices.

Strengthen Environmental Monitoring and Enforcement: All stakeholders need to ensure effective implementation and monitoring of the Environmental Management Plan (EMP) throughout the project's lifecycle. Conduct regular inspections to verify compliance with mitigation measures and environmental regulations. Improve coordination among responsible parties to enhance monitoring and enforcement mechanisms.

Hazardous Waste Management: It is highly recommended for the park to develop a comprehensive plan in collaboration with relevant authorities and organizations to safely remove and dispose of hazardous chemical waste. Ensure compliance with environmental regulations and promote responsible waste management practices.

Engage with Waste Treatment Plant: The management of the park needs to establish a dialogue and collaboration with the waste treatment plant to address pollution concerns. Develop joint monitoring programs and implement measures to mitigate air and water pollution.

Enhance Stakeholder Engagement: the park needs to request and foster closer collaboration with stakeholders, including affected communities, investors, and regulatory bodies. Conduct regular public consultations to gather feedback, address concerns, and incorporate community perspectives in decision-making processes.

Encourage Sustainable Practices: all parties promote waste reduction, recycling, and energy efficiency within the park. Encourage factories to develop their own Environmental Management Plans (EMPs) and adhere to environmental standards beyond minimum requirements. Provide support and guidance to facilitate the implementation of sustainable measures.

Establish a Long-Term Environmental Strategy: develop a comprehensive environmental strategy aligned with eco-industrialization goals. This strategy should encompass environmental management, resource conservation, and continuous improvement of environmental performance.

Improve Documentation and Reporting: to enhance the ESIA by providing detailed and comprehensive information on environmental impact assessment, mitigation measures, and monitoring plans. Improve transparency and accountability through accurate and accessible documentation and reporting.

Improved Compensation Scheme: The park needs to work closely with the city management to establish a fair and efficient compensation scheme for affected populations. Address economic, social, and psychological challenges faced by displaced individuals, ensuring their well-being, and promoting social equity.

Encourage Knowledge Sharing and Capacity Building: prioritize knowledge sharing and capacity building initiatives to promote environmental sustainability and best practices within the industrial park. Conduct workshops, training programs, and partnerships with relevant organizations to enhance skills and knowledge.

Address The Needs of Displaced Individuals: the industrial park management should implement a tracking and documentation system in collaboration with relevant authorities and community stakeholders to actively engage with affected communities. Establishing protocols for periodic check-ins will not only ensure the continuous well-being of displaced individuals but also enhance the ability to deliver timely compensation and support, thereby mitigating the challenges posed by the current lack of proper follow-up and documentation.

The implementation of these recommendations within the Bole Lemi Industrial Park will contribute significantly to its overall sustainability and long-term success. By developing a comprehensive hazardous waste management plan, establishing fair compensation schemes for affected populations, engaging with waste treatment plants to address pollution concerns, and strengthening environmental monitoring and enforcement, the park can ensure responsible waste management and mitigate pollution risks. Furthermore, by enhancing stakeholder engagement, encouraging sustainable practices, establishing a long-term environmental strategy, and promoting knowledge sharing and capacity building, the park can foster a culture of environmental stewardship and continuous improvement. Ultimately, through the adoption of green building practices, renewable energy adoption, circular economy principles, and collaboration with research institutions, the park can serve as a beacon of environmental sustainability and inspire similar initiatives globally. Regular sustainability reporting will provide stakeholders with transparent and accessible information, enabling them to monitor progress and hold the park accountable for its environmental commitments. With these measures in place, the Bole Lemi Industrial Park can truly exemplify the principles of eco-industrialization and pave the way for a greener, more sustainable future.

5.3. Pictures from Field Survey




Figure 7. Pictures from Field Survey

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a. Annex 1

Interview questions and Questionnaire

School of Graduate Studies

College of Developmental Studies

Center for Environment and Development Studies

Dear respondents,

Greetings!

My name is Addismeraf Ayalew. I am a master's student at Addis Ababa University. Currently, I am working on my thesis titled " effectiveness of the environmental and social impact assessment (ESIA) of bole lemi industrial park, Addis Ababa" To gather valuable data for my research, I have developed a questionnaire, and I kindly request your participation in answering the provided questions.

I assure you that this study is strictly for academic purposes and has received the necessary authorization from Addis Ababa University. Your responses and comments will be treated with the utmost confidentiality.

Your contribution to this research is highly appreciated, and I kindly ask for your cooperation in providing honest and thoughtful responses to the questions.

Thank you in advance for your valuable participation!

Sincerely,

Addismeraf Ayalew

Master's Student

Addis Ababa University

Address

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I. Key Informant Interview on the:

Assessment of the evaluation of the environmental social impacts assessment for the Bole Lemi Industrial Park and identify gaps. The key informant interview with concerned informants from the

- industrial park development corporation (IPDC).
- department of environmental and social safeguarding department of IPDC,
- environmental and social safeguarding department of IPDC Bole Lemi branch office

Section 1: Demographic Information: Background Information

1. What is your name?
2. Sex?
3. How are you affiliated with the Bole Lemi Industrial Park?
4. How long have you been involved with the Bole Lemi Industrial Park?

Section 2: KII Discussion

1. Are you aware of the Environmental Social Impacts Assessment (ESIA) report for the Bole Lemi Industrial Park? Have you reviewed the ESIA report for the Bole Lemi Industrial Park?

2. Are there any identified gaps or areas where the ESIA report could be improved, according to you?

3. In your opinion, what actions could be taken to address these identified gaps?

4. Do you believe the ESIA report provides a comprehensive overview of the potential environmental and social impacts of the Bole Lemi Industrial Park?

5. In your opinion, what are the primary environmental and social impacts of the Bole Lemi Industrial Park? (Select all that apply) Water pollution, Air pollution, Soil pollution, Noise pollution.

6. How important do you consider addressing the environmental and social impacts of the Bole Lemi Industrial Park?

II. Key Informant Interview on the:

Assessment of the evaluation of the environmental social impacts assessment for the Bole Lemi Industrial Park and identify gaps. The key informant interview with concerned informants from the

- industrial park development corporation (IPDC).
- department of environmental and social safeguarding department of IPDC,
- environmental and social safeguarding department of IPDC Bole Lemi branch office

Section 1: Demographic Information: Background Information

1. What is your name?
2. Sex?
3. How are you affiliated with the Bole Lemi Industrial Park?
4. How long have you been involved with the Bole Lemi Industrial Park?

Section 2: KII Discussion

1. Are you aware of any follow-up evaluations or actions taken because of the Environmental Social Impacts Assessment (ESIA) report for the Bole Lemi Industrial Park?
2. Have any changes been made to the project plans or operations based on the follow-up evaluation of the ESIA report?
3. What has been your experience with the follow-up process, and do you have a report on your follow-ups?
4. How effective do you believe the follow-up process has been in addressing the identified impacts of the Bole Lemi Industrial Park?
5. Have any unexpected environmental or social impacts arisen since the establishment of the Bole Lemi Industrial Park, and if so, could you describe them?
6. How satisfied are you with the measures taken to mitigate or address these impacts?

II. Questionnaires on the:

Main Questionnaires for Analyzing to assess the perception of the community on the environmental and social impacts of the Bole Lemi Industrial Park.

The key informant interview with concerned informants from the

- Bole Lemi industrial park BLIP workers
- Community around of Bole Sub-city, Woreda 11

Section 4:

Demographic Information: Background Information

1. What is your Age?
2. What is your role or affiliation with the Bole Lemi Industrial Park?
3. What is your educational background?
4. How long have you been involved with the Bole Lemi Industrial Park?

Please indicate your degree of agreement or disagreement for the following each question by putting tick mark (√) under one of the Likert scales type items from 1 to 5.

Where, 1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree, 5 = Strongly Disagree (HIRPE, 2020)

N.o	Questions	Response of Respondents									
		Strongly agree		Agree		Neutral		Disagree		Strongly disagree	
		Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent	Frequency	Percent
Please answer the following questions and indicate your level of agreement regarding the effectiveness of the proponent in Bole Lemi Industrial Park, specifically in the implementation and follow-up of the Environmental and Social Impact Assessment (ESIA). እባክዎን የሚከተሉትን ጥያቄዎች ይመልሱ እና በቦሌ ለሚ ኢኮ-ኢንዱስትሪያል ፓርክ ውስጥ በተለይም የአካባቢ እና ማህበራዊ ተፅእኖ ግምገማ (ESIA) ትግበራ እና ክትትልን በተመለከተ የደጋፊውን ውጤታማነት በተመለከተ የስምምነት ደረጃዎን ያመልክቱ።										
1	Implementation of environmental and social management plan የአካባቢ እና ማህበራዊ አስተዳደር እቅድ አፈፃፀም										
2	Regular internal ESIA monitoring, evaluation and reporting መደበኛ የውስጥ ESIA ክትትል፣ ግምገማ እና ሪፖርት ማድረግ										
3	Establishment of environmental unit የአካባቢ ጥበቃ ክፍል ማቋቋም										
4	Addressing unforeseen environmental and social effects ያልተጠበቁ የአካባቢ እና ማህበራዊ ተፅእኖዎችን መፍታት										
Please answer the following questions and indicate your level of agreement regarding the importance of Financial, Human resource and, Material resource capacity for effective implementation and follow-up of ESIA in the Bole Lemi Industrial Park. እባክዎን የሚከተሉትን ጥያቄዎች ይመልሱ እና በቦሌ ለሚ ኢኮ-ኢንዱስትሪ ፓርክ ውስጥ የኢኤስአይኤ ውጤታማ ትግበራ እና ክትትል ለማድረግ በፋይናንሺያል፣ በሰው ሃይል እና በቁሳቁስ አቅም ላይ ያለውን ጠቀሜታ በተመለከተ የስምምነት ደረጃዎን ያመልክቱ።										
5	Financial capacity የገንዘብ_አቅም										
6	Human resource capacity የሰው_ሀብት_አቅም										

7	Material resource capacity የቁስ_ሀብት_አቅም										
Please answer the following questions and indicate your level of agreement regarding the type of environmental pollution released from Bole Lemi Industrial Park to the environment and community. እባክዎን የሚከተሉትን ጥያቄዎች ይመልሱ እና ከቦሌ ለሚ ኢኮ ኢንዱስትሪያል ፓርክ ለአካባቢ እና ማህበረሰብ የሚለቀቀውን የአካባቢ ብክለትን በተመለከተ የስምምነት ደረጃዎን ያመልክቱ።											
8	Water_ pollution የውሃ ብክለት										
9	Air_ pollution የአየር መበከል										
10	Soil_ pollution የአፈር_መበከል										
11	Noise_ pollution የድምጽ_ መበከል										
Please answer the following questions and indicate your level of agreement regarding the contributions from Bole Lemi Industrial Park to the environment and community. እባኮትን የሚከተሉትን ጥያቄዎች ይመልሱ እና ከቦሌ ለሚ ኢኮ-ኢንዱስትሪ ፓርክ ለአካባቢና ማህበረሰብ የሚያበረክቱትን አስተዋፅኦ በተመለከተ የስምምነት ደረጃዎን ያመልክቱ።											
12	Social (access to basic services, credit facilities) ማህበራዊ (የመሠረታዊ አገልግሎቶች መዳረሻ ፣ የብድር ተቋማት)										
13	Economical (Employment, job creation, income generation) ኢኮኖሚያዊ (ሥራ ፣ ሥራ ፈጠራ ፣ የገቢ ማስገኛ)										
14	environment (release of contaminants/pollutants, Establishing of green area) አካባቢ (የበከሉ/የሚበክሉ መለቀቅ፣ አረንጓዴ አካባቢ ማቋቋም)										

15	capacity-building አቅም ግንባታ										
16	skill development and knowledge transfer የክህሎት እድገት እና የእውቀት ሽግግር										
17	increased land and asset value የመሬት እና የንብረት ዋጋ መጨመር										
18	Health and safety ጤና እና ደህንነት										
Please answer the following questions and indicate your level of agreement regarding the contributing factors that lead to the release of environmental pollutants from the Bole Lemi Industrial Park? እባክዎን የሚከተሉትን ጥያቄዎች ይመልሱ እና የአካባቢ ብክለትን ከቦሌ ለሚ ኢኮ-ኢንዱስትሪ ፓርክ እንዲለቁ አስተዋጽኦ የሚያደርጉ ምክንያቶችን በሚመለከት የስምምነት ደረጃዎን ያመልክቱ?											
19	Lack of responsible parties' commitment ኃላፊነት የሚሰማቸው አካላት ቁርጠኝነት አለመኖር										
20	Lack of awareness of the responsible parties on ESMP በ ESMP ላይ ኃላፊነት ያለባቸው አካላት የግንዛቤ እጥረት										
21	Weak institutional capacity of the industrial park የኢንዱስትሪ ፓርኩ ተቋማዊ አቅም ደካማ ነው										
22	Lack of awareness of the responsible parties on ESIA በESIA ላይ ኃላፊነት ያለባቸው አካላት የግንዛቤ እጥረት										
23	Weak enforcement mechanism by regulatory bodies የቁጥጥር አካላት ደካማ የማስፈጸሚያ ዘዴ										

Please answer the following questions and indicate your level of agreement regarding your perception of the environmental and social impacts of the Bole Lemi Industrial Park. እባኮትን የሚከተሉትን ጥያቄዎች ይመልሱ እና ስለ ቦሌ ለሚ ኢኮ ኢንዱስትሪያል ፓርክ የአካባቢ እና ማህበራዊ ተፅእኖ ያለዎትን ግንዛቤ በተመለከተ የስምምነት ደረጃዎን ያመልክቱ።											
24	Positive impacts of the park on the environment and local communities ፓርኩ በአካባቢ እና በአካባቢው ማህበረሰቦች ላይ የሚያመጣው አዎንታዊ ተጽእኖ										
25	Negative impacts of the park on the environment and local communities ፓርኩ በአካባቢ እና በአካባቢው ማህበረሰቦች ላይ የሚያመጣው አሉታዊ ተጽእኖ										
Please answer the following questions and indicate your level of agreement regarding what actions the proponent should take for the effective implementation and follow-up of the Environmental and Social Impact Assessment (ESIA) in Bole Lemi Industrial Park. እባክዎን የሚከተሉትን ጥያቄዎች ይመልሱ እና ደጋፊው በቦሌ ለሚ ኢኮ ኢንዱስትሪያል ፓርክ ውጤታማ ትግበራ እና የአካባቢ እና ማህበራዊ ተፅእኖ ግምገማ (ESIA) ምን አይነት እርምጃዎች መውሰድ እንዳለበት የስምምነት ደረጃዎን ያመልክቱ።											
26	Strengthening the implementation of ESMP. የ ESMP ትግበራን ማጠናከር										
27	Strict regular internal ESIA monitoring and evaluation. ጥብቅ መደበኛ የውስጥ ESIA ክትትል እና ግምገማ										
28	Strengthening the institutional capacity. ተቋማዊ አቅምን ማጠናከር										

29	Using environmentally friendly technology. ለአካባቢ ተስማሚ ቴክኖሎጂን መጠቀም										

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Section 5: General Information

1. Is there any other information that you would like to share about the Bole Lemi Industrial Park and its environmental and social impacts?

Thank you for your time and participation in this survey!

b. Annex 2

Industrial Parks Development Corporation
Bole Lemi Industry Park Branch Office

Name of Company: _____

1. Is there a monitoring system to ensure that producers are working on a social impact assessment to minimize and eliminate social impacts?
   1.1. Are preparation of the environmental and social management plan (EMP) at the Company level? Yes No NA
   1.2. Ensuring that the rights of workers employed by manufacturing companies are being respected and that there is a clear grievance redressal system in the event of gaps? Yes No NA
2. **Solid waste handling and storage providing proper services**
   2.1. Are all solid waste containers distributed and collected regularly across the installation? Yes No NA
   2.2. Are containers that collect solid waste emptied at least weekly? Yes No NA
   2.3. Recyclable materials? Yes No NA
   2.4. Are label Hazardous waste? Yes No NA
   2.5. Are all solid wastes containers placed in areas that do not pose a fire, health, or safety hazards? Yes No NA
   2.6. Are all solid waste containers in good condition? Yes No NA
3. **Storage of Chemicals and Dangerous Good**
   3.1. Are chemicals stored and labelled properly? Yes No NA
   3.2. Are proper measures to control oil spillage during maintenance or to control other chemicals spillage? Yes No NA
4. **Emergency Preparedness and Response**
   4.1. Are fire extinguishers / fighting facilities properly maintained and not expired? Escape not blocked / obstructed? Yes No NA
   4.2. Are accidents and incidents reported and reviewed, and corrective & preventive actions identified and recorded? Yes No NA
5. **Occupational Safety and Health at the Park and Manufacturing Levels**
   5.1. Are your work sites regularly checked for the need for PPE? (Head, eye, face, hand, or foot protection) Yes No NA
   5.2. Have the employees in the hazardous areas been trained on OSHA PPE standards? (Using what items, in what circumstances, as well as when and how to wear it and properly adjust it) Yes No NA
   5.3. Are approved respirators provided for regular or emergency use where needed? Yes No NA
   5.4. Is necessary special equipment available for electrical workers? Yes No NA
   5.5. Is ear protection provided in areas where sound levels exceed those of the OSHA noise standard? Yes No NA
   5.6. Are safe work procedures and PPE provided and used when cleaning up spilled toxic or hazardous materials and liquids? Yes No NA

5.7. Are appropriate safe work procedures in place for disposing of or decontaminating PPE after hazardous exposure? Yes No NA

6: Social infrastructure providing proper services

6.1. Adequate access to safe drinking water? Yes No NA

6.2. The availability of dining and entertainment rooms for the employees? Yes No NA

6.3. The availability of adequate toilets and bathrooms? Yes No NA

6.4. The existence of health facilities providing the appropriate medical services on the buildings? Yes No NA

6.5. The availability of adequate fast banking services in the industrial park? Yes No NA

6.7. Providing a series of gender-based vocational training to workers employed in manufacturing companies? Yes No NA

Signature of Site Inspector_____ Date____ Name of the person who filled out the information __

Signature _____

Responsibility_____

Date _____