



**COLLEGE OF SOCIAL SCIENCE AND HUMANITIES
DEPARTMENT OF GEOGRAPHY AND
ENVIRONMENTAL STUDIES**

**AN ASSESSMENT OF THE IMPLEMENTATION OF ENVIRONMENTAL
IMPACT ASSESSMENT (EIA) IN MANUFACTURING INDUSTRY
PROJECTS: THE CASE OF DEBRE BIRHAN TOWN**

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COLLEGE OF SOCIAL SCIENCE AND HUMANITIES
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List of Acronyms

ECA	Economic Commission for Africa
EFCCC	Environment Forest and Climate Change Commission
EFWPD	Environment Forest and Wild life protection Department
EIA	Environmental Impact Assessment
EMP	Environment Management Plan
EPA	Environment Protection Authority
EU	European Commission
IAIA	International Association for Impact Assessment
JPOI	Johannesburg Plan of Implementation
NEIAO	National Environmental Impact Assessment Organization
NEPA	National Environmental Policy Act
NSZ	North Shoa Zone
SEIA	Strategic Environmental Impact Assessment
SAIEA	Southern African Institute for Impact Assessment
UK	United Kingdom
UN	United Nations
UNDP	United Nations Development Program
UNEP	United Nation's Environmental Program
WHO	World Health Organization

Abstract

This study was conducted with the main objective of evaluating the implementation of EIA in manufacturing industry projects of Debre Birhan town. The study has employed a mixed research approach with exploratory and descriptive survey research design. To achieve the objectives, the study used both primary and secondary data sources. Primary data was collected from interviewees and questionnaire. Documents like EIA reports, monitoring reports, contract documents, books and journals were also reviewed to supplement data from the primary sources. The sample size used was 103 randomly selected respondents. The analysis method used in this study was both qualitative and quantitative or content analysis and descriptive statistical analysis methods.

The findings of the study showed that the implementation of EIA in manufacturing industries of Debre Birhan town in general was not in line with the EIA regulation set. EIA reports are of poor quality, implementation of mitigation measures was found limited, and community participation in the EIA process was also not satisfactory. The main factors that affect the quality of EIA report were attitude problems, corrupt practices, inadequate fund allocated from proponents, weak law enforcement, and weak inter-sectorial cooperation.

Thus, the study suggested the following recommendations for the improvement of EIA implementation and mitigation measures practicability in the study area. These include; strengthening law enforcement, inter sectorial cooperation, capacity building to shape attitude, and creating environmental database.

Key words: *Debre Birhan, EIA, manufacturing industry, Ethiopia, sustainable development*

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Environmental impact assessment (EIA) has been in existence since 1970 when it was introduced into the United States of America and has spread rapidly since then to all parts of the World (UNEP, 2017). The expansion of manufacturing industry has magnified the economic significance of the sector, but the sector is still blamed for its social and environmental shortcomings worldwide (Charles *et al.*, 2014). According to them, EIA is a systematic process to identify, predict and evaluate the environmental effects of industrial projects. EIA has a primary purpose to ensure that impacts of projects are appropriately considered and mitigation measures are incorporated in advance of decisions made. In addition, EIA also provides a forum for public involvement in decision-making process (World Bank, 2014). Today, it is applied in more than 150 countries, and by all development banks and most aid agencies (ECA, 2015).

The EIA process involves many stages. It starts with identification of development proposals. Then, screening of the proposal which determines whether an EIA is necessary and at what level the assessment should occur. The scoping stage is the process of interaction which aims at identification of: boundaries of the EIA studies, important issues of concern, significant effects to be considered. The next step of the EIA process is undertaking environmental impact study that involves impact prediction, impact analysis, consideration of alternatives, and preparation of management plan. Finally, reviewing, decision making, implementation and follow-up would be conducted (UN, 2015).

However, the effectiveness of EIA in the great majority of developing countries mainly Africa is low. This is because project proponents consider the EIA process as a bureaucratic requirement to be fulfilled for project approval, isolated from the project planning and implementation (European Commission, 2018).

In Ethiopia the FDRE Constitution under Article 44 guarantees for citizens to live in a clean and healthy environment. The EIA proclamation obliges projects that may cause

significant environmental damage to conduct EIA prior to project implementation (EIA Proc. No. 299/2002). Even though EIA has become a legal requirement in Ethiopia after the enactment of the enabling legislation, it has a number of constraints to realize its full potential as an instrument to promote sustainable development (Mellese and Mesfin, 2008). Debre Birhan town is also not an exception i.e. the situation has been worst currently in the study area. This is because the town is one of the fastest growing zonal towns in Amhara region of Ethiopia whereby various investment projects have been implemented and yet started affecting the society's health and environment (North Shoa Zone Finance and Economic Cooperation Department, 2019). This has shown that constraints encountered require an investigation to know the extent of the problem and recommend possible measures that would help the improvement of EIA practices in the town.

Thus, this study has tried to evaluate the implementation of EIA in manufacturing industrial projects of Debre Birhan town in North Shoa Zone of Amhara Region.

1.2 Statement of the Problem

The development of industries and their expansion has changed the socio-economic face and vitality of areas (Kien, 2013). However, as opposed to positive contributions to socio-economic development, the expansion of industries still contains non desirable impacts. This leads to a growing attention on the interactions between manufacturing industry projects and their environmental consequences, and the issue of sustainability in development strategies (World Bank, 2014). The achievement of sustainable development requires designing strategies. One of these strategies is the application of Environmental Impact Assessment (EIA) to support decisions (Ibid). This is due to the fact that manufacturing industrial projects can cause significant environmental and social damages and threaten sustainable development unless they are properly planned and managed (Zhenghi *et al.*, 2019). Currently, there is global consensus that environmental and social consequences of projects can be reduced to acceptable levels by the implementation of EIA (Ibid).

Earlier research by Yonas (2018) found that Ethiopian industries have been expanding at the expense of the society. However, the current EIA practice in Ethiopia in general is not effective to help achieve sustainable development. Among the reasons that significantly affect the EIA implementation can be weakness of institutions, inadequate commitment of developers, omission of stages in the EIA process, and the inadequacy of monitoring (Dir. No. 1/2008).

Moreover, some previous studies such as Laws and Practices on Environmental Impact Assessment in Ethiopia by Girma (2012), The Impact of Environmental Impact Assessment Law into the Ethiopian Legal system by Degene (2013), The Implementation of Environmental Impact Assessment in Dam Projects by Seleshi (2011), Environmental Impact Assessment for Irrigation Projects by Mekonene (2014), Environmental Impacts of Floriculture Industry by Abaynesh (2013), Environmental Impacts of Horticulture by Mushir (2013) and Socio-economic and Environmental Impacts of Large-Scale Agricultural Investment in Gambella Region by Azeb *et al.*, (2017) exists related to EIA in Ethiopia but all of these studies focuses mainly on environmental impact of agricultural projects, EIA implementation in dam projects, or the contribution of EIA laws on the legal system of the country but they have gap of focus on evaluating the implementation of EIA in manufacturing industries of Ethiopia.

In addition, there is no study targeting particularly the context of Debre Birhan. In general, previous studies made about EIA focuses mainly on contributions and problems what the environmental laws have and the impact of the projects. Besides, those studies failed to consider the quality of EIA report and implementation of mitigation measures and public participation in decisions at different stages of EIA to result win-win effect.

Debre Birhan town is one of the towns in the Amhara region of Ethiopia where manufacturing industries are rapidly expanding and have begun operation. Till now there are 506 manufacturing industry projects permitted to invest in Debre Birhan town of which 446 manufacturing industry projects have taken EIA license from North Shoa Zone Environment Forest and Wildlife Protection Department. Among 446 projects 208

projects have got their environmental clearance after 2010E.C and 11 of these projects have been in operation since then (NSZ Industry and Investment Office, 2021).

In Debre Birhan, EIA might not be properly implemented, often leading to environmental and social problems. It is also heard that the society in the industrial areas of the town has little or no participation in different stages of EIA of manufacturing industries. Besides, quality EIA may not be designed and mitigations suggested in advance reducing the adverse effect of manufacturing industries. On the other hand, residents in and around industrial areas are heard frequently complaining as they face bad smell, improper waste disposal, and associated health problem from manufacturing industries. This is due to lack of the responsible organs commitment to confront the implementation of EIA and to reduce the win loss effect of manufacturing industries. Therefore, this study was made to fill this gap by evaluating the EIA implementation practice in manufacturing industry projects of Debre Birhan town.

1.3 Objectives of the Study

1.3.1 General Objective

The general objective of this study was to assess the implementation of environmental impact assessment in some selected manufacturing industry projects of Debre Birhan town and to provide suggestions for its improvement.

1.3.2 Specific Objectives

The specific objectives of the study were to:

- ❖ Assess the quality of environmental impact assessment reports of some selected industrial projects in Debre Birhan town.
- ❖ Examine the practice of community participation in the EIA process of some selected industrial projects in the study area.
- ❖ Assess the implementation of mitigation measures suggested in the EIA of some selected manufacturing industries in Debre Birhan town.

1.4 Research Questions

This study attempts to answer the following research questions

- ❖ What looks is the quality of environmental impact assessment report of some selected industrial projects in Debre Birhan?
- ❖ What is the practice of participation of the people in the EIA process of some selected industrial projects of Debre Birhan town?
- ❖ How much is the implementation of mitigation measures suggested in the EIA of industrial projects in the study area?

1.5 Significance of the Study

This research would help the town administration to get sufficient information whether there are constraints of implementing EIA in industrial projects. It can also help to identify major factors affecting successful implementation of EIA and its mitigation measures in manufacturing industry projects of the town and ways to come out of the problem.

This research could also be important for different stakeholders such as consultants and other environmental actors who are involved in doing and implementing EIA by pinpointing strategies to improve the quality of EIA and its implementation in the town in particular. Moreover, this study might also help the residents of Debre Birhan town by providing information about what is expected of them and manufacturing industries to protect the society and environment they are operating their business. Finally, it may initiate other researchers to conduct further research on the sufficiency of the Ethiopian legal framework to ensure EIA implementation.

1.6 Scope of the Study

It would be very important if the study is conducted at country level. However, because of variety of constraints such as sufficiently available data, budget, and other logistical problems, the researcher is obliged to delimit the study area in more specific, manageable, and compact area. Accordingly, Debre Birhan town of North Showa Zone in the Amhara National Regional State become the geographic scope of the study. Thematically, the study was concerned with evaluating the manufacturing industries of Debre Birhan town in practically implementing EIA and mitigation measures suggested. The population of the study was household heads living close to manufacturing industries

in areas such as Regreg, Liche and Dashen of Debre Birhan town where industry projects have been found concentrated.

1.7 Limitation of the Study

During data collection, it was very difficult for the researcher to get accurate and adequate information from the study participants mainly of the EFWPD side. This was because the respondents were expecting that the researcher might be spy to them than perceived as a professional. During this time the researcher has created awareness about the aim of the research then, they tried to give the right evidences. Another challenge that the researcher faced was the issue of personal security because some respondents were in doubt of the neutrality of the researcher as the researcher is from a government office. However, all these difficulties have been resolved by awareness creation and spirit of cooperation.

1.8 Definition of Terms

In this study the key terms listed down hereunder are used as follows;

Environment: the totality of all materials /natural or modified by human/: their external spaces and the interactions which affect their quality or quantity and the welfare of human or other living things including water, sound, odor, taste, and aesthetics.

EIA Implementation: is the process of moving a planned EIA idea from concept to reality, or putting a plan into action to resolve identified problems of industry projects that began operation since 2010 E.C in Debre Birhan town.

Industry: refers some selected industry projects that began operation since 2010 E.C. in the town.

Impact: any change to the environment or to its component that may affect human health, flora, fauna, soil, water, and subsequently alter environmental, social, economic or cultural conditions.

Project: a development activity listed in any directive in line with the EIA proclamation, major expansion or alteration of work.

1.9 Structure of the Thesis

This thesis was structured in five chapters. Chapter 1 introduces the study by describing the background, statement of the problem, significance, scope and objectives of the study. The second chapter covered literature review dealing with evolution of EIA, objectives and principles of EIA, EIA implementation in industrial projects. The methodological framework of the study was described in Chapter 3. The chapter begins with description of the study area then further detail the methods employed to carry out the study.

Chapter 4 has presented the details of the results to be obtained through analysis of the data. The results and discussions were organized in accordance with the objectives of the study. Finally, chapter 5 presented the conclusions drawn from the study based on the finding of the research and measures recommended for improving the quality of EIA implementation in industrial projects of Debre Birhan town.

CHAPTER TWO

LITERATURE REVIEW

2.1 Definitions and Concepts of EIA

2.1.1 What is EIA?

Environmental impact assessment (EIA) is one of the environmental assessment tools being used world-wide to provide decision-makers essential information to plan for environmentally sustainable economic development (Stewart *et al*, 2016). Although there is no single agreed definition to EIA most commonly UNEP defines environmental impact assessment as a tool used to identify the environmental, social and economic impacts of a project prior to decision-making. It is a systematic analysis of projects to determine their potential environmental impacts and the significance of such impacts and to propose measures to mitigate the negative impacts (UNEP, 2017). It aims to predict environmental impacts at an early stage in project planning and design, find ways and means to reduce adverse impacts, shape projects to suit the local environment and present the predictions and options to decision-makers. By using EIA both environmental and economic benefits can be achieved, such as reduced cost and time of project implementation (Ibid).

Stewart *et al*, (2016) define EIA as it is both a planning tool and a decision-making tool. As a planning tool, EIA presents methodologies and techniques for identifying, predicting, and evaluating potential environmental impacts of projects as per the project cycle. As a decision-making tool, it provides information that promotes policy-making and actions that ensure sustainability in the implemented projects.

2.1.2 Evolution of Environmental Impact Assessment

EIA was formally introduced in the United States through the National Environmental Policy Act (NEPA) of 1969 (Goodland, 2015). According to Goodland (2015), forms of what later became known as environmental assessment had started under town planning, land use and other policies prior to this period. EIA regulations rapidly spread to others, mainly industrialized countries of the world. Today, it is applied in more than 150 countries, and by all development banks and most aid agencies (ECA, 2015).

At international level, there are a number of legal instruments having concern on EIA. For example, the principle of the 1972 Stockholm Declaration has a rationale underlying EIA. This can be identified in Principle 14, which states: rational planning constituted an essential tool for reconciling development and environmental needs. The Brundtland Report also signifies the importance of EIA as a tool by which environment and development objectives could be integrated to achieve sustainable development (OUR COMMON FUTURE, 1987 cited in Martinez, 2017). The 1992 Rio declaration also identified Principle 17 that endorses the institutionalization of Environmental Impact Assessment (EIA) at the national level as a decision-making instrument for proposed activities that are likely to have significant negative impact on the environment (UNEP, 2017). The Johannesburg Plan of Implementation (JPOI) which was the output of the World Summit on Sustainable Development identifies the use of EIA procedures as a key action to be taken in addressing the challenges of unsustainable consumption patterns and production (UN, 2015).

2.1.3 Objectives and Principles of EIA Implementation

Among others, the International Association for Impact Assessment (IAIA) in cooperation with Institute of Environmental Assessment, UK has set objectives of EIA in 1998. According to this institution the main objectives of EIA are: ensuring that environmental considerations are explicitly addressed and incorporated into development decisions; avoid, minimize or offset the adverse significant biophysical, social and other relevant effects of development proposals; protect the productivity and capacity of natural systems which maintain their functions; and promote development that is sustainable and optimizes resource use.

The general principles of EIA application are also identified as ten (Abaza *et al.*, 2014). The general principles are intended to be a first step toward EIA good practice. These principles of good EIA practices are: priority should be accorded to the implementation of EIA through legislation; EIA should be applied as a tool to help achieve sustainable development; EIA should be integrated into existing development planning and approval; EIA should be applied as a tool to implement environmental management, rather than as a report to gain project approvals; EIA should be integrated into the project life-cycle to

ensure that environmental information is provided for the appropriate decision points and time; EIA should be applied to all proposed actions that are likely to have a significant adverse effect on the environment and human health; EIA should include an analysis of feasible alternatives to the proposed action. The process should be applied early in project development; EIA should include meaningful opportunities for public involvement. to occur throughout the EIA process; EIA should be carried out in a multi- or inter-disciplinary manner, using best-practicable science; and EIA should integrate information on social, economic and biophysical impacts to the maximum extent possible (Abaza *et al.*, 2014).

2. 1. 4 Types of EIA

According to Komínková (2016) environmental impact assessments could be classified into four types i.e., strategic environmental assessment, regional EIA, sectorial EIA and project level EIA. These are precisely discussed below:

Strategic Environmental Assessment

Strategic Environmental Impact Assessment (SEIA) refers to systematic analysis of the environmental effects of development policies, plans, programs and other proposed strategic actions. SEIA represents a proactive approach to integrating environmental considerations into higher levels of decision-making beyond the project level (Komínková, 2016).

Regional EIA

EIA in the context of regional planning integrates environmental concerns into development planning for a geographic region, normally at the sub-country level. Such an approach is referred to as the economic - environmental development planning. This approach facilitates adequate integration of economic development with management of renewable natural resources within the carrying capacity limitation to achieve sustainable development. It fulfills the need for macro-level environmental integration, which the project-oriented EIA is unable to address effectively. Regional EIA addresses the environmental impacts of regional development plans and thus, the context for project-level EIA of the subsequent projects, within the region. In addition, if environmental

effects are considered at regional level, then the cumulative environmental effects of all the projects within the region can be accounted (Ibid).

Sectorial EIA

Instead of project-level-EIA, an EIA should take place in the context of regional and sectorial level planning. Once sectorial level development plans have the integrated sectorial environmental concerns addressed, the scope of project-level EIA will be quite minimal. Sectorial EIA helps address specific environmental problems that may be encountered in planning and implementing sectorial development projects (Ibid).

Project Level EIA

In many countries in the world where EIA is in place, developmental projects such as manufacturing industries, construction of highways, ports and harbors, hydropower projects, mining projects, etc., undergo an environmental examination prior to being given clearance to establish and operate the projects. The EIA study then recommends appropriate mitigation measures in the project itself. Examples of such modifications that can be made include (Ibid): Change in the alignment of a highway, reducing the height of a dam, resettlement of affected people, suggestion to use a cleaner manufacturing technology which over a long run can generate more profits etc. (Komínková, 2016).

2.1.5 Overview of the Stages of EIA process

This section presents an overview of the stages of EIA to help place them in the context of the whole process.

Screening

The EIA process begins from the very start of a project. Once a developer has identified a need and assessed all the possible alternatives of project design and sites, two important questions must be asked: 'What will be the effects of this development project on the environment? Are those effects significant?' If the answer to the second question is 'yes', an EIA may be required. Answering this question is a process known as screening, where the requirement for a formal EIA and its associated cost implications can lead the

developer to reassess the project design with a view of reducing the significant impacts to a minimal level (Salim, and Zobaidul, 2018).

Scoping

Where it is decided that a formal EIA is required, the next stage is to define the issues that need to be addressed, that is, impacts that have a significant effect on the environment. This is known as scoping and is essential for focusing the available resources on the relevant issues (Ibid).

Baseline study

Following scoping, it is essential to collect all relevant information on the current status of the environment where the project is going to be implemented. This study is referred to as a baseline study as it provides a baseline data against which change due to a development project can be measured (EC, 2018).

Impact prediction

Once the baseline study information is available, the important task of impact prediction can begin. Impact prediction involves forecasting the likely changes in the environment that will occur as a result of the development activity (Ibid).

Impact assessment

The next phase involves the assessment of the identified impacts - impact assessment. This requires interpretation of the significance of the impacts to provide a conclusion, which can ultimately be used by decision-makers in determining the fate of the project implementation.

Mitigation

The assessment of impacts will reveal damaging effects upon the environment. These may be alleviated by mitigation measures. Mitigation involves taking action to reduce or remove environmental impacts and it can be seen that the usefulness of the EIA process is well demonstrated here. For example, successful design of mitigation measures could

possibly result in the removal or reduction of all significant impacts if mitigation measures had been included from the start (Salim, and Zobaidul, 2018).

Producing the Environmental Impact Assessment Report

The outcome of an EIA is usually a formal document, known as an environmental impact statement (EIA), which sets out factual information relating to the development project, and all the information gathered relating to screening, scoping, baseline study, impact prediction and assessment, mitigation, and monitoring measures. It is quite common that an EIA produces a non-technical summary, a summary of the information contained within the EIA, presented in a concise non-technical format for those who do not wish to read the detailed documents. This is very important, as EIAs are public documents intended to inform the public on the likely consequences of a development project in time and to get participation and comment in the final project design (Salim, and Zobaidul, 2018).

EIA Report Review

Once the EIA is complete, the Environmental impact assessment report is submitted to the competent authority. This is the body with the authority to permit or refuse the development project applications. The competent authorities are often in a position of having very little time to make a decision and have a detailed and lengthy EIA to read through which may contain errors, omissions, and developer bias. It is essential, therefore, that they review the document. Review can take a number of forms: it may be purely a process whereby the document is read and commented on by decision-makers; it can be more formalized and expert opinion is sought; or it can be through the use of formal review methods designed specifically for the purpose. Basically, the review process should enable the decision-makers to decide whether the EIA is adequate, whether the information is correct, and whether it is unbiased. If it is, they are then in a position to use the EIA as information to be considered in determining whether the project should receive consent to be applied (EC, 2018).

Follow up

Follow up relates to the post-approval phase of EIA and encompasses monitoring of impacts, the continued environmental management of a project, and impact auditing. Without any form of follow up EIA would operate as a linear rather than an iterative process, and an important step towards achieving environmental protection will also have been omitted (Ibid).

Follow up presents an opportunity both to environmental effects identified and cause-effect relationships and to learn from the process. However, data generated by monitoring and other aspects of follow up should be compared with the original predictions and mitigation measures in the EIA report to determine;

1. the accuracy of the original predictions
2. the degree of the deviation from the predictions, if any
3. the possible reasons for any deviation
4. Whether mitigation measures have achieved their objective of reducing or eliminating impacts.

Thus, information generated by this process can contribute to the improvement of future EIA practice, for example, by enabling more accurate predictions to be made (Salim, and Zobaidul, 2018)

2.1.6 Who Conducts EIA?

EIA becomes more successful and produces the aspired results if it is done in an atmosphere of neutrality towards a particular proposed action (Squillace, 1995). In order to guarantee neutrality different countries have used different approaches. The first approach is giving the responsibility to conduct EIA to government organs. This approach has a positive benefit since one can rely on government agencies to be independent, then proponents or project owners who might prioritize business profits. However, conflict may arise when the government is the project holder.

The second approach of ensuring independence is allowing proponents to do the EIA, either using consultants or by themselves in situations where they have the necessary expertise. This is a generally accepted approach that many countries follow. This

approach is also not without fault because it invites proponents to conduct the EIAs as only a means of meeting a requirement and perform by protecting their self-interest not because they are concerned for the welfare of the environment. It is certain that the impact study will focus on what the proponents want to do (Bengtsson, 2016).

Ethiopia follows the second approach as indicated in the EIA Proclamation. Art. 7 of the EIA Proclamation states that a proponent must undertake EIA by using consultants or experts. In addition, the Proclamation requires the proponent to bear the cost of conducting an environmental impact assessment report.

2.1.7 EIA and Public Participation

The theoretical awakening of EIA in the 1990s has been seen very clearly in the area of public participation, as would be expected due to the new thinking of the concept of democracy, collaboration and environmental justice. Public participation is now given prominence in EIA writing. This trend has been reinforced since the European Union amended the EIA Directive to incorporate the principles of the Aarhus Convention on access to information, public participation in decision-making and access to justice in environmental matters (Pohjola and Tuomisto, 2013).

However, problems with public participation are not new, as the steady growth of literature on this theme from the early 1980s onwards testifies (Ibid). They identified the following main barriers to early and effective participation, poor public knowledge of planning legal and licensing issues, poor access to legal advice, mistrust of the waste disposal of an industry, mistrust to influence the decision-making process, poor execution of participation methods, and regulatory constraints.

Stewart *et al.*, (2016) suggests three reasons for the need of public participation in EIA i.e. obtaining public input into decisions taken separately by decision-makers, providing some degree of public sharing of decision-making, and altering the structures and power relationships of decision-making. And it is in such relationship between public participation, the EIA process and the decision-makers, that he sees the potential for reducing negative effect of projects in the future (Ibid).

2.1.8 EIA Implementation

The final report of the International Study on the Effectiveness of Environmental Impact Assessment concluded that, while EIA had made its mark since it was introduced, it would be necessary to maintain the efforts to improve its performance if it is to make a significant contribution to the goal of sustainable development (Sadler *et al.*, 2000). The theme of effectiveness of EIA has been ever-present in the literature since then, but as Zhenghi *et al.*, (2019) observe, the bulk of that literature addresses procedural issues, with a much smaller proportion concerned with the implementation issues. Both are important parts of the overall EIA effectiveness, but the procedural aspects are more amendable, while substantive considerations in implementation raise more difficult questions for investors.

In 2016, an update to the International Study on the Effectiveness of Environmental Assessment implementation was initiated by the International Association for Impact Assessment (IAIA). This takes stock of practical experiences, and identifies, and seeks solutions for, shortcomings – but it also provides feedback on innovative practices, new areas of application of EIA, and new challenges to be addressed. A closer inspection of a number of such evaluations reveals two key points. First, any evaluation of EIA implementation effectiveness is only meaningful when made in the socio-economic, political and cultural context of the country concerned (European Commission, 2018). Second, views on implementation effectiveness depend on one's understanding of the nature and purpose of EIA (Ibid). It is interesting, for example, to contrast the technical, engineering perspective of EIA with the politicization of EIA, and calls for much stronger recognition for the role of experts in the process (Ibid).

2.1.9 Evolution of Environmental Impact Assessment in Ethiopia

At the national level, Ethiopia has also stressed the importance of having a clean and safe environment in the FDRE Constitution enacted in 1995. The Constitution gave everyone the right to live in a clean and healthy environment Art.44 (1) and laid a responsibility on the Government to make every effort to protect an environment Art. 92 (1). Further, it conceptualizes the right to development based on ‘sustainable development’ rather than

mere economic development (FDRE Constitution, Art.43). However, clear basis for EIA came after the enactment of the first comprehensive environmental policy in 1997.

The Policy had the goal “to promote sustainable social and economic development through the sound management and use of natural, human-made resources and the environment as a whole so as to meet the needs of the present generation without compromising the ability of future generations to meet their own needs” (Environment Policy of Ethiopia, 1997). But EIA only became a reality with the ratification of the Environmental Impact Assessment Proclamation No. 299/2002, which came in to force in December 2002. Based on this proclamation the Amhara regional state has also ratified its own rule for the implementation of EIA called Rule No. 1/2010.

A key footstep in the history of EIA in Ethiopia is observed at the recent promulgations of important proclamations including, Establishment of Environmental protection Authority (Proc. No. 295/2002), Environmental Impact Assessment (Proc. No. 299/2002) and Proclamation for Environmental Pollution Prevention and Control (Proc. No. 300/2002). These proclamations have stipulated the need for EIA and institutional issues compounding EIA administration in Ethiopia (EPA, 2015).

The other most significant step in EIA system of the country is Proclamation No. 295/2002. According to this proclamation one of the powers and duties of EPA is to "prepare directives and systems necessary for evaluating the impact of social and economic development projects on the environment; follow up and supervise their implementation" (EPA, 2015). Accordingly, EIA Directive No. 1/2008 is established to determine the projects for which EIA is mandatory which incorporate manufacturing industries.

2.1.10 Legal Framework of EIA in Ethiopia

i) Environmental Impact Assessment Proclamation

Environmental Impact Assessment Proclamation (Proc. No. 299/2002) makes EIA to be a mandatory legal prerequisite for the implementation of major development projects, programs and plans. This proclamation was promulgated to facilitate the implementation

and the maximization of socio-economic benefits by predicting and managing the environmental effects which a proposed development activity or public instruments might entail prior to their implementation.

With regard to development projects, the proclamation indicates that no person shall commence implementation of a proposed project identified by directive as requiring EIA without first passing through environmental impact assessment process and obtaining authorization from the competent environmental agency. In line with this, project proponents must undertake EIA and submit the report to the concerned environmental body, and, when implementing the project, fulfill the terms and conditions of the EIA authorization given to them (EPA, 2015).

ii) Environmental Impact Assessment Guidelines

Based on the duties and powers vested to EPA it has issued different EIA guidelines that can help to implement the EIA Proclamation and policy objectives entailed in the environmental policy. Among these are the technical and procedural EIA guidelines, which were issued in 2006 and 2003 respectively. They are intended to guide developers, and other stakeholders in carrying out EIAs (Ibid).

The procedural guideline details the required procedures for conducting an EIA, the permit requirements, the stages and procedures involved in EIA process, and the roles and responsibilities of parties involved in the EIA process. It has also included the categories of projects that are in the requirement of EIA, and list of project types under each category. The procedural guideline aims at: ensuring the implementation of the environmental policy and compliance of EIA related legal and technical requirements, and providing a consistent and good practice approach to EIA administration in Ethiopia. The document also contains legal elements, core values, guiding principles, and basic requirements for undertaking environmental impact assessment.

The guideline which will be pertinent to this particular study is Environmental and Social Impact Assessment Guideline for Industry Projects (2006). This guideline highlights major issues and potential impacts that should be taken into account during the

preparation and assessment phases. It also explains the appropriate mitigation measures, specific characteristics of industry projects and indicators for environmental and social monitoring.

The other valuable document is the Guideline for Reviewing EIA Reports (2003). This is a generic guideline prepared to facilitate the EIA reports reviewing and decision-making process, and it includes review approaches, and outlines a minimum report structure and information requirements. It is intended to help the reviewers to assess the content, comprehensiveness, adequacy and accuracy of information in the report, as well as its organizational and presentational qualities. The review guideline is principally prepared to be used by EPA and regional environmental agencies but it can also be used by sectorial environmental units such as environmental protection office of the town. Thus, it is believed that the guideline will help to make good decisions on how a project shall proceed (EPA, 2015).

2.1.11 Administrative Framework of EIA in Ethiopia

The environmental protection organs responsible for administering the EIA process are established based on the provision of Environmental Protection Organs Establishment Proclamation. These environmental protection institutions include: Environmental Council, Federal Environmental Protection Authority currently called Environment Forest and Climate Change Commission, Regional Environmental Protection Authorities and Sectorial Environmental Units. Each of these organs has their own duties and responsibilities with respect to administration of EIA (EPA, 2015).

The Environmental Council consists of representatives from relevant federal government offices, NGOs and other civic societies. The main responsibilities of the council include reviewing proposed environmental policies, strategies, regulations and recommendations to the government; evaluating and providing advice on the implementation of Environmental Policy of Ethiopia; and reviewing and approval of directives, guidelines, and environmental standards prepared by EPA (Ibid).

Federal EPA is responsible for establishing a system to undertake EIA on public and private projects as well as on social and economic policies, strategies, laws and programs. Specifically, it is responsible for developing a directive that identifies categories of projects likely to have negative impact and thus require EIA, and for issuing guidelines that direct the preparation and evaluation of EIA reports. In addition, EPA is responsible for evaluating the EIA reports on projects subject to federal licensing, supervision on projects likely to create inter-regional impacts. The EPA is also responsible for auditing and regulating the practical implementation of such projects (Ibid).

The regional environmental agencies are responsible to evaluate the EIA study reports on projects that are licensed, executed or supervised by regional states and that are not likely to entail inter-regional impacts. Such agencies are also responsible for auditing and regulating the implementation of projects under their jurisdiction.

Sectorial environmental offices are mandated to be established under every regional environmental agency with the responsibility of coordinating and following up activities in harmony with environmental protection laws and requirements. Such sectorial environmental units can play important role in ensuring that EIA is carried on development projects initiated by government institutions or private investors. With respect to the construction and operation of industrial projects, project proponents like Ministry of trade and industry, Ethiopian Investment Commission and regional investment organs have established sectorial environmental departments and offices (Lu, 2017).

2.2 Theoretical Literature

2.2.1 Theories in EIA

Here why theory is important can be the first question? Well, theoretical models and understanding help in refining and developing practice - there should be an ongoing iteration between theories and practice so that theory is developed from, and tested with, observation, and practice is informed by maturing theoretical ideas. For example, how best to protect an environment from pollution can be informed by understanding different theories of environmental safety. No one theory will hold the best answers but the

discussion among the theorists can help to identify issues that should be taken into account when designing good environmental protection practices as part of EIA. This dynamic environment demonstrates that single theories and single implementing agencies will not be sufficient. Instead, multiple theories, involving multiple actors, should be the norm (Hollick, 1993 cited in Tesfaye, 2018).

Accordingly, there are two commonly used theories in EIA, one is clearly rooted in the information processing (rationalist) theory, and the other variant is of the symbolic politics theory (Saunders, 2009). Each brings to bear a perspective that influences how the purpose of EIA and its effectiveness, in either procedural or substantive terms, or both, are viewed.

1. The Symbolic Politics Theory

If we look at the Symbolic political theory-EIA is used to suggest in accordance with certain values, but not necessarily holding to those values. According to this EIA theory, suggested by (Bartlett and Kurian, 1999 cited in Tesfaye, 2018) effectiveness can be seen from a number of different, politically oriented perspectives. The focus of this theory is to get answer for questions like; has the EIA process opened opportunities for local people to be more involved in decision-making? Have companies become more aware of environmental issues through EIA and modified their practices accordingly to gain competitive advantage? Has change been brought about in government bodies dealing with, say, natural resources, to internalize EIA thinking? Do decision-makers and other stakeholders, understand and properly use the EIA information provided to them?

2. The Scientific Rationalist Theory

The rationalist model also called information processing model believe that - if EIA provide better and more information to the then they will help decision-makers make a more rational decision because they are better informed. But we all know that, in reality, decisions about development projects are not made solely on a rational basis. Decisions are based on many considerations, and are often highly political (Sheate, 2010). According to the rationalist theory, EIA is not just about its immediate outcome (whether it influences the decision to give consent or not) or the environmental impact statement

(EIA) that is produced, but the process of engaging with stakeholders that EIA engenders and the potential for sustainable development created may have greater value (Ibid).

The basis of the rationalist model was the adoption of a rational process to guide the choice, from a range of alternatives, of the best solution for a defined problem or need based on an analysis of all the relevant information necessary to make that choice. After the enactment of the NEPA, EIA came to be seen as one of the important sources of information that would inform the choice of the best solution when the decision involved project proposals. The model is characterized as having a strong technical emphasis, with planners and other professionals acting as neutral processors of information, producing independent evaluations of the alternatives, to be provided to decision-makers (Barton, 2017). This form of EIA that emerged in the 1970s and still dominates institutionalized EIA in many countries is strongly influenced by this model.

This model has been the subject of significant criticism. A key critique has been the impossibility of recognizing all possible alternative solutions, from which to select the ‘best’ solution (Saunders, 2009). Taking this model to the next level, Barton (2017) suggests that the rationalist model be more participatory and collaborative in order not to exacerbate environmental injustice.

2.3 Empirical Reviews

Dams were among the earliest examples of projects that necessitate EIA application. Since 1970, when EIA was introduced thousands of large dams have been built worldwide. For instance, India and China have both built in excess of 3000 large dams for power generation, water supply, flood control, irrigation or to meet multiple purposes (European Commission, 2018). However, the effectiveness of EIA in the great majority of developing countries mainly Africa is low as project proponents consider the EIA process as a bureaucratic requirement to be fulfilled for project approval, isolated from the project planning and implementation cycle (Ibid). EIA is often carried out after the decision on the site of a project has been made and engineering studies have been completed. But the choice of site of a project is usually determined by economic and engineering criteria, with little or no consideration for environmental issues. As a

consequence, the opportunity is lost for considering project site alternatives with less damaging environmental and social impacts. Moreover, late EIA studies impede the contribution and exchange of information between environmental specialists and project designers regarding mitigation of negative impacts (Ashton and Shenoy, 2015).

Technical reasons for the poor performance of environmental management of projects submitted to EPA in developing countries begin with poor impact prediction in EIA studies, so that sound monitoring plans and mitigation measures cannot be identified. In fact, on account of the lack of elements related to impact nature and magnitude, a number of EIA studies of projects have failed to propose comprehensive environmental management programs for project implementation. This is because of presenting a list of generalities in the place of appropriate mitigation measures. In this situation, such projects end up being approved on condition that the design and cost evaluation of environmental management actions is presented sometime in the future (Nadeem and Fischer, 2014).

2.3.1 EIA in Spain

The country has enacted Decree 189-1979, to manage EIA of projects. In the country all projects, construction or activity, public or private must have an environmental license before execution. At scoping risk map is developed using GIS mapping software, while in terms of monitoring: Self-regulation is mandatory throughout the lifetime of the project once the license has been granted (WB, 2014). Besides, as part of the monitoring process, a centralized database was set up to house ongoing results from data collection. The person responsible for environmental monitoring must keep a record of fulfillment of environmental commitments pertinent to all environmental Code of Spain, before any Environmental License request is considered by NEIAO, an expedition fee must be paid and the fee depends on the size of the project. Public participation in the EIA process is encouraged at all phases of EIA because. Neighboring populations to the project area of impact must be consulted about the project. Attitudes toward the project i.e. general content or discontent toward a project is investigated, not only for project success but also to ensure the project co-existence with the population. Anyone who thinks the ESIA has not addressed important impacts or proposed suitable mitigation measures can ask

project owners to include amendments. In relation to licensing: the country launched a new online platform aimed to help the EIA licensing process reduce waiting times for potential projects. One of the most important steps in mitigation is pre-testing of measures suggested. Here government is responsible for preparation of the environmental impact study (WB, 2014).

2.3.2 EIA in Thailand

The EIA implementation of **Industry Park** in Thailand, which was aimed to produce export garment products, is cited for its poor performance with respect to environmental management associated with the industrial project. The government of Thailand proceeded to construct the park over the muted objections of Thailand academics and the stronger protests of local people (Nadeem and Fischer, 2014). The government used a serious Environmental Impact Assessment (EIA) prepared in 2002 and ignored their own recommendations for the mitigation of the predicted public health, resettlement, social, economic and environmental impacts. The claims made in the EIA for the industry's benefits were later shown to be demonstrably false and based on inappropriate economic models. The EIA and other related documents were not made available to the project affected people and other interested groups. Affected villagers were not consulted at the early stages of the decision-making process and there were no attempts to include them in the decision making on the project or the mitigation measures. The issues about inadequate assessment of impacts and compensation were not addressed at the very beginning. The garment industry park did not comply with the existing World Bank guidelines that required a new EIA and appropriate impact mitigation prior to the implementation of the redesigned project (Ibid).

Generally, by many criteria, the past record of projects with respect to EIA implementation appears to be a poor one. Manifestations include: the poor quality of EIA studies; failure to address the concerns of people adversely affected by projects; inadequate funding for EIA and its mitigation measures; low standards of work and absence of enforcement and follow upon terms and conditions (Sadler *et al.*, 2000).

2.3.3 EIA in Nigeria

A case study conducted in Oil refinery in Nigeria, which was aimed to produce 125 Billion litter of fuel has indicated that the EIA study was submitted to Environmental Affairs Department for approval after ten years of its preparation, when some phases of the construction work had already been commenced. The level of public consultation and participation in the EIA process were limited. Consultation with surrounding communities and non-governmental organizations working in the area was not properly undertaken. Information disclosure during the project planning and design stage was not sufficiently delivered to the project affected communities and other interested groups. Moreover, these people had no access to the EIA report and to comment on it. The project was commenced before the reviewing activities carried out hence, the decision making process was not influenced by the EIA (SAIEA, 2013).

For example, among over 20 EIA processes reviewed in Nigeria only five incorporated a structured approach to public involvement as part of the EIA study and, in both cases, the level of involvement was “consultative” rather than “participatory”. A further eight EIAs included some component of interaction between the practitioners and local people, but most of these interactions consisted of ad hoc discussions between practitioners and those local inhabitants that happened to be present when the EIA practitioners visited the project area (ECA, 2015).

2.3.4 EIA in Ethiopia

Similarly, in the requirements of the Ethiopian EIA system, projects that fall under Schedule 1 (projects that require full EIA study) by their size, nature and/or location are: projects that displace above 200 people and has serious environmental impact with surface area of 2 ha or more (Sadler *et al.*, 2000).

Past experience in Ethiopia has also indicated that industrial projects were among the causes of environmental pollution as well as social and health problems. Many of the large-scale projects particularly those implemented for tannery development have performed poorly and failed to meet social safety and environmental sustainability. Only a few of the projects brought a significant contribution to economic development and

improvements in the living standard of the population. On the contrary, the majority of projects instead caused; loss of arable- and pasture-lands, displacement of large numbers of people, irreversible ecological damages, and increased health hazards (Asnake, 2013).

Besides, malaria was recorded in many of the irrigation schemes of Ethiopia. The situation in the Amibara Irrigation Project in the Middle Awash Valley is one of such examples affecting the society. The project caused paramount health problems to the local population as well as the project workers due to the widespread transmission of water-related diseases. The irrigation infrastructure (canals and drains) became suitable breeding places for the diseases vectors. This is because adequate mitigation measures were not implemented to prevent the diseases (Rahmato, 1999).

Environmental auditing conducted by federal EPA on Gilgel Gibe I electric project also indicated that during the dam construction water quality was seriously affected by soil erosion and pollution generated during civil engineering works (e.g. tunnel, quarry and borrow pits). This had resulted in deterioration of water quality, aquatic ecosystem, and the surrounding environment. The quarry site has also affected the aesthetic beauty of the surrounding environment by converting the topography of the area and leaving scars behind i.e. the quarry site was not properly rehabilitated.

The above examples indicated that, in most cases proper environmental considerations were not integrated in the planning and implementation of projects in Ethiopia. Only some of the large-scale projects, particularly the ones funded by donor agencies, had some environmental assessments. However, these studies were all about document preparation and the focus was primarily for meeting regulatory requirements of the donor agencies implying that little attention was given to implementation of mitigation measures. As a result adverse impacts were often not adequately mitigated.

2.3.4.1 Evaluation of the Ethiopian EIA Procedure

This section discusses the evaluation of the Ethiopian EIA procedure on the bases of the following criteria: the extent of coverage of EIA system, screening of actions, scoping of impacts, EIA report review, decision making, and monitoring of EIA system.

i)The Extent of Coverage of EIA System

The extent of coverage of EIA system in Ethiopia is evaluated as **partially satisfactory**. The EIA proclamation stipulated that every project which falls under the category of lists that require EIA shall be subject to the environmental impact assessment. Based on this provision, projects that require EIA are listed in Dir. No.1/2008 issued by EPA. Even in the existence of this directive most of the development proposals owned by private sectors don't properly pass through the EIA process (EPA, 2015).

ii) Screening of Actions

Screening is a process of judgment to decide, whether or not to conduct an environmental impact assessment process for the proposed activity. It is the practice by which the project can be divided into different categories, depending on the nature of its impact (Martinez, 2017).

The screening actions in the EIA procedure are less satisfactory. Based on the nature, size and location, the Ethiopian Procedural Guideline categorized projects in to three groups namely projects that requires full scale EIA, preliminary EIA and those that don't require EIA. On other hand, a directive issued to determine the categories of projects subject to EIA, lists projects requiring only full scale EIA (Dir. No.1/2008).

iii) Scoping of Impacts

Scoping is the procedure used to evaluate a range of issues to be analyzed in the EIA process. This practice is associated with determining the terms of reference for the assessment (Martinez, 2017). It is carried out to ensure that all significant impacts and reasonable alternatives are addressed in the intended EIA report of a project. It requires information and expert judgment on impact-related issues, and the evaluation of critical issues for various stakeholders (Ibid). Generally speaking, scoping is considered unsatisfactory in many developing countries. The process is often hindered by a number of recurring problems that center on the difficulty of identifying; prioritizing and reaching agreement on key issues to be included in the EIA report. According to EPA (2015)

scoping process is not satisfactory in Ethiopia too as it is overlooked in most projects of the Ethiopian EIA practice (Ibid).

iv) EIA Report Review

The most important quality control feature of EIA is the review stage, as it helps to ensure that whether information on the environmental impacts of an action is adequate before it is used as a basis for decision making (UNEP, 2017). Therefore, it is particularly important that this stage is carried out as effectively and efficiently as possible. Various methods to ensure quality of the review can be used. These include use of review criteria, the setting up of an independent review body, the publication of the results of the review, and the involvement of the community and other stakeholders (Ibid).

The EIA proclamation and its Procedural Guideline specifies that the responsible bodies for reviewing process are federal and regional environmental protection authorities and the process need to be carried out by taking into account any public comments and expert opinions(Ibid).

Recently federal EPA has delegated its power of reviewing EIA reports to identified sectorial licensing agencies that have vested interest on the development proposals. EIA report review needs to be undertaken by an independent reviewing body to avoid conflict of interest (Ibid).

vi) Monitoring of EIA System

There is very little EIA system monitoring in developing countries (Martinez, 2017). Though there are exceptions many environment departments do not keep a record of EIA documents or copies of EIA reports (WB, 2017). However, some limited informal system monitoring by environmental agencies has taken place in some countries, to try to improve practice by learning from experience. However, monitoring of the EIA system is uncommon and totally absent in projects of Ethiopia.

2.4 Conceptual Framework

The conceptual framework below summarizes that EIA emanates from proposed projects screened as requiring EIA. Once a project is screened as requiring EIA, it should include scoping of the project through public involvement, impact analysis, mitigation and impact management, followed by EIA report preparation, reviewing the report again with public involvement, and submission for decision after incorporating public opinion. However, EIA submitted for decision can be approved and proceed to implementation and follow up or it cannot be approved if it requires redesigning and resubmission. It also indicates that public involvement can occur at any other stage of the EIA process.

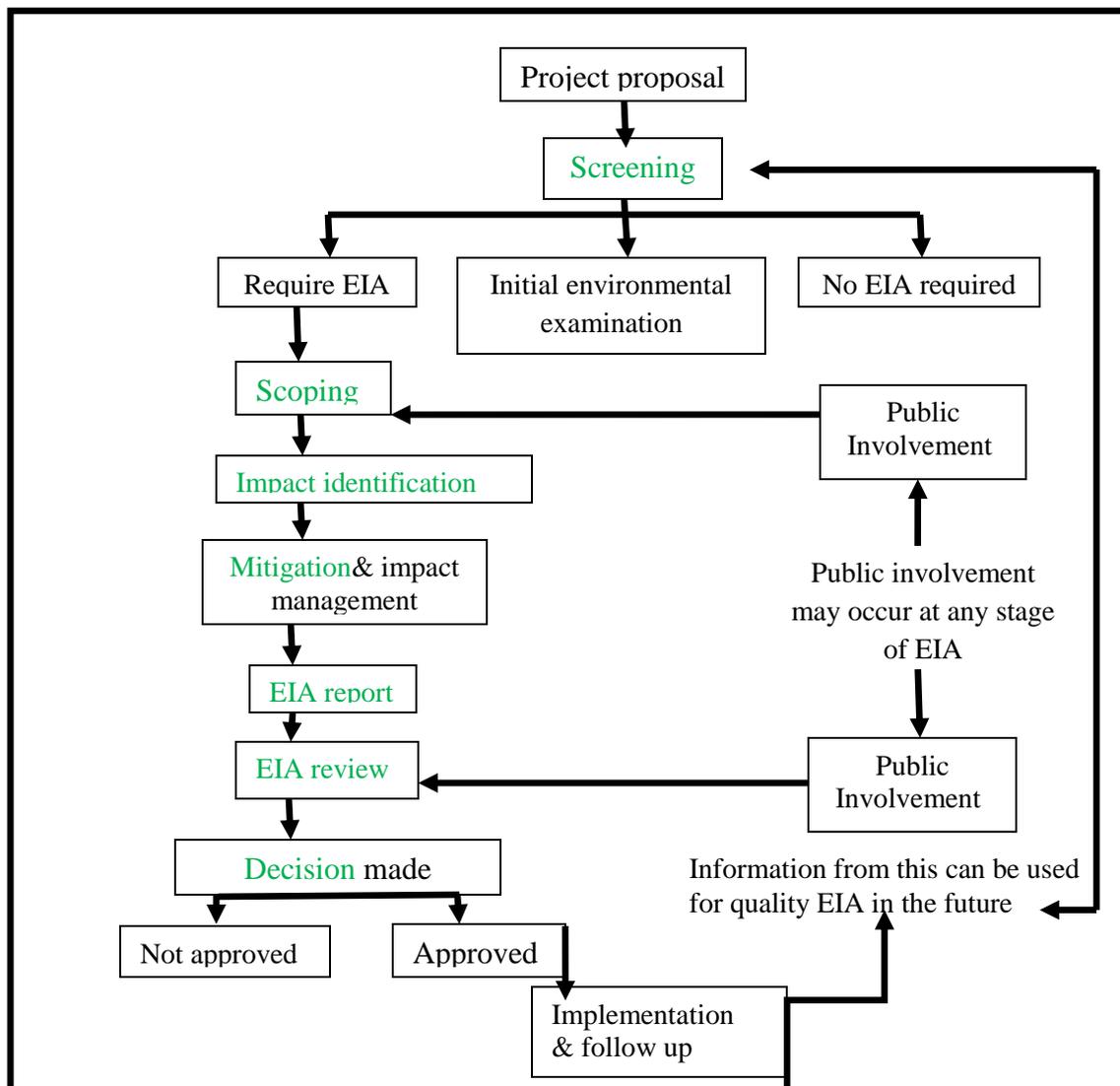


Figure 2.1 Conceptual framework of the EIA process

Source: European Commission (2018)

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter has aimed to offer key insights about the research methodology and designs used in this study. While research methodology refers the whole process of the research conduct, research design implies the specific techniques that question how the researcher is going to conduct the research. Thus, in this chapter, attempts were made to briefly show the type of research design being utilized in the process of the study that involves data sources, data collection tools, sampling method, and sample size, target groups of the study, methods of data analysis and the ethical considerations that are being adopted by the researcher.

3.1 Description of the Study Area

Debre Birhan means a place of light and hope. It is founded by Emperor Zera-Yaeqob in 1446. The name of the town has become Debre Birhan in response to miraculous light that was observed in the sky at that time. Before the light it was named as Debre-Eba (Dagne, 2016).

Location of Debre Birhan

In absolute terms the town is located at $9^{\circ} 41'N$ to $9^{\circ}44' N$ latitude and $39^{\circ} 32'E$ to $39^{\circ}35' E$ longitudes with an elevation of 2,840 meter above mean sea level (North Shoa Zone Finance and Economic Cooperation Department, 2019). The relative location of the town is in central Ethiopia surrounded by Bassona woreda. Debre Birhan is found at a distance of 695km South West of the regional capital, Bahir Dar and 130km North of Addis Ababa, on the paved high way to Dessie within North Shoa Zone of Amhara Regional State. Nowadays, the town is the administrative center of North Shoa Zone Administration (Ibid).

Climate

The climate of the town is temperate */dega/*, with total annual rain fall of 946mm, and average annual temperature of $10^{\circ}c$ which is suitable for various types of plants like *tid*, *gravilia*, barely, and other highland plants/crops to grow well. The rainy season of the

area is summer. Accordingly, high (1400mm) amount of rain is observed during June, July, and August. But the average annual rainfall in the town is 946mm. The temperature is relatively higher (18 °C) during April and May, and lower (4 °C) from October to January. In general, due to its high altitude above mean sea level the town is one of the coldest towns in Ethiopia (North Shoa Zone Finance and Economic Cooperation Department, 2019).

Topography

Altitude of the town ranges from 2370 meter to 2750 meter above mean sea level. The land form of the town is eighty six percent plain, ten percent irregular and four percent slightly rose in its central part. The major soil types in the town include black cotton, silt and clay soil. This indicates that the core business district of the town and its surrounding is suitable for various types of construction projects mainly silt and clay soils while the peripheries are dominated by black cotton soil (North Shoa Zone Finance and Economic Cooperation Department, 2019).

Demography

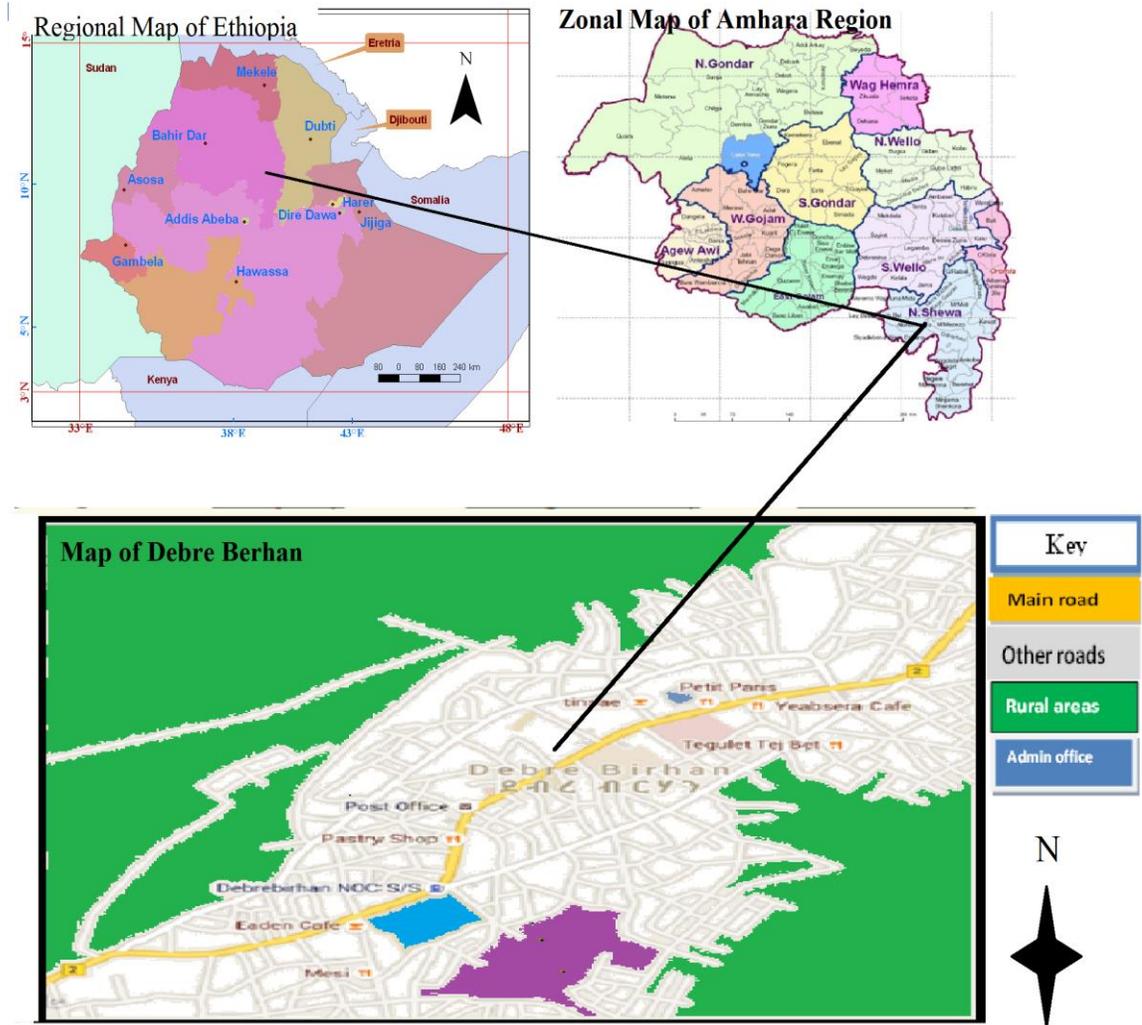
According to the population projection estimate made by North Shoa Zone Finance and Economic Cooperation Department for 2019 the town has a population of 113, 540. This population lives within an area of 2269.95 hectare and 470/km² density. The three largest ethnic groups reported for this town are the Amhara (93.23%), Oromo (4.11%), Tigre (1%) and all other ethnic groups made up 1.66% of the population. In terms of religious aspect orthodox christians account the largest (98 %) share while other religion accounts 2 percent (North Shoa Zone Finance and Economic Cooperation Department, 2019).

Economic activity

The major land uses of the town are residential, commercial, industrial, administrative, and agricultural. The economic activity of the people varies between primary activities; urban agriculture, and quarrying, secondary activities; cottage and modern light industry, and tertiary activities; service provision sectors like trade, transport, hotel, and others. Recently the town is becoming economically active and very much convenient for investment and residence. Due to this reason there are 446 investment manufacturing

industry projects that have taken EIA license in the town. There are 4 legal consultants operating in the town to prepare EIA report of manufacturing industries. Besides, the town is one of the areas in Amhara region where federal industry park is constructed and has started operation (NSZ Industry and Investment Office, 2021).

Map of the Study Area



Scale 1cm to 0.5 km
 Source: Own map generated from Ethio GIS, 2007

Figure 3.1: Map of the Study Area

3.2 Research Method

The choice of research design and methodology can be determined on the bases of philosophical assumption of each research method, or reasoning behind each research

method, and others (Kothari, 2004). A research design is a blue print, master plan, structure or strategy of investigation conceived in such a way that it provides answers to research questions (Ibid).Based on this the most suitable research approach for this study is mixed research approach. This approach helped in collecting the required types of data in both qualitative and quantitative form. Accordingly, the researcher employed mixed research approach. This is because the proposed study needs the collection of statistical (numerical) data and narrative data. Narrative data were collected through document analysis and interview i.e. regarding the existing conditions of EIA implementation by manufacturing industries of the town and, process that are going on regarding the preparation and ratification of EIA in Debre Birhan town. On the other hand quantitative data were collected through questionnaire.

Specifically, the research design used by the researcher for this study is both exploratory and descriptive type because descriptive type is required for narrative data gathered through questionnaire, interview, and document review. Moreover, exploratory design was used as it helps to explore new issues in the research (Kothari & Garg, 2014) and explain the data obtained from why and what questions during interview. The reason to select descriptive is that it helps to obtain information about the current status of the phenomena; to evaluate what practices manufacturing industries have with respect to implementing EIA in Debre Birhan town, and to measure things as they are. Also this design helped to use document analysis, interview, and questionnaire as data gathering tools, to include large samples, to generalize raw data and summarize it in a useable form (Chopra *et al.*, 2012).

The strategy of research used for this study was survey research strategy. The reason for the researcher to choose this strategy is that it helped to collect data from large population involving samples and enables the researcher to generalize research findings to the wider population (Ibid).

3.3 Target Population

Population members of the town such as employees of Debre Birhan industry and investment office, department of environmental forest and wildlife protection, consultants

in EIA and 610 household heads living close to manufacturing industries in the town mainly in Lich, Regreg, and Dashen area where industries are concentrated were targeted. Manufacturing industries which began operation in 2018 are purposively chosen because some of the mitigation measures indicated in the EIA report of investors needs time to be implemented and environmental and social effects caused by failure in implementing EIA may also require some years to occur. Similarly household heads living close to these industries were chosen for the study because adverse impact of manufacturing industries are more sever in nearby areas than those far apart. Besides, the target population includes all(52)employees of the above two government offices and 4 consulting offices in Debre Birhan town who are responsible to follow up the study and implementation of EIA, by manufacturing industries of the town(Debre Birhan Communication Office, 2020).

3.4 Sample Design

3.4.1. Sampling Technique

In this study, both non-probability (purposive) and probability (simple random) sampling techniques were used. Firstly, Debre Birhan town is purposively chosen. This is because Debre Birhan is a town where industrial expansion is relatively high in the region and the country as a whole (Debre Birhan Communication Office, 2020). From this town 3 area namely: Liche, Regreg, and Dashen areas where industries are more concentrated are purposively chosen. Besides, NSZ industry and investment office, office of environmental protection and land administration, EIA consultants and 610 households living close to manufacturing industries were also purposively chosen because of their strong relation with the topic under investigation. From the total 610 households living in the purposively chosen areas, only sample households were randomly taken. Then sample household heads were proportionally taken from each target area using simple random sampling method.

In addition, data were collected from the EIA consultants, EIA officer, and construction inspection officer and their heads, in Debre Birhan which are purposively selected by the researcher to get their expertise Knowledge.

3.4.2 Sample Frame

Sample frame is the population from which sample is drawn (Kothari, 2004). In each industrial area of the town list of households settled close to industries were generated from record of the concerned kebele administration to form the sampling frame. Then, among those households proportional samples were taken for the study using simple random sampling technique;.

3.4.3 Sampling Unit

Although the sampling units were Industrial areas, households in the three sample industrial areas of the town and individual employees in the government offices, and consultants the conclusion seems to apply for the whole town. Thus, Debre Birhan town was taken as a large unit of analysis in this study.

3.4.4 Sample Size Determination

According to the population estimate made by North Shoa Zone Finance and Economic Cooperation Department (NSZFECD) for 2019 the three industrial areas of the town has a population of 610 households (NSZFECD, 2019). Corbett (2005) recommends that an investigator is strengthen to decide the level of confidence for result analysis and margin of error what he/she agrees but should be liable for the quality of the result. With this consideration, the target population in this study was the 610 households who are close to manufacturing industries, in Debre Birhan. Based on this, the sample size was determined using (Kothari, 2004) formula as follows:

$$n = \frac{z^2 * p * q * N}{e^2 (N - 1) + z^2 * q * p}$$

Where: n = sample size

z = values of standard variation at 95% confidence interval (1.96)

p = Estimated proportion of households living close to industries (0.03)

q = 1-p

e = Standard error (acceptable error) it should be within 3% of the true value

N = number of total households in the sample area (610)

$$\text{Hence, } n = (1.96)^2 * 0.03 * 0.97 * 610 / ((0.03)^2 * (610 - 1) + (1.96)^2 * 0.97 * 0.03$$

$n = 68.192266 / 0.6598906$

$n = 103$ household heads. This sample size was shared for each industrial area household heads. Thus, the total sample size was 103 which were used to fill questionnaire.

Table 3.1: Number of Sample Households Taken for the Study

Industrial area name	Total No of households	Percentage Share	Sample to be taken from each area
Regreg	210	34%	35
Liche	139	23%	24
Dashen	261	43%	44
Total	610	100%	103

Source: NSZFECD, 2019

3.5 Sources of Data

Both primary and secondary data sources were used in this study.

3.5.1 Primary Data

To collect primary data, the researcher used, EIA consultants, officials from investment office, environment protection office of the town, and heads of households in industrial areas of Debre Birhan town. Two data collection techniques; questionnaire, and interview, were used to collect the necessary data from these respondents.

3.5.2 Secondary Data

The appropriate secondary data sources that the researcher used include EIA report documents submitted to environmental protection office, reports of local government institutions, and books. These sources were used to get review of literature and to verify/crosscheck the data collected from primary sources as indicated above.

3.6 Data Collection Tools

In order to acquire relevant information, the researcher can adopt diverse methods of data gathering tools (Corbet, 2005). Accordingly, questionnaire, formal interviews, and document analysis were vitally used to obtain primary data. These instruments helped the

researcher to get accurate and reliable data so as to respond to the research questions. Using these data collection instruments, the researcher has triangulated data to ensure its validity and reliability.

3.6.1 Interview

Interview with employees Environment protection office, investment office of Debre Birhan town, and EIA consultants was conducted separately to elicit data pertinent to the implementation of EIA by manufacturing industries. To this end, 7 interview (3 consultants, 2 from environment protection office namely EIA officer, and head of the office, and again 2 from investment office (head of the office, and construction inspection officer) were purposively conducted to get their expertise knowledge.

3.6.2 Questionnaires

Questionnaire was developed, pre-tested and used to collect data from households living close to manufacturing industries. Questionnaire is chosen as it helps to address large population within a short period of time (Baughn *et al.*, 2017). The focus was on mitigation measures implemented, community participation in EIA, conflicts over impact due to industries in the society's environment. The questionnaire was prepared in local language and made to address all the objectives of the study.

3.6.3 Document Analysis

In order to supplement the data collected from different sources the researcher tried to investigate various documents which are concerned of the manufacturing industries EIA report, target government institutions' monitoring results and public participation minutes. EIA reports were investigated about the inclusion of required contents; and mitigation measures recommended. Mainly, EIA document submitted to Zonal environment protection office by selected factories, evaluation results from the regulatory organ on the implementation of EIA by those factories were reviewed to determine the quality of the documents. Specific documents to Eleni Candy, Sun floor, Etal Aluminum, and Ek textile projects were selected and analyzed to make sure how consistent was the data gathered through the tools mentioned above.

3.6.3.1 Analysis of the Quality of EIA Reports

The quality of the EIA reports of four sampled projects was reviewed based on the review package developed by Zhuang and Xiong (2018) with some adjustment to the Ethiopian EIA reviewing guideline. The contents of the Ethiopian Review Criteria are very similar to that of the Lee and Colley Package. The review criteria are used to determine the validity and accuracy of information contained in the EIA report. In this study adjustment was made on the Ethiopian review criteria to facilitate the analysis through using criteria that are relevant to the nature of the projects under review (Ethiopian EIA review guide, 2003). The review criteria are arranged in four levels; project description and baseline information(1), identification and evaluation of key impacts(2), alternative, mitigation and monitoring(3), and communication of results(4). Under each review criteria there are categories (such as 1.1, 2.1, 3.1, and 4.1). Each category was awarded an alphabetic symbol A to E as a grade according to the quality of information presented in the contents of the EIA document.

An average grade then was calculated for each respective category. This way, the average grade was calculated for each of review area. Finally, from the grade given to each review criteria, an overall average grade of the EIA is arrived at the overall assessment of the quality of the EIA of the four projects under review. In order to make an average result of each category, review area and the overall assessment symbols were translated to numbers: 0 for symbol E, 1 for D, 2 for C, 3 for B, and 4 for A. In addition, the numbers were aggregated in order to obtain an average score for the Category, and same approach was applied to have an average score for the review criteria and for the overall quality assessment of the EIA (Ibid). The rating criteria for each symbol are interpreted as follows:

- A - Excellent: Relevant tasks well-performed, 90% of the contents required included.
- B - Good: Satisfactory and complete, only minor omissions exist, 75% of contents included.
- C - Satisfactory: because of few important omissions, above 50% contents included.
- D - Poor: because of many significant omissions below (50% of contents included)
- E - Have no EIA at all (Ibid). The adjusted review package is presented in Appendix 1.

3.7 Data Analysis Method

Content analysis is a method that is used to study and examine organizational behaviors, stakeholder perceptions and societal trends (Bengtsson, 2016). Content analysis as one form of qualitative analysis for research is used to understand and gain insights from the collected data. Thus, qualitative data analysis that is based on content analysis is used to explain the data acquired through interview, and document review in connection with the existing literatures. On the other hand, the quantitative data, data from questionnaire was analyzed through descriptive analysis based on mean, frequency distribution, and cross tabulation which is processed by using SPSS software.

3.8 Validity and Reliability

To ensure the validity and reliability of the study, the researcher correlated data from different sources; also conducted pilot test and expertise consultation. In addition, during questionnaire preparation, the language usage has considered understandability for respondents. The questionnaire was also distributed to household heads as the concept of EIA implementation requires certain level of practical experience. Representativeness of the samples selected was kept by taking samples from all areas where households and industries are observed close to each other.

3.9 Ethical Consideration

Prior to data collection from the study participants, the researcher tried to ensure the participants agreement for their active involvement in the study. Accordingly, all study participants were informed about the procedure used in the study, and their rights as study participants during data collection. In any activity that matters to the research, the researcher has made positive interaction with respondents to get their permission and approval. The researcher also promised the participants to keep the information they provided confidential during and after the study. Besides, all the sources reviewed and discussed in the study were fully acknowledged.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND INTERPRETATION

This chapter is intended to present the data that the researcher gathered from respondents through various data collection tools. Therefore, once adequate data is gathered, what comes next is to present, discuss, analyze, and interpret the existing data so as to enrich the intended objectives of the study. In short, without interpretation and analysis, presenting the data alone is nothing and cannot indicate what is required of the study. Accordingly, the researcher has tried to present, analyze and interpret the data in terms of the research questions here under.

4.1 Response Rate

The questionnaires were distributed to 103 employees of the ECWC. From the distributed 103 questionnaires for the study, 103 were properly filled and returned to the researcher. Therefore, the response rate in this study was 100 percent.

4.2 Demographic Profile

The following table shows the demographic profile of respondents in the sampled industrial areas of Debre Birhan Town.

Table 4.1 Respondents' Demographic Profile

Profile	Category	Frequency	percentage
Sex	Female	12	11.6%
	Male	91	88.4%
	Total	103	100%
Kebele	Lich	24	23.3%
	Dashen area	44	42.7%
	Regreg	35	34%
	Total	103	100%
Education	Below grade 12	60	58.3%
	Diploma	20	19.4%
	1st Degree	18	17.5%
	Above 1st degree	5	4.8%
	Total	103	100%

Source: Field survey, 2021

From the total respondents who fill the questionnaire of the researcher most (88.4%) were male and female respondents' account the remaining percentage share of the study participants. This shows that most households are male headed in the study area. In terms of kebele of respondents 42.7 percent were from Dashen area and the least (23.3%) were from Lich. It is also indicated that the respondents who have education level of below grade 12 were (58.3%) while the least (4.8%) of the respondents were above 1st degree followed by 17.5 percent respondents with 1st degree holders. This is evidenced by what is observed in table 4.1 above. Thus, educational status of respondents makes the respondents to be sufficiently matured/ wise in deciding to answer the research questions. But education is more crucial especially to bring about attitudinal change towards reasonable decision making.

4.3 Data Presentation and Discussion

This part of the study is devoted to the interpretation and discussion of the data obtained from the respondents in relation to the implementation of EIA by manufacturing industries of Debre Birhan town.

4.3.1 The Quality of EIA Report

The Amhara National Regional State Environment Protection Authority has formulated a revised regulation on 2010E.C (Rule No. 001/2010). This regulation has indicated that EIA study of manufacturing industry projects be conducted by legally permitted consultants and approved by the Zonal Environment, Forest and Wild Life Protection Department and it set out 17 content requirements to be included in the EIA document of any industrial projects as indicated in annexes (Rule No. 001/2010).

Having this in mind, the researcher has tried to conduct document review on four randomly selected manufacturing industry projects namely Sun floor, Etal Aluminum, EK textile, and Eleni Candy factories, among 11 manufacturing industry projects which began operation since 2010E.C. Here it is good to note that the filing system of EFWD is manual and very poor; it takes half a day for the record class to get the EIA report of the above mentioned 4 sample industry projects selected by the researcher for document review. The quality of EIA report of the four sample projects was assessed based on the

adjusted review package i.e. the quality of EIA report is presented in scores in which the grading system consists of an average score for the review areas, categories and finally for overall assessment.

Table 4.2: EIA report quality of reviewed projects

No.	Review Areas and Categories	Reviewed projects' score obtained			
		Eleni Candy	Sun floor	Etal Aluminum	Ek textile
Overall assessment		C	C	D	E
RA1	Project environment	C	C	D	Because it has submitted no EIA report to NSZ environment, forest and wild life protection department
1.1	Project description	D	C	D	
1.2	Site description	C	C	C	
1.3	Wastes	D	D	NA	
1.4	Affected environment	C	B	B	
1.5	Baseline description	B	B	B	
RA2	Identification and evaluation of impacts	D	D	D	
2.1	Identification of impacts	D	D	D	
2.2	Scoping of impacts	D	D	D	
2.3	Prediction of impact magnitude	C	C	NA	
2.4	Assessment of impact significance	D	D	NA	
RA3	Alternative, mitigation, monitoring	C	C	D	
3.1	Alternative	D	C	D	
3.2	Mitigation measure	C	C	NA	
3.3	Monitoring program	C	NA	D	
RA4	Communication of results	C	C	C	
4.1	Layout of information	C	B	C	
4.2	Presentation of information	C	C	C	
4.3	Emphasis	C	D	D	
4.4	Non-technical summary	D	C	NA	
4.5	Uncertainties in information	NA	NA	NA	

Source: Researcher Data Collection, 2021

Accordingly, as one can understand from table 4.2 above the researcher found that two of the manufacturing industry projects namely, Eleni Candy, and Sun floor factory have satisfactory results, score of “C” in describing the environment of the project and the baseline conditions.

With respect to identification and evaluation of key impacts the above two projects received unsatisfactory score of “D”, which is below the acceptable standard.

In the examination of the alternatives, mitigation and monitoring Sun Floor and Eleni Candy factory were evaluated as satisfactory “C”

In the assessment area 4, communication of results both Sun Floor factory and Eleni Candy have scored quality of “C”.

But what the surprise is that the case of the rest two projects namely Etal Aluminum and EK textile i.e. the EIA document of Etal Aluminum is still under way while EK textile have no EIA document submitted at all which is contrary to what EPA officials provided during their interview. The overall assessments for Sun floor and Eleni Candy projects was satisfactory “C” while EK textile is E, has no EIA and that of Etal Aluminum has received “D” grade, which is below the level of acceptance.

In general we can understand that review areas of the projects; baseline condition and project description have better quality for three projects as compared with the remaining review areas. This might probably be related to the fact that the tasks in these areas are largely depended on descriptive methods and readily available or obtainable data. For instance, the description of local environment has been made on the basis of secondary data about topography, land use, climate, and socio-economic aspects of the project area. Most of the baseline conditions of the impact areas were also described qualitatively. The task in the Review Area 4(Communication of results) is also basically a matter of organizing and presenting the information by the right professional in an acceptable standard. Thus, the tasks in the two review areas could be relatively easier to perform successfully, whereas the successful performance of the tasks in the other areas particularly Review Area 2 (Identification and evaluation of key impacts) and review area 3 requires the use of more complex methodology that may depend on more intensive data, which are usually not readily available and are costly to obtain.

In review area 2, the most common deficiencies observed in most of the reports included; weaknesses in impact scoping and evaluation of impact significance, which are the core elements of impact analysis. In this regard the EIA of Eleni Candy was unsatisfactory and

of Sun Floor factory was also the same quality in terms of impact scoping. This is because the scoping process undertaken was not clearly indicated as per the methodologies applied for identification of significant impacts and issues. Besides, public involvement during scoping (who had been consulted and what their inputs and concerns were), alternatives considered, and the results of scoping (TOR to guide the further studies) are poorly elaborated or not stated at all. In both cases, no quantitative methods have been applied in prediction of impact magnitude and assessment of impact significance. This implies that the reasons for this weakness might include the lack of established clear criteria for defining impact significance and absence of commitment to do the task by the right professional who knows the environmental standards.

In review area 3 (alternative, mitigation, and monitoring) the EIA report of Eleni Candy project had received poor and satisfactory quality for both alternative and mitigation measures respectively. The Etal Aluminum project had poor quality for monitoring program and alternative but not available for mitigation components. These limitations indicated that the EIA reports have failed to present appropriate EMP, to show the effectiveness of the proposed mitigation measures, and to address the potential negative effects of the mitigation measures and the potential conflicts that may occur between those demerits and the merits of the measures. Besides, the EIA reports did not indicate and explain the commitment of the developer to the implementation of mitigation measures.

To sum up, the quality EIA report in manufacturing industries of Debre Birhan town is not good when compared with the standard; some have missed major content requirements, others are totally absent or to be studied after construction of the project begins. The major factors for poor quality of EIA report include: attitude problem of proponents, consultants and government officials/ professionals, inadequate funds by the developer, lack of adequate time for conducting an EIA study, weak enforcement of environmental rules, corrupt practices, and lack of experience of EIA approval authorities.

In three of the sample cases the researcher has found that the consultant's role has been focused to highlight the economic benefits and justify the project for getting environmental approval than working to contribute for sustainable development which might benefit both the environment, current and future generations as well.

Moreover, the review of the contract document of Eleni Candy and Sun floor factory has also indicated that specific and legally binding agreements that included penalties for non-compliance with terms established for environmental protection requirements were not incorporated into construction contracts given for contractors. Clearly defined responsibilities and accountability of the consultant with regard to ensuring the implementation of environmental requirements was not included in the EIA report too.

4.3.2 Community Participation in EIA

In this section the participation of community/household heads in the EIA of manufacturing industry projects, contribution of the consultant, and the stages of EIA where the surrounding community has been invited to participate in the various stages of EIA process were presented together with the necessary data collected from the respondents of the study.

Table 4.3: Public notice made for community to participate in the EIA process

Public notice was made for you to participate in the EIA of manufacturing industries	Area of Respondents			Valid %
	Liche	Regreg	Dashen	
Strongly agree	2	4	3	8.7%
Agree	5	7	4	15.5%
I don't know	0	1	0	1%
Dis agree	14	21	32	65%
Strongly dis agree	3	2	5	9.8%
Total	24	35	44	100%

Source: field survey, 2021

The inclusion of public views and comments in the decision-making process of investment projects promotes informed choice, leading toward better and more

acceptable social and environmental outcomes (Nadeem and Fischer, 2014). At a minimum, the EIA process should disclose information on a project proposal, access to EIA review for affected and interested parties, scope of the project, and EIA reports. In addition, community consultation should be allowed for all interested and affected parties to express their views (Ibid). Regarding this key informants, during their interview, mainly the head and the team leader of NSZ Environment, Forest and Wild life Protection Department indicated that public notice was made for involvement to be carried out in the EIA of any manufacturing industry project in the town as well as in all other districts of the administrative zone.

Accordingly, the level of community participation within the EIA process of sample manufacturing industry projects under this study were evaluated by the researcher to examine public involvement at different stages of the EIA process. And what the researcher has found through distributing questionnaires is given as follows: As indicated in table 4.3 above, respondents were asked whether they were invited to participate in the preparation of EIA of manufacturing industries in the town and most (65%) respondents replied “disagree” while the least (1%) answered “ I do not know” for the question. This implies that local people were ignored to be involved at preparation stage of EIA which is against directive No. 001/2010 of the Amhara National Regional State which describes the condition through community participation is implemented in the preparation of EIA.

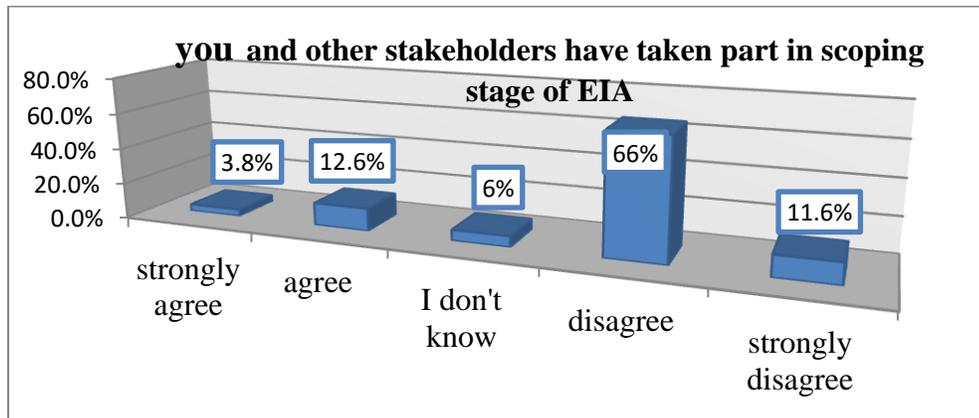


Figure 4.1: Participation of stakeholders in the scoping stage of EIA

Source: Field survey, 2021

Even though community participation in the scoping stage of EIA is fundamental for the local government and the proponent to keep the project accepted, unfortunately it is

highly unwanted by almost all consultants and proponents of manufacturing industry projects included in this study. Regarding this as indicated in figure 4.1 above majority (66%) of respondents expressed their disagreement and the least (3.8%) replied “strongly agree” for the question ‘you and other stakeholders were invited to participate in the scoping stage of EIA of manufacturing industries located in your area’ .Here respondents were also asked to explain who has got involved if their answer is disagree. Accordingly, they indicated that representatives of affected and beneficiary groups were identified by the kebele administration and discussion was made with these representatives about mere compensation than opening the participation for others interested.

Head of the zonal Environment Forest and Wild Life Protection Department and the EIA officer in their part, during interview, said that

“Yes different stakeholders that are expected to represent all category of the community were invited to participate and have participated in the scoping stage of EIA of industry projects. They added that this is done when industries are going to be located by displacing people. Otherwise project owners and the zonal administration are not willing to allow other stakeholders to participate, as this will enable other community members to become aware of their rights through involvement in such cases”.

Although key informants said yes stakeholders were invited to participate in the scoping stage of EIA they were unable to show the researcher at least 4 minutes when asked to bring the document for his document review and they showed only one letter written by Angolelana Tera Woreda EPA which is out of the scope of the study. However, in the Amhara regional state procedural guide line for EIA it is stated that, “community members and other stakeholders’ participation is one of the 17 content requirements to be included in EIA process. This shows that genuine participation of stakeholders is almost non-existent and done only for the purpose of reporting if any. Besides, the views of community based organizations, NGOs and other interested groups were not taken into account in the EIA process of most manufacturing industries of Debre Birhan.

The next question raised for respondents under the second objective of the study was their participation in the review of EIA organized by either the local EPA or the consultant in the side of the proponent. Accordingly, 80 (77.7%) respondents again answered the question “disagree”. There was also an open ended question raised for these respondents which asked them to explain why and most of them indicated that “The EIA review was made by the Woreda EPA and consultant of the developer through desk review. Opportunities were not given for the community to participate and access the EIA review.” Related to this UNEP (2017) indicated that the most important quality control feature of EIA is the review stage, as it helps to ensure that information on the environmental impacts of an action is adequate before it is used as a basis for decision making (Ibid). Therefore, it is particularly important that this stage is carried out as effectively as possible. Various methods to ensure the EIA review can be used. These include use of review criteria, the setting up of an independent review body, the publication of the results of the review and the involvement of community in the review (Ibid).

However, from the respondents answer indicated above one can understand that no community member have been involved at this stage except government officials and employees. Thus, their views were not considered in most industrial projects of the town. This is because the sample four projects in this study have not given the required opportunities to the public to access the EIA reports and review results. But Stewart *et al.*, (2016) suggested three reasons for the need of public participation in EIA i.e. obtaining public input into decisions, providing some degree of public sharing of decision-making, and altering the power relationships of decision-making. Similarly, the regional or zonal environmental protection authority or the project proponents didn't organize public hearings on the environmental impact assessment reviewing process so that the public can influence the quality of EIA and the final decision. However, the Ethiopian EIA proclamation and Amhara Regional State Regulation No 001/2010 demand the involvement of community particularly those likely affected by the project and of any interested party during the EIA reviewing process (Rule No. 001/2010).

In this regard almost similar practices are also common in some African countries. For example, among over 20 EIA processes reviewed in Nigeria only five incorporated a structured approach to public involvement as part of the EIA review and, in all cases, the level of involvement was “consultative” rather than “really participatory” (ECA, 2015).

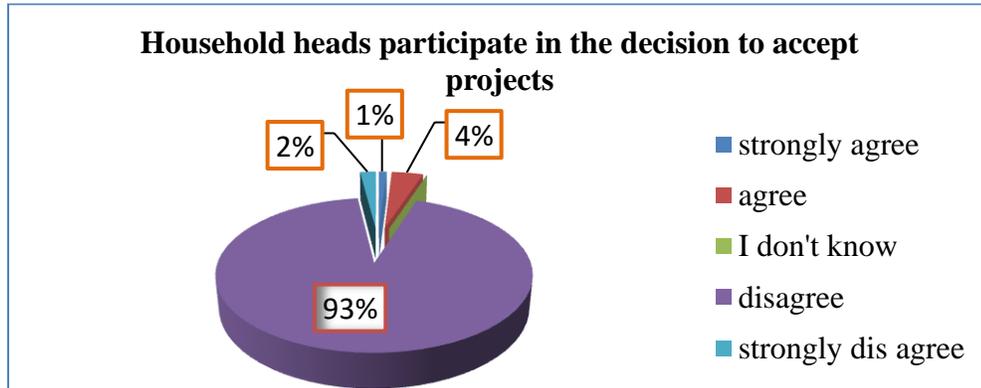


Figure 4.2: Participation of household heads in the decision to accept projects

Source: Field survey, 2021

Figure 4.2 above shown that most (93%) respondents have not participated in decision to accept or reject a manufacturing industry projects while only 5 percent respondents expressed their agreement as they participated in the decision making process. This might imply that decisions are made by the interest of government organs alone and there is no proper disclosure of the decision to the community before operation. The outcome of the decision was also not communicated to the community.

Regarding this experiences with EIA in many developing countries have shown that community participation does not significantly influence decisions (ECA, 2015). It acts largely as a mitigation exercise because the option of stopping projects is hardly possible. Many developers, including governmental development organizations, are lagging behind to fully appreciate the value of community participation in EIA decision stage, which they consider as corner stone to sustainable economic development (Ibid). This is due to the fact that many projects are considered to be of political and strategic importance and such views override any serious consideration of potential negative environmental or social impacts (ECA, 2015). That is why in the actual sense; EIA reports are prepared but have little or no effect on the decision-making process.

The EIA decision making process regarding the case studies of the town is not different from what is mentioned above. For instance in cases like Etal Aluminum, EIA begins after the construction commences and is to be used only to confirm that the environmental consequences of the project are acceptable. However, the Ethiopian EIA Procedural Guideline emphasizes the need of consultation, participation and influencing decision of others to behave responsibly and sustainably in their decision making.

4.3.3 Implementation of Mitigation Measures

Table 4.4: The Practical Implementation of Mitigation Measures

Mitigation measures suggested for significant impacts in the EIA of industries were properly implemented	Area of Respondents			Valid %
	Liche	Regreg	Dashen	
Strongly agree	3	3	3	8.7%
Agree	5	7	4	15.5%
I don't know	0	4	0	4%
Disagree	12	18	30	58.3%
Strongly disagree	4	3	7	13.5%
Total	24	35	44	100%

Source: Researcher data collection, 2021

One of the questions raised for respondents was ‘is mitigation measure suggested for significant social and environmental impacts in the EIA of manufacturing industry projects properly implemented?’ Accordingly, as we can see from table 4.4 above majority (58.3%) respondents replied ‘disagree’ and the least (4%) respondents replied I don’t know. In answering the open ended question they explain that as impact offsetting measure compensation was provided for property loss and displacement resulted due to industry projects. But they have complaints on the price estimation of the affected resources. Other than this they said no any mitigation measures have been put in place for identified negative impacts. This indicates that the performance of the mitigation measures implemented for all projects to reduce or offset the impacts to acceptable levels was not satisfactory. A number of factors contributed for the ineffectiveness of the

measures implemented. These include insufficient involvement of the affected people and local level organizations in planning and implementation of the mitigation measures; and lack of accountability for not implementing the planned measures.

Similarly, what is given by a construction inspection officer of NSZ industry and investment office said during his interview that “mitigation measures indicated in the EIA of manufacturing industry projects have not been constructed as per agreed standard. He added as an example that waste disposal sites of Eleni Candy are below standard. Besides, Although the EIA of industry projects should include design of what is constructed to manage their waste EK textile and Etal aluminum have neither the design of waste disposal site nor the EIA at all and the main reason that hinder the developers from construction of such essential infrastructures is their inclination to profit making which may emanates from attitude problem towards societal and environmental wellbeing.” He added that the new Investment Proclamation/Regulation seems to deliberately omit the requirement of EIA before issuing investment permits. This is because, EIA is still considered by proponents and licensing organs as ‘bureaucratic obstacle in the path of development’.

Moreover, one of the consultants, Bazel in his part answered the same question in the following way:

“In terms of EIA document preparation it is mandatory for manufacturing projects to submit with all the requirements including mitigation measures and their design if any. This is because it is must to meet all the requirements to get their project licensed or accepted by the local EPA but the problem comes during the implementation of suggested mitigation measures on the ground. This may be associated with attitude problem of the factory owners as most of them are business oriented or it may be related to corrupt practices of the regulatory agency which refrain it not to take the right action against projects that are unable to implement suggested mitigation measures in accordance with the commitment made. He added that if mitigation measures were properly implemented, frequent complaints of residents

of kebele 07 over factory induced bad smell and liquid waste discharge) would not be common.”

This implies that mitigation measures were neither properly implemented nor included in the EIA of manufacturing industry projects of the town. Auditing on the proper implementation of mitigation measures should not be left for the EPA alone rather it should include community representatives, NGOs working on Environment and others concerned.

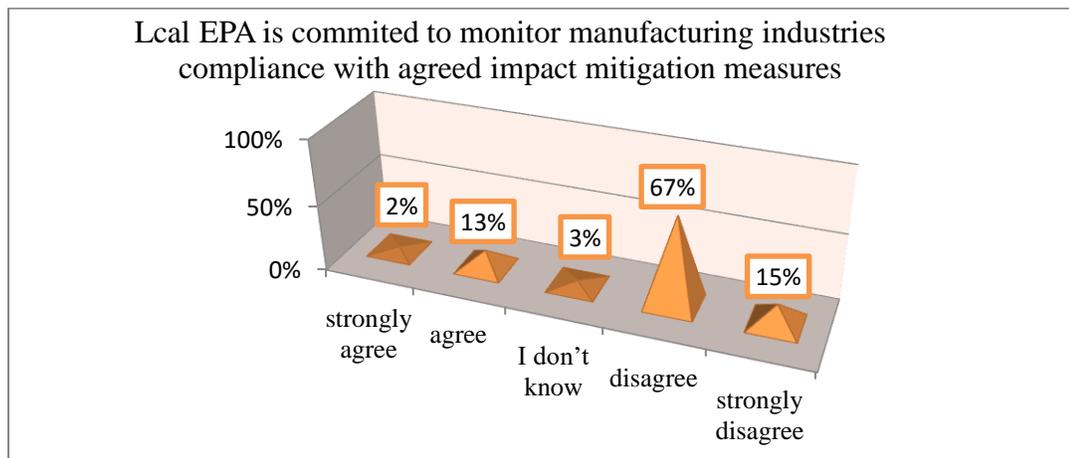


Figure 4.3: Commitment of local EPA to monitor factories compliance with their EIA
Source: Researcher data collection, 2021

The EIA Proclamation imposes sanctions for non-compliance with its provisions. For instance, any person (whether legal or natural) who fails to obtain an authorization from the concerned organ or make false presentations in an environmental impact assessment report is liable to a fine of not less than fifty thousand birr and not more than one hundred thousand birr (EIA Proclamation, Art. 18(2)). Respondents were also asked about the commitment of the local EPA to monitor factories wrong deeds through proper intervention measures. Accordingly, majority (67%) respondents expressed their disagreement and the least (2%) replied “strongly agree”. This is shown in figure 4.3 above. However, among those who answered disagree 68 percent were from Dashen area. Meanwhile, key informants from EPA has said that “we are committed to monitor and correct wrong deeds of manufacturing industries by taking intervention measures when necessary and we have even taken practical actions over VIV (punished 50,000 ETB),

Dashen Brewery and Habesha Brewery factories (punished 100,000 each) for failure to implement mitigation measures mainly waste treatment.”

The local EPA has also shown the researcher a warning letter written over Etal Aluminum and Sifang factories to submit their EIA report as they began operation without environmental clearance. This might indicate that public relation works have not been done by EPA about its interventions measures taken over those manufacturing industries or the intervention measures taken were not sufficient when compared with the number of industries within the problem.

The other question forwarded for respondents under the third research objective was ‘factory owners have shown their commitment of implementing mitigation measures practically.’ This question has got its answer disagree from 90 (87.4%) respondents and I don’t know from 3(2.9%) respondents. However, 10 (9.7%) respondents have expressed their agreement for the question. Among those who expressed their agreement 60 percent were from Liche area while from those who replied disagree most 78.8% were from Regre area. This shows that factories located near Liche area have taken care of the society and the environment than those located in other sample areas.

Both the head and construction inspection officer of investment and industry office were interviewed ‘whether all manufacturing industries construct suggested mitigation measures like waste disposal site in accordance with the agreed contract document’. Accordingly they replied “no” for the question. In explaining the reason behind, the head of industry and investment office said that most proponents want to pass the construction by providing their promise to construct after the construction of their industry shade commences. The officer in his part added that developers want to dispose their waste in an open space called Gara Dinku, a municipal waste disposal site than investing capital on constructing their own infrastructures. According to the officer developers’ interest in doing this may continue until the residents in the surrounding area have raised complaints over their project.

Similarly, the head of North Shoa Zone EFWPD was also asked the same question and he replied “no” with no doubt. His reason to say this is that

“Proponents primarily think of their profit than environmental and social wellbeing of the area where they operate. And everything they did to manage their waste is not because of their wish to contribute for sustainable development rather it is in fear of the legal punishment for violating rules of the government. To your surprise even factory owners from abroad have no difference in this regard. As an example you can take EK textile, in Debre Birhan Industry Park owned by Spanish investors but operating its business without submitting even an EIA document and still dispose its solid waste in Gara Dinku.”

From this we can understand that there is attitude problem towards social and environmental responsibility in the side of the proponents. Thus, it needs a solution from concerned government organs and others working on environment and sustainable development.

Are environmental management actions sufficiently incorporated in the contract document of manufacturing industries so that proponents can understand what is expected of them for the environment? Was the other question raised for key informants? In providing answer to the question the EIA officer in EFWPD and Endayehu consulting said “yes” the environment management actions are incorporated as part and parcel of EIA document of most projects but the limitation prevails when the proponents were asked to put the actions on the ground. Associated with this review literature indicates that the implementation of an environmental management plan, mitigation measures and post-decision monitoring are some of the weakest facets of Ethiopia’s EIA system (Lu, 2017). The Ethiopian EIA proclamation requires implementation of monitoring in order to evaluate compliance with all commitments made by obligations imposed on the proponent during issuance of environmental clearance. However, there are no specific procedures governing monitoring on a project’s environmental impacts during construction and operation.

This question was again asked for the head and construction inspection officer of NSZ industry and investment office. Accordingly, the head office answered “no”. For the

question why she added that the laws governing my office i.e. Proclamation No. 1180/2020 and its regulation do not require the conducting of environment management actions like EIA as one of the prerequisites to grant investment permits to investors. Similarly, the officer's answer was "no" too. While reasoning out the event he added that every project has received land and building permit from the town administration with 30% green space as indicated in the plan. However, in my inspection what I have faced is that proponents want to build industry shade in all the land area they have received unless shortage of finance limits them from doing so. Based on this related question was raised whether these projects have recruited a skilled EIA professional or not and all key informants of the study answered the question "no in most projects it is difficult to get the right professional but assigning a symbolic person perhaps their own relative who might even know nothing about where the EIA document is located and what is includes in it."

Here Masresha consulting told the researcher evidence as follows;

"Before 4 years I have got the opportunity to visit Habesha Brewery together with a team organized by the regional government including his Excellency Gedu Andargachew, the then president of Amhara region. The aim of the visit was to check whether the factory has released untreated water to the neighboring farmers land or not which is initiated by farmers' complaints. Accordingly, the first question raised for the EIA officer of the factory was to show the EIA document for the visiting team but he was unable to show the document which I know its existence as a consultant. This was due to the fact that the man who seat in the position of EIA officer has no environmental background"

In the researchers' effort to review EIA document of Sun floor factory, it was found out that the sufficiency of environmental management actions incorporated in the contract document of the project was poor, since the environmental issues are general and not impact specific. In addition, the environmental management plan during the construction phase was not incorporated into the contract document.

There was also a question ‘do you have incentive mechanism for proponents who implement mitigation measures as per the agreed EIA document?’ but the answer to this question from head of EFWPD was “no”. On the other hand, the answer from the head of investment office was as follows;

“Yes we have incentive mechanism for those investors who commence their project work in line with the investment proposal permitted but not for implementing EIA because it is not our duty. However, in some cases, the feasibility study of investors may include a brief part on environmental and social impacts of their projects. But, most do not include that and I do not oblige them to include environment and social impact either as part of their feasibility study or conducting a separate assessment, since the law does not require it as one of the pre- requisites to grant investment permits. She added as an example that my office has given duty free letter for good investors to import machineries.”

This implies that EFWPD need to take lesson from investment office because shaping attitude of proponents through motivation may result better than punishment.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1 Conclusion

Manufacturing industries in a town like Debre Birhan are important for its economic competitiveness. However, the manufacturing industries action must be in favor of environmental protection to make the development sustainable. This study was made with the aim of assessing the implementation of EIA in manufacturing industries of Debre Birhan town. To collect the required data for the study questionnaire, interview and document review were used. Ethiopia has established the legal and administrative framework to put EIA system in place for development projects. However, findings revealed that a number of weaknesses occurred in implementation. In a similar fashion, weaknesses are found common in implementing EIA within the manufacturing industries of Debre Birhan town. This implies that there is weak enforcement of law, omissions of the stages of EIA process, inadequate community participation, absence or poor quality of EIA report and absence of regular monitoring on the implementation of mitigation measures.

The people of Debre Birhan has gave due emphasis for the proper implementation of mitigation measures suggested in the EIA report of manufacturing industries. Thus, they often want the town administration to resolve different adverse impacts of manufacturing industries imposed over them due to little or improper implementation of mitigation measures. The major findings of this study indicated that there was weak commitment of the regulatory government organ in EIA administration implying that there exists attitude problem, weak inter-sectorial coordination; corrupt practices; poor filing system; and inadequate resource available to administer EIA by recruiting technical experts.

The quality EIA report in manufacturing industries of Debre Birhan town does not live-up to the standard; some have missed major content requirements, others were totally ignored or to be studied after construction of the project begins. In those which have got environmental clearance some of the components of EIA process such as the scoping of impacts and monitoring of the EIA system were practically absent from the EIA report.

In addition, the EIA reviewing process is not participatory and challenged by absence of multidisciplinary experts. This means the involvement of responsible parties such as community, project proponents, construction contractor, construction inspection body and EIA regulatory authority during EIA review were considered to be poor and failed to implement their responsibilities. This in turn shows that the decision making process to accept/reject manufacturing industry projects was less influenced by EIA and lacks transparency to the public.

In all sample projects there was weak influence of public participation on the quality of the EIA and the final decision making activity. Project affected communities were consulted only during EIA scoping stage for mere compensation issues showing that sufficient consideration was not given to community participation early in the EIA preparation process, decision making and monitoring stages. Besides, there was lack of communication as well as access to information related with EIA review and decision.

The study has identified poor scoping (including preparation of TOR), shallow analysis of impacts, and inadequate consideration of alternatives, inadequate practical mitigation measures and monitoring. This means environmental management actions were not adequately included in the contract documents of most sample projects. Responsible and professional environmental expert was not assigned to supervise the proper implementation of the impact mitigation activities in the manufacturing industry projects. This could lead environmental management issues to be totally neglected and the environmental monitoring and follow up activities had been undertaken in a limited manner.

5.2 Recommendations

Based on the findings of this research, the following recommendations are made: which are believed helpful in improving the EIA implementation and its overall process.

➤ Strengthen Law Enforcement

Issuing regulation, directives and preparing specific guidelines for public participation, EIA report preparation including techniques to be employed, and environmental

management system that can enable the effective implementation of EIA is not a serious problem to ensure quality of EIA report in the town. But the problem is on enforcing the law. Thus, in order to improve environmental law enforcement which in turn improves the quality of EIA document and its implementation, law enforcement should be strengthened. To this end the town administration should design incentive mechanism for regulatory organs, consultants, and proponents who become active in enforcing/implementing the environmental law and punishment for failure to do so.

➤ **Enhancing Community Participation**

Increasing the participation of local communities especially the household heads located close to industries and local NGOs working on environment in the design and implementation of environmental and social management activities is good in order to improve project performance on the ground and increase accessibility of EIA reports to the public. So to minimize adverse impacts and increase project acceptance real community participation should be encouraged by the local EPA and others working on environmental protection.

➤ **Inter Sectorial Cooperation**

Though industry and investment office is mandated with promoting investment of the study area as a means of economic growth, it must recognize that economic growth should not neglect environment protection, in order to make the growth sustainable. Therefore, EFWPD must create good relations with industry and investment office and other environment protection agencies to avoid the conflicting nature of EIA licensing procedure and investment permit, so we can ensure that construction of industry shades and operation of industries should not take place prior to EIA approval. Therefore, working in collaboration with licensing agencies can avoid the problem in implementing EIA and its mitigation measures which in turn reduce possible adverse impacts.

➤ **Capacity Building**

The town administration have to implement capacity building programs including human resource development aimed at enhancing the capacities of parties involved in administering and implementing EIAs in order to overcome the limitations of managerial

and technical capabilities while implementing mitigation measures. Programs to raise awareness on the importance of implementing EIA and other environmental management actions targeting at proponents, government regulatory agencies, consultants and other stakeholders can also improve the attitude of the target groups; so that the proper implementation of mitigation measures can be ensured. Therefore, capacity building should be made by the town administration through training, experience sharing, and other options.

➤ **Creating Environmental Database**

Creating environmental database and information sharing is essential to build the capacity of the town for gathering and providing baseline environmental information for investors, consultants and other environmental actors. While doing this it will be possible to overcome the problem of data retrieval and management system so that effective impact identification and prediction for manufacturing projects can be made. Thus, the EFWPD of North Shoa Zone should work to create its own environmental database.

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Appendices

Appendix I

List of Review Topics for Assessment of the Quality of EIA

Report

1. Description of the Project, the Affected Environment and the Baseline Conditions

1.1 Description of the project

1.1.1 Are the purpose(s) and objectives of the development project clearly explained?

1.1.2 Are the main features of the project including the design and size clearly described?

Are diagrams or maps used for this purpose?

1.1.3 Are the physical appearance of the completed project indicated?

1.1.4 Are the nature and methods of construction and operation intended described?

1.1.5 Are the nature and quantities of raw materials needed described?

1.1.6 Is the description of any additional services (water, electricity, health services etc.) and required as a consequence of the project given?

1.1.7 Is the description of the project's potential for accidents given?

1.2 Project site description

1.2.1 Is the land area taken up by the project defined and its location clearly shown on a map? 1.2.2 Are the different uses of land described and areas demarcated?

1.2.3 Is the estimated duration of the construction phase and operation phase given?

1.2.4 Are the numbers of workers to be involved in the construction and operation estimated?

1.2.5 Are the means of transporting raw materials and products described?

1.2.6 Is the reinstatement and after-use of land-take during construction described?*

1.3 Wastes (all residual process materials, effluents and emissions)

1.3.1 Are the types and quantities of waste produced estimated?

1.3.2 Are the ways to handle and/or treat these wastes indicated, together with the routes by which they will eventually be disposed of to the environment?

1.3.3 Are the methods by which the quantities of residuals and wastes were obtained indicated?

1.4 The affected environment

1.4.1 Is the environment likely to be affected by the development indicated with map of the area?

1.4.2 Is the wider environment likely to be affected by the development defined?

1.4.3 Are the land uses on the site(s) and in surrounding areas described?

1.5 Baseline conditions

1.5.1 Are the components of the affected environments identified and investigations disclosed?

1.5.2 Are existing data sources searched and utilized?

1.5.3 Are the baseline conditions clearly described using appropriate data?

2. Identification and Evaluation of Key Impacts

2.1 Identification of impacts

2.1.1 Are the potential impacts identified and categorized as short, medium and long-term, negative effects?

2.1.2 Are the potential impacts on receptors: human beings, flora and fauna, soil, water, air, and the interactions between them identified?

2.1.3 Are the impacts determined as the deviation from baseline conditions?

2.1.4 Are impacts identified using a systematic methodology such as project specific checklists, panels of experts, consultations, etc?

2.2 Scoping of Impacts

2.2.1 Is a genuine consultation and involvement made with all stakeholders (the community, relevant public agencies, experts and special interest groups)?

2.2.2 Are key impacts identified and selected for more intense investigation?

2.2.3 is a copy or summary of the main comments from community participants, and measures taken to respond to these included?

2.2.4 Are project-generated impacts differentiated from others resulting from non-project activities?

2.3 Prediction of impact magnitude

2.3.1 Are the data used to estimate the magnitude of the main impacts sufficient and clearly described? Are the gaps in the required data indicated and the means used to deal explained?

2.3.2 Are the methods used to predict impact magnitude described and appropriate to the size and importance of the projected impact?

2.3.3 Are predictions of impacts expressed in measurable quantities?

2.4 Assessment of impact significance

2.4.1 Is the significance of an impact assessed taking into account appropriate national and international quality standards, location and duration of the impact?

2.4.2 Is the choice of standards, assumptions and value systems used to assess significance justified and any contrary opinions summarized?

3. Alternatives, Mitigation and Monitoring

3.1 Alternatives

3.1.1 Are realistic and genuine alternative sites considered and the main environmental advantages and disadvantages of these discussed and the reasons for the final choice given?

3.1.2 Are realistic alternative processes, designs and operating conditions considered at an early stage of project planning and reported where the proposed project is likely to have significantly adverse environmental impacts?

3.1.3 If unexpectedly severe adverse impacts, which are difficult to mitigate, are identified, are alternatives rejected in the earlier planning phases?

3.2 Mitigation measures

3.2.1 Are mitigation measures proposed to avoid, reduce or offset the significant adverse impacts of the proposal?

3.2.2 Are the mitigation methods considered include modification of the project, compensation and the provision of alternative facilities as well as pollution control?

3.2.3 Is the expected effectiveness of the mitigation methods indicated?

3.2.4 Are the reasons for choosing the particular type of mitigation, and the other options available, described?

3.2.5 Are any adverse environmental effects of mitigation measures described?

3.2.6 Is the potential for conflict between the benefits of mitigation measures and their adverse impacts considered?

3.2.7 Are details of how the mitigation measures will be implemented and function over the time span for which they are necessary given?

3.3 Monitoring

3.3.1 Are monitoring arrangements proposed to check the environmental impacts resulting from the implementation of the project?

3.3.2 Does the scale of these monitoring arrangements correspond to the likely scale and significance of expected impacts?

3.3.3 Is provision made to adjust mitigating measures where unexpected adverse impacts occur?

4. Communication of Results

4.1 Layout of information

4.1.1 Is there an introduction briefly describing the project,?

4.1.2 Is information logically arranged in sections or chapters signaled in a table of contents?

4.1.3 When information from external sources is introduced, is the original source acknowledged at that point in the text, and a full reference to the source included?

4.2 Presentation of information

4.2.1 Is information presented so as to be comprehensive to the non-specialist? Are tables, graphs and other devices used as appropriate?

4.2.2 Are technical terms, acronyms and initials defined?

4.2.3 Is the Statement presented as an integrated whole, and summaries of data in the main body of the text?

4.2.4 Are the relevant EIA legislations, name of organization preparing the Statement, and name of the developer, and name of competent authority mentioned?

Appendix II

Questionnaire for household heads living close to industries

General information

Sex -----

Responsibility -----

Educational background -----

Main questions

No	Question	Options				
		strongly agree	agree	I don't know	Disagree	strongly disagree
1	Public notice /announcement were made for public participation in ESIA?					
2	You and others were invited to participate in the scoping stage of ESIA process?					
3	You had taken part when the ESIA was reviewed by the EPA?					
4	The extent of consultation and participation of stakeholders before and during the implementation of mitigation actions was strong.					
5	You and other participants were provided with the opportunity to see minutes of the consultation?					
6	You were involved in any impact mitigation activities of industries?					
7	The agreed mitigation measures of significant social and environmental impacts have been well implemented?					
8	8. Government organs have regularly monitored the manufacturing activity's compliance with agreed conditions in implementing mitigation measures?					
9	You have access to the results of the compliance monitoring and enforcement					
10	Factories have commitment to implement mitigation measures suggested in the EIA					

Interview Guide for officials of EFWPD

General information

Organization -----

Responsibility -----

Educational background -----

Experience in ESIA related works -----

Main Questions

1. Is there a clear and specific legal provision on the content requirement of ESIA document of manufacturing industries? ----- if yes, what is it? Please show me the legal provision or tell me the contents to be included
2. Do all manufacturing industries meet the content requirements in their ESIA report? if no why:-----
3. Who is mandated to prepare and approve ESIA report of manufacturing industries?
Preparation ----- approval -----
4. Do public notice /announcement made for public participation in ESIA?
5. Have different stakeholders been invited to participate in the scoping stage of ESIA process? if yes, what is the extent of participation of the relevant stakeholders?
6. Do you have commitment to check the implementation of mitigation measures suggested in the ESIA report of manufacturing industries?
if yes, (show me the plan you prepare to do so, budget allocated, skilled man power, and other resources you have for this year)
7. How well are the mitigation measures of significant environmental impacts implemented?
8. Factory managers are committed to the implementation of ESIA mitigations in line with agreed conditions / standards (if no why.....)
9. Do you receive regular monitoring results by the project proponents?
10. Are environmental management actions sufficiently incorporated in the contract documents, so that project owners can understand what is expected of them for the society and environment?
11. What do you suggest to improve the effectiveness of the ESIA implementation?

Interview Guide for Consultants

General information

Name of Organization -----

Year operation started -----

Main Questions

1. Do all project owners come to consultants to ask prepare their EIA
2. How many EIA have you done for manufacturing industries in Debre Birhan town since establishment.....for which projects among those which start operation in 2010E.C.....
.....
3. Who is actually preparing the EIA of most manufacturing industries? (Project owner, consultants, or EIA officer in government office)
.....
4. Do you invite community members to participate in all the EIA made by your organization if yes please sow me minutes
5. Who has the mandate for approving EIA
6. Is the EIA approval process totally free of corruption?if no, please explain the problem you faced
7. Is the regulatory agency committed to check the implementation of mitigation measures you suggested if yes, are mitigations you suggested properly implemented
8. Is there EIA professional in all manufacturing industries where you made EIA..... if yes, list some

Interview Guide for Investment Officials

General information

Name of Organization -----responsibility.....

Educational background -----Experience

Main Questions

1. How many manufacturing industries are there in the town till now? -----how many of them start operation since 2011 E.C/2019 G.c----- please list some(name and location)-----
-----How many categories of manufacturing industries are there-----namely-----
2. Is there a clear and specific legal provision on the manufacturing industries?-----
-----if yes what is it?-----please
Mention the contents to be included in the EIA report-----

3. Do all manufacturing industries construct mitigations as per their ELA report?..... If no why.....
4. Who is mandated to prepare and approve mitigation measures ELA of Manufacturing industries? Preparation-----Approval -----
-----if consultant please name available consultants.
5. Do public notice/announcement has been made for community participation in all industries during construction of mitigations?-----if yes please show me sample-----
6. Do you regularly evaluate the manufacturing industries compliance with agreed condition on implementing mitigation measures?-----if Yes what findings you have got-----and what measures have you taken-----
-----please show me a letter written to one factory-----

7. Do you have incentive mechanism for factories which properly implement mitigation measures?-----if yes please explain-----

8. Are factory Managers committed to Implement Mitigations in line with agreed ELA conditions standard (if no why?-----
-----Example-----
9. How much the industries are open for environmental auditing to be carried out---

10. Are environmental management actions sufficiently incorporated in the contract document so that projects owners can understand what is expected of them for the society and environmental ?What are the action-----
11. Have you received any complain from residents related to the impact of manufacturing industries----- if yes list some of the complaints

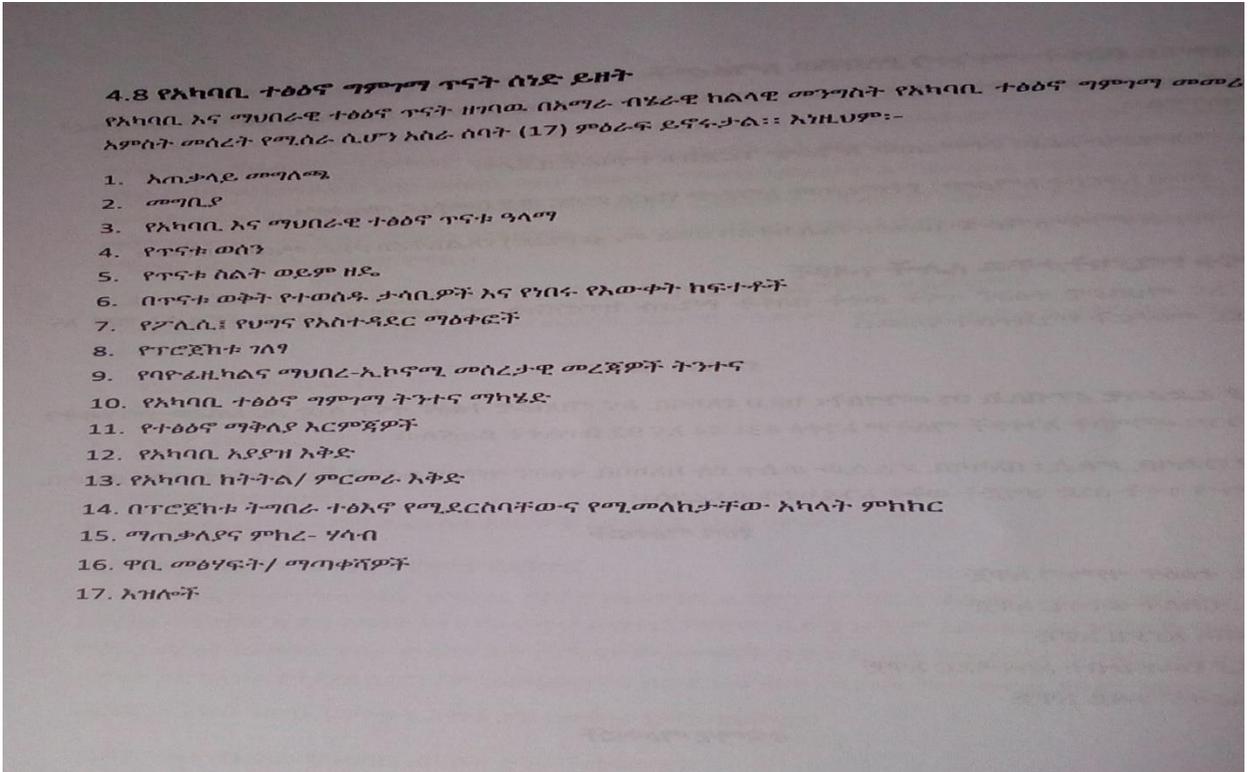
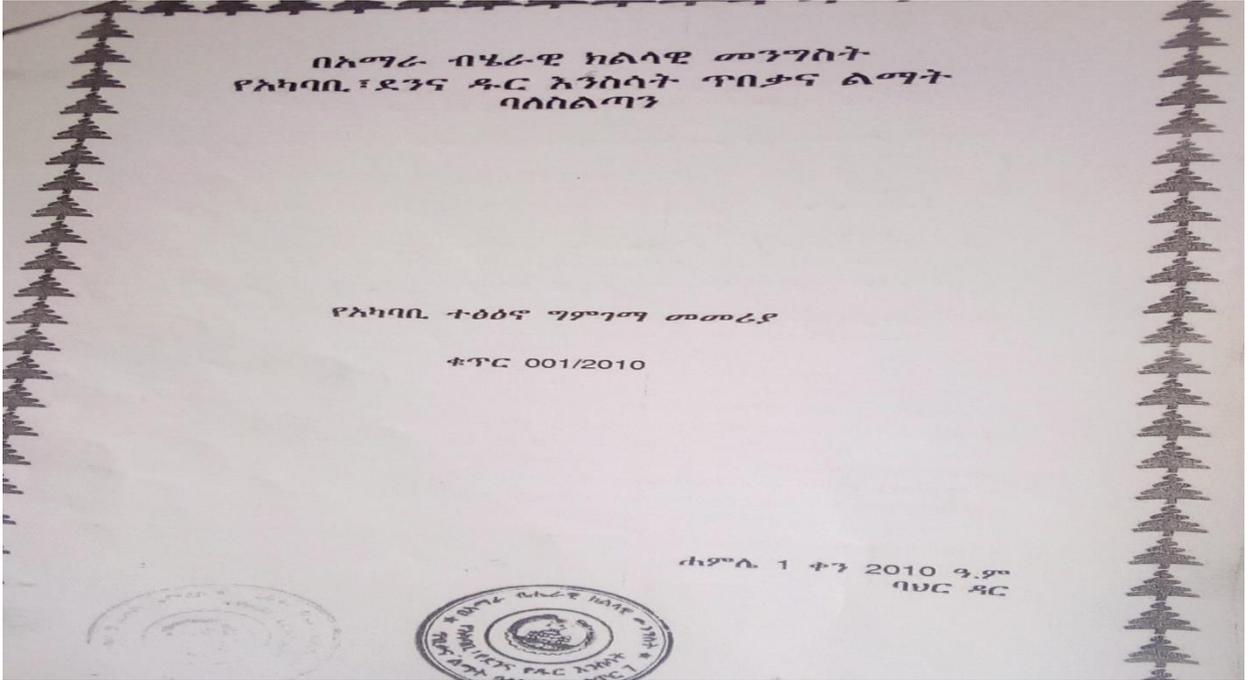
Appendix III

List of Key Informants

No	Name	Sex	Responsibility	Place of interview	Date interviewed
1	Besufikad Neberu	M	Head of EFWPD	His office	May 2021
2	Andinet Fikre	M	EIA officer	EFWPD office	May 2021
3	Tigist Yigezu	F	Head of investment office	Her office	May 2021
4	Demerew Belete	M	Construction inspection officer	Investment office	May 2021
5	Biruk Dachew	M	Secretariat of Bazel EIA Consulting	Municipality office	May 2021
6	Masresha Zeleke		Chairman of Masresha consulting	Municipality office	May 2021
7	Endayehu T/aregay		Chairman of Endayehu 1 st rank consulting	His office at Abdul-Semed building	May 2021

Appendix IV

ANRS EIA Regulation No. 001/2010



Interview with key informants



With Head of EFWPD With Construction Inspection Officer

Local EPA Auditing

