University of KwaZulu-Natal

The cost of Environmental Impact Assessment studies in KwaZulu-Natal

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DECLARATION

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ABSTRACT

Environmental Impact Assessment (EIA) is regarded as one of the most successful and widely adopted policy interventions in recent decades when it comes to environmental policy tools. Exploring the cost of EIA is relevant within the South African context where calls have been made to evaluate the need for EIA, based on the perceived associated costs and time delays affecting job creation and economic growth. In light of the latter there was a need to gain deeper understanding of direct and indirect cost of EIA, critical and generic factors affecting the costs associated with the EIA process, its effectiveness and decision making. This study on costs and factors influencing the EIA cost was conducted on the EIA approval authority in KwaZulu-Natal (South Africa) i.e. the Department of Economic Development, Tourism and Environmental Affairs. The study used a qualitative research method among eleven participants who were purposefully selected, within the environmental management function representing all eleven district municipalities of KwaZulu-Natal. The purposeful sampling methodology was used to do semi-structured Interviews to collect data. The results showed that the Departmental officials have limited understanding of the direct and indirect cost of EIA applications. The direct costs varied from district to district for the same development activity for either basic assessment report or full scoping environmental impact report. Secondly the EIA review process is not operating effectively because of the EIA review process not being rigorous. The Department is sitting with a backlog of EIA applications not being speedily processed. All these factors need to be attended by the Department as they affect the costs ultimately paid by the applicant to get an EIA decision, as either poor decision are made or decisions are grossly delayed.

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Chapter One: Introduction

1.1. Introduction

Environmental Impact Assessment (EIA) was systematically designed and established as a process to identify environmental and social impacts as a result of development activities. EIA is one of the tools for ensuring sustainable development and the management of the environment (Tshangela, 2014). The importance of EIA is the identification and evaluation of positive and negative environmental impacts at the early stage of development activities. The intention being the avoidance and or reduction of development activities, that have negative environmental impacts. EIA reports have been used by authorities to approve or dis-approve environmental reports submitted by developers or their proponents for approval (Lion, Donovan and Bedggood, 2013).

1.2. Environmental Impact Assessment

EIA process originated in 1969 in the United States of America (USA) and has spread worldwide being adapted to country specific formats (Tshangela, 2014). The EIA process can be divided into three main steps i.e. the preliminary assessment, the detailed assessment and the follow-up. Koeppel and Geissler (2015) refer the preliminary assessment and the detailed assessment as pre-decision stages. These components include project planning, screening, scoping, public participation, consideration of alternatives, mitigation measures and assessment of impact significance (Koeppel and Geissler, 2015). According to Arts, Caldwell and Morrison-Saunders, (2001) and confirmed by Lion *et. al*., (2013) the pre-decision stage of an EIA process assists in determination of negative environmental impacts and possible mitigation measures to reduce such impacts. However, the post-decision (follow-up) stage is mostly the communication, audit, monitoring, management and evaluation (Lion *et. al*., 2013). This stage looks at the effectiveness of the mitigation measures and implementation of such mitigation measures (Sandham, van Heerden, Jones, Retief and Morrison-Saunders, 2013).

According to Lion *et. al*., (2013) the pre-decision stage is an internationally well practiced component with the post decision component being the least recognized. This compromises the post decision stage's effectiveness and its significance in ensuring sustainable development (Lion *et. al*., 2013). The post-decision stage provides developmental feedback that can improve the overall EIA process and decision making (Patel and Giordano, 2014).

The worldwide EIA as an environmental tool has been adopted for its benefits to the environment and such benefits outweigh its costs. According to Retief and Chabalala, (2009) the aim of an EIA process is to maximize environmental benefits and to minimize environmental costs. EIA has a significant impact on development projects planning and decision making (Faith-Ell, 2015). According to Zhang, Kornov and Christensen, (2013), the benefits of EIA at a planning stage of the project contribute to the improvements of project design and location. During the EIA process project alternatives are analysed in terms of the design and location of projects. This can result in efficient technological use which lowers waste outputs. The most appropriately suited project design can minimise environmental impacts and risk (to both people and the environment), and thus lower or eliminate remedial costs.

Environmental compliance through a proper EIA process contributes to the reduction of environmental damage. It further limits the likelihood of penalties in the form of fines, costs of rehabilitation, loss of trust and credibility (Vanclay, 2015). EIA assist in eliminating undue costs of unanticipated impacts thus savings in project capital and operating costs. An 'anticipate and avoid' approach when it comes to environmental challenges is a cheaper option than 'react and cure' which can be costly to the project owners (Vanclay, 2015).

EIA approval also can eliminate project delays as project alternatives would have been considered in advance before the project is implemented. This therefore reduces time and costs. This is achievable through an open and transparent EIA process. The process, that provides opportunities to the public for their involvement, as interested and affected stakeholders (Kabir, 2013).

1.3. Rationale for the study

The argument on EIA cost over the years has given rise to a number of questions about the importance of EIA and the value it adds to project development and whether it's a worthwhile activity (Retief and Chabalala, 2009). EIA at times is perceived as a bureaucratic process that only serves as a barrier to project development. Retief and Chabalala, (2009) further discuss how internationally the EIA systems, its value and added benefits have come under scrutiny. Henri, Boiral and Roy, (2014) has done some conceptualisation and distinguished a number of EIA cost classifications. Gilpin, (1996) further distinguished these as direct costs and indirect costs. Direct costs are defined as the fees that are paid by the project developers to acquire the EIA authorisation in compliance to the South African EIA legislation. Direct costs are also fees that are incurred by the regulators in processing the application. The indirect costs being the costs associated with delays due to process inefficiency. Different countries have varying costs estimates of both direct and indirect EIA costs. Thus there is a need to review the time, benefits and costs associated with the implementation of South African EIA regulations (Vanclay, 2015). The European Union and other developed countries have developed broad estimate of direct EIA costs, expressed mostly as overall project cost and giving EIA project range estimate in their local currency (Vanclay, 2015).

The European Commission report, (1997) for developed countries gives EIA costs as a percentage of total project cost. Most countries having EIA cost ranging between 0.01% and 0.5% of project cost. The European Commission report (1997) concluded that of the 60% projects reviewed EIA costs amounted to less than 0.5% of the total project capital cost. There were also exceptional projects where the EIA cost exceeding 1%. Within the cost of EIA the lions share is taken by detailed environmental studies i.e. investigations. These costs amount to between 60% and 95% of the total EIA cost for studies.

Exploring the cost of EIA is relevant in the South African context. This is as a result of the calls that have been made on the need for EIA, the value it add to the planning processes. This is based on the associated costs and time delays brought about the process of conducting EIA and the affects it has on job creation and economic growth in Republic of South Africa (RSA) (Vanclay, 2015). In light of the concerns

around the costs of EIA there is a need to explore, and gain deeper understanding of the real costs associated with EIA in South African and focusing in KwaZulu-Natal (KZN).

1.4. Research Aim and Objectives

This research aim to investigate the direct and indirect cost of EIA, the perspectives of participants, and the factors that affect the EIA costs and effectiveness in KwaZulu-Natal.

The following objectives and sub-objectives have been set for this study:

(i) To identify and categorize all costs associated with the EIA application and processing. The sub-objective of this objective was the review of the EIA process efficiency.

(ii) To determine the critical factors which have an influence on the effectiveness of the Environmental Impact Assessment (EIA) process and decision-making. The sub-objective of this objective being the assessment of the EIA management capability.

The objectives of this study were met through a research questionnaire being answered by research participants. The research questions for this study were:

a) Identification, listing and categorizing all direct and indirect cost associated with EIAs
b) Identification of what cost are associated with what phase of the EIA process
c) Identification and costing critical factors that influences the effectiveness of the EIA process and decision making
d) Identification and costing the generic factors that influences the effectiveness of the EIA process and decision making

1.5. Methodological Approach

Semi-structured Interviews were used to collect primary data from officials in the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (KZN DEDTEA), the EIA approving authority. This qualitative approach allowed for the exploration of in-depth analysis of factors associated with the cost of

EIA in KwaZulu-Natal. Purposeful sampling was used to select participants. The participants were requested to sign an informed consent form prior to the interviews being conducted. All interviews were recorded and the data was transcribed. Data collected was further analysed and interpreted through documentary and thematic analyses.

To overcome any researcher bias in the interpretation of data, interview data was sent to an independent researcher for verification between findings and analysis. Moreover, detailed notes on observations throughout the interview process were kept. NVivo v11 data analysis package was used to code themes emerging from the interview responses.

1.6. Structure of the Dissertation

Chapter one introduces the research topic and provides a brief background on the cost of EIA. It also provide the rational and significance of the study, as well as research aim and objectives.

Chapter two reviews literature from secondary sources including journal articles and books, pertaining to EIA systems and related themes.

Chapter three describes in detail the research methods adopted in this research. This chapter demonstrates the research methods used to collect and analyse data to enable the drawing of necessary conclusions.

Chapter four presents the results of this EIA costs research. The results are interpreted and discussed. It further discusses the perspectives of participants as it relate to their understanding of EIA process and experience. This includes active participants' in the EIA process i.e. as case officers or reviewers, implications of the EIA process as well as the future directions for EIA process.

Chapter five presents the conclusion and recommendations of the findings. The chapter also covers the limitations of this research and suggests future research approach.

1.7. Conclusion

EIA as a critical decision making tool has its limitation when it comes to the cost elements and factors that have an impact on the costs of conducting an EIA. Literature has shown that different countries have different EIA cost estimates. This research explored the understanding of the authorities of the KwaZulu-Natal EIA cost and factors that drives these costs. This was done in greater details from the perspectives of the approving authorities. The findings were backed up by literature and conclusions made.

Chapter Two: Literature Review

2.1. Introduction

This chapter discusses tree main components of EIA i.e. the theoretical framework and sustainable development. Secondly, it introduces the topic of EIA origins, its systems, and its social; environmental and economic benefits. Thirdly, it critically reviews EIA system implementation in South African. These three components combined form the conceptual framework for the study.

2.2. Sustainable Development

The increase in economic growth due to development and industrialisation has led to the evolution of the term sustainable development and its applications (Atkinson, Dietz, Neumayer and Agarwala, 2014). In some cases such economic growth has proven to have negative impacts on the environment. This creates concerns for the earth's natural resources and thus leading to un-sustainability development practices (DEA, 2014). In 1972 the terms 'sustainable development' and 'sustainability' were introduced and has since been used interchangeably in different ways (Sachs, 2015). In 1987 the United Nation World Commission on Environment and Development (UNCED) report (also known as Brundtland Report) popularised the term sustainable development. This report, defined sustainable development as "Development that meets the needs of the present without compromising the ability for future generations to meet their own" (Atkinson *et. al*., 2014).

Sustainability recognises the protection and maintenance of natural resources. It further emphases healthy ecosystems as vital for human well-being. Sustainability also recognises that the goods and services provided by the ecosystems are limited (Sachs, 2015). Blewitt, (2015) defines sustainable development as the process undertaken in achievement of sustainability. This suggests that social and economic goals are achievable through the implementation of sustainable development. Sustainable development goes a long way in understanding the dynamics and the relationship of economic and social development as well as environmental considerations (Sachs, 2015). Thus the linkages and the interdependencies between

economic growth, social development and environmental protection result in sustainable development (Enders and Remig, 2015).

The financial institutions have also taken an interest in ensuring that the projects they finance also adhere to the environmental, social and economic pillars to ensure sustainable development. According to Thien, (2015) and Khovavko, (2016) the World Bank has introduced standards, which are defined by International Finance Coorporation (IFC) guidelines, which occupy a central place in environmental regulation of any business. The content of these guidelines is the promotion of sustainable development by incorporation of social and economic assessment of projects during the process of making decisions about their funding. The IFC's environmental protection and social standards were the basis for the Equator Principles, a set of voluntary principles developed and adopted by banks for assessing the environmental and social risks when granting funds to a project (International Finance Corporation, 2012).

In 2003, ten largest global banks, which together represent a third of all credit resources, agreed to abide by the Equator Principles when selecting priorities for financial support. Today, they are used by more than sixty global banks, which are engaged in 71 percent of all projects financing in countries with rapid economic growth (Khovavko, 2016).
According to Khovavko, (2016) for banks to supply loans when applying the Equator Principles they need to consider the following:

- Study of the environmental and social impacts and risks related to the given project;
- Categorization of the project, in terms of environmental and social risks;
- Execution of EIA with use of quantitative environmental indicators, and required disclosure of information about the project for local communities (for high-risk projects); and
- Constant monitoring for compliance with statutory requirements during the process of project implementation and required reporting by the client.

The IFC has developed eight standards for a project's social and environmental sustainability. These standards need to be met for a positive decision related to lending and investment, which are:

1) Social and environmental assessment,
2) Labor and working conditions,
3) Prevention and reduction of environmental pollution,
4) Public health and safety,
5) Acquisition of land use rights and involuntary resettlement,
6) Conservation of biodiversity and sustainable management of natural resources,
7) Indigenous peoples, and
8) Cultural heritage.

The most fundamental standard is the social and environmental assessment, in conjunction with which all projects are assessed. As part of comprehensive assessment of social and environmental risks, all relevant social and environmental impacts associated with implementation of the project must be assessed, both at the home site and at all associated entities (including suppliers, government, nongovernmental organizations (Thien, 2015).

2.3. EIA and Sustainable Development

EIA and sustainable development are internationally recognised as critical support tools that promote sustainable development (Sachs, 2015). According to Glasson, Therival and Chadwick, (2005), EIA can be viewed as an effective environmental management tool if it accomplishes sustainable development, achieves its goals for environmental protection, is cost effective and assesses impact throughout the life of a project. Khovavko, (2016) state, that EIA is conducted to identify the nature, intensity, and severity of effects from all types of proposed economic development activity on the state of the surrounding environment and public health. EIA ensures sustainability of projects while protecting society and ecosystems from negative outcomes that might be associated with developments (DEA, 2014). Environmental assessment entails applying various techniques and procedures to predict and evaluate the consequences of human actions on the environment. It is an important

component of contemporary environmental management and one of the primary measures to achieve environmental sustainability (Kidd and Retief, 2009).

The EIA process promotes the management of environmental impacts due to development and establishes mitigation measures at the planning stage, prior to the construction. This contributes to and safeguards the environment and its services which are utilised by society and for economic benefit. In essence EIA bridges the gap between development and the environment (Bennet, 2015). In order to support sustainable development, environmental management requires tools and techniques to prevent negative impacts of human activities on the social and natural environment. EIA is one of the tools that ensure that the environment is not compromised by proposed development activities. Table 2.1 shows some of the immediate and long term objectives of EIA (UNEP, 2002).

Table 2.1: Immediate and long term objectives of EIA (UNEP, 2002)

Immediate Objectives of EIA	Long Term objectives of EIA
• Enhance the environmental design or layout of the proposed project • Make sure that natural resources are used correctly and in a manner that is not wasteful • Recognise suitable measures for preventing, reducing and or mitigating the potential impacts of the proposed development • Enable an informed decision making process whereby the environmental duration, conditions and limitations for the proposed project are put forward	• Protect the health and safety of the affected community • Avoid permanent changes that results in grave damages to the natural environment • Protect resources, natural areas and ecosystem components that are deemed irreplaceable • Increase the social aspects of the proposed development or project

2.4. History and Development of EIA

Environmental impact assessment is a tool used to minimise and or prevent negative impacts of development activities on the environment (Sandham, 2013). Sandham,

(2013) further state that this is done through the identification and analysis of information gathered on proposed development, and integrates environmental considerations and public concerns into the decision-making process. Glasson *et. al*., (2004) defines EIA "a systematic process that examines the environmental consequences of development actions in advance".

2.4.1. Origins of EIA

The global increase in industrialisation in the 1960s, it became apparent that industrial activities were having major impacts on the environment. Due to the increase in environmental awareness, from Carson's Silent Spring and many other events such as Earth Day on 22 April 1970, activities harming the environment were highlighted (Sandham, 2013). In response to the growing concerns of industrialisation and environmental impacts industrialisation was coursing, legislation such as control of air and water pollution, hazardous waste management and resource protection were introduced in the USA (Sandham, 2013). The most notable legislation was the establishment of the National Environmental Policy Act (NEPA) in the USA January 1970. This law set the first and legal foundation for EIA (Sandham, 2013 and Noble, 2006).

Since the endorsement of NEPA, EIA has been established and adopted throughout the world in various forms, initially with more developed countries such as Canada in 1973, Australia in 1974, West Germany in 1975, and France in 1976 (Glasson *et. al*. 2005). Notably EIA was inadequately implemented in developing countries because of the need for economic growth and minimisation of poverty (Rajaram and Das, 2011). After the United Nations Conference on Environment and Development (Rio 92 or Earth Summit) in 1992 developing countries substantially took notice of EIA and its benefit in reduction of environmental impacts. Funding agencies financing projects in developing countries also had a major impact in popularising EIA as they insisted that the projects they were funding had elements of EIA in them i.e. ensuring that their funded projects were protecting the environment (Patel and Giordano, 2014; and Ogola, 2007). Funding agencies include investment banks i.e. African Development Bank, World Bank, European Investment Bank and European Bank for Reconstruction and Development amongst others (Lion *et. al*., 2013).

2.4.2. The evolution of EIA in RSA

Different countries follow different path in developing their EIA process. South Africa followed the following path as outlined by Marais, Retief, Sandham and Cilliers, (2015) as well as Kidd M. and Retief, (2008).

- The white paper on Environmental Conservation was developed in 1980. The aim of the white paper was the establishment of a South African national policy on environmental conservation and suggested that the environment should be the core of planning for any development project.
- The Environmental Conservation Act (ECA) (Act No.100 of 1982) was signed into law in 1982. ECA allowed for the creation of a statutory council for the Environment, which in conjunction with officials of the Department of Environmental Affairs (DEA) played a crucial role in the development of EIA thought processes. ECA (Act 100 of 1982) established a procedure for environmental assessment with the aim of assisting decision making and the preparation of an environmental impact report (Sowman, Fuggle and Preston, 1995).
- The Council for the Environment was than established in 1983, a committee for the EIA which begun research, workshops as well as discussions on EIA to nurture an instrument that will be appropriate for the South African perspective.
- The Presidents Council published in 1984, two reports that demanded obligatory introduction of EIA for development projects
- A National Workshop on the significance and necessity of EIA was held in 1985. Participants in this workshop included government officials, professionals and academics. They all showed their solid backing for the introduction of EIA as part of an all-inclusive universal planning process.
- In 1987, a working group constituted of the EIA committee and members of the Council for the environment were appointed and tasked to advance the philosophy on environmental assessment for South Africa.
- In 1989, the Environment Conservation Act (Act No.73 of 1989) allowed for an environmental policy in terms of Section 2 and EIA in terms of Section 22, 23 & 26.

- The Council for the Environment had set out the principles and procedures for the evaluation of policy, programmes and projects in the Integrated Environmental Management report.
- In 1992, the Department of Environmental Affairs and Tourism (DEAT) published guideline series reports which functioned as regulation on the implementation of Integrated Environmental Management.
- In 1996, the country had a new Constitution which through section 24 guaranteed South Africans the right to live in an environment that is not harmful to their human health and well-being. The Constitution further designated environmental management through its schedule of functions as a concurrent function which meant that these function was to be shared by the national, provincial and local spheres of government.
- In 1997, through Section 21, 22 & 26 of the Environment Conservation Act, 1989; EIA regulations were promulgated which had specific focus on listed projects only.
- In 1998, a country white paper was published to set the scene for NEMA. The paper was expected to provide clarity on Integrated Environmental Management to authorities and regulated sectors ahead of it becoming law. Subsequently NEMA through chapter 5 makes provision for EIA. Table 2.2 shows the comparison between ECA and NEMA.
- In 2005, there was an amendment of NEMA aimed at improving the EIA regulations as well as integrated environmental management.
- In 2006 EIA regulations were passed into law which affords for new EIA regulations in terms of 24 of NEMA.

Subsequently EIA regulations have been reviewed in 2010 as well as in 2014 (DEA, 2017)

Table 2.2: Comparison of Environment Conservation Act No. 73 of 1989 and National Environmental Management No. 107 of 1998

Conservation Act 1989	National Environmental Management Act 1998
The Environment Conservation Act (ECA), No. 73 of 1989 (RSA, 1989)	National Environmental Management Act (NEMA), No. 107 of 1998 (RSA, 1998)

	National Environmental Management Act (NEMA), Second Amendment Act, No 8 of 2004 (RSA, 2004) National Environmental Management Act (NEMA), Third Amendment Act, No 21 of 2006 (RSA, 2006)
Regulation 1182 of 5 September 1997 (RSA, 1997a) Regulation 1182 of 5 September 1997 (RSA, 1997a) Regulation 1182 of 5 September 1997 (RSA, 1997a)	Regulation of 543 of 18 June 2010 (RSA, 2010a) Regulation of 544 of 18 June 2010 (RSA, 2010b) Regulation of 545 of 18 June 2010 (RSA, 2010c) Regulation of 546 of 18 June 2010 (RSA, 2010d)
Lack of thresholds for listed activities	Thresholds for listed activities
Lack of time frames resulting in high volumes of expensive EIA executions and increased capacity and time needs related to the decision making authority	Strict time frames
Proper guidance in terms of public participation pertaining to the nature and extent is absent	Clear prescriptions in terms of Interested and Affected Parties and public participation.
Lack of prescriptions in terms of consultant's competence and professionalism	The need to appoint independent consultants outlined. Prescriptions in terms of appointment requirements and disqualification for consultant provided.
Low clarity and different interpretations because of low prescriptive measures that pertain to impacts on the environment and that the impacts were not effectively managed no reference made to compliance with the provisions of the Record of Decision (RoD). Neither	Highly prescriptive in terms of identifying the impacts and the mitigation measures to be put in place. Monitoring to be done and Environmental Management Programme (EMPr) to be developed before activity can commence. Environmental Authorisation (EA) is

monitoring nor compiling of Environmental Management Plans (EMPs) is addressed; the RoD is issued for listed activities.	given for listed activities.
Minimal enablement of strategic decision making	Strategic decision making enabled through provisions for Environmental Management Framework (EMF) and EMP
Not streamlined process, but it did however assist authorities to make informed decisions.	Streamlined in terms of provisions for combination of projects
Unnecessary time and monetary costs	Time frames set and should be cost-effective.
Time and resources wasted due to no differentiation of nature, environmental footprint and risk of those listed activities which required and EIA – all activities were subject to similar EIA process	Clear differentiation between listed activities and there are two processes for basic and scoping EIA
Social Impact Assessment (SIA) not included in EIA as it lacks legal standards – social issues are often seen as unimportant and SIA is poorly funded compared to EIA	SIA only addressed as part of specialist inputs if identified by the Environmental Management Practitioner (EAP)

2.4.3. Strengths and weaknesses of EIA in RSA

The EIA procedure as stipulated in the South African, National Environmental Management Act (NEMA) EIA regulations includes a basic assessment report for small-size projects and a full scoping & EIA report for mid-size to larger projects. Activities located in specified geographic areas also require an EIA. The EIA are undertaken by Environmental Assessment Practitioner. This involves a public participation process and interactions with competent authority who intern approve the EIA report that meets the requirements of the NEMA. The report may consist of a

draft environment management programme (EMP), the key monitoring tool used to manage the environmental impacts and risks identified during the EIA. The competent authority in approving the EIA report, the environmental authorisation is issued with approval conditions. The effective management of the project and associated environmental impacts is the responsibility of the project proponent and this task is usually outsourced to an environmental specialist, environmental control officer (ECO) or consultant who provides audit reports, as per the requirements of the permit / approval, to the regulatory body. The EMP is a legally binding document, critical in the implementation, operational and decommissions phases for environmental risk management, monitoring and evaluation (Rogers, Jalal and Boyd, 2008).

The lack of linkages between assessment and management of risks, as previously underscored, is further compounded by the lack of and incorrect contextualisation of certain impacts and issues (Tshangela, 2014), especially when cumulative effects assessment, cost–benefit analysis, lifecycle assessment and risk assessments are considered. Finally, the compliance of project developers to EIA conclusions and the enforcement of the authorisation conditions and the EMP are of particular importance. Enforcement of environmental laws and regulations is sometimes questioned especially at a local level in South Africa (Du Plessis, 2011). EIA has also been identified as not an exception to the rule in specific cases (Marais *et. al*., 2015). A lack of such enforcement, if confirmed beyond these specific cases, would result in unmanaged impacts despite the implementation of EIA. The Department of Environmental Affairs has identified that the follow-up, response and monitoring of the audit reports does not always take place, resulting in the undermining of the EIA process and a false sense of environmental impact mitigation (Marais *et. al*., 2015).).

2.5. NEMA No. 107 of 1998

South Africa in implementing IEA developed the National Environmental Management Act (NEMA). NEMA is a legal framework to assist in environmental management and decision making in order to promote sustainable development. NEMA fulfills section 24 of the Constitution of Republic of South Africa, 108 of 1996 in provision for environmental rights (Tshangela, 2014; van der Linde, 2010; and Noble and Fischer, 2015). NEMA defines environment as the surroundings within

which humans exist and that are made of (i) the land, water and atmosphere of the earth; (ii) micro-organisms, plant and animal life; (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

National Environmental Management Act (NEMA) No. 107 of 1998 is a framework legislation which hosts a number of other environmental legislations e.g. waste act, air pollution act etc. This framework and the National Development Plan (NDP) are the two main cross planning exercises executed by the government (Rennkamp, 2012). They aim to promote stewardship of South Africa's natural, social and economic resources (DEA, 2013).

According DEA, (2013) EIA can be used as a tool to ensure that there is sustainable use of natural resources with the increase of human development and economic growth. Sustainability principles are set out by NEMA (No. 107 of 1998) which encourages environmental management to ensure integrated management of activities that may have adverse impacts on the environment (DEA, 2014). According to NEMA the environment is holistic in that it includes the ecological,

2.5.1. NEMA EIA regulation changes

In an attempt to improve effectiveness and efficiency of EIA and enhance environmental protection and compliance to the available legislation EIA regulations needed to be improved from time to time (DEA, 2010). Hence the 2006 NEMA EIA regulations were replaced by the 2010 NEMA EIA regulations. The 2006 amended National Environmental Management Act 107 of 1998 (RSA, 1998) outlined the need for monitoring and auditing. The 2010 NEMA EIA regulations included certain types of activities with more detailed thresholds, length of time of the coverage of activity requiring an EIA e.g. mining; time frames and the introduction of two types of assessment processes (Noble and Fischer, 2015; and Kidd and Retief, 2009). These 2010 NEMA EIA regulations have also been amended in 2014.

These regulations are documented in Chapter 3 of the 2014 NEMA regulations under the subtitle: content authorisation. Content authorisation stipulates the information required by the competent authority for environmental authorisation for

the requested project, under which it states that activities conducted by an EIA require the management, monitoring and reporting of the impacts of the activity on the environment throughout the life cycle of the activity as contained in the approved environmental management plan (DEA, 2014). The completion of an Environmental Impact Report (EIR) and an environmental audit report are also required to be prepared by the holder of the authorisation or a person who is independent. Such reports should specify proof of compliance, i.e. the extent to which the conditions of the authorisation are being or not being complied with, the reasons for such behavior, and any action taken with regard to mitigation measures (DEA, 2014).

2.5.2. EIA process under NEMA

EIA is the main tool of ensuring Integrated Environmental Management (IEM) in South Africa as highlighted in the Chapter 5 of NEMA, 1998 (No. 107 of 1998) (Figure 2.1). This is done through a regulated environmental authorisation process (Sandham and Pretorius, 2008). Under NEMA any activity that would degrade or pollute the environment required an EIA assessment of the impact (DEAT, 2006). According to DEA, (2010) such activities include agri-industry projects, energy projects, large-scale property developments, social infrastructure and housing projects and linear developments.

Prior to project development, an EIA process has to be conducted for authorisation (Tshangela, 2014). Sandham and Pretorius, (2008) described the process as consisting of the following main steps:

1. Pre-application consultation;
2. Plan of study for scoping (including public involvement);
3. Scoping report (including public involvement);
4. Plan of study for EIA;
5. Environmental Impact Report (EIR) (including public involvement);
6. Authority review;

7. Environmental authorisation (including conditions of approval).

The environmental authorisation includes the authorities' approval of the EIA and the EMPr which then gets audited to ensure compliance. This process administratively is shown in Figure 2.2 and Figure 2.3 for Basic assessment report as well as the scoping and EIR processes as adapted from Ridl and Couzens, (2010). According to Saidi, (2010), EIA facilitates planners to develop alternate design, scale and location that would not compromise the environment which results in better planning.

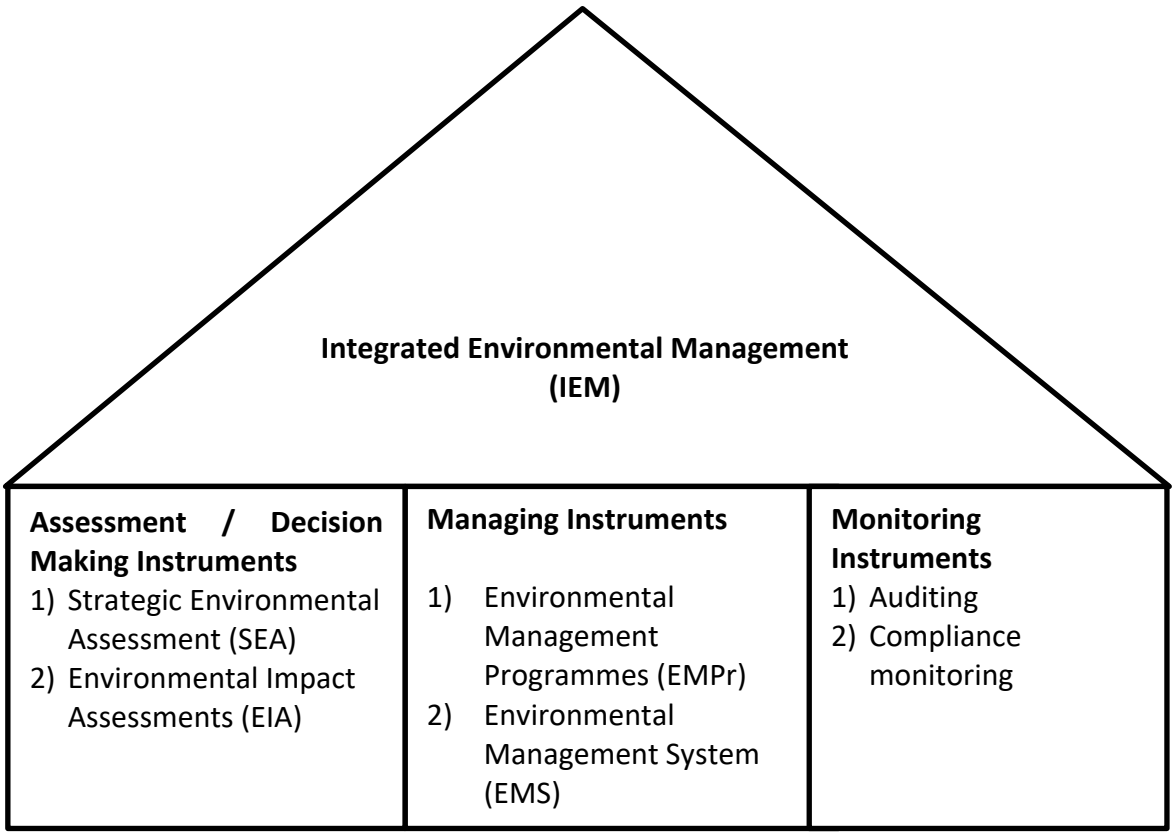

Figure 2.1: Illustration of the overarching function of IEM (de Wit *et. al*., 2015)

Basic Assessment Process: Flow Diagram

Regulations 21-25, EIA Regulations 2010 (Government Notice No. R. 543, 18 June 2010)

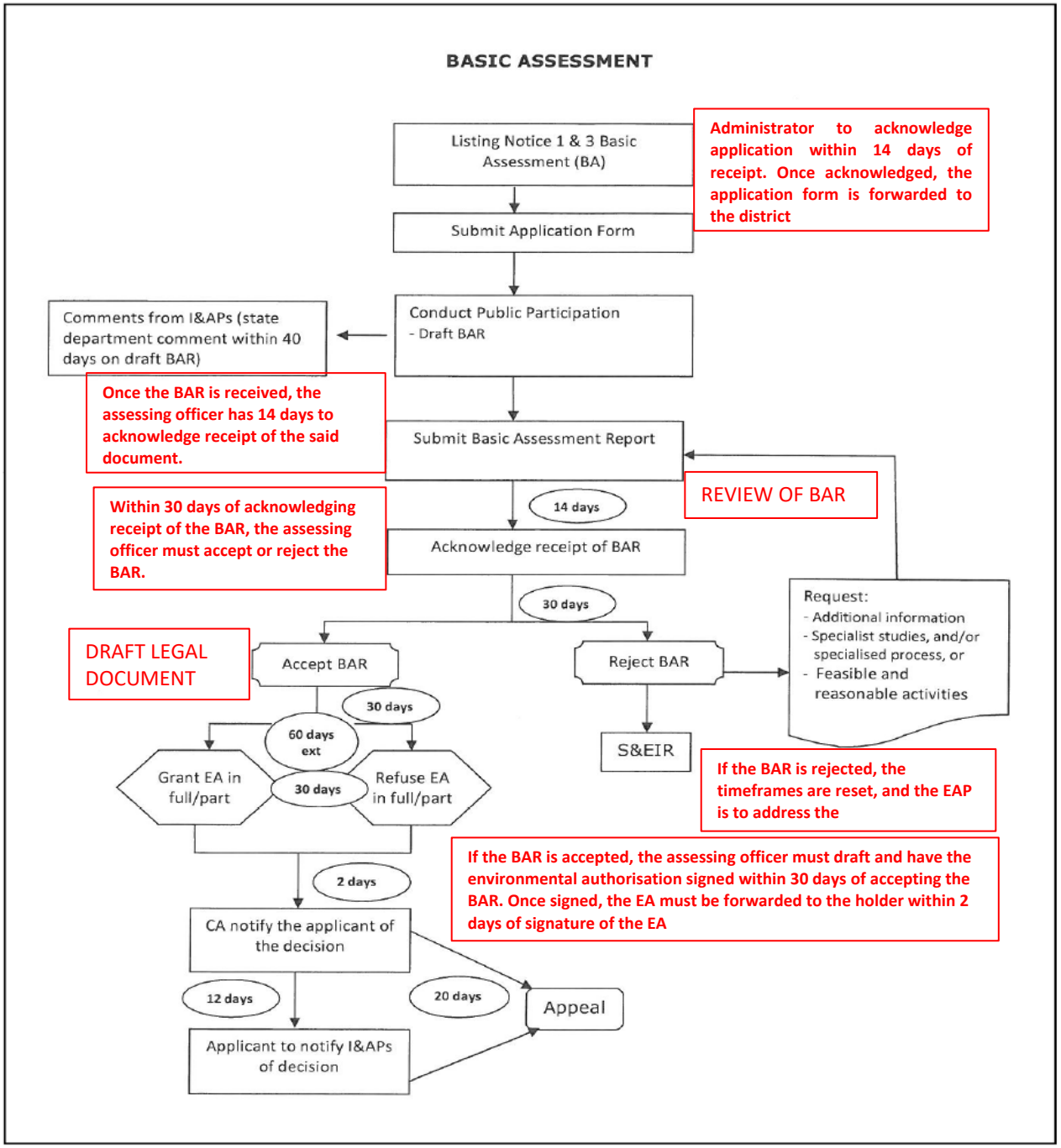

Figure 2.2: Basic Assessment Report process flow adapted from Ridl and Couzens, (2010) and de Wit *et. al*., (2015).

Scoping and EIR Process Flow Diagram

Regulations 26-35, EIA Regulations 2010 (Government Notice No. R. 543, 18 June 2010)

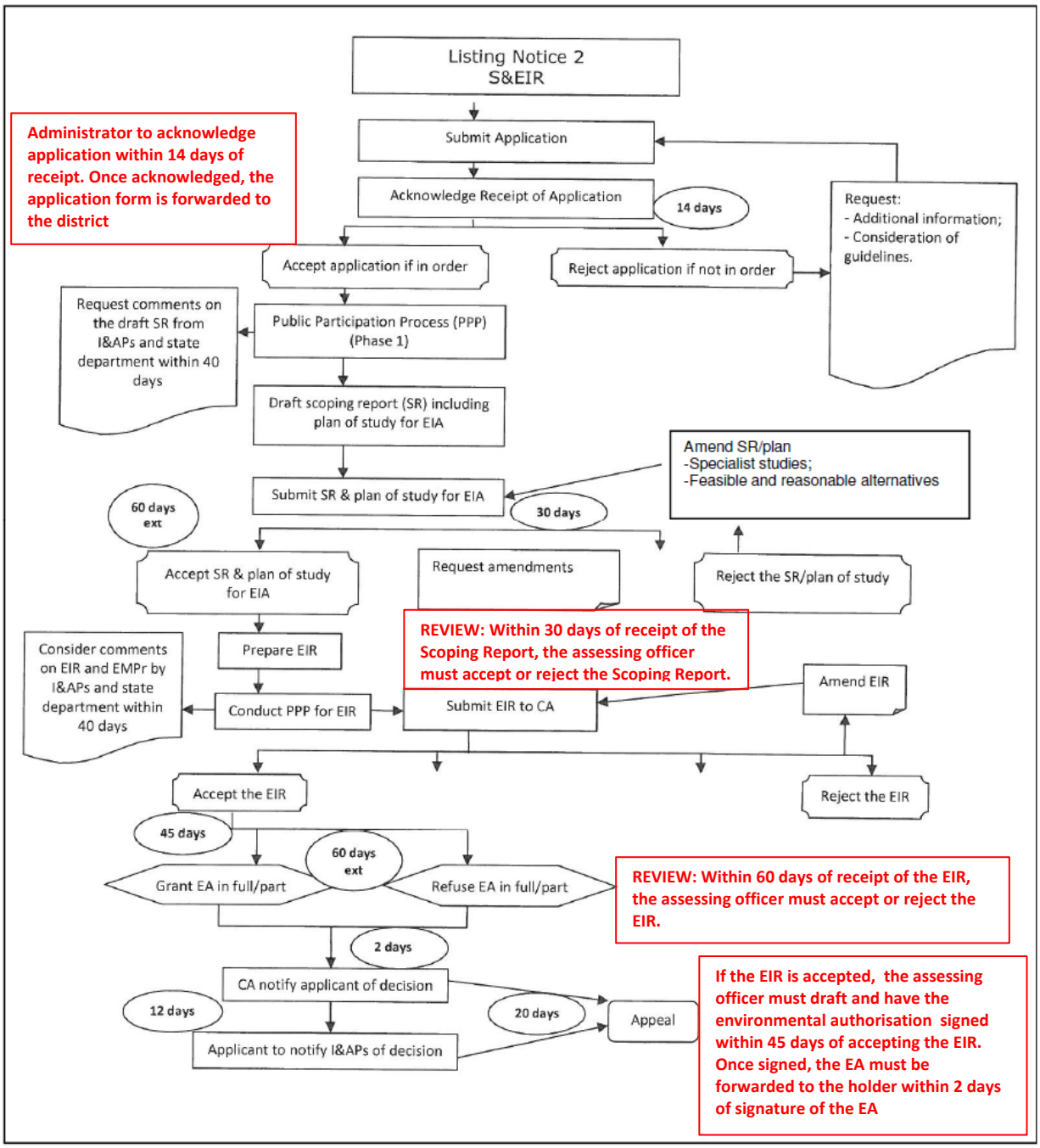

Figure 2.3: Scoping and Environmental Impact Report process flow adapted from Ridl and Couzens, (2010) and de Wit *et. al*., (2015).

2.6. Integrated Environmental Management

South Africa has used environmental tools such EIA to facilitate sustainable development (Marais *et. al*., 2015). According to Noble and Fischer, 2015 sustainable development is core to the IEM, and is also enabled through effective environmental governance. Environmental governance is concerned with the process of decision making regarding the management, control of the environment and natural resources. Environmental governance in South Africa is largely shaped by the concept of IEM which is an interpretation approach to environmental management. It identifies compliance monitoring, environmental monitoring, enforcement, and auditing as important components of an EIA process (Marais *et. al*., 2015).

The IEM provided the philosophy of environmental management that led to the EIA thus requiring a broader philosophy for environmental assessment (de Wit *et. al*., 2015). In reaction to environmental degradation, IEM was perceived as a concept that mainly took into account a "green" environment during decision making which aimed to prevent any adverse environmental impacts. Since then, its philosophy has changed and it now incorporates a set of principles of sustainable development which include social, political and cultural and economic impacts. The Constitution as set out in 1996 enshrined South African citizens' right to a healthy environment, and implementation of EIAs, as set out by NEMA (de Wit *et. al*., 2015).

IEM is the broad interpretation approach to environmental management, and is currently being implemented in terms of Chapter 5 of NEMA (No. 107 of 1998). The purpose of Integrated Environmental Management is to integrate environmental management principles into decision making. Secondly, to ensure the balance between the environment and development (DEA, 2014). IEM is concerned with the implementation, monitoring and the full planning cycles and various environmental management tools to ensure that environmental considerations are taken into account at every stage of a project development (DEA, 2014). NEMA (Act 107 of 1998) defined IEM as a philosophy that prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development and decision-making processes. The IEM philosophy (and principles) is integrated as applying to the planning, assessment, implementation and

management of any proposal (project, plan, programme or policy) or activity at a local, national and international level-that has a potentially significant effect on the environment (DEA, 2014).

DEAT in 1992 published a revised IEM procedure and a series of guideline documents. These documents have been used widely, in particular the set of twelve principles that support the IEM philosophy in South Africa. Some principles relevant to this study include:

- Accountability and responsibility: accountability and responsibility of all stakeholder in the process and through the life-cycle of the activity;
- Alternative options: the process must identify reasonable alternatives and offers the decision-makers an understanding of the trade-offs. These alternatives should include demands, activities, location, schedules and processes;
- Polluter pays: those who are primarily responsible for pollution, environmental degradation and subsequent health effects are liable for paying the costs to remedy such situations; and
- Adaptive: Processes should be flexible and adaptive to realities issues and circumstances. (DEA, 2014).

In order for the effective IEM implementation, adaptation and improvement an Environmental Impact Assessment Strategy (EIAMS) was launched in 2011. EIAMS was to enable the use of Environmental Management (EM) instruments and tools for decision making purposes. DEA, (2014) further state that EIAMS aims to integrate environmental consideration into policies and ensure the development and appropriate use of Environmental Management (EM) tools to achieve sustainability (de Wit *et. al*., 2015).

2.7. National Policy Directives

The National Policy Directives focus on how to improve the current IEM system to facilitate the move towards sustainability for the country. With this, the strategy aims to create an efficient governance system for integrated planning and implementation, an enhanced governance system and capacity, and sustainable environmental

management. This is derived from the National Development Plan (NDP), the Medium Term Strategic Framework (MTSF), the Presidential Outcome and the National Strategy of Sustainable Development (NSSD).

The National Development Plan, (2030) was developed by the National Planning Commission in the President's office. The National Development Plan 2030, amongst others, focuses on transition to a low carbon economy, resilience towards climate change and progression towards an environmentally sustainable South Africa (Presidency, 2014). Constraints that needed to be addressed by the NDP include natural resource degradation and depletion due to economic growth which were addressed as the 12 sub-outcomes and actions established during the drafting of the 2014-2019 Medium Term Strategic Framework (MTSF).

The overall goal of the NSSD is sustainability (or a sustainable society). NSSD acknowledges that maintaining a healthy ecosystem and natural resources are preconditions for human well- being (DEA, 2014). There is a relationship between the sustainability objectives of the NDP, the MTSF, and Outcome 10 (from the 12 outcomes) and the NSSD. Outcome 10 refers to the protection of environmental assets and natural resources to produce sustainable environmental management. These objectives include enhancing governance systems and sustainable environmental management, sustained ecosystem and protected biodiversity, positive response to climate change, a low carbon or green economy and sustained communities (DEA, 2014). Achieving sustainability, and ultimately, sustainable development requires a sustainability-led approach.

A sustainability-led approach to the IEM system in South Africa aims for a sustainable development path for this country. This would include the NDP, NSSD and the Presidential Outcomes. A sustainability-led approach aims to enhance favorable effects of human activity on the natural environment without compromising its integrity. It ensures that the human basic needs are met and avoids inappropriate trade-offs. It includes the use of sustainability objectives, indicators and targets, as well as avoidance and decrease of impacts (DEA, 2014). This in turn encourages the exploration and evaluation of alternatives to proposals and projects in order to meet the needs, purpose and sustainability objectives and targets (DEA, 2014). One of the important requirements for an effective sustainability led approach is the monitoring,

measuring and implementing of compliance enforcement to sustainability targets. This in turn promotes sustainable development as a main support tool for EIA (Fischer *et. al*., 2015).

2.8. Institutional and administrative structures for EIA in RSA

There are established institutions for environmental management in South Africa (Table 2.4). Chapter 2 of EIA regulations 2006 and 2010 highlight these institutions (RSA, 2006; 2010). The South African government is divided into three spheres i.e. national, provincial and local government. These spheres are distinctive, interrelated and interdependent. These spheres have executive and legislative authority over various environmental issues (de Wit *et. al*., 2015).

The approving Authority for EIA is vested at nine provincial government Departments of Environmental Affairs or provincial Departments that have an environmental competence e.g. Department of Economic Development, Tourism and Environmental Affairs (EDTEA) in KwaZulu-Natal and the National Department of Environmental Affairs (Fischer *et. al*., (2015) and de Wit *et. al*., (2015)). These government Departments were delegated as competent authorities that approves EIAs. Proponents or applicants or developers are expected to appoint an independent environmental assessment practitioner / consultant to submit an independent assessment report for consideration by the environmental authority.

For a proposed development activity to take place, certain procedures have to be undertaken. Such procedures are to demonstrate that key actions and considerations have been taken to care for the environment. This can be done through indicating that such development activity will not adversely impact the environment. Proponents or applicants for EIA approval need to submit an EIA with a full Environmental Impact Statement (EIS). This statement constitutes a description of the activity, potential impacts and the necessary mitigation measures (Sandham, 2013).

In South Africa in 1997 EIA process allowed for the three authorisation processes (de Wit *et. al*., 2015).

• Exemption phase: The regulations made provision for proponents to apply for exemption from the requirements of the regulations. This is normally in cases where the applicability of the listed activities is questioned. However, the environmental authority still requires what is referred to as an “exemption report” as basis for its authorisation decision.

• Scoping phase: The EIA process provide for exit if no significant environmental issues are identified through a scoping process. The decision to grant authorisation at the scoping stage is based on the contents of a so called “scoping report”.

• Full EIA: If it is found that potential significant environmental issues are applicable to the development then the environmental authority could require what is termed a “full EIA process”. The full EIA process generates an “environmental impact report” on which the authorisation decision is based (Retief and Chabalala, 2009).

The 1997 EIA regulations has since been replaced by 2006, 2010 and 2014 regulations, promulgated in terms of the National Environmental Management Act, in 2006, with the aim to address some of the inherent weaknesses of the previous arrangements, such as time delays, ambiguous screening criteria, vague public participation requirements, etc. However, the 2006, 2010 and 2014 regulations are not based on a formal empirical review of the old ones and many of the identified weaknesses of the old system are based on perceptions or anecdotal evidence at best (Retief and Chabalala, 2009).

a) National Department of Environmental Affairs

The National Department of Environmental Affairs is the Department that takes overall leadership for the administration of environmental legislation. This National government department is led by a minister (de Wit *et. al*., 2015). Section 24 of the Constitution outlines the mandate of this Department. This mandate is accomplished by formulating, monitoring and the implementation of national environmental policies, legislation and programmes.

According to the Southern African Development Community (Walmsley and Patel, 2011), the DEA is also responsible for:

- Developing and enforcing compliance with environmental policy;

- Developing and implementing an integrated and holistic environmental management system;
- Coordinating and supervising environmental functions in all spheres of government; and
- Developing and enforcing an integrated and comprehensive regulatory system.

b) Provincial Structures

The provincial departments e.g. Department of Economic Development, Tourism and Environmental Affairs (EDTEA) in KwaZulu-Natal are responsible for environmental matters at a provincial level (de Wit *et. al*., 2015). In terms of section 42(1) of NEMA of 2003, provinces were granted, by the Minister, the responsibility for authorising proposed development activities in terms of the EIA Regulations.

NEMA 2010 and 2014 regulations list the obligations of the provincial departments as:

1) Provide the applicant with any relevant guidelines, departmental policies, decision- making instruments and information relevant to the application,
2) Advise the applicant on the nature and processes that must be followed in order to comply with the Act and Regulations,
3) Consult with other competent authorities and other organs of state to avoid duplication of effort;
4) Receive and acknowledge receipt of applications within the stipulated time frames. Such applications include the EMPr which is created by the EAP of that particular project. There are conditions for authorisation of the EMPr that inform the preparation of EMPr that the EAP needs to comply with when preparing the plan. These conditions, as referred to in this study, include:

    - Detail of the person who prepared the EMPrs;
    - Information on any proposed management of mitigation measures that will be taken to address the environmental impacts identified;
    - Identification of the persons who will be responsible for the implementation of the measure contemplated;

- Description of the manner in which it intends to modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; and

- Time periods within which the measures contemplated in the environmental management.

The provincial structures (Table 2.3) are responsible for enforcing regulatory requirements and the administrative framework EIA. They implement and communicate EIA policy and procedures to local government structures (Marais *et. al*., (2015). The provincial departments are as follows (de Wit *et. al*., 2015):

Table 2.3: Provincial Structures in South Africa

Province	Provincial Department
Eastern Cape	Department of Economic Development and Environmental Affairs
Free State	Department of Economic Development, Tourism and Environmental Affairs
Gauteng	Department of Agriculture and Rural Development
KwaZulu-Natal:	Economic Development, Tourism and Environmental Affairs
Limpopo:	Department of Economic Development, Environment and Tourism
Mpumalanga	Department of Economic Development, Environment and Tourism
Northern Cape	Department of Environmental Affairs and Nature Conservation .

North West	Department of Economic Development, Environment, Conservation, and Tourism
Western Cape	Department of Environmental Affairs and Development Planning

c) Local Government Structures

The final institutional and administrative structure is the local government. The local government or municipalities are responsible for implementing policies, plans and programmes from provincial and national government (de Wit *et. al*., 2015). Municipalities are a critical organ of state as they are the closest to the communities. They fulfill an important role of socio-economic development of their citizens. Local government is responsible for the alignment of the Integrated Development Plans (IDP), Local Economic Development Plans and the Environmental Implementation Plans in their respective municipalities (Marais *et. al*., (2015). In the case of the EIA process, they ensure compliance with and enforcement of environmental authorisation and participation at a local level. Local government is able to govern according to their own initiative depending on the needs of the local community using the by-laws. The local government has a range of responsibilities including building regulations, specified water and sanitation services, municipal roads, noise pollution, refuse removal and solid waste disposal. Local government structures administer and grant authorisations to proponents to commence with development (Ahammed and Nixon, 2006). These structures secure a balance between the interest of the proponent and the community as well as confirm compliance with NEMA (Marais *et. al*., (2015).

d) Other role players in the EIA process

In addition to the competent authority, there are three other role players involved in the EIA process. They are the applicant (developer), environmental assessment practitioner (EAP) and the interested and affected parties, and public or private institutions. Where appropriate, commenting authorities such as the Department of Water Affairs (DWA), the Department of Agriculture, Forestry and Fisheries (DAFF), Ezemvelo KZN Wildlife (EKZNW), ensure that there is compliance with respective

authorisations and regulations during development (de Wit *et. al*., 2015).

e) Project proponents and developers

The applicant is the developer of the project and will have to acquire Environmental Authorisation from a competent authority. As the developer, he or she is responsible for hiring the environmental assessment practitioner at his or her cost to manage the application. The developer has to make sure that the practitioner is independent with expertise, experience and complies with the necessary legal requirements. The applicant must also provide the practitioner and competent authority with the relevant information for the application process (de Wit *et. al*., 2015).

f) Environmental Assessment Practitioners

The key role in the environmental approval process is played by the Environmental Assessment Practitioner (EAP). The EAP fulfills an essential role in educating and assisting clients in understanding legal environmental requirement (Retief, 2010). Retief, (2010) further state that the EAP ensure compliance with the legal requirements, highlighting sanctions for non-compliance and provide solutions to address non-compliance. The EAP is responsible for the pre-decision stage of the EIA process consisting of compiling a report or undertaking a specialised process to manage the application for a Basic Assessment or an Environmental Impact Assessment as well as drawing up the EMPr for authorisation. The EAP works independently from the ECO (de Wit *et. al*., 2015).

g) Environmental Control Officers

The Environmental Control Officer (ECO) is appointed by the client and is responsible for the post-decision stage of the EIA process. The ECOs are responsible for compliance monitoring, implementation and enforcement, ensuring legal compliance, advising, communicating, reporting and raising awareness (Wessels and Morrison-Saunders, 2012). They are not legally tied as ECOs in the EIA regulations; instead they are referred to as independent persons. An appraisal conducted by Wessels and Morrison-Saunders (2011) disclosed that both proponent and regulator benefit from an independent ECO. They facilitate discussion among stakeholders, are adaptable and proactive while enforcing conformity. According to legislation, the holder of an environmental authorisation (client) must appoint an independent person with relevant environmental auditing expertise to prepare

environmental audit reports and submit to the competent authority as indicated in the environmental authorisation (RSA, 2014). ECOs in South Africa are consultants from Environmental Companies, Environmental Departments and Engineering Companies etc. The ECO is meant to avoid, manage and mitigate environmental impacts associated with the authorised development (de Wit *et. al*., 2015).

The ECOs also prepare and submit audit reports to the relevant competent authority. The objective of the audit report is to demonstrate the level of performance against compliance of a project to the EMPr. It also reports the measures that were used to manage and mitigate environmental impacts caused by developments. In addition it identifies potential impacts and risks that could be caused by the authorised project. With regard to the Environmental Management Plan (EMP), it assesses its effectiveness, accuracy for future reference regarding the avoidance, management and mitigation measures for authorised projects (RSA, 2014).

The EIA legislation provides guidelines for the ECOs on the content of environmental audit reports. An independent person, who is appointed by the client, conducts the follow-up and submits an environmental audit report to the relevant competent authority. According to the 2014 amended EIA regulations, audit reports outline the level of compliance with the conditions of the environmental authorisation and EMPr. They also report on the management and mitigation measures provided for in the EMPr and identify any new impacts and risks associated with the undertaking of the activity.

h) Interested and Affected Parties (I&APs)

Public participation refers to the involvement of the local community in designing and evaluating the proposed plan or project. It includes procedures and methods that are designed to inform the public of potential decisions that can affect them thus allowing persons of all parties who may have an interest or are affected (I&APs) by a proposed development to have an input into the process. The latter are also known as EIA follow-up participants. They have a right to bring to the authorities, any issue or concern they believe needs to be considered by the authorities prior to granting authorisation. On a broader scale, stakeholder engagement is the framework of policies, principle and techniques that ensure the public participate in the EIA process (citizens and communities, groups, organisations and individuals) are

provided with the opportunity to engage in the decision making process. Public participation is viewed as a practice of stakeholder engagement (de Wit *et. al*., 2015).

Table 2.4 shows the list of all key stakeholders and their respective roles in any EIA application. The roles of I&APs in public participation include one or more of the following (de Wit, Rossouw, Davies, Fortuin, and Rapholo, 2015): theoretical

- Assist in identifying and prioritising issues that need to be investigated;
- Assist in or comment on the development of mutually acceptable criteria for the evaluation of decision options;
- Make suggestions on alternative and means of preventing, minimising and managing negative impacts and enhancing project benefits;
- Contribute information on public needs, values and expectation; and
- Verifying that their issues have been considered.

Table 2.4: Key stakeholders and their respective roles in any EIA application.

Institution	Role
DEA	Lead agent for the environment, responsible for air quality; pollution control and waste management; environmental impact management; biodiversity conservation; and marine and coastal management.
DAFF	Responsible for agricultural resources, pests, regulation of fertilisers, farm feeds and agricultural remedies, Genetically Modified Organisms, veld, forests and forestry.
Arts and Culture Department	National Responsible for protecting National Heritage.
Rural Development and Land	Responsible for development facilitation and principles governing land development, land use and animal breeding.

Reform	
DMR	Responsible for providing access to minerals, mine related health and safety and is responsible for mining related activities that require EIA.
DWS	Responsible for protection and management of water resources, water services and mountain catchment.
COGTA	National Responsible for municipal planning, integrated development plans, municipal service delivery and disaster management.
SANBI	These agencies act as stakeholders are tasked with protecting the ecosystem agency during the EIA process.
SANParks	
SAWS	
Provincial Departments of environment	Acts as the competent authority for provincial applications, issue EA, responsible for compliance monitoring within the province.
Municipalities	Commenting Authority. Ensures protection of environmental resources at local level.
AMAFA	Commenting Authority. Ensure protection of cultural and heritage resources within the province.
EKZNW	Commenting Authority. Responsible for biodiversity protection within the province.

2.9. EIA Effectiveness in RSA

Effectiveness of an environmental management tool is determined by its ability to meet the purpose for which it is intended (Patel and Giordano, 2014). This includes maintaining and improving environmental quality through the application of such an environmental tool. Patel and Giordano, (2014) asserted that the effectiveness of the EIA is broad, total measure of the manner of performance. The manner of performance determines whether the EIA, as a whole or application of the main stages, fulfilled its procedural requirements and substantive criteria. In this context,

procedural requirements are concerned with whether an EIA is undertaken according to established expectations and substantive criteria with whether the EIA achieves its purpose (Cashmore, Gwilliam, Morgan, Cobb and Bond, 2008). The effectiveness of the EIA process can be evaluated against certain criteria and standards (Sadler, 2004). The success of the implementation of EIA is relative and is determined by the criteria or standards that are created for effectiveness and performance review (Patel and Giordano, 2014).

Significant research has been done on the effectiveness of EIA systems as a tool for environmental management (Fischer *et. al*., 2015). Such research is based on various criteria, such as pre-decision procedural performance and report quality. However there has been minimal research that has been conducted on the cost of an EIA application particularly in developing countries. Research arena has broadened over the years with EIA work drawing from a range of disciplines that include various socio- cultural and geopolitical environments (Fischer *et. al*., 2015).

EIA efficiency depends on three approaches namely: (i) a self-directed assessment; (ii) an EIA process administration; and (iii) through guidance on EIA implementation (Abaza, Bisset, and Sadler, 2004). A self-directed assessment is a measure used by applicants / proponents to assess and account for the environmental impact / decisions (Montano, 2015). The self-directed assessment ensures the proponents are more responsible for the environment, identify and implement mitigation measure to their development activity as well as implement environmental management plans. The EIA process administration entails the approval authority on the EIA application. In the case of South Africa there are government institutions, delegated authorities to manage the approval process of EIA applications. They monitor compliance with EIA legal and procedural requirements (Montano 2015). These administrative bodies are vital in reinforcing accountability, consistency, fairness and interpretation of rules and requirements thus ensuring procedural effectiveness of EIA. However the understanding of the cost of each EIA application by officials processing these applications is what this study is exploring. According to Abaza *et. al*. (2004), an EIA administrative body can have one or more of the following functions and duties:

1. Preparation of regulation and guidance;

2. Providing procedural advice and direction including on issue resolution;

3. Registration of EIA reports and documentation;

4. Overseeing or facilitating stakeholder involvement;

5. Review or approval of EIA report;

6. Promoting EIA good practice;

7. Supervision or inspection of EIA derived environmental management plans for project implementation; and

8. Carrying out EIA audit and follow-up studies.

Abaza *et. al*., (2004) as well as Montano, (2015) recommend guidance on EIA implementation as the approach on effective EIA management process. Formalised guidelines can be implemented when preparing official documents issued by an administrative body. These guidelines outline the EIA requirements, legislative and regulatory compliance with explanations of actions required. In essence, guidelines describe what needs to be done, how specific actions can be conducted, when these can be done and what decisions are required

2.10. Current state of knowledge on the cost of EIA

There are costs associated with undertaking EIA, with the potential savings over the life of a project. Tsai, (2015) stated that the potential savings over the life of a project through the management of EIA costs and environment impact process can repay the development investment many times over. The savings can be economic (e.g. identification of least cost alternative) as well as environmental (e.g. impact reduction, maintaining other resource use opportunities). Generally the earlier EIA process is introduced in the project cycle, the greater the potential returns. When EIA is integrated into the project preparation phase, environmental design considerations can be introduced in the first place rather than the proposal having to be modified later (Patel and Giordano, 2014).

It can be difficult to determine the exact costs of an EIA at the beginning of the EIA process because major projects typically require a large number of investigations and reports, often for closely related purposes (e.g. engineering feasibility studies of hydrology and surface materials). The World Bank noted that the cost of preparing an EIA rarely exceeds one per cent of the project costs. For Bank projects, the relative cost of an EIA typically ranges from only 0.06 per cent to 0.10 per cent of total project costs. The total cost of an EIA might range from a few thousand rands for a very small project, to over a R10 million rands for a large and complex project, which has a significant environmental impact and requires extensive data collection and analysis. Although many proponents complain that EIA causes excessive delays in projects, many of these are caused by poor administration of the process rather than by the process itself. These occur when the:

- EIA is commenced too late in the project cycle;
- Terms of reference are poorly drafted;
- EIA is not managed to a schedule;
- Technical and consultative components of EIA are inadequate; and
- EIA report is incomplete or deficient as a basis for decision making (Rossouw, Davies, Fortuin, Rapholo and de Wet, 2014).

Similar considerations apply to the timeframe for the EIA process. Most projects merely require screening and might take only an hour or two of work. Where further EIA work is necessary, the time taken can range from a few days or weeks, for a small irrigation or a minor infrastructure project, to a year or more for a large dam or a major infrastructure project. The costs and time involved in EIA (for both EAP and approving authority) should decrease as experience is gained with the process and there is a better understanding of the impacts associated with different types of projects and the use of appropriate methods. Over a longer timeframe, the availability of baseline data should also increase (Patel and Giordano, 2014).

The purpose and benefits of EIA are not always clear to mid-sized and smaller project sponsors. Incorporating EIA early into project development is often viewed as an additional cost and the benefits are often underestimated. A common mistake is to focus solely on minimizing capital costs and, in doing so, limiting the amount of time and effort spent on management. It has been estimated that regulatory

compliance costs South African business over R796 billion per annum, which is considered a substantial burden hindering national development targets (Rossouw *et. al.*, 2014).

South Africa is one of the leading developing countries in terms of the introduction of EIA. However, almost a decade of mandatory EIA practice has raised serious questions about unjustified and unnecessary time and monetary costs and a desperate need for improved efficiency and effectiveness (Duthie, 2001; Crookes and De Wit, 2002). Considering the social and economic context and increased concern over the cost of red tape to the economy (Pizer and Kopp, 2003) as well as in light of the government's National Development Plan and Strategic Infrastructure Programme (South African Government, 2014). DEA has stated with reference to EIA that, "Government is concerned about any delay, costs and associated impacts on economic growth and development. This is why we need to improve efficiency and effectiveness without compromising basic environmental rights and quality." (Patel and Giordano, 2014).

The most relevant available data for developing countries on the EIA cost estimates is provided by the World Bank, which conclude EIA to cost between 0.01% and 1.0% of total project cost (World Bank, 1999). This goes together with the need to consider an integrated approach for infrastructure development. This consideration includes environmental considerations and the identification of co-benefits coming from the integration of a set of infrastructures (Patel and Giordano, 2014).

The World Bank quoted estimates on direct EIA costs in South Africa vary between 0.2% and 4.0% of total project cost (Republic of South Africa, 2014; Weaver, 2008). These estimates are however based on international experience as well as anecdotal evidence and not on any empirical survey or formal research. Views have been raised that EIA cost estimations would mainly depend on the level of project complexity (type), which in turn, depends on the degree of impact (size) associated with the development and the sensitivity of the receiving environment. This study looked at an empirical survey exploring direct and indirect EIA cost as well as factors affecting EIA costs in KZN. Hart, (1984) and Gilpin, (1996) depicted the cost elements of EIA as shown in Figure 2.4 below.

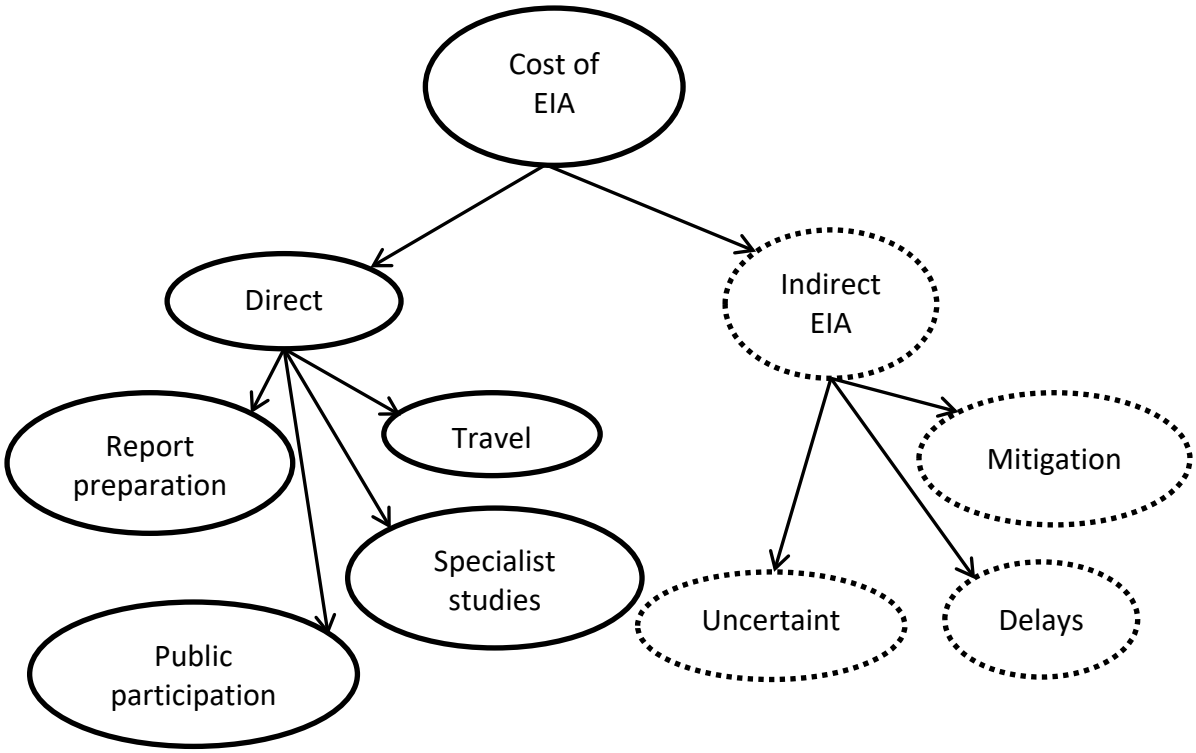

Figure 2.4: EIA cost elements (Source: Hart, (1984) and Gilpin, (1996)

2.11. Conclusion

The EIA is an important instrument in the management of the environment and it has gained more prominence over the years after the world adopted the concept of sustainable development. This concept puts people at the forefront of the management and it promotes a balance among three key pillars; ecological, social and economic sustainability.

Literature shows that an EIA's implementation and effectiveness depends on closing the gap between project plans and their implementation. This chapter outlined the EIA legislative framework for this study and highlighted the need for an in depth understanding of the cost of doing EIA. It provides an overview of the legislation the institutional structures and role-players involved in the EIA process.

Chapter Three: Research Methodology

3.1. Introduction

Research methodology is concerned with describing how a research problem is formulated, methods used to collect the data, type of data to be collected and reasons for a particular data analysis techniques (Ruane, 2016). The researcher was a part - time student and conducted independent investigations. Permission to conduct the research at the EIA approval authority (competent authority) was obtained from the KZN Department of Economic Deployment, Tourism and Environmental Affairs (EDTEA). The research was conducted between May and July 2016. This chapter briefly describes qualitative and qualitative research approach and research design, followed by a sampling technique. A description of the methods of data collection and data analysis is then presented. Lastly, the limitations encountered during the study.

3.2. Qualitative and Quantitative research methods

Qualitative and quantitative research are differentiated by the type of data used (textual or numeric, structured or unstructured), the nature of the investigation (exploratory or confirmatory), the means of analysis (interpretive or statistical), the approach to explanation (variance theory or process theory), and the underlying paradigm (positivist or interpretive) (Noble and Fischer, 2015). According to Ruane, (2016) quantitative research is framed by the positivist paradigm, while qualitative research is framed by the constructivist, interpretive paradigm. This study used a qualitative research approach, framed by a social constructivist paradigm. Thus meaning that knowledge is socially constructed, and that subjectivity is part of the production of data. It describes events, persons, meaning and feeling of a situation observed scientifically without the use of numerical data (Ruane, 2016). It aims to reveal the patterns of meaning in the area under study.

Qualitative data is non-numerical, includes concerned with descriptions (using words) and applying reason (Noble and White, 2013). Ruane, (2016), summarised qualitative research methods as including observation (unstructured, structured, and

participant), interviews (face-to-face, semi-structured, unstructured and non-directive), group interviews (focus group), concept mapping, recordings (audio and video with structured or unstructured analysis), ethnography and documentary or policy analysis. Notably (Ruane, 2016), stated that there are three main methods of data collection that produce qualitative findings using qualitative research method. These are in-depth, open-ended interviews, direct observations and written documents. This study employed semi-interviews framed within a constructivist and interpretative paradigm.

It can be said that qualitative methods of research are intended to achieve depth of understanding while quantitative methods are intended to achieve breadth of understanding (Strydom and Bezuidenhout, 2014). Palinkas, Horwitz, Green, Wisdom, Duan, and Hoagwood, (2013), stated that qualitative methods place primary emphasis on saturation yet quantitative methods place primary emphasis on generalizability. Therefore qualitative and quantitative methodologies have different sampling techniques, expectations and standards for determining the number of participants.

3.3. Research Approach and instrument

Data gathering is crucial in any research, as it contribute to a better understanding of a theoretical framework (Creswell, 2014). It is therefore important to collect data in a sound manner. Qualitative researchers study subjects in their natural settings, attempting to make sense of, or to interpret the phenomena in terms of the meanings people attach to such a phenomenon (Denzin and Lincoln, 2013). Qualitative research is characterised by its aims, which relate to understanding some aspect of social life, and its methods which (in general) generate words, rather than numbers, as data for analysis. In this research qualitative research method was used to penetrate to the deeper significance that the subject (Approval authorities) of the research ascribes to the topic of costs implications to EIA. An interpretive, naturalistic approach to the subject matter was applied and gave priority to what the data contributed to important research questions and existing information.

3.3.1. Purposeful Sampling

Purposeful sampling is a technique widely used in qualitative Research (Creswell, 2014). According to Creswell, (2014), purposeful sampling is used for the identification and selection of information-rich cases e.g. EIA as a subject matter. Purposeful sampling involves identifying and selecting knowledgeable and experienced individuals with the subject matter being studied. This also maximise the efficiency and validity of the study. According to Creswell, (2014), there are numerous purposeful sampling designs. In this study a purposeful sampling Criterion-I was used. Criterion-I identified and selected all cases that met some predetermined criterion of importance i.e. the selection of staff members that do the EIA authorisation processing in District municipalities of KwaZulu-Natal as used in this research.

3.3.2. Challenges with Purposeful Sampling

This study used purposeful sampling method. There are a number of challenges in identifying and applying the appropriate purposeful sampling strategy in any study e.g. the range of variation in a sample from which purposeful sample is to be taken is often not known at the outset of a study. To set as the goal the sampling of information-rich informants that cover the range of variation assumes one knows that range of variation (Creswell, 2014). According to Palinkas *et.al*., (2013), criterion sampling may not be the most appropriate strategy for implementation research. This is because by attempting to capture both breadth and depth of understanding, the researcher might end up accomplishing either.

Qualitative methods are often contrasted with quantitative methods on the basis of depth versus breadth; they actually require elements of both in order to provide a comprehensive understanding of the phenomenon of interest. Ideally, the goal of achieving theoretical saturation by providing as much detail as possible involves selection of individuals or cases that can ensure all aspects of that phenomenon are included in the examination and that any one aspect is thoroughly examined. This goal, therefore, requires an approach that sequentially or simultaneously expands and narrows the field of view, respectively.

By selecting only individuals who meet a specific criterion defined on the basis of their role in the implementation process or who have a specific experience (e.g., engaged only in an implementation defined as successful or only in one defined as unsuccessful), one may fail to capture the experiences or activities of other groups playing other roles in the process. For instance, a focus only on practitioners may fail to capture the insights experiences, and activities of environmental enforcement, environmental monitoring, general administration and management, thus limiting the breadth of understanding of the process (Palinkas *et.al*., 2013).

On the other hand, selecting participants on the basis of whether they were a practitioner, environmental enforcement, or any of the above, may fail to identify those with the greatest experience or most knowledgeable or most able to communicate what they know and/ or have experienced, thus limiting the depth of understanding of the implementation process. To address the potential limitations of criterion sampling (as done in this study), other purposeful sampling strategies should be considered and possibly adopted in implementation research. For instance, strategies placing greater emphasis on breadth and variation such as maximum variation, extreme case, confirming and disconfirming case sampling are better suited for an examination of differences (Palinkas *et.al*., 2013).

3.3.3. Semi-structured interviews

Semi-structured interviews are most commonly used in qualitative analysis where the interviewer does not research in order to assess a particular hypothesis (Jo, Lee, Mcclure, and Zadrozny, 2016). For semi-structured interviews, the interviewer is guided by a list of the main themes, issues and questions. In a semi-structured interview, the interviewer has the freedom to explore questions without having to follow a detailed interview guide. The interviewer can also use sub-questions, themes and questions to explore unforeseen encounters (Jo *et. al*., 2016). This study made use of semi-structured interviews questionnaire, which was designed for the gathering of qualitative data.

The questions were developed from the literature study and aligned to the main research questions. The main research questions were decomposed into a series of

open ended questions. Respondents were given the opportunity to interpret the questions in their own way and the interviewer probed for further information to draw upon the respondent's attitudes, beliefs, opinions, feeling and experiences that would not be feasible in the collection of other methods.

Four critical interview questions were used to guide the interview. Each question had four sub questions (Appendix 1). The following were the questions used to guide the interview session.

e) Identify, list and categorize all direct and indirect cost associated with EIAs
f) Identify what cost are associated with what phase of the EIA process
g) Identify and cost critical factors that influences the effectiveness of the EIA process and decision making
h) Identify and cost the generic factors that influences the effectiveness of the EIA process and decision making

Furthermore semi-structured interview was chosen to allow further clarity, probing and crosschecking questions where the interviewer had the freedom to alter, rephrase and add questions according to the nature of responses from interviewees (Jo *et. al*., 2016). The semi-structured interviews provided opportunities for the recording of idiosyncratic and more free-flow responses. The questions were purposefully engineered to gather the perceptions of the sample population.

3.3.4. Challenges with semi-structured interview

There are both strengths and limitations related to semi-structured interviews. The strengths include the researcher's ability to prompt and probe when given the opportunity (Jo *et. al*., 2016). In addition, unlike the structured interviews, the researcher can explain or re-phrase the questions if respondents are uncertain and need clarity. However, probing questions may also serve as a limitation when the researcher is unable to ask prompt questions thus preventing the gathering of some relevant data (Jo *et. al*., 2016)

Semi-structured interviews aim to access data based on open-ended questions. This study used in-depth interviews with verbal questions that were direct and open-ended. According to Jo *et. al*., (2016), in depth interviews "explore, probe, and ask

questions that will elucidate and illuminate that particular subject to build conversation within a particular subject area, to word questions spontaneously, and to establish a conservational style but with a focus on a particular subject that has been predetermined". In-depth interviews were essential for exploring knowledge of each participants understanding of the applicants costs involvement with the EIA process, their roles and responsibilities, as well as lessons learnt. Interviews were in-depth and were in the form of 'conversations'.

Qualitative data are in the form of text and the act of analysis involves the deconstruction of the textual data into manageable categories, patterns and relationships (Blandford, 2013). The aim of the qualitative analysis of this research was to examine the various elements of the captured data to clarify concepts and constructs and to identify patterns, themes and relationships according to the research purpose.

3.4. Research setting

KwaZulu-Natal is one of the provinces in South Africa (Figure 3.1) with the growing number of EIA applications over 400 in 2016/17 (DEA, 2016). It is also a province with 11 district municipalities of which one is a Metropolitan municipal council (SALGA, 2011). Purposive sampling is a non-random sampling technique where there is a purposeful selection of a representative sample by the researcher based on a set of defined characteristics (Palinkas *et. al*., 2013). The participant's for this research were chosen based on the following criteria:

i. Position and role in organisation: District Manager or Environmental Officer - EIA practitioner in each of the 11 District municipalities. The Environmental Officers were government employees under the DEDTEA, selected for their position and holistic view of the organisation.
ii. Years of Experience: Individuals with more than 2 years EIA processing experience.
iii. Leading, directing and managing resources: Be able to understand the challenges and complexities of problems experienced in the processing of EIA.

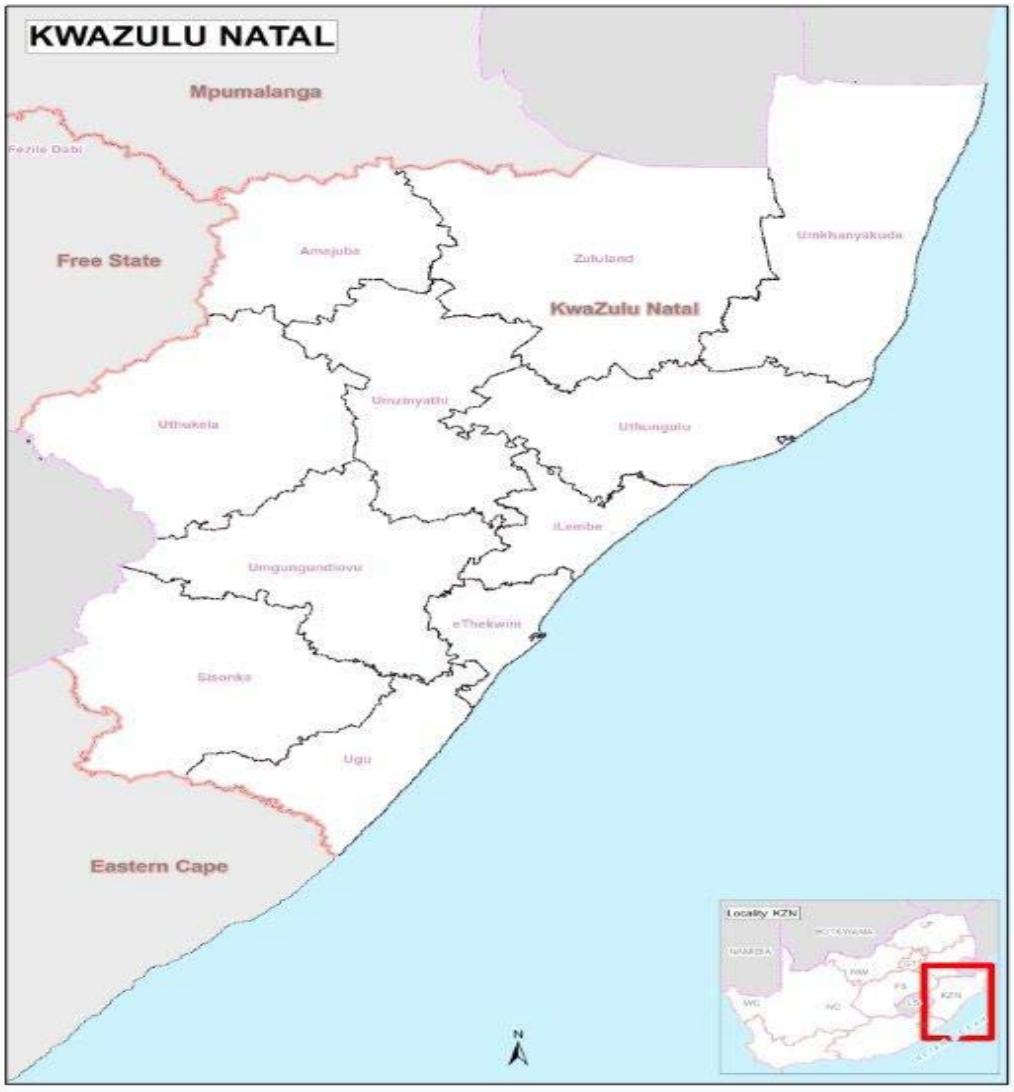

Figure 3.1: Province of KwaZulu-Natal

3.5. Data Collection

The province of KwaZulu-Natal has eleven district municipalities. Each district municipality was represented by one respondent making a sample size of eleven. There are 55 officials responsible for processing EIA applications in KZN DEDTEA. Table 3.1 shows all the districts represented. All district opted to have one respondent representing the views of their district. Over a period of 12 weeks (May to July 2016), a total of 22 interview requests (two participants per district) were sent out by email to Environmental officers. A total of 11 interviews (Table 3.1) were conducted with an average duration of 44 minutes and median length of 36 minutes.

The ratio of female to male participants that were interviewed was 5:6 which was a balanced gander representative sample.

Table 3.1: Participants interviewed

Respondent	Participant District (District Municipality)	Position and role at DEDTEA
1	Ugu	District Manager (Environmental Officer), Case officer supervisor
2	Amajuba	Acting District Manager (Environmental Officer), Case officer supervisor
3	UMkhanyakude	District Manager (Environmental Officer), Case officer supervisor
4	UThukela	Acting District Manager (Environmental Officer), Case officer supervisor
5	UMgungundlovu	District Manager (Environmental Officer), Case officer supervisor
6	Ilembe	District Manager (Environmental Officer), Case officer supervisor
7	Harry Gwala	Acting District Manager (Environmental Officer), Case officer supervisor
8	UMzinyathi	District Manager (Environmental Officer), Case officer supervisor
9	Ethekwini Metro	District Manager (Environmental Officer), Case officer supervisor
10	Zululand	Environmental Officer, EIA Case officer
11	UThungulu	Environmental Officer, EIA Case officer

Permission was granted by the Head of the Department (HOD), to conduct the study within the Department (DEDTEA), an informed consent form was signed between the researcher and each participant. This clarified that information derived from the interview would only be used for research purposes.

Interviews were conducted once the researcher received Ethical Clearance from the University of KwaZulu-Natal. The respondents participated willingly thus creating an agreeable and cooperative setting for the interviews. Interviews were all recorded, transcribed and thematically analysed.

3.6. Interviews Procedure

The recording of the interview data took place by means of note-taking and audio recording as recommended by among others (Creswell, 2014). The note-taking served as an additional recording measure and as a back-up procedure if consent was not obtained from the interviewees to record the interview by means of an audio recorder. Interviews took place in the offices of the district officials and at DEDTEA provincial offices. There was also sensitivity to the specific situation of each respondent, because of the Department specific circumstances and work-related priorities.

A semi-structured interview design with open-ended questions was deemed most appropriate. This choice was based on the following considerations (Creswell, 2014 and Nohl, 2009):

- The semi-structured design gives the participants ample time and scope to express their diverse views and allows the researcher to react to and follow up on emerging ideas and unfolding events
- Results obtained through semi-structured interviews can be compared among each other since all participants are required to express their views about the same general themes
- Semi-structured interviews allow not only for assessing the participants' opinions, statements and convictions, they also allow to elicit narratives about their personal experiences
- Open-ended questions allow the participants to freely voice their experiences and minimize the influence of the researcher's attitudes and previous findings
- Anonymity was guaranteed in order to give the participants the opportunity to freely express their views and encourage them to also address politically delicate issues.

A list of guiding questions was compiled and used to guide the expert interviews in order to make sure that all respondents address in the interview process the issues that are of interest for this study. Contact to experts was initiated with a telephone call.

During the interview the initial task was to establish a friendly, secure and cooperative relationship with the interviewee by a word of thanks for being willing to partake in the research. The participants were assured of the confidentiality of their participation in the interview and the background of the research and related aims were explained to provide the interviewees with relevant and necessary information about the research. The format and sequence of questioning were also explained before the actual interview. The pace and time during the interview were continuously monitored. The preceding information and explanations were also included in the cover letter that was handed to each participant. A copy of the interview schedule, with the contact detail of the researcher was provided to each interviewee for possible future enquiries.

3.7. Data analysis and interpretation

Analysis of data is a methodical systematic process of cleaning, transforming, inspecting, and modeling data. Sekaran and Bougie (2013) Suggests that data must be captured, cleaned, scrubbed and establish how outliers and incomplete data was be treated and handled in the survey. The intent of this process being, the discovery of information and decision - making process. Preliminary analysis was undertaken to achieve the appreciation of the data. Interview notes and observations were analysed. A gap analysis was undertaken to establish additional information or clarity questions that might be required. In this case where additional information was needed the researcher contacted those identified participants for further information.

Literature review in chapter two was used as a source of the coding words. The interview results were analysed using NVivo v11 software (appendix 3) designed to classify and manage qualitative information.

Redundancy in duplicate code were eliminated and a reduced more manageable list was developed. Codes were grouped into categories of ordinary themes. The codes

were collapsed into themes which were the major ideas emerging from the data. These themes were the evidence that support the research question. The codes and the themes were then built into descriptive passages starting from a broad description and then funneled into narrow description.

The findings were presented into comparison Tables and in some cases Figures that presented a visual depiction of the relationship between the themes. The data was interpreted by contrasting against personal reflection and the literature review perspective. Limitation of the study was addressed and any validation and accuracy were challenges.

3.8. Thematic Analysis

Thematic analysis, as a grounded theory, is a qualitative method used in identifying, reporting patterns (themes) and analysing the data in which one is interested (Braun and Clarke, 2006). It goes beyond counting words or phrases to identifying and describing themes within the data collected. Braun and Clarke, (2006) identify a theme as capturing something vital in the set of data collected in relation to the research question, and represent the patterns in the responses or meaning within the data collected. Themes identified that were important for a certain phenomenon were used as categories for analysis once coded (Feredat and Muir- Cochrane, 2006). Coding refers to the creation of categories in relation to the data prior to a process of interpretation (Braun and Clarke, 2006).

According to Joffe and Yardley, (2004) in thematic analysis, a coding category can refer to something directly observable in the data that is it can refer to the manifest or semantic content of the data, therefore, with the semantic approach the researcher is not looking for anything beyond what the participant has said. Thematic analysis draws upon both themes: the manifest poses as the main theme but one need to understand the latent meaning of the manifest themes observed within the data, which requires interpretation.

Themes identified may have very little relation to the questions asked of the participants and were independent of the pre-existing coding frame (Braun and Clarke, 2006). For this research, themes identified in the raw data were influenced

by existing theoretical ideas adopted by the researcher to assist in deductively exploring the research question and fulfilling the set objectives. Additionally, themes independent of theoretical influences were derived from the raw data for the current research, therefore, the inductive approach to data also proved essential. These themes connected to the data themselves, and independence from the pre-existing coding frame was vital and contributed to fulfilling the overall research aim. Both these approaches were appropriate to this study since an existing practical framework for an EIA costs (deductive) was used to thematically analyse the raw data collected (inductive) which presented its own themes.

3.9. The role of the researcher

In qualitative research, the researcher stands central to the data collected (Wood, 2012). The researcher collected the data by means of semi-structured interviews. The following implications were relevant for the role of the researcher:

- As the primary instrument of data collection and analysis, the researcher become immersed in the phenomena under investigation
- As an active participant in the research, the researcher adopted an exploratory, non-judgemental orientation by trying to learn how district municipalities understand the costs associated with EIA processing.
- Introspection and the acknowledgement of own biases, interest, perspectives and values are typical reflexive qualities of a good qualitative researcher (Cresswell, 2003).
- The positionality perspective taken in this study is that of outsider in collaboration with insiders. The issue of what each stakeholder wants out of the research needed to be negotiated carefully if reciprocity was to be achieved.
- The researchers positionality can, therefore, be described as one of cooperation with departmental officials working together with the researcher to determine priorities with the responsibility remains with researcher to direct the process.

3.10. Limitations

Several limitations and challenges were experienced prior to and during the collection of data and it should be noted that the ‘effectiveness’ for the purposes of

this research was measured from information available at the time of the research. These challenges included geographic spread of district municipalities demanded an excessive travelling between the districts. Secondly, the application process is a manual process (not automated). Access to all documents was limited as the Department did not have a delineated archives section where they store all their files. Some files have to be looked for since they were not readily available. Thirdly, the respondents were afraid to be victimised by senior managers should they disclose more than what their senior managers would have wanted. This was overcome by the non-disclosure form that was signed. Fourthly, the study was done after the Environment function in the province of KZN was moved from KZN Department of Agriculture to be merged with the KZN Department of Economic Development and Tourism. This move included the staff move as well, which most staff members did not understand or agree with. This gave rise to a state of disorientation and blurred lines of reporting at a senior management level. This confusion had limited impact on the study and the results thereof because senior management level is above the district management level where approvals are obtained.

The time consuming process of transcribing became a challenge due to inarticulate responses from some participants. To overcome this, second opinions were required to assist with the inarticulate responses from participants. Participants also had biased responses regarding the costs in their district. Similarly this biasness was managed through second opinions that were requested from their supervisors.

3.11. Trustworthiness

The trend that emphasises the use of rigor to assure reliability and validity in qualitative research was followed in this section of the research. Rigor refers to the demonstration of integrity and competence in qualitative research by adherence to detail and accuracy to assure authenticity and trustworthiness of the research process (Van Zyl, 2014). As such the rigor of the qualitative section relates to the overall planning and implementation of the planned research design conducted in a logical, systematic manner to ensure the authenticity and trustworthiness of procedures according to the following criteria:

- **Validity**: Validity in some cases is referred to as consistency, predictability or, stability. A test is seen as valid if it does what it is set out to do. According to (Van Zyl, 2014), validity is about the instrument the researcher is using and this chosen tool should be able to measure what it is designed to be measured. Validity refers to the results of the test and not the test. Validity has to be understood within the context within which the test is undertaken. Validity is define by Sekaran and Bougie, (2013) as a test of how well an instrument that is developed measures the particular concept it is intended to measure. The goodness of measure for this study was established through validity and reliability. Validity was established by selecting the most appropriate methodology, survey instrument, sample size and the target population during the design stage. At the data collection stage validity was ensured by tailoring the instrument to situational factors, by ensuring a consistent and standard procedure for data collection. At the data analysis stage validity was ensured by preventing subjectivity in the analysis of data, using the most appropriate statistical data analysis techniques, avoiding the selective use of data and making inferences and generalisation beyond the data. All qualitative data was appropriately codified (Wainer and Braun, 2013). Finally at the data report stage validity was maintained by not making wild claims that were not supported by the data and that the research questions were answered. The research data was also not used selectively and unrepresentatively(Sekaran and Bougie, 2013).
- **Reliability:** Reliability is mainly concerned with making certain that the method of data collection leads to dependable results. According to Sekaran and Bougie, (2013), the reliability of a measure is an indication of the stability and consistency with which the instrument measures the concept and helps assess the “goodness” of measure. This study used qualitative method and analysed the results using Nvivo software
- **Credibility:** Engagement with the data (recordings, notes and transcripts) was done intensively to demonstrate clear links between the data and interpretations. The use and indication of verbatim examples of participant’s responses reflect for example the range and tone of the gathered responses. The credibility of the research was further increased by results being submitted to an independent evaluator for the review of interpretation of data and assessment of the

documentation. Regular discussions were held and adjustments were made according to suggestions and recommendations by the interviewee.

- **Dependability:** Care was taken to ensure that the research process was logical, traceable, and clearly documented in a reflexive manner by giving a detailed account of the research process.
- **Transferability:** This indicates the extent to which the findings can be applied in other contexts or with other participants (Babbie & Mouton, 2001). The strategies for achieving transferability comprised of thorough descriptions and purposive sampling. To ensure thorough descriptions, detailed descriptions of data are provided. Purposive sampling was applied within this study because of its propensity to maximise the variety of the information that can be obtained within a specific context.
- **Confirmability**: An audit process was implemented by working forward as well as backward through the research process to ensure that the data and interpretations of the findings were not figments of imagination, but clearly derived, sound and confirmed findings. The intention during the interpretation process was not to generalise findings to a population, but to identify generic accepted principles and trends related to the research topic. Confirmability, therefore, constitutes the degree to which the researchers own biases are excluded from the finding (Babbie & Mouton, 2001). Accordingly, a confirmability audit trail was developed by leaving an adequate trail for following up the conclusions, interpretations and recommendations. To ensure that such a trail was adequate, five different EIA application document were reviewed to determine the applicability of some of the recommendations of this research.

The description of the research process of what was done, how it was done and why it was done as well as the implementation according to criteria for qualitative research ensured that the authenticity and trustworthiness of the research was increased. The stated criteria did not serve as a restrictive checklist for the qualitative research process, but were regarded as parameters to generate informational knowledge in accordance to the research aims. The legitimacy of the interview was thus assured by a clear conceptualisation, a purposeful design of an interview schedule, as well as a set plan or protocol to conduct the interview. The

consistency of responses was checked by restating questions and giving the predetermined set of questions to the interviewee.

3.12. Ethical aspects

Three basic principles were set forth in the Belmont Report to provide an analytical framework toward the resolution of ethical problems that develop with research involving human subjects: (a) respect for persons, (b) beneficence, and (c) justice. The principles provide a framework within which to think about risks to human subjects participating in research in addition, they provide a basis on which specific rules may be formulated, criticized, and interpreted (National Commission, 1979).
The researcher dealt with ethical issues in the following manner:

- **Informed consent:** The Researcher informed the participants of the purpose, nature, data collection methods, and extends of the research prior to commencement. Further, the researcher explained to them their typical roles. In line with this, the researcher obtained their informed consent in writing.
- **Harm and risk:** In this research study the researcher guaranteed that no participants were put in a situation where they might be harmed as a result of their participation, physical or psychological (Trochim, 2000). This taking into consideration that, there was a perceived fear amongst staff members due to the merger and the formation of the new Department.
- **Honesty and trust:** Adhering strictly to all the ethical guidelines serves as standards about the honesty and trustworthiness of the data collected and the accompanying data analysis.
- **Privacy, confidentiality, and anonymity:** In this study the researcher ensured that the confidentiality and anonymity of the participants would be maintained through the removal of any identifying characteristics before widespread dissemination of information. The researcher made it clear that the participant's names would not be used for any other purposes, nor will information be shared that reveals their identity in any way.
- **Voluntary participation:** Despite all the above mentioned precautions, it was made clear to the participants that the research was only for academic purposes and their participation in it was absolutely voluntary. No one was forced to participate.

- **Ethical clearance**: Ethical clearance was obtained from the University for KwaZulu-Natal.

3.13. Conclusion

This chapter presented the methodology and methods used to collect data for this research study. To determine the cost of an EIA and causes for EIA application delays in KwaZulu-Natal, South Africa. A qualitative approach was adopted to investigate the key issues in relation to this investigation, followed by a detailed description of the implementation of research methods. This description included information about aims of the study, participant selection, data collection and data analysis procedures for this study. The ethical considerations for this study have also been outlined in this chapter. The primary focus of this chapter has been to provide descriptions for the research process and its applicability to the research questions at hand.

In-depth interviews were conducted, observation techniques were employed, and a documentary analysis of main EIA application documents. Interviewees were selected through a purposive sampling technique. The results are presented and discussed in the next two chapters.

Chapter Four: Results presentation and Analyses

4.1. Introduction

This chapter presents and analyse the results gathered from the responses of the participants in this study on the cost of EIA in KwaZulu-Natal. The study used quantitative method and the results were analysed using NVivo v11 software. The results gathered were coded; these codes were then translated to themes. Themes were used in an attempt to answer the research questions (appendix 1). The results can be generalised to the entire population of DEDTEA environmental staff because of the applicability of results across the province.

4.2. Qualitative Results and the overview of the Relevant Themes

These results were based on the 11 semi structured interviews that were conducted from the staff members of DEDTEA that processes EIA applications. NVivo software was thereafter used by the researcher to explore and present the data thus generated a number of themes (appendix 3). The following (Figure 4.1) are the four main themes that were reflected by the participants in this study. These four themes were analysed in order to determine the cost of EIA in KwaZulu-Natal:

- Costs (Direct and Indirect EIA costs)
- EIA review process efficiency
- Critical success factors
- EIA management capacity

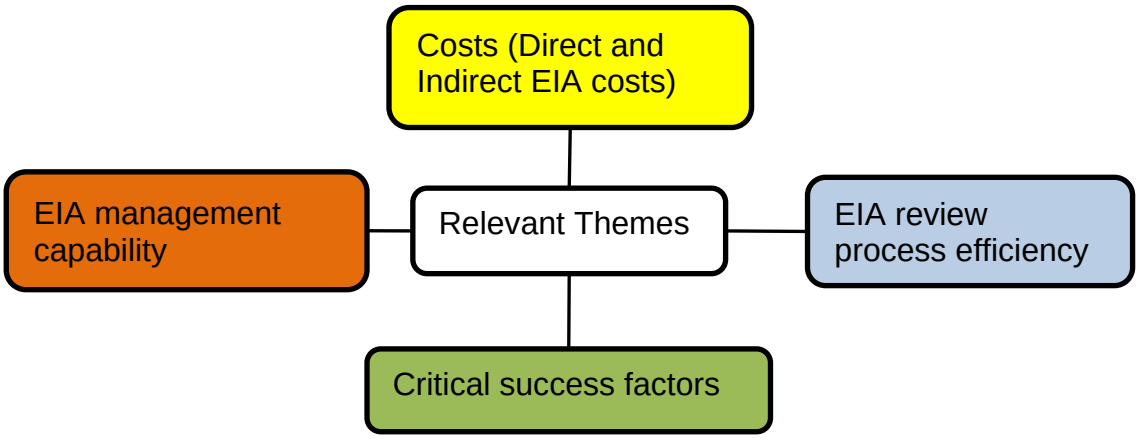

Figure 4.1: Thematic analysis of the study (authors own)

4.2.1. Costs

Theme 1: This theme explored the direct and indirect EIA costs through the use of NVIVO version 11. The theme gave insight into the costs associated with EIA application that get submitted to the Department (DEDTEA) for approval. The costs of EIA application were the first theme that was investigated by the researcher. The main findings that resulted from this theme are shown in Figure 4.2, which were comprehensive costs for delayed EIA, cost associated with each phase of the EIA, direct costs and indirect costs and value associated with each EIA phase.

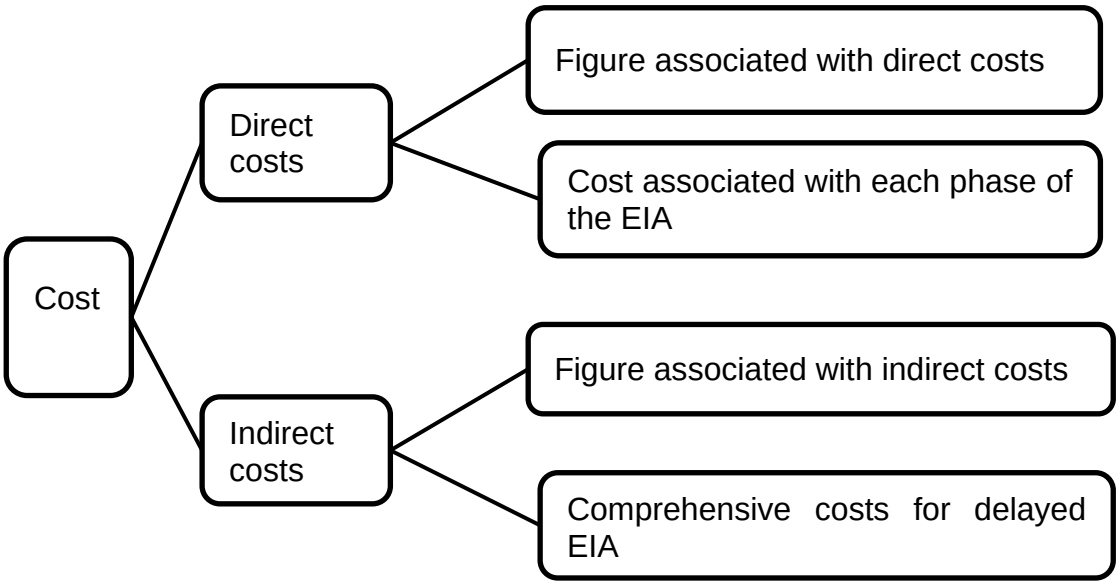

Figure 4.2: Cost thematic decomposition (authors own)

4.2.1.1. Direct costs

The direct costs are costs that are paid towards each phase of the EIA application phase i.e. application fee or cost of the public participation stage. Respondent five and eight had the better and detailed understanding of the direct costs. They listed the costs as the cost of EAP and the cost of the reports, specialist studies, advertising costs, printing costs and posting to stakeholders, hire of venues for public meetings approximately, hire of facilitators / translators for public consultation and travel. However not all respondents could quantity the actual specific cost as they differ from district to district. The respondents further stated that some EAPs charge approximately R80 000.00 for basic projects and this excluding any specialist studies.

Respondent eight stated that "*Legal costs are significant if the application is to be contested or go on appeal*". These legal costs are paid by the applicant. The Table 4.1 shows the direct and indirect costs as stated by respondents.
The direct costs were discussed as:

- EAP fees: Paid by the developer to the EAP for compiling the EIA report coordinating and facilitating the EA. In other cases for conducting environmental studies.
- Regulated application fee of R2000 for a Basic Assessment Report (BAR) and R10 000 for a scoping and EIR paid to the Authorities
- Pre-application meeting: This meeting is needed to ensure that EAPs understand the processes they need to undertake. It is a meeting that was introduced through regulations in order to support the EAPs and fast track the EIA application process i.e. the authorities were not approving a number of applications due to the EAPs submitting unlisted activities or not understanding the EIA process.
- Screening to determine the level of assessment (BAR or Full scoping EIR (Environmental Impact Report)): BAR needs a shorter process i.e. does not need specialist studies whilst Full EIA process needs specialist studies which take time to pull together.
- Traveling costs: In putting together the EIA application and going for site visit.
- Public participation costs: Hire of venues for public meetings, hire of facilitators / translators for public consultation and hiring of communication instruments.
- Specialist studies: These studies might be needed for the full EIA application. These differ in months they take e.g. seasonal variation on the specific site might take 12 months to complete.
- Advertising and printing costs: There are regulatory requirements to advertise the EIA being conducted on a particular site. These advertisement costs are critical in public awareness process of the proposed development. Printing costs relate to all printing works done during the process of compiling the EIA up to the EIA being approved.
- Posting to stakeholders: Interested and affected parties need to be send EIA related documents for the proposed development.

- Site investigation and site notices: The need to know the site very well to determine the environmental sensitivities and whether the activity being proposed needs a BAR or full EIA.

Table 4.1: Respondents numerical direct and indirect costs of EIA

Respondent (District Municipality)	Direct Costs (Rands)	Indirect Costs (Rands)
Ilembe	200 000	80 000
Zululand	100 000	1 000
EThekwini Metro	80 000	150 000
Ugu	80 000	150 000
UMkhanyakude	100 000	1 000
UThukela	104 000	80 000
Harry Gwala	70% of the total project cost	30% of the total project cost
UMgungundlovu	80 000	Socio-economic opportunities lost, loss of biodiversity, loss of amenity, reduction in job opportunities
UMzinyathi	100 000	Degradation of the environment that leads to many different disasters
Amajuba	100 000	The participant did not have a clear view and opinion of the indirect cost
UThungulu	The participant did not have a clear view and opinion of the direct cost	The participant did not have a clear view and opinion of the indirect cost

4.2.1.2. Indirect costs

The indirect costs are costs associated with the application that have no bearing to the phases of the EIA application phase. Henri *et. al.,* (2014), describes the indirect costs as hidden costs that are embedded into other general cost pools, such as general overhead costs or administrative costs and the tracking of environmental costs as a the identification and accumulation of specific internal costs related to the protection of the environment. The identification thus is the observation, description,

and classification of various types of environmental costs. Such direct and indirect costs are summarised below on Table 4.2., Respondent five listed "*time allocated to the compiling of the reports and costs in terms of time from project inception to approval*" as some of the indirect costs of EIA process these has a knock on effects of securing or losing funding for the project. This is coupled by the project financial costs from the financing institutions whilst awaiting the EIA approval. The respondent five further stated that these add to the process inefficiencies and administrative delays that cost the applicant. The respondent stated that these delays result in their clients have perceptions that EIA are not needed, are an administrative burden and work against the development. Respondent four also stated that the other important cost is the lack of legislative understanding of the EAP of legislation including times frame that are regulated as well as the administrative process.

The indirect costs were discussed as:

- Finance charges from the banks: Account opening costs which are bank dependent. Some developers opened project financing accounts (respondent four) which have account fees.
- Time delay: As some developer are not fully aware of the importance of environmental processes and hence appoint construction companies before the planning and EIA process is completed. When the construction company's start before the EIA is approved they get penalised. The process there after to get the environmental authorisation might be seen as delaying.
- Indecision by official in approving or dis-approving the EA: respondent five indicated that the major cost factor is the indecision by "*the officials that do not have a clue what they are doing*". This not only delays the EAP but also create a bad name for the authorities as being slow and EIA as a bureaucratic problem.
- Delayed implementation and service delivery: The delayed EIA approval has a domino effect on the project as the beneficiaries delayed deriving benefits of the project, the developer might delay in realising the investment made of the project.
- Mitigation measures and uncertainty: The principle of environmental conservation is that there must always be a mitigation measures on every project undertaken that disturbed the environment. Uncertainty of the approval process has been

addressed in the 2010 regulations however more work needs to be done on awareness of environmental processes.

4.2.2. EIA review process efficiency

Theme 2: This section evaluated the EIA review process. This theme gave insight into the possible process deficiencies and areas of improvements. This theme was a second theme that was investigated by the researcher. The main findings that resulted from this theme are shown in Figure 4.3 which included rigor, experience, knowledge, technical skills, objectivity and value add. These findings are discussed below.

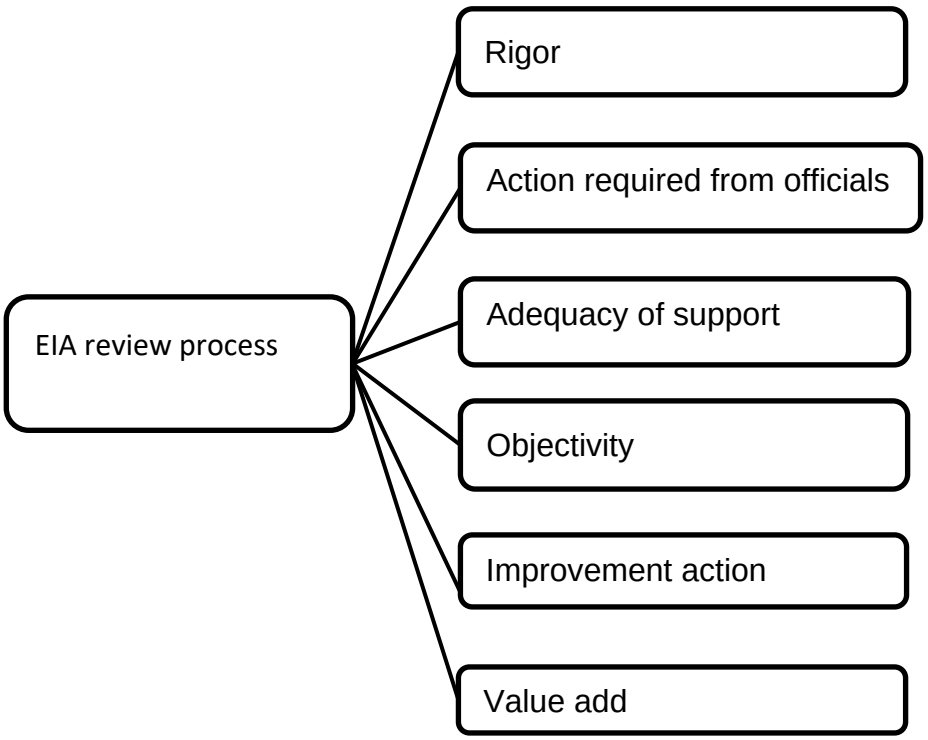

Figure 4.3: EIA review process decomposition (authors own)

4.2.2.1. Rigor

Rigor refers to the reliable application of the depth of interrogation in the review of EIA review process. Respondent ten stated that *"there is always a room to improve integrity and consistency of the review process".* Respondent eleven in agreement stated that the "*expectation is to have consistency."* Respondent eight also noted

that the *"consistency can be improved, if we can keep the staff we have instead of training people and they move."* Respondent seven further stated that *"EIA reviewers must be trained to be consistent, to be given guidelines, checks and balances to be consistent."*

The Auditing Practise Board, (2011) sets the principles guiding the conduct of an audit process. Among the principles is the principles of rigor, in which reviewer ensure that their work maintains thoroughness and professionalism. They critically evaluate all information, evidence and explanations to address the intention and objective of the audit or review.

4.2.2.2. Action required from officials

Official are expected to hold pre-consultation meetings with applicants. This process according to respondent three is, optional processes to the applicants however the officials are mandated to hold such pre-consultative meetings should a request arise. The same review official is expected to review the application, and do site inspection. Furthermore there are additional internal processes the application undergoes. Respondent nine stated that *"the process of review is time delaying as it is based on mistrust, the application need to be reviewed by the assessing official supervisor and signed off by the district manager depending on the complexity of the application".*

Respondent four stated that "*some complex application have to be signed off by the regional manager*". Respondent eleven said these layers add both administrative and bureaucratic layers that ultimately delay the approval process. The review official also has the primary responsibility to communicate with the applicant from site inspection to sending approval or decline letters. "*Should the district have an admin person this sending task could be done by them instead of technical personnel"* reflected respondent eleven.

4.2.2.3. Adequacy of support

Ensure that District offices have enough instruments to perform their functions. All district municipalities expressed their dissatisfaction with the support they receive from the provincial office. The issues they stated as lacking are

- Their operational budget is being reduced year on year.

- The critical post they need generally for critical functions which support the EIA review process are not being filled. Respondent two and respondent ten corroborated each other's statements that for years there have been requesting administration support. Respondent five added that their environmental officers' posts are not being filled. Respondent five further added that they cannot meet with most of their clients of the pre-consultation meetings due to the shortage of staff.
- Respondent nine stated that "*staffs have been moved from other functions like enforcement to increase the staff compliment of EIAs thus reducing the performance of other functions*".

However all of the District municipalities expressed certification with technical support provided by the DEDTEA and National office.

4.2.2.4. Objectivity

Objectivity refers to an opinion without biasness and influence from third parties. Respondent five stated that *"review officials in her district are often objective and knowledgeable thus cannot be easily influenced to recommending a flawed environmental authorisation (EA)".* Respondent six in agreement stated that *"officials always shy away from discussing into details the review process with the applicant to avoid being influenced to a particular direction."* Respondent nine further stated that the *"meetings including the pre-application meetings are always held by two or more officials to manage objectivity and fairness". She further stated that "the process of review goes through a number of officials to check and review the application independently".* The respondents were of the perception that the EA review process demonstrates objectivity, therefore there is a weak risk associated by the objectivity of officials.

4.2.2.5. Improvement action

The participants expressed different improvement areas as they affected their districts. The common areas of improvements included the time frames they take to review each application. All participants indicated that the process can take 90 days to review the EIA application. The application documents must all be properly filled and all supporting documents submitted according to the regulations. Respondent

three indicated that per each phase of the application process either the BAR or Scoping & EIR time frames can be made shorter thus fast tracking the application review process. They further stated that this can only be done should they be given enough and experienced personnel. Respondent seven indicated that "*what makes bad the situation is the lack of resource e.g. cars to travel to site inspections*". This is said to be the main stumbling block to efficiently do their job.

4.2.2.6. Value add

Value-add is the contribution and enhancement that the EIA review process adds to the overall environmental management process. The remarks pertaining to the value that EIA review process adds on environmental management are as follows, respondent seven stated that *"It is appropriate and does add value if there is a follow up".* Respondent three in agreement stated that *"If properly done it adds value and eliminates environmental degradation however some developers like to omit the EIA process."* Respondent two however noted that *"it adds value only if there are follow ups done on the EA conditions."* In addition, another founding principle is to provide value (Friedman, 2015). Auditors or reviewers ensure that their finding reports are developed with the highest level of quality and maintain reliability. The respondents were of the perception that EIA review process does not add value if not coupled with environmental audit and compliance and therefore a potential risk that contributes to the effectiveness of EIA review process.

Some respondents, however, did not agree with the majority and were of the view that the EIA process is just a "*tick box exercise*" used to obtain a *"permit for development to proceed*" respondent seven. Some respondents indicated that the EIA process is very generic, in some cases, the EIA may provide reasons as to why development should not proceed, and they seem to still be approved due to the political nature of those projects (respondent nine in reference to the small craft harbour in Durban). The respondent nine felt that "*EIA process serves an essential decision-making role, but if they are left to fulfil only that role, they will never be effective in protecting the environment and promoting sustainable development*". All respondents felt that EIA review process was not effective if it was considered as only a paper chase malicious exercise and able to be influenced by politicians and developers. The EIA process should not be viewed as a one more hurdle that the

developer needs to get through but a legitimate process that demonstrates their efforts to preserve the environment.

4.2.3. Critical success factors

Theme 3 evaluated the generic factors for the purpose of this study termed critical success factors. These are the factors that influence the effectiveness of EIA process and decision making. They contribute to the speed and efficiency in the processing of the EIA. The main findings that resulted from this theme are shown in Figure 4.4 which were lack of understanding, low skillset, lack of details and no alignment. It should be noted that no one district municipality showed a good and balanced combination of all the four critical success factors listed below.

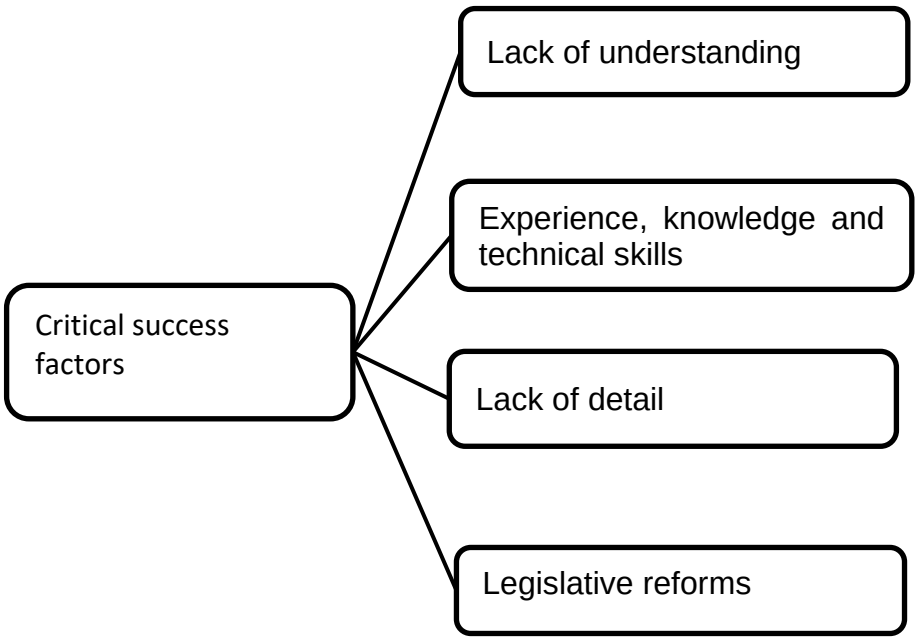

Figure 4.4: Critical Success Factors thematic decomposition (authors own)

4.2.3.1. Lack of understanding

Lack of understanding of the EIA process and report format, from the side of the EAP was the issue that was highlighted by the respondents as the cause of sub-standard quality reports that get submitted. Respondents associated the lack of understanding with the lack of knowing and comprehending the expectation of the methodology. The respondent seven stated that *"some staff members as well as*

some EAPs do not understand the methodology hence gaps in the reports that get submitted and also improper reports are accepted". Upon further questioning they illustrated that either both the staff member and the EAP do not have adequate experience to put together the EIA report or to review the report. This lead to the respondent seven review reports being corrected by other districts or redone.

Respondent four stated that there are powers that were not delegated to them i.e. to sign the authorisation. This was due to the vacancies of permanently appointed district manager not being filled. It further emerged from all respondents that EAP are not regulated hence anyone who has natural sciences qualification and minimal experience can practise as an EAP. This regulatory body of the EIA practitioners is crucial to ensure that the EAP are properly screened before they practise.

All respondents agreed that two over all fundamental components needed to be addressed i.e. competency assessment, and training as well as retraining of review officials. Further all respondents acknowledged that the senior management in the environmental management function of the Department was aging thus posing a challenge for the succession planning of the Department as there was no succession plans in place. According to Becker and Huselid, (2006), the single biggest dilemma in the work place is the transfer of skills and knowledge from aged retiring professionals to the next generation of work force. These results appear to suggest that there are a number of challenges around skills transfer in the environment programme of the Department.

4.2.3.2. Experience, knowledge and technical skills

A significant number of participant's 73% (8/11) indicated that most EIA reviewers at DEDTEA had the necessary training, knowledge and technical skills on environmental impact management however lacked needed experience. Respondent four stated *"most of the environmental offices have the necessary skills and knowledge but lack in-depth experience and there are no efforts to capacitate them to an advanced level."* The capacitation through mentorship programme is one of the methods DEDTEA staff could be given in-depth experience. Respondent one in agreement stated that *"environmental officers when appointed some are new from University, some have been interns for two years".* Although to be appointed as

environmental office you need a degree in natural sciences however the skills and experience in the field are also a critical requirement to review EIA applications.

The critical principle of the EA review is the principle of competence. This is the ability to apply education, skills, knowledge and experience to execute professional duty (Auditing Practise Board, 2011). The respondents were of the perception that some district offices do not demonstrate competence as some of their decisions need to be reviewed twice some over turned. Thus, posing a potential risk that compromises the EIA review process. What compound this risk is that posts are not being filled as stated by respondent nine that "*The Department has been unable to fill all critical vacant posts thus leading to critical staff shortages in key functions including environmental management'.* The need for more staff is further highlighted by Kidd, (2008) who highlighted that the EIA process requires considerable resources in terms of time, money and staffing in both applicant and reviewer (regulatory agencies). Lack of skilled and experienced personnel in the Department hinders the capacity of authorities to take appropriate measures in addressing problems, complaints and review decisions in ensuring enforcement of legislation and authorisation.

4.2.3.3. Lack of detail

One of the comments from the respondents was that when applications are submitted they do not have enough content for the Department to make a meaningful decision. Respondent eleven stated that *"guidelines are provided on what the EA application should have, however some EAPs submit documents that lack information."* Respondent nine in agreement indicated that *"the reason why the pre-application meetings are crucial is that the Department can provide information to the EAPs and the applicants to allow them to ask any clarity seeking questions".*
This talks to the inability and capacity levels of EAPs to articulate what they require, in a detailed meaningful manner. Generally this is attributed to the lack of experience, knowledge and skills. This can be linked to low competency levels in the EIA technical field. This is a risk as it results in un-intended delays in the processing of applications.

4.2.3.4. Legislative reforms

DEA published a number of reforms around EIA regulations. The arrival of the 2010 regulations was seen as making the EIA process easy and manageable for both the officials reviewing the EA and the EAPs submitting applications. These regulations were also preceded by 2014 regulations which also were attempting to further clarity and assist in fast tracking the processing of EIA application thus unlocking development. In 2016 there were additional regulations which also attempted to ensure that EIA approval is not cumbersome to the reviewers and meaningful to the developers.

The respondents felt these regulations are a needed change in the EIA space however there are challenges with their implementation. Respondent one highlighted that "*although needed but there exist a problem with their implementation as there is no effective communication and roll out of these regulations once they are finalized. Staff needed to be workshoped on their implications and applications*". This was agreed to by respondent four who stated that "*we were still grappling with 2014 regulations and in December 2016 new regulations came to being*". The 2016 regulation were seen as putting additional pressure on the skeleton staff that the Department has, as they were understaffed. This possesses a major risk of the effectiveness of the 2016 regulations. The regulations may be seen as not working yet there were no staff members to implement them. The regulations amongst other things have cut the process of reviewing the applications. Introduced the pre-application meetings, removed certain developmental activities from needing the EIA application.

4.2.4. EIA management capability

The semi structured interviews with the eleven staff members resulted in the conception of this theme, namely EIA management capability. This theme gave insight into the world of the reviewer. The main findings that resulted from this theme are shown in Figure 4.5 which were strong interpersonal skills, knowledge of processes and procedures, customer focused, leadership, proactive risk management and lessons learning.

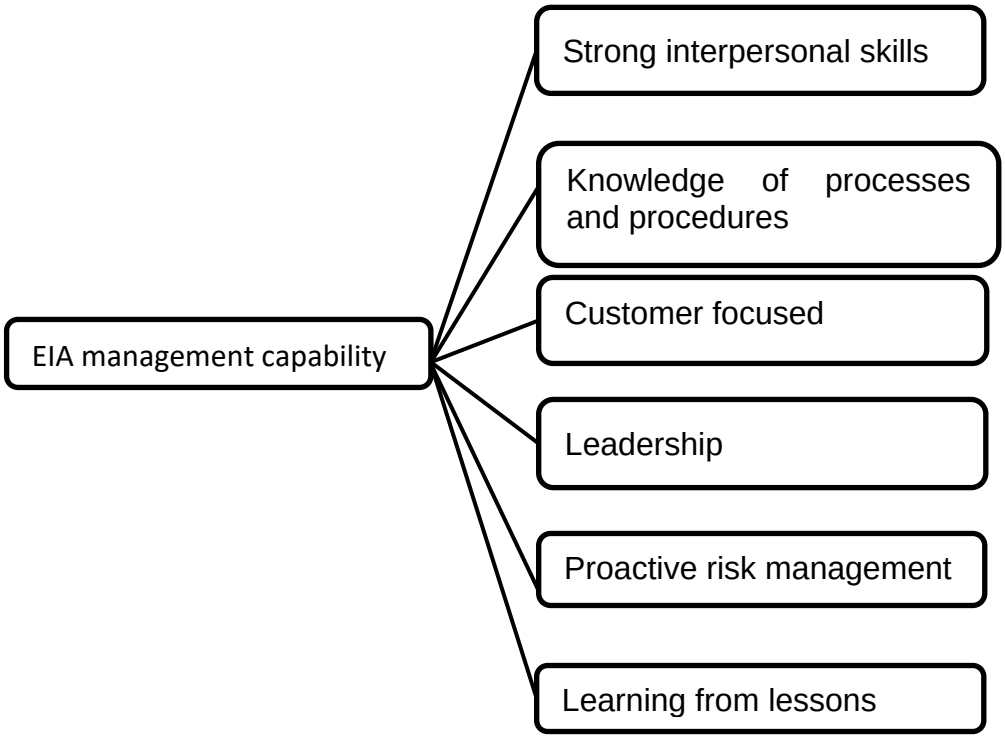

Figure 4.5: EIA management capability thematic decomposition (authors own)

4.2.4.1. Strong interpersonal skills

It is important that the EIA reviewer has strong interpersonal skills including ability to communicate effectively, ability to listen and positive attitude towards their work. These are critical in resolving challenges they encounter in processing EIA applications. Respondent one stated that *"interpersonal skills are vital together with good clear communication as essential tools that every reviewer needs".* According to the Pinkowska and Lent, (2011), people are the most important component of a project management, forming the management resources. Most projects take a significant amount of time due to people challenges rather than the critical path project deliverables. Many issues arise from interpersonal conflict, personality disparities, poor communication and cultural diversities between people and stakeholders. Pinkowska and Lent, (2011) further proposes, soft skills pertaining to project management is essential to engage effectively with people.

4.2.4.2. Knowledge of processes and procedures

The use of EIA cost information provides valuable information that DEDTEA need and is important in decision-making as it contributes to the management of

environmental costs and the processing of EIA applications. According to Henri *et. al.,* (2014), a balanced perspective on cost management helps managers understand business processes and organisational activities. More specifically, a better recognition of environmental costs and the cost of processes allows for a broader understanding of how costs relate to output and how developers are impacted. The comments pertaining to knowledge of processes and procedures in the review process of EIA are as follows:

Both respondent three and respondent nine stated that resources must *"know business processes well."* Respondent nine stated that review officials must further *"understand processes and systems and implications to the environment should they recommend an authorisation that might have a negative impact on the environment or that lead environmental degradation."* By the definition as advocated by Kerzner, (2013), on project management that knowledge of processes and procedures is of paramount importance. Thus officials must be able to leverage the organisation scale in terms of processes and procedures not only to enhance governance but also organisational efficiencies and effectiveness in delivering project objectives.

4.2.4.3. Customer focused

The remarks pertaining to being customer focused in the assessment of EIA management capability are as follows, respondent three stated that EIA review officials *"need to be customer focused as the Department is rendering a service."* Respondent one stated that "*the EAPs need to understand the EIA regulations to assist them in compiling the EIA reports thus assisting the Department to speedily make a determination on the report*". In agreement respondent four stated that "*Some clients want to cut corners and demand a decision that favors them on the face of the environment*". Respondent two stated that "*official are always willing to assist to explain to EAPs and applicants the processes and procedures in putting to together the EIA report*".

4.2.4.4. Leadership

The remarks pertaining to leadership are as follows. Respondents one stated *"strong leadership is very important in environmental management coupled with leaders that are familiar with their line of work."* In agreement respondent five stated *"leadership*

translates the vision into reality and bring alignment of processes together in support of the work at hand." Respondent eight further mentions that *"leadership is an essential and critical component for any project management team."* The essential part of leadership is the coordination of activities of people and guiding their efforts towards the attainment of organizational goals and objectives. This view was confirmed by respondent seven. Leadership and leadership style is the most fundamental attribute of success as confirmed by Project Management Body of Knowledge, (2013). Leadership falls under the behavioral competency range and all three standards highlights the importance of leadership in delivering project objectives. Project Management Body of Knowledge, (2013) refers to leadership as competent project professionals as a critical success factor of a project. Further stated that a leader provides a vision, a sense of mission, instilled pride, respect and trust in the organizations or task he has to lead. It is highlighted in terms of being suitability qualified, skilled and has the appropriated experience and personalities to get the job done.

4.2.4.5. Proactive risk management

The comments pertaining to proactive risk management were noted from respondent ten as *"the review officials need to be proactive in management of risks in the files the look at reputational risk to the Department and the risk to the environmental emanating from the poor decision making process that may be made by them."* respondent two in agreement stated *"they need to be proactive in identification of all risks and putting in place mitigation measures to prevent such risk."* Risk management focus on the risk methodology which needs to be employed, identify the risks which have a potential of negatively impact the smooth progress of the project. The Project Management Body of Knowledge, (2013) also supports the notion of integrated risk management as a success factor.

Most respondents felt that the main purpose of the EIA process is to ensure the protection of the environment whilst ensuring that sustainable development takes place. One of the ways in which this can be achieved is through significance determination, which highlights potentially adverse impacts that must be addressed to ensure that the surrounding environment is protected, thus ensuring that the EIA is effective. According to Enders and Remig, (2015), the purpose of EIA is to prevent

further degradation of the environment and protect natural resources whilst ensuring sustainable development. In other words, the EIA process must identify all potential positive and negative impacts (biophysical, social and environmental) and ensure that all impacts can be mitigated against and also meeting the objectives of the NEMA principles. This was further supported by respondent six who indicated that the purpose of the EIA process needs to inform the project not only in the design phase of the development but also throughout the lifecycle of that project, within a "*green economy trajectory*".

4.2.4.6. Lessons learnt

The objective of lessons learned is to gather experiences and insights, be it negative or positive that can be shared with others and be implemented or applied to the EIA review process. Research undertaken on project management reveals that lessons learned reviews are powerful techniques adopted by mature project professionals to improve their competency and experience so as to not repeat the same mistakes in the future (Polonen, Hokkanen and Jalava, 2011). When interviewees were asked to comment on lessons learn from their and others past experience. Respondent one stated that *"no formal lessons learned workshops across district municipal offices".* Respondent three and respondent eleven stated that *"lessons happen very informally, is limited. They are a lot of needed improvement required in terms of structure and process, to leverage the lessons is a needed benefits."*

According to Polonen *et. al.,* (2011), learning is vital since monitoring furthers our understanding on the effects behind the impacts of the project, and promotes more accurate predictions for future projects. EIA review process promoted continuous learning on a daily basis as each application has different attributes thus needing different approach yet applying the same regulations. Lessons learnt by the respondents included proper report screening, communication, in-depth knowledge of the regulations, implementation of risk mitigation and control measures. Morrison-Saunders *et. al.,* (2004) argued that the EIA process should facilitate continuous learning from experience and increase learning through active feedback. These feedback sessions although not regularly held in the Department give valuable information to staff. This was stated by respondent six that "*information sessions are*

critical to share the latest developments" These Departmental feedback sessions focused more on legislative changes, compliance and deliberation of environmental issues than on outlining lessons that can be learnt. This was mostly evident when most participants hesitated and struggled to answer the question on lessons they had learnt during the review period since their employment. In addition, there were deliberations on environmental issues and concerns during monthly meetings they had as an office i.e. in their respective district municipalities.

The lessons learnt on issues of management could be implemented for future projects. However, one has to question how this will be possible considering these lessons were not recorded and therefore cannot be referred to for future reference. Furthermore, measures highlighting the importance of protecting the environment cannot be compromised during development. Importantly the district managers learned that good management habits such as on-going management proactive rather than reactive approaches to problem solving is important. This prevents unnecessary delays as reported by respondent nine.

One of the most crucial lessons learned by the reviewers was the scheduling of work. Due to the volumes of application received annually, they was a need to apportion the applications per district. If one district was falling behind in processing the applications, some other files (not from the same district) were taken by the provincial management in environment management and given to other districts that do not have a high work load.

4.7. Conclusion

This chapter presented a basket of issues as raised by respondents in an attempt to respond to the research question outlined in chapter one. The study explored qualitative method of getting results. Qualitative data was collected from the semi structured interviews from eleven EIA practitioners captured and analysed using NVivo software. Four themes were derived from the data collected and each theme had a number of sub-themes which were derived from the main theme and also discussed in-depth. The next chapter links the objectives and the finding of the study. Conclusions together with recommendations to address the research problem will be proposed and suggestion for future studies will be presented.

Chapter Five: Recommendations and conclusion

5.1. Introduction

This chapter is divided into four parts; firstly the brief overview of this study's findings. Secondly, it discusses how the stated aims and objectives were achieved. Thirdly, the recommendations for the study. Finally, the overall conclusion of the study. This section of the dissertation presents the conclusion of the research and establish if the research questions have been resolved.

5.2. Overview of the Findings

This research explored the direct and indirect EIA cost, EIA review process efficiency, critical success factors that influences the effectiveness of the EIA process and decision making, and management capability. The data and the discussion of the previous chapters provided substantial insight into the various elements of EIA costs and factors that affect the EIA process. Thus providing vital information with which conclusions may be drawn. Conclusions based on empirical findings that have been drawn in relation to each of the objectives for the study are discussed below. The complexity of the objectives resulted in introduction of sub-objectives.

5.2.1. Objective One: Costs of EIA application and processing

Understanding and managing the direct and indirect costs can have a positive impact on the project / development cost. This research has demonstrated that there are a number of cost factors that determine the EIA costs. Both direct and indirect EIA costs have a significant bearing on the overall total project cost. There are a number of direct EIA costs as outlined by the participants in this research these costs are unavoidable and necessary e.g. statutory application fee as highlighted by the participants. Whilst these are mandatory there are significant indirect costs which the EIA cannot be approved without having incurred them. Poor administration of the EIA process was also cited by participants as having an impact on the approval process. The results showed that different districts have different understanding of

costs (direct and indirect). It was evident in this research that some reviewers do not have a first-hand experience in drafting the EIA reports thus understanding the costs factors in details.

5.2.1.1. Conclusion of objective one

It can therefore be concluded that there is limited understanding of the direct and indirect cost of EIA applications. The lack of detailed understanding of cost can be seen through the limited appreciation of the costs of delayed EIA application. This is evident through the high number of backlog applications. Although there are stipulated i.e. regulated turnaround time frames however some application should take much shorter time frames to process.

5.2.1.2. Recommendations of objective one

In order to overcome this challenge, it is recommended that there are a number of specific measures that can assist to make the EIA process transparent, accessible and accountable to the public. These include but not limited to the following.

a) Technical assistance and advice, and EIA training workshops with EAPs to understand what EAPs do and broadly the costs associated with EIA application both BAR and full scoping & EIR.
b) Support in the form of on the job training, skills transfer from the more experienced members of the EIA review team across the province. EIA-specific training can be done at different levels and over different periods to meet a variety of needs in order to capacitate the DEDTEA EIA review officials.
c) Provision of templates and guidelines on how to review the application.
d) Development of standard operating procedures (SOP) which should be enforced by management. Respondent three indicated that there were SOPs however not enforced. This leads to fragmentation in the implementation of EIA processes.
e) Institutional strengthening through the filling of vacant funded positions
f) Establishing a network of practitioners in KZN with experience in EIA or technical analysis to advise the Department on the review process.
g) The development of the interactive document management system to track all EIA applications in order to avoid delays in the approval process. This would

require additional resources in the form of finances, time, and information technology and software applications followed by focused training on how to use the technology.

Capacity building is the long-term, voluntary process of increasing the ability of KZN province (Environmental assessing capacity) to identify and solve problems, risks, and to maximise opportunities.

5.2.2. Sub-Objective One: EIA review process efficiency

EIA review process efficiency refers to whether an EIA system achieves its objectives, resulting in minimum delays, not bias and has no prejudice. It needs to include efficiency of operations throughout the EIA review phases, fairness of procedures, cost-effectiveness of the operation, the potential to deliver a particular result, and compliance with specific procedural requirements (Sandham *et. al.*, 2013). The analysis of this sub-objective revealed that the EIA review process at DEDTEA complies with regulatory requirements however is not applied rigorously. The review process adds value to the concept of environmental management as it considers minimising the environmental degradation.

5.2.2.1. Conclusions of Sub-Objective One

Based on the finding of the study under this sub-objective, it can therefore be concluded that the EIA review process is not operating effectively and consistently across the province because of the EIA review process not being applied rigorously.

5.2.2.2. Recommendation of Sub-Objective One

In order to overcome this challenge, it is recommended that the following intervention be undertaken:

a) Periodically invite experts (from the National DEA) to assess the efficiency of the EIA review process and share the national perspective of the impact of delayed EIA application approvals in order to improve and eliminate any issues of inconsistency in rigor.
b) During off-peak periods of low volume applications the staff members can be involved in continuous improvement activities like updating of standards to

manage rigor, improving turnaround times to be shorter than the regulated time frames and ensuring that their work maintains thoroughness and professionalism.

c) Baseline review criteria and check lists must be developed, and workshoped with the stakeholders to maintain rigor, objectivity, consistency and transparency. During the checklist development they need to critically evaluate all information needed for the review and explanations to address the intention and objective.
d) The Department to provide financial support to further develop the environment function. This need to be accompanied by tools of trade e.g. laptops, extensive GIS capability to geo-reference and geo-map all the approved environmental impact applications.

5.2.3. Objective Two: Critical factors

The majority of the respondents indicated that the review teams across the district municipalities demonstrate some level of knowledge and technical know-how of environmental management legislation. However the results indicated there is a need for in-depth experience in the review of EIA applications. There is a need for capacity building programmes e.g. training mentorship to give the DEDTEA staff better understanding of environmental legislation.

5.2.3.1. Conclusion of objective two

It can therefore be concluded that a large proportion of EIA reviewers at the time at the study did not have comprehensive experience in EIA compiling and reviewing. Although some reviewers have over two years work experience they do not have in-depth knowledge and understanding of EIA process and related legislation.

5.2.3.2. Recommendations of objective two

In order to overcome this challenge, it is recommended that the following intervention be undertaken under this theme:

a) Establish a strategic provincial EIA review committee. The purpose of the committee will be to develop and maintain focused training interventions for skills development and the upliftment of competencies in the EIA field. The committee should focus on some of the following initiatives:

- Prepare training material and teaching modules in focused areas where there are gaps in competencies within the organisation.
- Establish electronic learning portal platform, on demand to curb excessive costs as the KZN province is vast and some district municipality offices are over 400 kilometres apart. This will also minimise the operational disruptions.
- Establish a provincial project management hot line to help EIA reviewers to get technical assistance through posing queries and issues on a day to day basis.
- Provide advisory services on complex applications and challenges.
- Host conferences and symposiums to share knowledge and keep up to date with the latest development in the EIA field in addition attend annual AIAI conferences.
- Host lessons learned workshops and manage a data base of lesson with solutions and recommendations.
- Network with academic institutes of learning. Jointly develop training programmes and host guest lectures and workshops including funding a research chair in one of the tertiary institution.
- EIA reviewers to undertake annually, a competency test on procedures on how to assess an EIA application both BAR and full scoping and EIR for different development activities.

b) Establish formal coaching and mentorship programmes for junior staff members within the organisation and on the job training initiatives.
c) Establish a formal role profile for every staff members and training them to understand the expectations of the organisation, public and their role.
d) Ensure all governance procedures and administrative procedure are formalised and rolled out with structured formal training initiatives.
e) Develop focused training on customer services, risk management, people interpersonal skills training.
f) Foster self-development by encouraging individual to take ownership for their training needs by promoting initiatives like Individual Development Plans and 360 degree reviews on performance and areas for continuous improvement.

g) Recruit experts and specialists experienced in the EIA compiling and assessing. They must facilitate mentoring, advisory services and teaching roles within the organisation.
h) The implications associated for this recommendation is that the training will require additional resources in terms of financial resources and time off from general operations. A suitable budget must therefore be devised and training interventions must also be undertaken in timeframes that have minimal effect on operations.
i) A suitable budget must be setup for recruitment of additional staff members.

5.2.4. Sub-Objective Two: EIA management capability

The main findings that resulted from this sub-objective are strong interpersonal skills, knowledge of processes and procedures, customer focused, leadership, proactive risk management and lessons learning. These are but some of the management attributes that are essential in achieving an effective and efficient EIA process.

5.2.4.1. Conclusion of Sub-Objective Two

Arising from this research is that there is a lack of effective management in the management of EIA applications across the province. This is as a result of many factors that ultimately affect the cost associated with submitting EIA applications.

5.2.4.2. Recommendations of Sub-Objective Two

In order to overcome these challenge, it is recommended that the following initiatives be implemented at DEDTEA – Environmental management unit:

a) Extensive training and re-training on environmental legislation including EIA regulations and other related legislations. This need to be accompanied by management training to build strong interpersonal skills and leadership abilities. This is linked to the recommendations of theme 1 and 3.
b) Workshops on SOPs together with lessons learning seminars for peer learning across all KZN district municipalities. This need to be accompanied by engagement with DEA.
c) Develop a quality management procedure, as two respondents indicated that in some districts there were poor EIA decisions documents that were

produced which makes it difficult to do compliance monitoring and enforcement after the decision has been issued.

d) Re-engineering recruitment initiatives to attract and recruit specialist skills as well as competent environmentalists must be given high attention. This needs to be done with a retention policy in place.
e) The Department needs to hold at least two feedback sessions with applicants and their EAPs. This will not only ensure that Developers / applicant appreciate the EIA complexities but also to educate them on environmental legislation and EIA regulations.
f) The Department needs to develop a comprehensive environmental risk i.e. focusing on process risks to the Department as well as to ensure that EIA processes are not used as delay tactics in issuing decisions.

5.3. Recommendations for this study

The costs and time involved in EIA should decrease as experience is gained with the EIA process and there is a better understanding of the impacts associated with different types of EIA applications (Tsai, 2015). This should improve the experience of the review staff in handling applications. Over a longer timeframe, the availability of baseline information should also increase i.e. how the type applications are treated (How to speedily assess an application for diesel storage facilities of different quantities).

A qualitative research approach was used for this study. Data was collected through semi-interviews for which participants were selected purposively. Through semi-structured interviews, the researcher was able to gain insights into the perspectives and opinions of participants on EIA costs in KwaZulu-Natal, South Africa. The method selected successfully achieved the objectives outlined in this study.

This chapter discusses the findings of the study and highlights that the EIA review procedure can be improved through the appropriate institutional arrangements on staffing, techniques and methods used to assess the EIA application, communication and participation and training and development of staff members. The responses from the participants primarily revolved around their understanding of EIA costs, EIA as a procedure and factors affecting the costing of EIA that ensures the environment

is protected from negative development. This study allowed the researcher to draw conclusions and provide recommendations to improve the performance of an EIA procedure, EIA cost understanding and the effectiveness in the processing of EIA.

The research highlighted successfully that the costs vary of each EIA application and officials do not all share the same understanding of costs either for a BAR or full scoping and EIR. The understanding of direct costs and indirect costs were not understood as these were not the areas the authorities pay particular interest as they do not directly affect them and their operations. The operational experience of this study and the critical findings, a number of recommendations were made to ensure future successful performance of the EIA review process and the overall effectiveness of the EIA process. The understanding about EIA costs varied among the participants, according to their experience. This study exposed that need for continuous learning by the authorities. Learning is vital, it can further the authorities understanding of the impacts of the project and promotes more accurate predictions for future projects (Polonen *et. al*., 2011).

Participants understood the factors affecting costs elements of EIA, in general the participants believed that the process undertaken by the Department to process the EIA can still be improved. The issues of institutional arrangements, techniques and methods, communication and participation, training and development, attention to the EIA process as well as the environmental education were among the issues that needed more attention to improve the efficiency of EIA processing.

- Institutional Arrangements: There is empirical evidence gathered from this study to demonstrate that there were limitations in the DEDTEA. The limitations were human capital and structurally related as a result of lack of technical specialists at DEDTEA. As there was no proof revealed from the respondents that the delays has led to financial losses in actual projects, there is a general feeling from respondents that the biggest improvement can come in a form of filling vacant funded posts and increasing the posts allocated to EIA review. According to some respondent staff shortage was one of the factors that course delays in the processing of EIA. According to Kidd, (2008), the lack of resources and capacity delays the authorities in addressing problems, and enforcing legislation

and authorisation. Therefore, an increase in staff members in the department could allow the not only the speed of processing the EIA but also the efficiency of processing EA. In addition, staff and financial resources are also required as the reviewer need to go to site to assess the site conditions before they make their decisions.

- Techniques: According to the respondents the techniques and methods used for to evaluate the EA application is rigid and has been standardized in the regulations. Such techniques and methods included checking whether the development activity is listed, site visit to verify what the EAP has documented in the report, assessing the application based on the legislation and regulations, making a decision. However there is a need for rigorous implementation of these regulations.
- Communication and participation: Communication is important between the EAP and the assessing official. Regular communication after the pre-assessment meeting assist in ensuring that the EAPs understand what they need to include in the report to minimise the reports being returned or rejected for lack of information. Due to the EAPs not being formally registered as practitioners the officials cannot independently evaluate in details the skill level of the EAP except for the screening their CV during the application process. Such screening does not conclusively give information on the credibility of the EAP and whether the EAP understand the EIA process as expected. Morrison- Saunders and Bailey (2009) pointed out that the relationship between the environmental practitioner and the regulator is essential in ensuring overall protection of the environment. This can also assist in the speedily approval of the application without compromising the objectivity.
- Training and Development: DEDTEA has been taking in interns as part of their strategy to increase the capacity of their staff. The problem that most respondent raised was that the number that each district get given is too small to adequately address their staff shortage issues. These interns were not given enough time to learn and perfect their skills, due to staff shortage they were given applications to process before they have grasped the concepts of assessing applications. This needs to be relooked at although interns' strategy is a positive contribution to the process but they need to be given sufficient time to learn before heavy

responsibilities is given to them. The interns' mistakes were often attributed to the Department as EAPs know them as representing the authorities. Secondly DEDTEA EIA reviewing staff needs regular re-training and sharing of lessons amongst themselves. There is limited interactions amongst different district municipalities on the type of applications each district get. This is partially due to shortage of financial resources for staff to travel to places where they can share knowledge and problems as a group assessing the EIA applications.

- Attention to EIA process: Although the EIA process has iterative stages, it should still be a viewed as a process that contributes to the economic development in each of the district municipalities in KZN. EIA legislation and regulations dictate development activities that need environmental approval however there are no associated comprehensive costs guidelines given for each activity.
- Environmental education: Environmental education and awareness needs to be integrated into environmental management for all EIA participants. Inter departmental engagement is needed to ensure the skills transfer and peer learning.

5.4. Limitations and areas of future research

The scope of this research is limited to a South African, KwaZulu-Natal context, with focused emphasis on the Department of Economic Development, Tourism and Environmental Affairs. The results may only be valid in this context. The results and outcomes may be extended to other similar organisations so as to not generalise the findings across the country. The scope of this research is also confined to the environmental management sector. This research also concentrates on cases officers / EIA application reviewers. The opinion of the sample research contributors is not adequate to represent the entire South African population's views.

The study questionnaires were administered in English, whilst there are eleven official languages in South Africa, descending from various ethnic backgrounds. Native English speakers may have an advantage in understanding the questions better than non-native English speakers. To eliminate the phenomena of response bias, future research must be extended to other functional areas in the environment sector and conducted in the respondent preferred language.

There were a number of areas this study was unable to examine. There is an opportunity to repeat this study by using EAPs, developers and general public. This would require a change to the research instrument e.g. the use of mixed method as well as quantitative methods of research, different sample size and different statistical package for analyses. The sample frame for this study only considered DEDTEA employees. It is recommended that the sample frame be increased to include the sampling population to all employees within DEDTEA. This will provide a more comprehensive picture of the Departments view of EIA challenges. The scope of this study could be extended to other provinces and municipalities. Anecdotal evidence suggests that major regional variances exist and that EIAs in the Western Cape, Gauteng and KwaZulu-Natal Provinces are significantly more expensive.

The scope of study was undertaken with the exclusion of Environmental Compliance Monitoring and Enforcement functions which are also done in the same provincial Departments of environmental affairs. These present an opportunity to undertake another research to ascertain whether their process presents similar challenges.
Finally, given the limited time and resource constraint, the depth of the study and research outputs may only scratch the surface of the subject matter and further research may need to be explored.

5.5. Summary of the study

In order for DEDTEA to realise its strategic vision of driving an inclusive and sustainable economic growth; and a mission of being a catalyst for economic transformation and sustainable development; it would need to ensure it is efficient and effective in processing of EIA applications. The objectives of this study have been successfully satisfied and the results are meaningful and valid. The limitations had no material bearing to the final outcomes of the study. Therefore the study has raised many valid, practical and relevant recommendations for closing the gap on the processing of EIA applications in KZN through officials understanding of costs and factors associated with the EIA applications. The outcome of this study has provided a deeper knowledge on how EIA costs are understood, what skills and programmes are needed to improved and uplift the staff skills sets.

The outcomes of this study have further unlocked the challenges associated with the costs of EIA application process in KZN. The study further presented tangible reasons and understanding of the factors that influence the costs of EIA. The findings were further supported and complemented by the literature. Recommendations in closing the identified challenges have also been suggested.

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Appendix 1: Research questionnaire

Objectives and Questions

The objectives with associated questions namely:

1. Identify, list and categorize all direct and indirect cost associated with EIAs
   a. What are direct costs with their associated examples?
   b. What figure / cost do you associate with direct costs?
   c. What are indirect costs with their associated examples?
   d. What figure / cost do you associate with indirect costs?

2. Identify what cost are associated with what phase of the EIA process
   a. What are the phases of EIA process?
   b. Are you aware / do you know about the legislated EIA process?
   c. What cost you associate to what phase of the EIA?
   d. Is there value you associate with the costs associated to each phase of the EIA?

3. Identify and cost critical factors that influence the effectiveness of the EIA process and decision making
   a. Do you think the existing processes to processing EIA are efficient?
   b. What do you think need to be done to fast track or improve the efficacy of processing of EIAs?
   c. Are you confident with the support that you receive from KZN DAEA&RD to assist you to fast track your EIA application?
   d. What value do you draw from the EIA process?

4. Identify and cost the generic factors that influences the effectiveness of the EIA process and decision making
   a. What do you think affect the processing of EIA?
   b. What are your comprehensive costs for delayed EIA?
   c. What legislated processes negatively affect your EIA approval?
   d. What can you do to ensure that your EIA is fast tracked?

Your participation in responding to the above questions is highly appreciated. The copy of the results will be published without citing the details of each participant. Participants will be allowed to view a copy of the results before they are published. Participants are free to withdraw from the research at any time without any negative or undesirable consequences to themselves. Participation is voluntary and responses will be treated in a confidential manner hence your name is not required.

APPENDIX 2: Ethical approval

APPENDIX 3: NVIVO RESULTS