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Evaluation of the quality of public participation in the environmental impact assessment reports (EIARs) of renewable energy projects in the Northern Cape province of South Africa

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Evaluation of the quality of public participation in the environmental impact assessment reports (EIARs) of renewable energy projects in the Northern Cape province of South Africa.

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A Dissertation submitted to the Faculty of Science, University of Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Master of Science.

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Co-Supervisor: Prof Mulala D. Simatele

May 2020

Declaration

I, Nyameko Ntsulumbana, declare that *Evaluation of the quality of public participation in the environmental impact assessment reports (EIARs) of renewable energy projects in the Northern Cape province of South Africa* present my work. All the sources that I have utilised and quoted in this study have been pointed out and acknowledged in the form of full references and this research was not submitted by me previously for a degree at another institution of higher learning.

Signature: _____  _____ **Date: 12 May 2020.**

Abstract

Public participation is mandatory according to the South African National Environmental Management Act (NEMA Act No. 107 of 1998) and Environmental Impact Assessment (EIA) Regulations promulgated in 2014, and as a result the quality of public participation has to be in line with regulatory requirements. The current study evaluated the quality of public participation in the environmental impact assessment reports (EIARs) of renewable energy projects in the Northern Cape province of South Africa. The South African adapted version of the Lee and Colley Review Package methodology was utilised to carry out the assessment on 22 sampled EIARs, in line with the 2014 regulations.

Two out of 22 (9.1%) EIARs were allocated the quality grading of "B", while 18 (81.8%) EIARs received "C" quality level, and the remaining 2 (9.1%) EIARs were assigned a "D" quality score. Detailed reports, particularly on areas involving public participation process reports, were classified as strong as they adequately addressed and were compliant with different clauses of the 2014 NEMA EIA Regulations. On the other hand, poor quality reports were as a result of inadequate information provided regarding the public participation process leading to their weaknesses. The weaknesses were partly due to lack of clarity regarding EIARs on obtaining written permission by landowners of anticipated projects, before environmental authorisation was granted. Also, the weaknesses regarding the reports were due to lack of alternative methods to accommodate stakeholders who cannot understand English and/or Afrikaans. The EIARs which could not furnish any relevant details on the stipulated dimensions of the notice-boards, also led to reports classified as weak due to their poor completion.

Taking into consideration the quality trends emanating from the current study, several recommendations are proposed to enhance the writing of EIARs pertaining to public participation in order to contribute to improved planning and better decision-making regarding environmental matters.

Keywords: Environmental impact assessment; Public participation; Renewable energy projects; Lee and Colley Review Package; Satisfactory and unsatisfactory quality; Strengths and Weaknesses.

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List of acronyms and abbreviations

EIA: Environmental impact assessment

EIARs: Environmental impact assessment reports

DEA: Department of Environmental Affairs

EIS: Environmental impact statement

NEMA: National Environmental Management Act

NEPA: National Environmental Policy Act

EC: European Commission

I&APs: Interested and affected parties

PP: Public participation

PPP: Public participation process

RE: Renewable energy

CDM: Clean Development Mechanisms

JI: Joint Implementation

UNFCCC: United Nations Framework Convention on Climate Change

IRP: Integrated Resource Plan

BRICS: Brazil, Russia, India, China and South Africa

CSP: Concentrated solar power

PV: Photovoltaic

NGO: Non-governmental organisation

NPO: Non-profit organisation

EAP: Environmental assessment practitioner

EAPASA: Environmental Assessment Practitioners Association of South Africa

S&EIR: The scoping and environmental impact report

EMPr: an environmental management programme

SWOT: Strengths, Weaknesses, Opportunities and Threats

CHAPTER 1

INTRODUCTION AND STUDY CONTEXTUALISATION

1.0 INTRODUCTION

An environmental impact assessment (EIA) is a systematic environmental management process for predicting benefits and challenges related to effects of proposed developments before the projects are carried out (Wood *et al.*, 1996; Mhango, 2005; Kuitunen *et al.*, 2007; Clausen *et al.*, 2010). EIA started in the United States of America (USA) by means of the enactment of the 1969 National Environmental Policy Act (NEPA) (Sandham *et al.*, 2008a; Aucamp, 2009; Boshoff, 2013; Hildebrandt & Sandham, 2014). The aim of EIA is: (1) to describe as well as to examine anticipated environmental effects (both good and bad) in the initial stages and to explore possibilities to prevent negative impacts; (2) to make certain that the proposed infrastructural developments do not threaten human health and environmental quality; (3) to incorporate environmental considerations as part of decision-making by the relevant authorities; and also (4) to guarantee public participation (Lee & George, 2000; Retief *et al.*, 2011; Wood, 2013; Mounir, 2014). The EIA procedure is comprised of various steps, of which the following are common in most international jurisdictions:

(1) Screening: to establish if an EIA is necessary on the selected proposal or not;

(2) Consultation and subsequent public participation: to generate stakeholder engagement;

(3) Consideration of alternatives: for evaluating the feasibility of different options;

(4) Environmental assessment: to smaller developments through environmental licencing;

(5) Scoping: for preliminary identification of terms of reference and identification of significant impacts;

(6) EIA review: for the analysis of the EIA report; as well as

(7) Plan development: for better environmental management of project proposal (Jalava *et al.*, 2010; Pölönen *et al.*, 2011; Sandham *et al.*, 2013a; Barker & Jones, 2013).

All of the information gathered during the EIA process is summarised and synthesised into a document called an EIA report (EIAR) in South Africa (Sandham & Pretorius, 2008; Sandham *et al.*, 2008a; Sandham *et al.*, 2013a) or what is termed an environmental impact statement (EIS) in Europe (McGrath & Bond, 1997; Põder & Lukki, 2011; Loomis & Dziedzic, 2018). If the EIA report is approved, then the proposed development action receives environmental authorisation and thereafter the proposed development can be implemented (Baker & McLelland, 2003; Aucamp, 2009; Morrison & Therivel, 2009; Glasson *et al.*, 2012).

Compiling and presenting the EIAR happens throughout the EIA process before submission of this document to the interested and affected stakeholders as well as the regulatory government

departments or competent authorities (Peterson 2009; Nadeem & Fischer, 2011). Such stakeholders are indispensable for effective public participation (Peterson, 2009; Nadeem & Fischer, 2011; Auberle *et al.*, 2013). Therefore, every EIAR should provide comprehensive information on the environmental feasibility of planned development actions, key and significant environmental impacts, as well as the actions that can be carried out to help prevent, minimise the magnitude and significance of these impacts and also enhancing the positive impacts (Peterson, 2009; Nadeem & Fischer, 2011; Jalava *et al.*, 2010; Auberle *et al.*, 2013).

1.1 PUBLIC PARTICIPATION (PP) WITHIN AN EIA SYSTEM

The research emphasis of this dissertation is on public participation process during an EIA investigation. Public participation (PP) during an EIA process involves the engagement of the general public, potential interested and affected parties (I&APs), non-governmental organizations (NGOs), non-profit organisations (NPOs), as well as the organs of state in environmental management matters (Hartley & Wood 2005; Murombo, 2008; Hourdequin *et al.*, 2012; NEMA: EIA Regulations, 2014). This is done by presenting a platform to encourage discussion and participation by different I&APs in a transparent two-way interaction in the decision-making process through: (1) planning of proposed projects; (2) assessing project viability as well as environmental impacts; and (3) agreeing on decisions taken (Pölönen *et al.*, 2011; Wasserman, 2012; Mareddy, 2017; Zhou *et al*., 2019). The main purpose of PP is usually to: (1) inform and promote stakeholder engagement on various issues which relate to the impacts of proposed developments so as to enhance environmental management, (2) provide information to promote awareness of potentially detrimental environmental impacts, (3) provide mutual learning opportunities for the public, developers and EIA consultants, and (4) strengthen the positive impacts (Canter & Sadler, 1997; Vicente *et al.*, 2015; Enriquez-de-Salamanca, 2017; Zhou *et al*., 2019).

Public participation also helps in reducing potential conflicts between stakeholders because key information is communicated openly on the proposed projects and the receiving environments (Bond *et al.,* 2004; Retief *et al.*, 2011; Moynihan, 2012). However, to realise such goals the public participation process must take place early enough and timeously in order to avoid expensive project delays, thus providing sufficient time to address and resolve stakeholder issues (Bond *et al.*, 2004; Retief *et al.*, 2011; Moynihan, 2012). Stakeholder engagements must aim at enabling meaningful involvement for interested and affected parties and consider their values as well as opinions on matters under discussion (Bond *et al.*, 2004; Cuppen *et al.*, 2012; Moynihan, 2012).

Given the aforementioned background, PP is critical in the EIA system as a way to better the process credibility and also for the success of the EIA process as a whole (Nadeem & Fischer, 2011; Wasserman, 2012; Brombal *et al.*, 2017; Khodyakov *et al.*, 2018; Zhou *et al*., 2019). For the PP in the

EIA system to be successful, involving the I&APs should be addressed satisfactorily (Nadeem & Fischer, 2011). More often than not the objectives of public participation are not met due to, amongst other reasons, late starting in the EIA process, weaknesses inherent within public participation process, insufficient input from interested and affected parties, as well as negative cost factors (Clausen *et al.*, 2010; Fischer & Nadeem, 2010). Furthermore, public participation may not always be as successful as it is anticipated because of the diversity of views, interests and expectations of different stakeholders. The process of public participation is sometimes met with resistance from interested and affected stakeholders (Clausen *et al.*, 2010; Moynihan, 2012; Marzuki, 2015). For example in Costa Rica due to inadequate consultation and collaboration between the developers as well as interested and affected communities, there were upheavals that led to the closing down of a gold mine in 2010, and ultimately to the prohibition of open-pit mining in that country by the courts (Glucker *et al.*, 2013). Prior to this shutdown, this project went through the EIA process and obtained an environmental permit (Glucker *et al.*, 2013). Also, some weaknesses inherent to PP during an EIA process have been highlighted in Brazil (Duarte *et al.*, 2017). Subsequently, one of the main characteristics of EIA in Brazil is the provision for mandatory public hearings whereby various stakeholders are afforded the opportunity to present their views and objections against controversial development projects (Duarte *et al.*, 2017).

1.2 STATEMENT OF RESEARCH PROBLEM AND OBJECTIVES

As stated earlier, PP is a key phase during the EIA process. Effective PP entails, amongst others, enhancing the stakeholder engagement process as it improves the trust and the overall relationship between I&APs and in this way legitimises as well as improves the decision-making process (Schoeman, 2017). However, there are several hurdles to effective PP. Public participation may not always be as successful as it is anticipated because it does not guarantee acceptance of the project proposal within the affected stakeholders and communities.

Ineffective public participation may lead to stakeholder conflicts and expensive lawsuits from I&APs since they feel excluded from the decision-making process and their opinions as well as their concerns are not taken into consideration (Aucamp, 2009; De Santo, 2016; Gu, 2016). Worldwide, there has been an increase in the dissatisfaction of stakeholders regarding the effectiveness of EIA procedures and subsequent decisions that influence their biophysical surroundings, social capital together with economic aspects (Li *et al.*, 2012; De Santo, 2016; Gu, 2016).

In South Africa (SA), PP is mandatory on environmental assessment of all proposed developments. As a result, there are several legal and regulatory requirements that must be satisfied for promoting the favourable outcome of the public participation process (PPP). These requirements are mentioned in Section 24 of the Constitution of South Africa, the National Environmental Management Act (NEMA)

(Act No 107 of 1998), and several EIA Regulations (NEMA EIA Regulations of 2006; 2010; 2014; and 2017) promulgated under the NEMA (Act No. 107 of 1998). Despite these laws and regulations, weak EIA implementation and practice often leads to unproductive public participation, thus producing community conflicts, project delays, and even lawsuits from I&APs (Aucamp, 2009; De Santo, 2016; Gu, 2016). Although South Africa when compared to other African countries has a well-developed legal and regulatory framework for EIA, several instances of poor public participation have been reported (Murombo, 2008; Mnengwane, 2014; Madlome, 2016; Schoeman, 2017). Thus, there are many implementation problems that dilute the effectiveness of PP in South Africa.

One example of poor PP has to do with the beleaguered Xolobeni Heavy Mineral Sands project. The 2005 EIA process that was undertaken for the proposed Xolobeni Heavy Mineral Sands project in the Eastern Cape Province (in South Africa) has not yet been finalised, nearly 14 years since its inception (Sibane, 2012). The main problem in this EIA process is poor public participation as well as rapidly worsening rivalry and misunderstandings amongst I&APs, including communities (Sibane, 2012). In fact, the ensuing conflict has generated the formation of two rival community groups – (1) the Amadiba Crisis Committee (ACC) that is vehemently opposed to the proposed mining development in the location and (2) the Xolobeni Local Community (Xolco) that is in support of the mining project because they were promised 26% of the financial returns by the mining company (Sibane, 2012). Given the level of distrust and dispute between the developers and polarised communities, the EIA application has been rejected several times by competent authorities due to a flawed public participation process. In fact, at one stage the mining permit was removed by the former Minister of Minerals and Energy (Minister Susan Shabangu) owing to weaknesses in the EIA process, especially regarding how public participation was conducted in Xolobeni (Sibane, 2012). It is therefore very clear that the Xolobeni's mining project must satisfy the necessary conditions of the EIA Regulations (2014) and NEMA (Act No. 107 of 1998). What is paramount here is that the critical conditions necessary for effective public participation were grossly violated by the agencies who conducted the compromised EIA process.

One way to examine the progress of the EIA process is to examine the quality of the EIARs that details how the entire EIA was undertaken. To this extent, some research has been executed on EIAR quality in South Africa (Sandham *et al.*, 2008b; Boshoff, 2013; Sandham *et al.*, 2013b). However, there are few studies that have specifically focused on the quality of the PPP during an EIA study. Given this paucity of information, this dissertation has evaluated the quality of the public participation processes that were documented in various EIARs based on proposed renewable energy projects in the Northern Cape (NC) province of South Africa. In addressing this research problem, the following research objectives were formulated:

(1) To determine and characterise the quality of public participation in selected EIARs;

(2) To determine the degree of legal and regulatory compliance, using 2014 NEMA EIA Regulations (Annexure A in this dissertation);

(3) To identify the strengths and weaknesses in the selected EIARs regarding public participation; and

(4) To make recommendations that can enhance the quality of public participation in the sampled EIARs.

Because the research problem is based on the quality of PP in EIARs that were compiled for renewable energy developments, it is imperative to give a background on this energy sector.

1.3 RENEWABLE ENERGY (RE) IN SOUTH AFRICA

RE is the energy resulting from sources that are replenished in a limitless way, for example, geothermal heat, sunlight, wind, rain, tides, and waves (Stats SA, 2012; DEA, 2015). Renewable energy can also be derived from biomass and other natural processes (Stats SA, 2012; DEA, 2015). Renewable energy (RE) projects are important due to increased emission of greenhouse gases (GHG) (e.g. SO_2; CO_2) linked to the energy production, and are considered to be one of the biggest contributors to climate change (DEA, 2015). RE resources can be used to produce energy in a relatively clean and sustainable manner, decrease CO_2 emissions, lower national dependence on imported energy, enhance energy security, as well as gradually replace fossil fuel energy sources (Frid *et al.*, 2012). In developing countries, bio-fuels research and development can have positive spin-offs in that it can contribute to self-sustaining measures of energy supplies, thus enhancing economic, social and ecological development (Amigun *et al.*, 2011).

South Africa, in line with the other countries in the world, has ratified the United Nations Framework Convention on Climate Change (UNFCCC) and as such has endorsed the Kyoto Protocol (Boshoff, 2013). The Kyoto Protocol supplies three 'flexibility mechanisms' to motivate those countries who ratified the Protocol to conform to their requirements (Boshoff, 2013). These mechanisms are the Clean Development Mechanisms (CDM), Joint Implementation (JI), as well as International Emissions Trading (Boshoff, 2013). Within the BRICS countries (Brazil, Russia, India, China and South Africa), South Africa has the lowest number of CDM & JI projects while China and India have the highest number of these developments (Freitas *et al.*, 2011; Boshoff, 2013). Subsequently, the Kyoto Protocol was replaced by the Paris Agreement in 2015. The conference in Paris recognised the importance of supporting access to sustainable RE, over non-renewable energy, especially in Africa (UNFCCC, 2015).

The RE resource with the ability to make some contribution in the energy mix in South Africa is solar radiation, using two main technologies for generating electricity (i.e. concentrated solar power (CSP)

and solar photovoltaic (PV)) (Pegels, 2010). South Africa has the potential for both solar and wind power production, and this can be utilised to close the gap that is existing regarding distribution of electricity to remote areas that cannot be reached (Jain & Jain, 2017). On average, South Africa has 2500 hours of sunshine per annum and 4.5-6.6 kWh/m^2 of radiation level, resulting in the country being in the top three, globally (Jain & Jain, 2017).

The NC province is one of the best solar resource locations globally (Pegels, 2010). Two projects were compared for EIA conformity by two developers in NC (Shubane, 2015). The negative aspect regarding both developments was that the noise and air pollution became high as a result of the construction work executed (Shubane, 2015). The mitigation measures employed by the developers to the environment were: (1) to work during the times when most children are at school; (2) no construction work was carried out on Sundays and on public holidays; (3) drip trays were utilised on generators and machinery to control oil leaks; (4) working areas were demarcated; (5) water was used to reduce dust effects; and (6) oil tanks built on embankment areas (Shubane, 2015). Ecologically, the predicted negative impacts coming from both projects were: (a) the dust coming from the construction, operational activities and wind erosion, (b) soil disturbance, (c) and loss of habitat, ground water and soil impact by oil in the event of oil leakages from the electric transformers (Shubane, 2015). In addition to the mentioned negative impacts: construction workers by their presence made the area prone to the risk of veld-fires; cement pollution, lubricant and fuel spillages, as well as land disturbance that negatively affect the environment (Shubane, 2015).

In the early years of EIA in South Africa (in the 1970s) there were no mandatory time-frames and no follow-ups required after environmental authorisation (Sandham *et al.*, 2013a; Shubane, 2015). Subsequently, the government that came into power in 1994 changed the environmental legislation and time - frames had to be adhered to (Shubane, 2015). For example, scoping report has to be comprehensively written to include the mandatory public participation report together with the comments by the interested and affected parties (Shubane, 2015). On the other hand, impact assessment and mitigation in the EIA process is usually combined with the scoping process (Shubane, 2015). In this manner then the impact assessment and public participation are both relevant in the whole EIA process success (Shubane, 2015).

On the other hand, mitigation measures such as straw bales and sprinkler system were used to contain top soil; soil was restored after construction; transformers were erected on embankment areas (Shubane, 2015). In addition to the mitigation measures, fires were only permitted within specified areas with sufficient fire-fighting apparatus; fuel storage on site was prohibited; construction work was allowed to take place on weekdays in order to mitigate noise environmental impacts; and preference of recruited employees came from the local communities (Shubane, 2015). Predicted socio-economic impacts were as follows: influx of construction employees leading to petty crime, theft and infrastructure damage was expected to worsen (Shubane, 2015).

South Africa is heavily dependent on fossil fuels as the main energy source (Strydom & Surridge, 2009; Boshoff 2013). Moreover, in 2004 renewable energy (RE) resources only contributed 0.1% of the country's energy supply (Strydom & Surridge, 2009; Boshoff 2013). Meanwhile, South Africa's energy supply is inadequate as almost half of the population do not have access to electricity (Baker & Phillips, 2019) with ongoing planned load-shedding in the current years (Boshoff, 2013). In the light of this report, South Africa has no choice but to upgrade its energy supply reserves by growing its energy production capacity and its obligation regarding greenhouse gas (GHG) emission cutback (Boshoff, 2013). This can be accomplished by using RE resources (for example, wind and solar energy) that are found near areas with elevated energy demand; and such RE resources would result in cost reduction, improving and maintenance of transmission power lines (Boshoff, 2013). Furthermore, climate change is forecast to result in drastic harm to the environment and weaken attempts to upgrade the living standards of the African continent. Given this state of affairs, it is imperative that South Africa rapidly abandons the non-renewable energy resources and its dependency on them (Boshoff, 2013). There is also a school of thought that since South Africa has abundant coal resources, its energy sector will be forced to change drastically once this resource is exhausted (Boshoff, 2013).

The economic importance and environmental relevance of renewable energy projects in South Africa has increased rapidly over the last 20 years (Strydom & Surridge, 2009; Global Wind Energy Council, 2011; Musango *et al.*, 2011; Boshoff, 2013; Jain & Jain, 2017). The use of renewable energy resource can contribute positively to tackle the requirement for the sustainable utilization of natural resources, in this way leading to reduced CO_2 emissions (Boshoff, 2013). Although solar energy developments in South Africa have been mostly functioning off-grid, several surveys show that Northern Cape will have installations of solar technologies of around 5 giga-watt (GW) of energy by the year 2020 (Musango *et al.,* 2011). Photovoltaic (PV) arrangement can be set up in countries that get 3-6 kWh/m^2 solar radiation per day, in this way localising energy sectors and intensifying the energy provision of these countries (Dekker *et al.,* 2012; Tsoutsos *et al.,* 2005). Approximations showed that ± 4.5 to 6.5 kWh of solar energy is emitted onto different localities throughout South Africa (Dekker *et al.,* 2012).

South Africa has big prospects in terms of solar energy resources which surpasses Europe and USA with its whole-day long solar radiation (Bode & Sheer, 2010; Musango *et al.,* 2011; Stats SA, 2012). South Africa has authorised the fitting of 630-megawatt (MW) wind energy currently and ongoing, with the objective to grow its installed capability to 800MW by the year 2030 (GWEC, 2011). One of the benefits of wind energy resources' use is that the production of energy does not involve cooling water, unlike fossil water and nuclear fuels' systems that use a lot of water (Abbasi & Abbasi, 2000). This would save South Africa a lot of water, considering that it is a semi-arid country.

South Africa is fossil-based and emission intensive country (Pegels, 2010) with 77% of the country's electricity produced from coal as a consequence the country contributes highly to the environmental

damage (Jain & Jain, 2017). Due to coal challenges to the environment, South African government had to find alternative energy resources like renewable energy (RE) so as to obviate and ameliorate the current problem from fossil fuels and thus reduce the threat to climate change (Pegels, 2010).

RE is not a flawless innovative alternative as it has risks associated with its use, and amongst these are technological risks (Pegels, 2010). A study by Strydom & Surridge (2009) revealed the negative aspects associated with renewable energy, for example, with the building of hydro-power plants that may contribute to the disturbance to river ecosystems, siltation of dams as well as in elevated evapotranspiration rate.

The support for green energy has resulted in the decrease in energy generation costs, direct foreign investment and support from local stakeholders, especially in rural areas (Jain & Jain, 2017). However, as South Africa adjusts to this new industry there are obstacles that still need to be dealt with (Jain & Jain, 2017). These obstacles include, amongst others, political tensions, differing energy strategies, grid infrastructure and electricity supply as well as the technical expertise required to carry and expand RE sector (Jain & Jain, 2017). On the other hand, the enabling factors for RE include, amongst others: research and innovation capacity, institutional support, decline of RE, as well as the world outlook (Jain & Jain, 2017). From 2009, the South African government made a commitment to decrease the country's emissions by 34% by 2020 and 42% by 2025 (Pollet *et al.*, 2015). Energy efficiency and renewable energy are important as they furnish energy security as well as the mitigation of global warming (Aliyu *et al.*, 2018). The following factors summarise the importance of energy efficiency: (1) reduce CO_2 emissions; (2) optimisation of the demand of power production in a country; (3) delays the requisite for supplementary power production capacity; (4) enhance the health of the nation by curtailing the release of detrimental atmospheric gases; (5) reduce energy shortage as it is less expensive; (6) alleviates the contamination of the environment; (7) improves energy security against price variation of products by decreasing the imported sources of energy like coal and oil; (8) and enhances industrial competitiveness by leveraging energy efficiency means (Aliyu *et al.*, 2018).

1.4 THE STRUCTURE OF THE DISSERTATION

This dissertation is made up of five chapters. Chapter 1 describes the research problem together with the research aim and objectives as well as the rationale and reasoning behind the study. Chapter 2 deals with review of the literature associated with the concept of EIA and the renewable energy. Chapter 3 focuses on research design and methodology adopted in this research. Chapter 4 introduces and explores the current research findings. Lastly, chapter 5 presents conclusions as well as the recommendations for the EIA practice and further studies proposed, as a way forward on the current research.

CHAPTER 2

LITERATURE REVIEW

2.1 INTRODUCTION

In this chapter the literature regarding environmental impact assessment (EIA), public participation (PP) as well as the quality of environmental impact assessment reports (EIARs) is reviewed. Effectiveness of PP together with models to improve PP in EIA are also given attention. In addition, the various review packages that can be used to examine the EIARs are discussed. An outline of the EIA quality research in South Africa (SA) is also discussed.

2.2 ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

The EIA process is utilised to point out, foretell, assess and alleviate the magnitude and significance of anticipated development impacts on the biophysical and socio-economic components of the receiving environments, before taking significant decisions regarding the environment by the relevant stakeholders, including environmental authorities (Weston *et al.*, 1997; Almeida & Montano, 2017; Schoeman, 2017; Loomis & Dziedzic, 2018). The process originated in the USA and was adopted in other countries such as Finland, Bangladesh, India, Ireland, United Kingdom, South Africa, and Kenya (McGrath & Bond, 1997; Sandham & Pretorius, 2008; Pölönen *et al*., 2011; Kabir & Momtaz, 2012). As stated earlier on (in chapter 1), the EIA process is comprised of various steps such as screening, scoping, description of the environmental baseline, impact assessment, assessment of alternatives and impact mitigation as well as public participation and review (**Figure 2.1**). The goal of this process is pollution minimisation, ascertaining that the decisions taken between socio-economic development and environmental impacts are sound and feasible as well as sustainable in the long-term (Glasson *et al.*, 2005; van Heerden, 2010; Bawole, 2013; Mnengwane, 2014; Schoeman, 2017; Loomis & Dziedzic, 2018). Other positive and negative impacts associated with EIA that may be affected could come from the socio-economic aspects of the environment like employment opportunities, services (e.g. health and education), community structures, lifestyles and values (Glasson *et al.*, 2005). Additionally, other impact assessments like risk, demographic, climate, gender, psychological, noise, economic, and technology related could also be affected (Glasson *et al.*, 2005). It also serves as a useful planning aid that combines natural, social and economic concerns into decision-making and encourages environmental mainstreaming into projects by the communities so as to attain sustainable development (Doelle & Sinclair, 2006; Mannarini *et al.*, 2010; Schoeman, 2017). A diagrammatic representation of the EIA system is depicted in **Figure 2.1**.

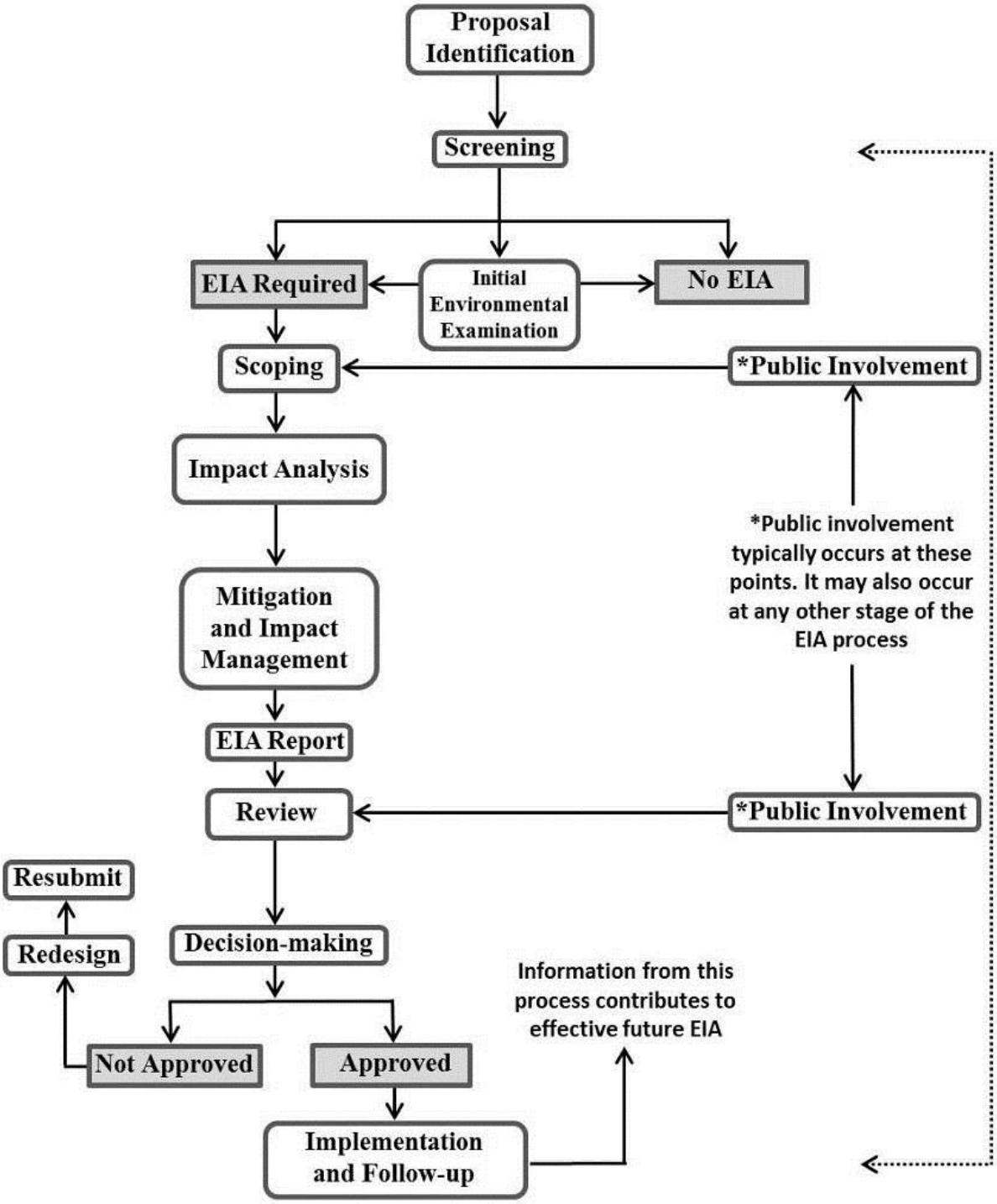


Figure 2.1: Generalised EIA Process Flowchart (El-Gendawy *et al.*, 2013, p.5).

2.2.1 Different Stages of EIA

(a) Screening

The screening stage is the initial step in any EIA system representing a critical decision stage and entails preliminary appraisal of a project for generating significant environmental effects (Pinho *et al.*, 2010; Weston, 2011). The objective of screening is to establish if an EIA process is needed for a proposed development action (Glasson *et al*., 2012). Such a screening stage is conducted by: (1) conducting initial environmental assessments; (2) following case-by-case approach; and (3) by using previously determined measures and indicative limits, found in legislation, regulations and other guidance documents (Pinho *et al.*, 2010; Glasson *et al.*, 2012). At the end of the screening stage, a decision will be taken on whether an EIA is necessary or not, based on what the environmental legislation and regulations of each jurisdiction dictates.

(b) Scoping

Scoping is applicable on various issues to be investigated during an EIA process, in order to clarify the specific scope and limitations of the study together with key environmental impacts, alternatives and stakeholders to be consulted (Lee & George, 2000; Glasson *et al*., 2012; Duarte *et al.,* 2017).

(c) The identification of alternatives

During an EIA process, different alternatives are identified regarding the proposed project, proposed sites and alternative processes and technologies (Glasson *et al.*, 2005; Mareddy, 2017). The objective of identification of alternatives is to make certain that environmental effects and criteria are described and considered in the planning phase of the EIA process, before finalising the type, scale, and location of development (Glasson *et al.*, 2005; Mareddy, 2017).

(d) Impact identification and prediction

During impact identification, different effects that would emanate from the proposed projects are mentioned and these entail direct, indirect, residual and cumulative effects (Glasson *et al.*, 2005). The environmental impacts of development are changes that arise or would arise due to the implementation of a project (Glasson *et al.*, 2005). This would include, amongst others, various environmental parameters like air quality, water quality, noise levels, levels of unemployment and crime (Glasson *et al.*, 2005). Projects may have unmediated effects that result in minor and unintended impacts later (Glasson *et al.*, 2005). The direct and indirect effects could, sometimes,

correspond to short-term and long-term impacts (Glasson *et al.*, 2005). Various ways and procedures are utilised to identify and predict anticipated impacts and these include:

(1) Checklists;

(2) Matrices;

(3) Mathematical and computer-based models,

(4) Networks; and

(5) Overlay maps and geographical information systems (GIS) (Glasson *et al.*, 2012).

(e) Public participation

PP during an EIA process involves the engagement of the general public, potential interested and affected parties (I&APs), non-governmental organizations (NGOs), non-profit organisations (NPOs), together with the organs of state that have authority in environmental matters (Hartley & Wood, 2005; Murombo, 2008; Glucker *et al.*, 2013; NEMA: EIA Regulations, 2017).

The rationale of PP is focused on its value-adding effect to the EIA process and can be classified as (Mnengwane, 2014; Mareddy, 2017; Loomis & Dziedzic, 2018):

(1) Stakeholder involvement approach – the emphasis here is on public enthusiasm and involvement in the community-based governing undertakings;

(2) Direct public engagement approach – the focus here is on the community involvement aimed at being an effective tool in decision-making;

(3) Partnership approach to governance – the public and the politicians play a dominant role in the political arena;

(4) Pacifying approach – PP is seen as helping to reduce possible conflict between the public and the authorities, thereby enhances community trust in the process;

(5) Pro-active result-oriented approach – effective public participation legitimises the decisions taken and gives some sense of 'ownership' to the public as the public, in turn, endorses the decisions arising from such engagements;

(6) Influential-player approach – this viewpoint supports the laypersons to raise their concerns and propose solutions where they deem this fit; and

(7) Democratic-persuasive approach – this approach encourages both the authorities and the communities to debate the issues at hand in such a way that the communities can influence the outcomes of the decisions taken.

The key purpose of PP is to afford opportunities for I&APs to voice their opinions and to promote stakeholder engagement on various issues which relate to the impacts of proposed projects; also to achieve social as well as environmental justice and enhance the quality of decision-making by stakeholders (Canter & Sadler, 1997; Soneryd, 2004; Nadeem & Fischer, 2011; Mnengwane, 2014; Schoeman, 2017). PP also serves to achieve social and environmental justice as well as to encourage improving the quality of decision-making (Mnengwane, 2014; Schoeman, 2017). In other words, PP should allow I&APs to partake so as to impact the decision-making process; in this way reduce potential conflict amongst participants (Andre *et al.*, 2006; Wouters, 2008; Moynihan, 2012; Schroeter *et al.*, 2016; Jami & Walsh, 2017). However, to realize such goals the public participation process must take place early enough and timeously in order to avoid expensive project delays, thus providing sufficient time for resolving stakeholder issues (Bond *et al.*, 2004; Retief *et al.*, 2011; Moynihan, 2012). In this way, the PP is a critical component of the EIA process in that it serves as a platform for I&APs to be involved in various steps of the EIA process (Mnengwane, 2014; Schoeman, 2017).

The extent of participation varies widely based on the project type, the stakeholders' skills and experiences (Väntänen & Marttunen, 2005; O'Faircheallaigh, 2010; Brombal *et al.*, 2017). Enhancing PP effectiveness during the EIA process remains an important challenge for decision-making processes locally and globally (Lee & George, 2000; Glasson *et al.*, 2012).

2.2.2 Effectiveness of PP

Globally, PP is regarded as the foundation for effective and efficient democratic governance, as well as one of the preconditions to encourage collective decision making and eventually sustainable development (Bastidas, 2004; Mareddy, 2017). Benefits of PP include: (1) enhanced democratisation involving various actors in the decision-making process; (2) improved accountable decision-making whereby governments are responsible for their deeds and responding to societal interests; (3) improved EIA process; and (4) greater environmental awareness (Masango, 2002; Bastidas, 2004; O'Faircheallaigh, 2010; Mnengwane, 2014; Mareddy, 2017).

Generally, for PP in EIA to be effective, the following factors must be satisfied: (1) provision of sufficient opportunities to stakeholders for raising issues of concern; (2) creation of awareness and education of stakeholders regarding the proposed project and the likely environmental effects; (3) proper usage of languages understood by all stakeholders; (4) the minimisation of conflicts amongst participants; (5) improved transparency and openness in decision-making; and (6) building trust amongst I&APs (Nadeem & Fischer, 2011; Mnengwane, 2014; Mareddy, 2017).

The International Association for Public Participation uses what they refer to as Public Spectrum to describe the role the public (especially the communities affected by proposed developments) is supposed to play in planning and decision-making as well as how the communities can influence

planning or decision-making processes (IAPP, 2014). Five levels of public participation are proposed, and these are summarised as follows:

(1) Inform: The PP goal is to supply the public or the communities with the balanced and objective information they require to understand the decision-making process. This is the lowest level of community participation (Mnengwane, 2014; IAPP, 2014);

(2) Consult: This entails getting responses from the public regarding the plans, ideas, options or issues at hand but with little exchange. This is the second lowest level of community engagement and the authorities here listen to issues at hand but do not have to act on them. The purpose of this level of the process is to establish the anticipated concerns requiring attention in order to direct the subsequent collaborative stages of the planning process (Mnengwane, 2014; IAPP, 2014);

(3) Involve: The PP goal is to work together with the communities throughout the process with the aim of understanding and considering the concerns of the communities. At this level, the communities are encouraged to participate in the process to a great extent than in informing and consulting levels. The pledge at this level is that concerns raised will be listened to even though the decisions remain entirely with the authorities and not the public (Mnengwane, 2014; IAPP, 2014);

(4) Collaborate: The PP goal is to form allies with the involved stakeholders in the decision-making, establishing the alternatives as well as the examination of the proposed solutions. This is an interactive and comprehensive two-way process that aims to reduce and deal proactively with potential conflict. Even though making decisions still lies with the authorities but there is more ownership by the respective participants on the plan arrived at (Mnengwane, 2014; IAPP, 2014); and

(5) Empowering: The PP goal is to emphasise and support the fact that the final decision-making is greatly influenced by the public, with the I&APs having the contribution into the process. The empowering process encourages interaction and engagement of all the stakeholders regarding pertinent issues. This is the highest level of community engagement (Mnengwane, 2014; IAPP, 2014).

There is no one PP process (PPP) that is suitable for all countries and in all jurisdictions, and as a result, several studies have examined various arrangements and models of PP (Schoeman, 2017).

Models for Improved PP in EIA

The first proposed model of PP is known as “A Ladder of Citizen Participation” and was established by Arnstein in 1969, (**Figure 2.2**) (Mareddy, 2017; Schoeman, 2017). Connor (1988) introduced a “New Ladder of Citizen Participation” to counter the one by Arnstein, the emphasis was more on avoiding public discord and less on public division of power (Schoeman, 2017). The aim of the New Ladder of Public Participation was to introduce a systematic pro-active manner to deal with disagreements emanating from PP and supported interactive education process on PP between

authorities, developers and communities (Connor, 1988). In 1998, Connor's "New Ladder of Citizen Participation" was utilised to establish the "Wheel of Participation" which was to help reduce past challenges associated with using unsuitable methods when dealing with public participation and clarifying the objectives of participation (Davidson, 1998). The wheel encouraged a constructive debate on the issues at hand (Davidson, 1998). A lot of PP processes do not go beyond steps 3, 4 and 5 in **Figure 2.2** (Davidson, 1998; Mareddy, 2017). Consequently, several projects and studies resorted to using either OECD (Organisation for Economic Co-operation Development) model or International Association for Public Participation model which simplify Arnstein's model into 3 and 5 levels, respectively (Prieto-Martin, 2014).

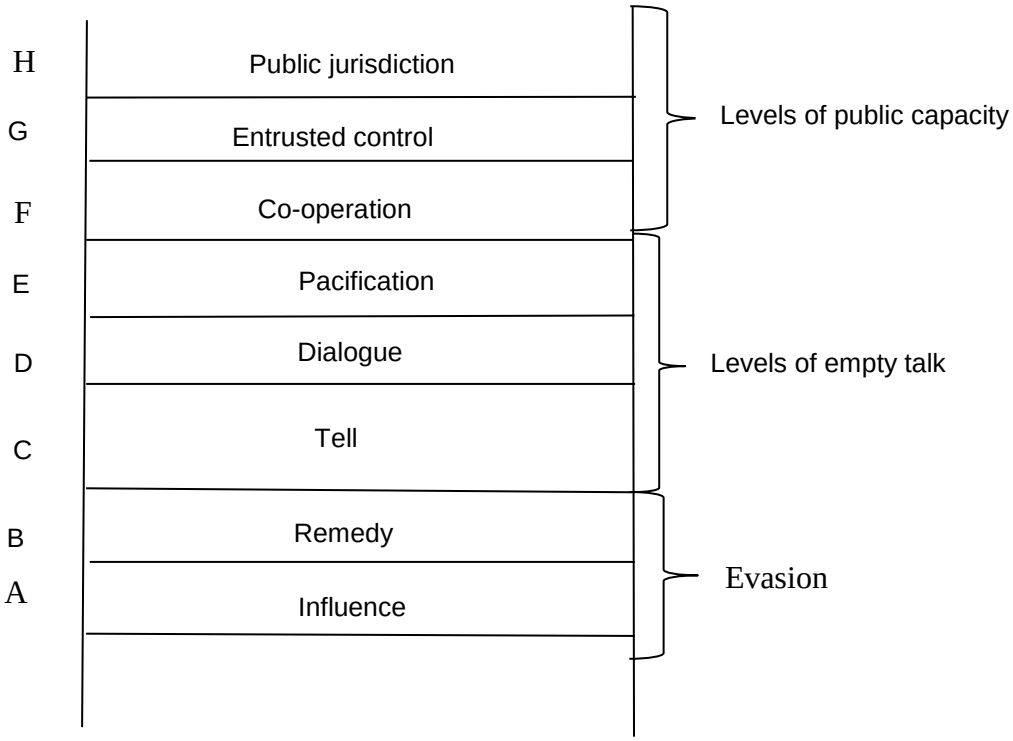


Figure 2.2: Eight steps of a ladder of citizen participation (Arnstein, 1969, p. 217).

Prieto-Martin (2014) established participation schemas model, which acknowledges that various situations need various perspectives to be applied (Prieto-Martin, 2014). The model's objective is to serve as a guide on the features required in the participatory processes, emphasising the value and the commitment of public involvement and open to continuous improvement (Prieto-Martin, 2014). **Figure 2.3** shows the participation schemas established by Prieto-Martin based on Arnstein's model as a starting point, while **Table 2.1** gives a comprehensive description of classifications of the participation schema model (Prieto-Martin, 2014; Schoeman, 2017). In **Figure 2.3** "transparency cliff" is critical for "consultative participation" to transition to "collaborative participation" (Schoeman, 2017).

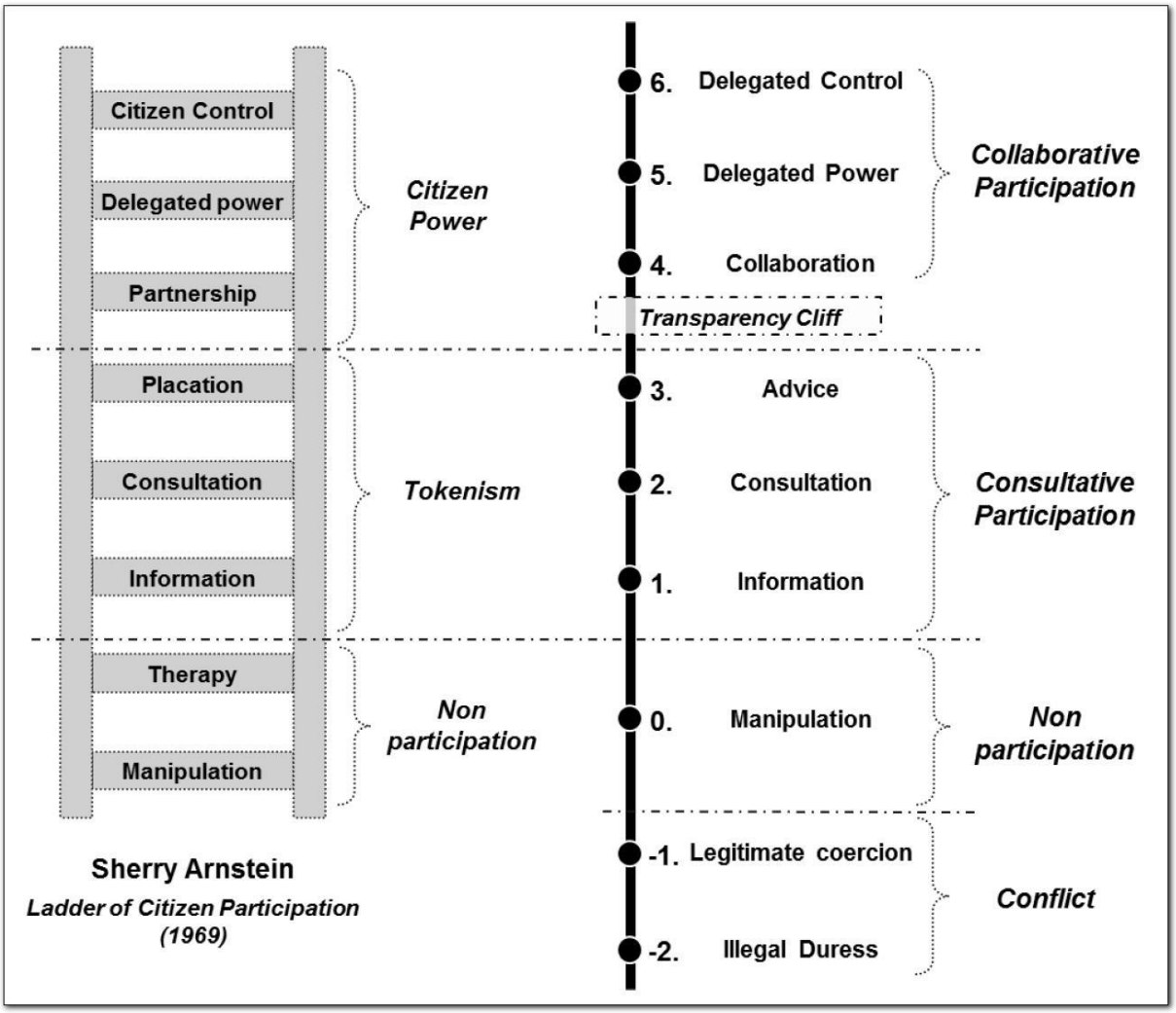


Figure 2.3: Participation Schemas model to analyse and categorise different levels of public participation (Prieto-Martin, 2014, p.4).

Table 2.1: Description of Participation Schemas categories (Prieto-Martin, 2014, pp. 4-6; Schoeman, 2017, p.12).

Class	Degree		Definition
Dispute I&APs are given a chance to express their points of view and determine their expectations (degree of pessimism).	A	Unlawful coercion	Drastic means used due to basic privileges contravened e.g. revolts.
	B	Legal duress	The communities employ lawful doctrines to ascertain that their demands are listened to.
Non-involvement Mislead or calm down the affected communities without addressing their issues at hand.	C	Influence	The authorities exploit and trick the communities into endorsing the resolutions that have been adopted in their absence and without their involvement.

Advisory involvement The authorities collect the concerns of the I&APs but the resolutions depend on the authorities, alone.	D	Information-sharing	Authorities informs the I&APs about the anticipated plans and projects.
	E	Consultative	Collective involvement with I&APs given a chance to voice their displeasure on information-sharing.
	F	Input	Issues of the I&APs are solicited as well as their recommendations to be brought forward.
Joint involvement Involvement hinges on shared responsibility amongst I&APs and reliance on each other. The communities are fully involved in the resolutions of the projects.	G	Shared responsibility	I&APs have an effect on the resolutions adopted, and all those involved are encouraged to choose the best way forward and plans of action.
	H	Appointed personnel	The involved committees/organisations are assigned restricted controls/accountabilities in the resolution mechanisms.
	I	Nominees with jurisdiction	The authorities are in charge of observing the proceedings while the involved committees/organisations are given some powers to make resolutions.

Despite these benefits, there are many factors which constrain and hinder the effectiveness of PP. These factors can be summarised in the following way: (1) Education: (lack of the requisite knowledge necessary for meaningful public participation); (2) insufficient communication between I&APs regarding the developments; (3) shortage of ability to execute the PPP; (4) inadequate transparency; (5) poor timing of the stakeholder's involvement; (6) lack of preparation and resources; (7) negative attitudes of the projects' applicants (developers); (8) poor consideration of alternatives (Murombo & Valentine, 2011; Kakonge, 2012; Rottmann, 2013; Mnengwane, 2014).

The global diverse use of EIAs has its influence on the decision-making mechanisms, in spite of the shortcomings identified below (Boshoff, 2013):

(1) High levels of bias;

(2) Inadequate public participation;

(3) Poor communication of results;

(4) Insufficient understanding of impact significance; and

(5) Unsuitable identification of alternatives.

Summarily, EIAs have not significantly affected decision-making processes the way they should (Sadler, 2004; Jay *et al.,* 2007). This could be due to several factors like subjectivity of EIAs, ineffective and inefficient PPP as well as insufficient communication of results (Jay *et al.,* 2007). Therefore, the objectives of EIAs need to be re-evaluated so as to continually improve the role of EIAs in decision-making processes (Jay *et al.,* 2007).

The EIA process in South Africa has undergone revision in 2006, 2010, 2014 and 2017 and this is the strength in the EIA system of having commendable environmental legislation which compares well with developed countries. However, there are weaknesses in a number of EIA systems internationally which compare with South Africa's EIA process, for example:

(1) Insufficient consideration of alternatives (England, Wales, and Brazil);

(2) High levels of bias (India);

(3) Fragmented administrative responsibilities (Ethiopia); and

(4) Inadequate screening processes (Columbia) (Boshoff, 2013).

As part of dealing directly with the research topic (evaluation of the quality of PP in the EIARs of renewable energy projects in the Northern Cape (NC) province of South Africa, the focus and attention are devoted to the quality and review of EIARs (together with the limitations regarding the quality of EIARs), in the following.

2.3 QUALITY AND REVIEW OF ENVIRONMENTAL IMPACT ASSESSMENT REPORTS

2.3.1 Overall EIA Quality

Effectiveness of the EIA system is defined as the degree to which the EIA functions procedurally, its results impacting the decision-making process in a development, accomplishment of EIA goals, PP dealing with understanding the people's concerns, and the extent to which I&APs can be educated when EIA is carried out (Baker & McLelland, 2003; Sadler, 2004; Loomis & Dziedzic, 2018; Pediaditi *et al.*, 2018). EIA quality is one way of measuring the effectiveness of the EIA process. In other words, one element of effectiveness of the EIA system focuses on the quality and the improvement of the information that is compiled in a report known as the EIA report (EIAR) (van Heerden, 2010), called environmental impact statement (EIS) in Europe (McGrath & Bond, 1997; Loomis & Dziedzic, 2018). These reports are compiled by the environmental assessment practitioners (EAPs), representing the developers, and submitted for approval to the environmental authorities in government (Peterson, 2009; Jalava *et al.*, 2010; Nadeem & Fischer, 2011, Panigrahi & Amirapu, 2012, Auberle *et al.*, 2013). Various review packages are available for use to examine the quality of the EIARs, amongst others, the European Commission Review Guidelines, Oxford-Brookes University Review package together with the Lee and Colley Review Package (McGrath & Bond, 1997; Glasson *et al.*, 2005; Peterson, 2009; Talime, 2011, Sandham *et al.*, 2013a, b).

(a) European Commission Review Guidelines

The EIAR (EIS) should supply sufficient information on the environment to help with planning and decision-making mechanism (Glasson *et al.*, 2005; Peterson, 2009; Talime, 2011; Kolhoff *et al.*, 2016). **Table 2.2** explains this review package further. Each of the sections is categorised in the following manner: "A", "B", and "C" = adequate quality while "D" and "E" = inadequate quality (Canelas *et al.*, 2005; Peterson, 2009; Talime, 2011). In order for one to use this review package in the current study, one would have to follow the procedure outlined in **Table 2.2** using the sampled EIARs, focusing on PP and using 2014 NEMA EIA Regulations to execute the evaluation.

Table 2.2: European Commission guidelines (Peterson, 2009, p. 170).

Segment	Segment – the number of sub-segments	The number of analysis queries
A	Account of development (5)	49
B	Options (0)	5
C	Account of environment that might be influenced by the development (2)	22
D	Account of possible significant impacts of the development (6)	38
E	Account of actions taken to alleviate the effects (0)	10
F	Non-specialized synopsis (0)	7
G	Standard of delivery (0)	12
	Sum of queries	143

(b) Oxford-Brookes University Review Package

The Oxford-Brookes University Review package (also known as the IAU, Impact Assessment Unit) is a technique to coherently evaluate EIARs and emerged from a study regarding the varying quality of EIARs (Talime, 2011; Glasson *et al.*, 2012). IAU emanated from blending and expanding Lee and Colley review package and European Commission review guidelines (Talime, 2011). The method is split into 8 segments with several separate review criteria inside each segment, overall the method reviews an EIAR against 92 criteria, with some not applicable to all developments (Glasson *et al.*, 2005). The method resembles the Lee and Colley review package in that it is made up of eight categories arranged in a ladder-like form (Talime, 2011). Every category in the method is split into sub-categories, with three resulting levels in the ladder-like form (Talime, 2011). Criteria are classified according to the quality of the supplied information for every criterion and each segment or category is then allocated a score (Glasson *et al.*, 2005). From the allocated scores for each segment an overall score for the EIAR is then deduced, the scores used fall in the scale "A" to "F" with "A" representing good quality while "F" represents bad quality according to the expected work done on the EIAR (Glasson *et al.*, 2005). If one were to use this review package in the current study, one would have to take clauses and sub-clauses presented in chapter 6 of 2014 NEMA EIA Regulations

for public participation and form eight segments with various review criteria inside the eight segments. One would then proceed as outlined above to make the assessment, using the selected EIARs, with emphasis on PP.

(c) Lee and Colley Review Package

The Lee and Colley Review Package emanated in the United Kingdom (UK) in 1989 (van Heerden, 2010). The main purpose of this review package is to examine the quality of EIARs, and can be modified for use in each country and for each project (van Heerden, 2010; Mounir, 2014). The Lee and Colley Review Package has been widely utilised in EIAR quality research (McGrath & Bond, 1997; Barker & Wood, 1999; Sandham & Pretorius, 2008; Sandham *et al.*, 2008a, b; Jalava *et al.*, 2010; Kabir & Momtaz, 2012; Auberle *et al.*, 2013; Kabir & Momtaz, 2013b; Sandham *et al.*, 2013a, b; Hildebrandt & Sandham, 2014; Mounir, 2014; Wylie *et al*., 2018).

The review package centres around four review areas, with each emerging from various categories and these, in turn, emerging from more comprehensive sub-categories (Sandham & Pretorius, 2008; Barker & Jones, 2013). Quality scores are allocated for each sub-category, using the bottom-up approach from "review sub-categories", through "review categories", to "review areas", until a final "score" is assigned for each EIAR (Sandham & Pretorius, 2008; Barker & Jones, 2013). Six scores can be allocated for each of the criteria, with A-C indicating satisfactory or acceptable levels and D-F as unsatisfactory or unacceptable, spanning from A representing job well done, all the way to F representing highly unacceptable (Sandham & Pretorius, 2008; Barker & Jones, 2013).

In South Africa, the Lee and Colley Review Package has been modified and utilised in several studies on different developments. Examples, amongst others, are as follows:

(1) "The quality of environmental reports for projects with the potential of affecting wetlands in South Africa" (Sandham *et al.*, 2008b);

(2) "The contribution of EIA screening to decision-making for biological pest control in South Africa" (Sandham *et al.*, 2010);

(3) "Reflections on the quality of the mining EIA reports in South Africa" (Sandham *et al.*, 2008a);

(4) "The performance of environmental impact assessment in the explosives manufacturing industry in South Africa" (Sandham *et al.*, 2013b);

(5) "The quality of EIA reports for housing developments in the Nkangala district of the Mpumalanga province, South Africa" (Mbhele, 2009);

(6) "A review of EIA report quality in the North West province of South Africa" (Sandham & Pretorius, 2008);

(7) “Evaluating the quality of EIA scoping reports associated with hazardous waste management activities in South Africa” (Thorpe, 2014); and

(8) “Evaluating the quality of environmental impact reporting for proposed tourism-related infrastructure in the protected areas of South Africa” (Wylie *et al*., 2018).

Generally, all the examples above (except example (2)) show that the reviewed EIARs have reasonable levels of success with variable room for improvement in each case. On the other hand, example (2) show that overall report quality was poor due to intrinsic shortcoming of the EIA process as well as the complex nature of the biological controls related to EIA. In the light of the above information on all three review packages, Lee and Colley Review was chosen over the other two to be the most suitable and the best to use in the current study.

2.3.2 Key principles of PP in EIA process

Some of the principles proposed to help improve and make PP successful in EIA are:

(1) Understanding of the PP requirements for EIA and inclusion of the PP procedure in EIA;

(2) PP ought to be inclusive – identify and involve all I&APs and use a phased approach;

(3) PP should be frank with no hidden information;

(4) The PP process needs to be necessary to carry out, focussing mainly on important issues;

(5) PP must be fair – not favouring one party over the other;

(6) Various PP engagement strategies and tactics must be explored to ultimately come up with the most viable conceptual framework for assessing the most effective PP strategy;

(8) PP needs to address the I&APs expectations and information contribution; and

(9) PP process must have the support and approval of all I&APs (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018).

Reviewing the literature regarding the principles above related to PP, the following proposals are put forward, especially if used in the initial stages of the projects’ planning:

(i) Adjusting PPP to the requirements of the situation, PP needs suitable evaluation of the I&APs which necessitates ongoing reviews. Avoid rigidity when it comes to consideration of alternatives and willingness to change the developmental proposal when the need arises. Creating environment that encourages time to resolve disputes may improve outcomes (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(ii) Supporting all the stakeholders, this can be done through accommodating I&APs who have particular needs. Language barrier, representation barrier, barrier to access to communication

technology/media, amongst others. Inclusivity by accommodating as diverse a group of people as possible who will be impacted by the anticipated project (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(iii) Community engagement should be treated as a continual activity and not as a once-off event. Upfront clear explanation of the proposal's intention and how this will be accomplished (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(iv) Regarding efforts to be responsive to fears and worries of I&APs, some developers opt to evade response rather than tackling fears directly - Application of conflict resolution techniques such as case evaluation, collaborative monitoring, consensus building, collective probing, mediation and arbitration. Applying empathy methodology in dispute resolution mechanisms (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(v) Effective PP entails more than just arranging meetings to get comments but scrutiny of the PPP as a whole, and accountability should be exercised. On issues raised, the cycle on such should be completed, followed-up and responded to in order to close the loop (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(vi) All I&APs must be involved, and non-governmental organisations (NGOs) as well as the special interest groups with specific concerns. Frankness, from the outset, is expected regarding the anticipated project's intentions and activities. Carefully listening, with the intention to reach a resolution, to the issues and worries of the communities and the basis behind such issues (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(vii) Consideration of community opinions on environmental decisions (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(viii) Municipal authorities may play a role in facilitating and monitoring PP meetings (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(ix) Public involvement should include situational examination and how the questions regarding the anticipated projects are asked by the developers to the communities (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(x) Transparency, documentation as well as availability of documentation (for example, PPP reports as part of EIARs) within confidential business constraints (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018). Generally, EIA documents should be public (except for confidential business information on the project processes and sensitive information on cultural sites and endangered species that would endanger them, if publicly available) (Wasserman, 2012);

(xi) How success is determined regarding PPP (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(xii) Constraints to PP stakeholder involvement addressed, for example, community is non-technical and therefore cannot understand and make valuable contributions to the meeting discussions (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(xiii) Includes results-oriented meetings and using best practices, for example, form a discussion team with different skills set as well as addressing uncomfortable perceptions and topics in meetings (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(xiv) Set up and support discussion teams (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(xv) Use a continuous quality improvement philosophy in engagements. Develop and sustain a mutually beneficial dialogue mechanism throughout the PP process (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018);

(xvi) Assess meetings progress. In negotiations, find alternative ways to make progress, once you reach a deadlock (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018); and

(xvii) Increase current stakeholders' partnerships (Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018).

Overall, the above review of literature highlights that more continual improvement is required in order for PP to function the way it should, South Africa is no different.

Table 2.3 further explains the strengths and limitations of public participation while **Table 2.4** explores the advantages of effective public participation for various groups, as additional explanation so as to furnish further clarity. There are several methods for categorising public participation involvement, as shown in **Table 2.5** (Mareddy, 2017).

Table 2.3: Advantages and disadvantages of public participation (Mareddy, 2017, p.561).

Benefits of public involvement	**Limitations of public involvement**
Improves the support and the working relations of I&APs.	Difficulties in selecting all the necessary stakeholders.
Description of options and courses of action to reduce the impacts.	Challenges related to different language and ethnic groups.
For each option, need to define and make clear the arrangements in place.	Low levels of ability to read and write for certain I&APs
Recognition of meetings to sort out any concerns of I&APs.	Insufficient understanding of anticipated developments by the communities.
Introduction of crystal-clear mechanisms.	Inadequate access to projects' advisers.
Establishment of forum with a sense of belonging and responsibility amongst the communities.	Expenses and time-span involved in PP process.

Table 2.4: The benefits of effective public participation for different groups (Mareddy, 2017, p.562).

The developer	Authorities	I&APs
Sensitizes the developer to the foreseen effects of the anticipated development to the environment and neighbouring communities.	Better knowledgeable and responsible resolutions accomplished.	Presented with a platform to voice issues that affect them and contribute to resolutions adopted.
Listens and act on the concerns of I&APs, in this way the projects accommodated and get legitimacy.	Reinforces the legitimacy of the projects by being honourable resolving the communities' concerns.	Getting education and empowerment pertaining to the possible dangers to the environment.
Enhances reliability and faith by the communities.	Reveal impartial and clear course of action regarding adopted resolutions.	Improved consciousness and transparency regarding the whole process of adopting resolutions.
Help to avail necessary details required by all I&APs regarding projects.	Encourage good working relations amongst all stakeholders.	Communities are well educated regarding implications of the projects on their social circles and regarding the mechanism involved in resolutions' adoption.
Strives to proactively solve disputes timeously to curtail anticipated expensive ensuing setbacks.	Prevents subsequent anticipated expensive setbacks by solving disagreements on time.	Before the resolution is adopted, I&APs ascertain that critical concerns are addressed.

Table 2.5: Methods for public participation involvement (Mareddy, 2017, p.564).

Item No.	Categorisation technique for I&APs' involvement	Technique Detail
A	I&APs' gatherings	Wide group of I&APs permitted to participate without limitations.
B	Consultative group	Panel of personnel selected to act on behalf of I&APs Regular meetings to evaluate progress on assignments carried out. Make proposals on assignments to be done at a later time.
C	Community information centres	Centres in reachable districts in the neighbourhood. Centres to have information on developments. Centres accessible to general public to peruse information on projects and allowed to comment on them.
D	Consultative face to face discussions	Unrestricted discussions with chosen I&APs' spokespersons.
E	Surveys	I&APs supplied systematic range of questions to congregate the issues they have.

F	Involvement assessment mechanisms	Use of a structured way to evaluate using panel survey method and examination using diverse commentary methodology.

In order to establish a PP plan, it is recommended that there must be clear and flexible objectives of the PP activities during the EIA process (Mareddy, 2017). Some of the reasons for this are that these objectives might be amended during the EIA process stages and also the fact that some PP methods might be better to apply at certain EIA stages than others (Mareddy, 2017). It is recommended that such objective-inclined PP should incorporate public relations, information as well as the conflict resolution aspects (Mareddy, 2017; Khodyakov *et al.,* 2018). Such objectives can be further broken down through the different phases of the EIA process into the following (Mareddy, 2017):

(1) Problem recognition, problem requirements and significant benefits;

(2) Responses and exchange of information regarding the EIA process;

(3) Sharing of information, co-operation, and knowledge-spreading amongst the I&APs;

(4) Brainstorming sessions and proposed problem-solving;

(5) Examination of the available alternatives; and

(6) Joint dispute resolution by participants to avoid costly litigation.

In order to effect far and wide communication across all I&APs, especially the affected communities, four communication process models are proposed: (1) spreading, (2) grouping, (3) interchange, and (4) diffusion collection (Mareddy, 2017). These models would serve to enhance disseminating information so as to reach wide sectors of the public regarding effectiveness rather than just limited target group. In this way this would improve inclusivity and communication exchange of comments related to I&APs as it relates to this study.

The following techniques are proposed as communication characteristics in the PP process, holistically: stakeholder hearings, stakeholder gatherings, unofficial and small group gatherings, information and coordination seminars, special committees, charrettes, workshops, public displays and model demonstrations, field trips and site visits, local planning visits, operating field offices, as well as the forum of other agencies or groups (Mareddy, 2017).

PP feedback can be useful in defining the developmental requirements, establish and recognise vital aspects of the project as related to the environmental surroundings and impacts, possible alternatives as well as the mitigation measures, and allocating significant values to both environmental issues as well as impacts (Mareddy, 2017). Over and above the formal arranged and organised PP meetings in the EIA process, there are several occasions where verbal communication has got to be carried out effectively both formally and informally to I&APs and the media personnel (Mareddy, 2017). Verbal

presentations have got to be planned properly to achieve the desired objective and also taking into consideration the particular audience addressed - advisable to use visual aids to promote effectiveness (Mareddy, 2017). The following topics can serve as good guidelines in this regard:

(1) The fundamental reason for executing the EIA process.

(2) Requirements to be adhered to in order for the project to be accepted and implemented.

(3) Baseline environment summary, especially on environmental impacts as well as on socio-economic impacts.

(4) Consideration of alternatives and choice method(s) to be used in comparison with other alternatives.

(5) Critical information as it relates to location, design aspects, timelines of construction, operational requirements, costs and benefits (including the environment) of the anticipated development (Mareddy, 2017), as well as social and economic aspects.

(6) Salient aspects of the core environmental impacts and risks of the project (outlining both pros and cons) and information on significant mitigation measures to be used.

(7) Establish the outstanding issues regarding the development'

(8) Recognition and acknowledgment of critical stakeholders in helping to avail information to aid the drafting of the EIAR.

(9) A list of the participating team members together with their credentials, experience, and expertise in prior similar studies (Mareddy, 2017).

Public participation is a mandatory necessary condition prescribed in the South African NEMA EIA Regulations of 2014 and the revised regulations that were promulgated later (in 2017). As a result, the quality of the PP ought to be aligned with these regulatory requirements.

2.3.3 Shortcomings in EIAR Quality

The reviewed literature identified research work carried out in both developed and developing countries showing that there are shortcomings regarding the EIAR quality. A case in point is that in Europe between two countries (Portugal and Spain), where EIA quality review was conducted in the time spanning 1998 – 2003 (Canelas *et al.*, 2005). Of the 46 EIA reports reviewed, 65% of Spain's EIARs and 78% of Portugal's EIARs were quality graded as satisfactory (Canelas *et al.*, 2005). The weaknesses came from review areas like "description of project" (30% for Portugal compared to 48% for Spain) and "description of significant effects of projects" (Spain with 26% and 4% for Portugal), with low-quality scores (Canelas *et al.*, 2005). Meanwhile, Bangladesh revealed that EIA system stages are not properly established, with legislation only talking explicitly about screening but vague

describing method of other stages like scoping, alternative analysis, prediction and assessment of impacts, monitoring and auditing (Kabir & Momtaz, 2013a).

2.4 THE EIA QUALITY RESEARCH IN SOUTH AFRICA

Subsequent to the brainstorming by academics and professionals in South Africa in 1974, there was activity (including research, working group formation, consultation) which resulted in the drafting of the bill and its subsequent enactment of the Environment Conservation Act in 1982 (van Heerden, 2010). It is noteworthy that EIA was not fully and clearly expressed in the Act as the technique for meeting the policy objectives - primarily the Act was meant to coordinate environmental matters (van Heerden, 2010). Subsequently, the Council for the Environment was formed in 1983, together with few other sub-committees that included the EIA Committee; this Committee contributed significantly in the development of EIA mechanisms in South Africa (van Heerden, 2010). As a result of research conducted, a working consultative group that involved EIA Committee of the Council issued a report titled Integrated Environmental Management (IEM) in 1989; the IEM report described the environmental examination mechanism for South Africa and also the first suggestion came up of the technique for examination of policies, programmes, and definitions (van Heerden, 2010).

EIA became compulsory in South Africa in 1997 when EIA regulations were enacted through Environment Conservation Act (ECA) of 1989 (Sandham & Pretorius, 2008; Sandham *et al.*, 2008a; Retief *et al.,* 2011; Sandham *et al.*, 2013a; Hildebrandt & Sandham, 2014). Subsequently, National Environmental Management Act (NEMA) No. 107 of 1998 was promulgated (Mnengwane, 2014) followed by the 2006 NEMA Regulations, which were revised in 2010, 2014 and in 2017 to enhance the EIA process. NEMA became the overarching legislation pertaining to environmental matters (Mnengwane, 2014). Chapter 5 of NEMA should be read together with chapter 6 of 2014 NEMA Regulations in order to understand how both prescribe the execution of the EIA process and the PP process (Mnengwane, 2014). The following factors may influence EIA report quality:

(1) The date on which the EIA report was compiled;

(2) The type of legal obligations pertaining to EIA;

(3) The level of hands-on expertise of the proponent, consultant & the competent authority;

(4) The availability of scoping;

(5) How long the report of EIA is together with the cost of EIA; and

(6) The characteristics and the sizes of the developments (Barker & Wood, 1999; Sandham *et al.*, 2008a; Sandham & Pretorius, 2008; DEA, 2015).

Several exploratory studies have been carried out in South Africa to examine the quality and detail of the supplied information on EIARs compared to EIA legislation and regulations in South Africa (Sandham *et al.*, 2008a, b; Sandham & Pretorius, 2008; Sandham *et al.*, 2010). So far, several quality evaluation studies on EIARs, using Lee and Colley review package, have been carried out in South Africa. From these studies, the following issues emerge:

(1) EIARs on wetland projects in South Africa had acceptable quality, with the strengths being the description of the development, local environment and baseline as well as the communication of results while the weaknesses were alternatives and mitigation of impacts together with the description and examination of key effects (Sandham *et al.*, 2008b);

(2) formal quality assessments of "EIA reports in North West province of South Africa" on different unrelated projects with mainly EIARs classified as satisfactory - strengths included projects' environmental description and communication of results with weaknesses being "evaluation of impacts as well as the alternatives and mitigation" (Sandham & Pretorius, 2008);

(3) quality insights on the mining EIARs in the country with many EIARs graded as satisfactory, strengths were the site description as well as the related site environment and the "communication of results" while weaknesses were "identification and evaluation of key impacts as well as the alternatives and mitigation" (Sandham *et al.*, 2008a);

(4) the study "to determine the quality of EIARs for the housing developments in Mpumalanga province of South Africa" found that 70% of the reviewed EIARs had acceptable quality grading, best performing categories being the "description of the development and the environment", "the identification and evaluation of key impacts" together with the "communication of results", with worst performing classifications as alternatives and mitigation as well as some aspects of the description and examination of key effects (Mbhele, 2009);

(5) the study on the projects dealing with "biological pest control in South Africa" found that the EIAR quality was unacceptable compared with similar ones globally, there were no strengths in these reports and the weaknesses included the "description of the receiving environment, identification and evaluation of key impacts, alternatives and mitigation, as well as communication of results" (Sandham *et al.*, 2010);

(6) another study was that of the quality investigation of EIARs of the "filling stations in South Africa" with the findings that 55% of reviewed EIARs had satisfactory quality grading (Kruger, 2012). The strengths here were the environmental description, "identification and of impacts", as well as the evaluation of impact significance (Kruger, 2012). The weaknesses were projects' sites descriptions, cumulative effects, and dedication to courses of actions that serve as mitigation (Kruger, 2012);

(7) lessons from South Africa in answering the question “does enhanced regulation improve EIA report quality?”, the “overall quality of the EIARs for both systems used (prior to the promulgation of the National Environmental Management Act (NEMA) (Act. No. 107 of 1998) and post the passing of this Act, particularly in 2006)” was found to be acceptable, with the strengths being the “environmental description, baseline conditions, scope and effectiveness of mitigating measures, presentation and the layout of the reports as well as the non-technical summaries, the weaknesses were impact identification and prediction of impact magnitude” (Sandham *et al.*, 2013a:158-161);

(8) in EIA performance in the companies that produce explosives in South Africa, “the quality of EIARs was found to be satisfactory”, with the communication of results relatively good and the only strength while the weaknesses were in technical aspects in terms of information conveyed, specialist impact assessment and procedure leading to the potential adverse impacts (Sandham *et al.*, 2013b);

(9) in assessing the EIA quality scoping reports in activities related to hazardous waste management, findings are that “the quality of the reports was satisfactory”, the strengths were the stakeholder engagement, description given for biophysical and biological site elements, and good “communication of results”, the weaknesses on the reports were lack of comprehensive “description of the proposed projects”, no systematic consideration and analyses of alternatives, poor “identification of potential impacts”, poor consideration and “identification of raw materials” used, insufficient identification of methods, poor identification of impacts, little description and consideration of guidelines, exclusion of terms of reference as well as the potential bias of environmental assessment practitioners (EAPs) towards development proposals (Thorpe, 2014); and

(10) selected EIARs on tourism infrastructure of South Africa (especially in the protected areas), the quality of basic EIARs was found to be acceptable despite minor gaps and shortcomings, strengths were in review areas dealing with the description parts of EIA quality reporting while the weaknesses were found in the review areas focusing on the analytical aspects of the sampled reports (Wylie *et al*., 2018).

The previous studies on EIARs show that communication of results and environmental description were identified as the strengths (Sandham & Pretorius, 2008; Sandham *et al.*, 2008a, b; Mbhele, 2009; Kruger, 2012; Sandham *et al.*, 2013a, b; Thorpe, 2014; Wylie *et al*., 2018). On the other hand, the weaknesses were observed as “identification and evaluation of key impacts” as well as “mitigation and alternatives” (Sandham & Pretorius, 2008; Sandham *et al.*, 2008a, b; Mbhele, 2009; Sandham *et al.*, 2010; Kruger, 2012; Sandham *et al.*, 2013a, b; Thorpe, 2014; Wylie *et al*., 2018). From the review of the literature, none of the studies assessed the quality of public participation using “Lee and Colley Review Package” on renewable energy. Therefore, the current research is using this review package to assess PP for renewable energy projects in Northern Cape province of South Africa so as to close the existing gap in that regard.

CHAPTER 3

DESCRIPTION OF RESEARCH METHODOLOGY

3.1 INTRODUCTION

Outlined in this chapter is the research methodology utilised for the evaluation of the quality of public participation (PP) in environmental impact assessment reports (EIARs) that focused on renewable energy projects in the Northern Cape (NC) province of South Africa (SA). The Lee and Colley Review Package (Lee *et al.,* 1999) is described, followed by description of the structure of the generic package. Next is the modified package customised for the study carried out in this research, and lastly is the selection of the reports used in the data analysis in this research.

3.2 LEE AND COLLEY REVIEW PACKAGE

The Lee and Colley review package emerged as a "response to UK planning regulations" which obligated the environmental reports to be assessed in line with EC Directive 85/337 (Lee *et al.,* 1999: 9). This review package was revised in the subsequent years (Lee *et al.,* 1999; van Heerden, 2010). "The package has been used" internationally since the 1990's "to evaluate the quality of environmental impact assessment reports" (McGrath & Bond, 1997; Barker & Wood, 1999; Sandham & Pretorius, 2008; Sandham *et al.,* 2008a: 702; Sandham *et al.,* 2013a) and has been adopted for this study.

3.2.1 Structure of the Lee and Colley Review Package

The Lee and Colley package reviews EIARs under four segments: (i) "description of the development, the local environment, and the baseline conditions; (ii) identification and evaluation of the key impacts; (iii) alternatives and mitigation" of impacts; and (iv) "communication of results" (Lee *et al.*, 1999; Glasson *et al.*, 2012). "The hierarchical" nature of the Lee and Colley EIAR review package" is shown in **Figure 3.1** (Sandham *et al.*, 2013a: 158; Hildebrandt & Sandham, 2014: 22; Mounir, 2014: 91). **Table 3.1** shows the list of assessment symbols and their descriptions used in the evaluation of the selected EIARs in this study to assign various quality scores in the results and discussion section, in Chapter 4.

The results from each EIAR are then compiled in a collation sheet for carrying out the quality analysis (Sandham *et al.*, 2013a; Hildebrandt & Sandham, 2014; Mounir, 2014). The collation sheet is used to record the scores by the reviewer(s) obtained for each EIAR evaluation (Lee *et al.*, 1999; van Heerden, 2010). In essence, the review process assesses how well the evaluated tasks have been carried out, so as to give an indication regarding the quality with which these tasks have been accomplished (McGrath & Bond, 1997; Sandham *et al.*, 2013a; Hildebrandt & Sandham, 2014). For

the implementation of the Lee and Colley review package, it is proposed that two or more assessors, separately, carry out the analyses (van Heerden, 2010; Glasson *et al.*, 2012). This is to encourage being more objective than subjective in scoring the sampled reports (using a "double-blind" approach) (van Heerden, 2010; Glasson *et al.*, 2012). Thus, in the current study a double review mechanism was subsequently followed for estimating the quality of documented PP for proposed renewable energy projects in the NC province of South Africa. For the selected EIARs two reviewers (the author and the Supervisor) assessed the reports independently of each other. The quality scores were then compared and each reviewer gave reasons why the scores were assigned. The score sheets were then systematically analysed and discussed objectively, in each case avoiding being harsh or lenient on the EIARs, using only the available documented information on EIARs to reach consensus on the final agreed quality scores.

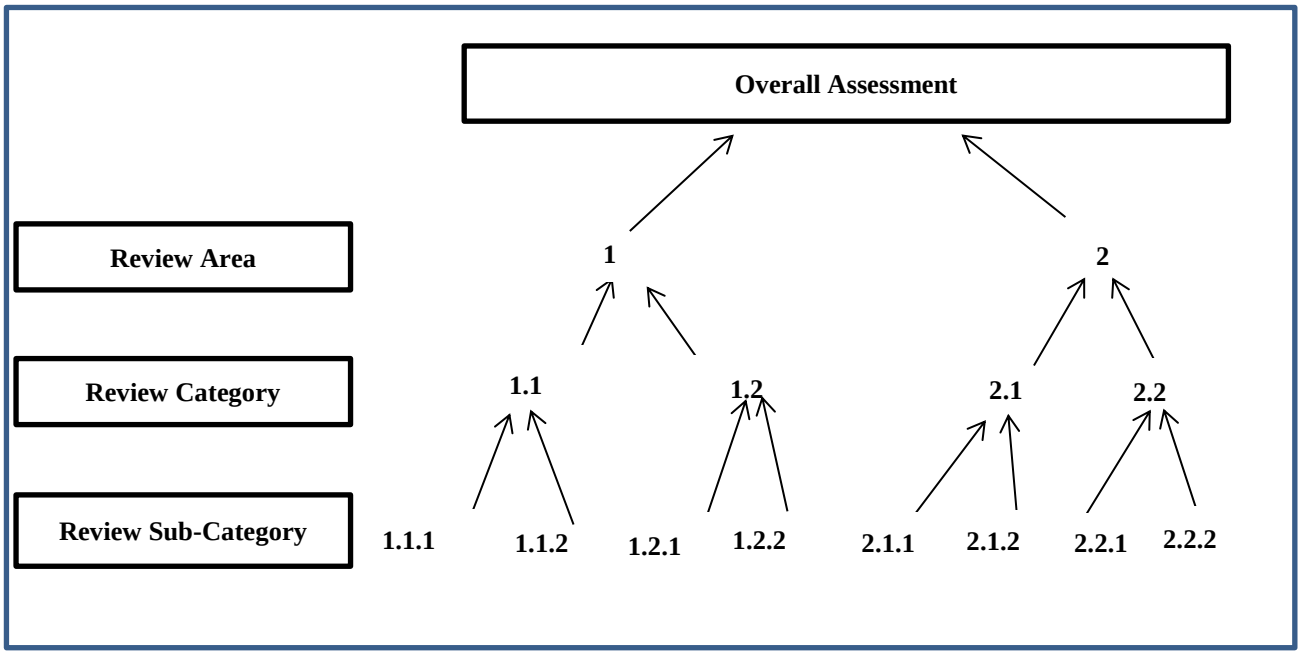


Figure 3.1: Hierarchical structure of Lee & Colley EIAR review package. Level 4 – overall assessment EIAR; Level 3 – assessment of review areas; Level 2 – assessment of review categories; Level 1 – assessment of review sub-categories (Sandham *et al.*, 2013a, p.158).

Table 3.1 List of assessment symbols for the evaluation of the sampled EIARs (Lee *et al.*, 1999, p. 11; van Heerden, 2010, p.47).

Symbols	Description
"A"	"Relevant tasks well performed; no important task left incomplete"
"B"	"Generally satisfactory and complete with only minor omissions and/or inadequacies"
"C"	"Can be considered just satisfactory despite omissions and/or inadequacies"

“D”	“Parts are well attempted but as a whole can only be considered just satisfactory because of omission and/or inadequacies”
“E”	“Not satisfactory because of significant omissions and/or inadequacies”
“F”	“Very unsatisfactory because important tasks have been poorly done or not attempted”
“N/A or NA”	“Not applicable. The review topic is not applicable or is irrelevant in the context of the report”

3.2.2 Modified Lee and Colley Review Package

As mentioned earlier on, the Lee and Colley review package was chosen to analyse the quality of PP on the sampled EIARs due to its adaptability, user-friendliness, and consistency as it brings about a systematic, structured and objective perspective to quality analysis (Lee *et al.*, 1999; van Heerden, 2010). However, the original Lee and Colley review package was customised to suit the purposes of the current study by incorporating the relevant Clauses (i.e. Clauses 39 - 44) in the NEMA EIA Regulations of 2014. The modified version of this package is given in **Annexure B** and is specifically modified for PP requirements according to the 2014 NEMA EIA Regulations in South Africa. As stated before, the EIARs were evaluated using 2014 NEMA EIA Regulations and not necessary based on the interested and affected parties (IAPs). The approach used in this study was to read the EIARs and finding out if the information provided measures up to what can be expected according to the criteria derived from NEMA. The modified version of Lee and Colley Review Package differs from the original version in the following way. The original version had 4 main Review Topics/Areas made up of (Lee *et al.,* 1999):

(1) Description of the plan, the affected environment and the baseline;

(2) Identification and evaluation of key impacts;

(3) Alternatives, mitigation measures, monitoring and recommendations; and

(4) Communication of results.

Under the each Review Area are Review Categories with Review sub-Categories (Lee *et al.,* 1999). In the current study the Review Areas, Review Categories and Review sub-Categories were aligned with the 2014 NEMA EIA Regulations resulting in the modified version, additionally more explanation is given in **Annexure B**.

3.3 SELECTION OF ENVIRONMENTAL IMPACT ASSESSMENT REPORTS

Regarding the current study, samples of EIARs were obtained on proposed renewable energy generation projects in the NC province of South Africa. For the applications on their environmental authorisation, the South African NEMA EIA Regulations of 2014 (annexure A of this report) were

relevant requirements at that time. To carry out the quality analysis, the first six alphabetical letters ("A"- "F") were used to denote the quality level of the various EIARs that were subjected to the review. These symbols define the quality of information that was provided for each assessment task in the sampled EIARs. The symbols "A", "B" and "C" are classified as satisfactory (adequate) while the symbols "D", "E" and "F" are categorised as unsatisfactory (inadequate) (McGrath & Bond, 1997; Sandham *et al.*, 2008a; Jalava *et al.*, 2010; Sandham *et al.*, 2010; Sandham *et al.*, 2013a; Hildebrandt & Sandham, 2014; Mounir, 2014). On the other hand, "N/A or NA" represented a review category that was not relevant in connection with that EIAR (Sandham *et al.,* 2013b). In situations where EIARs showed above 60% of the quality score symbols "A", "B", and "C upon analysing the review areas and review categories, these should be regarded as areas of strengths as they denote satisfactory quality (Kruger, 2012). On the other hand, where EIARs displayed scores of 60% and below for the same symbols these should be regarded as weaknesses in the public participation process (PPP) (Kruger, 2012). A list of EIARs that were subjected to the quality review is shown on **Table 3.2**.

Table 3.2: List of sampled EIARs**.**

EIARs	Type of Renewable Energy	Energy Capacity (MW)
1.	Wind energy	390
2.	Solar energy	75
3.	Solar energy	75
4.	Solar energy	75
5.	Solar energy	75
6.	Solar energy	75
7.	Wind energy	140
8.	Solar energy	75
9.	Solar energy	75
10.	Solar energy	225
11.	Wind energy	240
12.	Solar energy	100
13.	Wind energy	140
14.	Solar energy	150
15.	Solar energy	75
16.	Solar energy	75
17.	Hydropower	22
18.	Solar energy	150
19.	Solar energy	50
20.	Wind energy	140
21.	Solar energy	200

22.	Solar energy	75

3.4 DATA ANALYSES AND INTERPRETATION

The collected data was analysed in the following way. The selected reports were perused and scrutinized against what the 2014 NEMA EIA Regulations prescribes. The Clauses and sub-Clauses of the Regulations were used to generate the Review Areas, Review Categories and Review sub-Categories and the overall assessment for each EIAR. The quality review entailed evaluating how well the review criteria (Review sub-Categories, Review Categories and Review Areas) were executed. In the absence of the detailed public participation process reports, the information available on EIARs was used to score the reports. The reports written in such a way that they satisfactorily addressed the relevant Clauses and sub-Clauses of the Regulations were awarded higher quality scores (i.e. grading symbols “A”, “B” and “C”) than the ones which were unsatisfactorily completed (i.e. grading symbols “D”, “E” and “F”). The symbolism used in this study is in line with the original Lee and Colley Review Package. No “average” scores were awarded in the reports and this explains why letters of alphabet grading symbols “A - F” were used instead of numerals which could have been combined by reviewers to average scores. In addition, this is shown in Table 3.1 and the grading symbols described in this table. The “A” grading symbol represented excellent EIA quality reporting with the necessary assignments executed well, whereas “F” was awarded to highly unsatisfactory reporting tasks where critical tasks were not carried out or poorly done (Boshoff, 2013). Within the quality grading symbol limits of “A - F” there are other categories of “B”, “C”, “D” or “E”, as explained in in Table 3.1 (Boshoff, 2013). The quality symbols “C” and “D” were regarded as the border between satisfactory and unsatisfactory reports. For each report the quality review was started by assessing the Review sub-Category/Review Category at the lowest level, using the bottom-up approach and the quality reviewers continued progressively to higher levels in the hierarchy. Next, the Review Areas were assessed by considering and keeping in mind the evaluations of the Review sub-Categories/Review Category obtained before (Kruger, 2012). Lastly, the overall assessment of that particular EIAR was determined by taking into account the assessment of the Review Areas; this is further depicted in Figure 3.1. The consensus reviewers’ results for each analysed report were then recorded in the collation sheet using the standard list of assessment quality symbols in Table 3.1. The analysed data in this study was presented in the form of tables and bar graphs.

CHAPTER 4

RESULTS AND DISCUSSION

4.1 INTRODUCTION

In this chapter, the results are presented and discussed. Section 4.2 provides a broad outline of the results. In section 4.2.1, the results regarding the descriptive tasks associated with public participation are given while section 4.2.2 is based on the purpose of public participation (PP). In section 4.2.3, the results on the public participation process (PPP) are presented. Section 4.2.4 deals with results on how the register of the interested and affected parties (I&APs) and their comments were compiled. The strengths and the weaknesses in the sampled environmental impact assessment reports (EIARs) regarding PP are also briefly mentioned.

4.2. BROAD OVERVIEW OF RESULTS

In **Table 4.1**, the different quality scores allocated to each environmental impact assessment report (EIAR) are indicated. Eighteen (18) out of 22 (81.8%) EIARs were assigned an overall quality of "C", meanwhile 2 (9.1%) EIARs were awarded a "B" quality grade. On the other hand, two (9.1%) EIARs received a "D" quality grade. A quality grade of "C" was assigned for reports that were compiled in a 'just satisfactory' manner regarding public participation requirements for proposed renewable energy projects in the Northern Cape province. On the other hand, a "B" quality symbol stands for EIARs that were "generally satisfactory and complete with only minor omissions" while a "D" quality score refers to EIARs with some parts well attempted but as a whole the EIARs are only regarded as just satisfactory, thus bordering an unsatisfactory standard due to omissions and inadequacies.

Table 4.1: List of EIARs and the quality of grades allocated**.**

EIARs	Type of Renewable Energy	Quality Score
1.	Wind energy	**C**
2.	Solar energy	**D**
3.	Solar energy	**C**
4.	Solar energy	**C**
5.	Solar energy	**C**
6.	Solar energy	**C**
7.	Wind energy	**B**
8.	Solar energy	**C**
9.	Solar energy	**C**
10.	Solar energy	**D**
11.	Wind energy	**C**
12.	Solar energy	**C**

13.	Wind energy	C
14.	Solar energy	C
15.	Solar energy	C
16.	Solar energy	C
17.	Hydropower	C
18.	Solar energy	C
19.	Solar energy	C
20.	Wind energy	C
21.	Solar energy	B
22.	Solar energy	C

Table 4.2 is provided, additionally, to identify the strengths (denoted by a green colour) and weaknesses (denoted by a red colour) regarding the quality ratings in the selected EIARs as they relate to public participation.

Table 4.2: Summary of the review quality levels for all selected EIARs.

Summary of review areas and categories		A	B	C	D	E	F	N/A	% A – C (Areas of Strengths)	% D – F (Areas of Weaknesses)
RA 1.0	**Description of proposed project sites**	0	0	0	0	0	22	0	0	100
RC 1.1.1	Granting of landowner's written permission	0	0	0	0	0	22	0	0	100
RC 1.1.2	Application of linear activities related to mining or prospective and/or exploration of energy resources	0	0	0	0	0	0	22	0	0
RA 2.0	**Purpose of public participation**	3	17	2	0	0	0	0	100	0
RC 2.1.1	Submission of scoping reports and EIARs by applicants	12	8	2	0	0	0	0	100	0
RC 2.1.2	PPP to provide access to information pertaining to the EIA application	5	7	10	0	0	0	0	100	0
RC 2.1.3	Comments submitted by I&APs	9	11	2	0	0	0	0	100	0
RA 3.0	**Public participation process**	0	4	15	3	0	0	0	86	14
RC 3.1.1	Adherence to NEMA EIA Regulations of 2014	2	15	5	0	0	0	0	100	0
RC 3.1.2	Giving notice to I&APs by the applicant as part of PPP requirements	8	9	5	0	0	0	0	100	0
RC 3.1.3	Requirements related to the notices for PP	3	6	13	0	0	0	0	100	0
RC 3.1.4	Notice-board requirements for PPP	0	0	0	4	0	18	0	0	100
RC 3.1.5	PP non-compliance to the regulations	0	0	0	0	0	0	22	0	0
RC 3.1.6	Accessibility of PPP information to I&APs for their comments	7	11	4	0	0	0	0	100	0
RC 3.1.7	Merger of PP processes on different sites	15	5	1	0	0	0	1	95	0
RA 4.0	**Register of I&APs and their comments**	0	18	4	0	0	0	0	100	0

RC 4.1.1	Register or database of I&APs	11	6	5	0	0	0	0	100	0
RC 4.1.2	Comments on reports by registered I&APs	10	9	3	0	0	0	0	100	0
RC 4.1.3	Comments by other government department(s)	10	7	5	0	0	0	0	100	0
RC 4.1.4	Documenting of I&APs' comments on plans sent to DEA	6	6	10	0	0	0	0	100	0
RC 4.1.5	Alternative methods of recording comments by special group(s) of I&APs	0	0	0	0	0	22	0	0	100
Final quality rating for the sampled EIARs		0	2	18	2	0	0	0	91	9

4.2.1 Review Area 1: Description of Project Sites

The results on **Review Area 1.0 (RA 1.0)** (Description of proposed project sites) are shown in **Table 4.3** and in **Figure 4.1.** Based on these results, all EIARs (i.e. 100%) were conducted very poorly in terms of providing adequate site descriptions where proposed projects will be located, thus an "F" quality score was allocated. If the proposed renewable energy sites are not described properly, how do we expect the affected and interested stakeholders as well as the competent authorities to make informed assessments? These results are similar to some of the findings from previous EIAR quality studies conducted in South Africa (even though under different review areas but relevant for EIARs under review). For example, Sandham & Pretorius (2008) found that the descriptions of proposed development actions in the North West province were of borderline quality ("C-D") in 79% (i.e. 22 out of 28) of EIARs they reviewed while Sandham *et al.* (2010) found that **Review Area 1.0** was unsatisfactorily populated in all cases reviewed (description of receiving environments). On the other hand, Sandham *et al.* (2008a, b) and others found that the description of proposed project sites were populated satisfactorily in most of their evaluated EIARs; therefore, their results are different to the current study.

Table 4.3: Results on the quality of EIARs based on Review Area 1 requirements.

Review Areas and Review Categories	A	B	C	D	E	F	NA	Total
RA 1.0	0	0	0	0	0	22	0	22
RC 1.1.1	0	0	0	0	0	22	0	22
RC 1.1.2	0	0	0	0	0	0	22	22

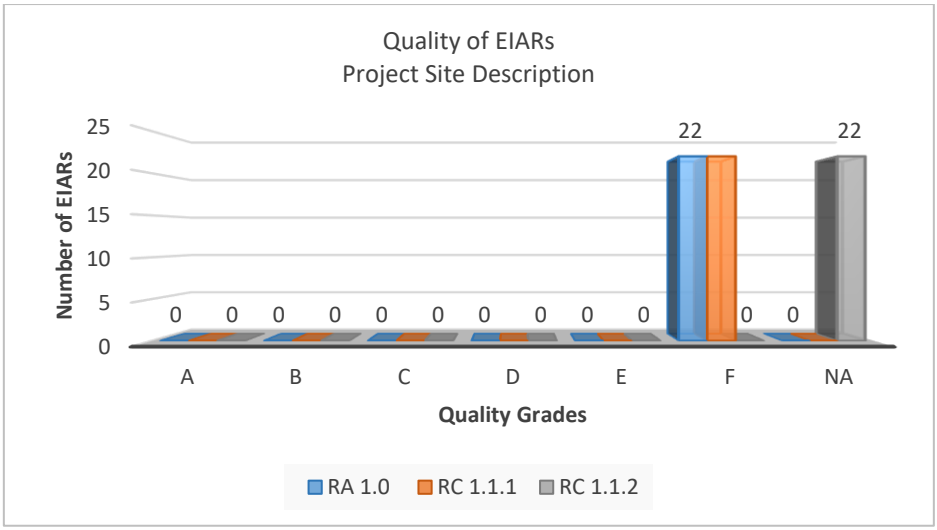


Figure 4.1: Results on the quality of EIARs based on Review Area 1 requirements.

Further analyses under **Review Area 1.0** revealed the following results. The **Review Category (RC 1.1.1)** (Granting of landowner's written permission) was not adequately complied with. Hence, an unacceptable quality score of "F" ('very unsatisfactory') was assigned because this task was inadequately carried out or not done at all. According to Clause 39 in the 2014 South African NEMA EIA Regulations, it is imperative for the EIA applicant to acquire written permission and consent by the landowner or person who the land belongs to, where the proposed development actions will be undertaken.

Furthermore, **Review Category (RC 1.1.2)** (Application of linear activities related to mining or prospective and/or exploration of energy resources) was not relevant or applicable (NA) to the quality of the EIARs.

As specified earlier, an "F" quality symbol was assigned to all EIARs (100%) in terms of meeting the requirements (i.e. Description of the project sites and activities associated with public participation) associated with **Review Area 1.0**. Such a rating denotes very unsatisfactory quality due to critical duties in these reports that were inadequately carried out or not done at all. More specifically, these EIARs failed to specify whether the applicants had obtained written permission from landowners before the granting of environmental authorisation. Therefore, the evaluation of the 22 EIARs in terms of **RA 1.0** reveals that Clause 39 in the 2014 NEMA EIA Regulations was not duly complied with.

4.2.2 Review Area 2: Purpose of Public Participation

The results regarding **Review Area (RA 2.0)** (Purpose of public participation) are depicted in **Table 4.4** and in **Figure 4.2**. Generally, the quality scores ranged between "A", "B" and "C" and no EIARs

were allocated scores “D”, “E”, and “F”. Overall, the **RA 2.0** was assigned a “B” quality score (77.3%, 17/22 of the EIARs) because, to a great extent, the requirements of the 2014 NEMA EIA Regulations were adequately complied with, except for minor exceptions in the EIARs.

Table 4.4: Results on the quality of EIARs based on Review Area 2 requirements.

Review Areas and Review Categories	A	B	C	D	E	F	NA	Total
RA 2.0	3	17	2	0	0	0	0	22
RC 2.1.1	12	8	2	0	0	0	0	22
RC 2.1.2	5	7	10	0	0	0	0	22
RC 2.1.3	9	11	2	0	0	0	0	22

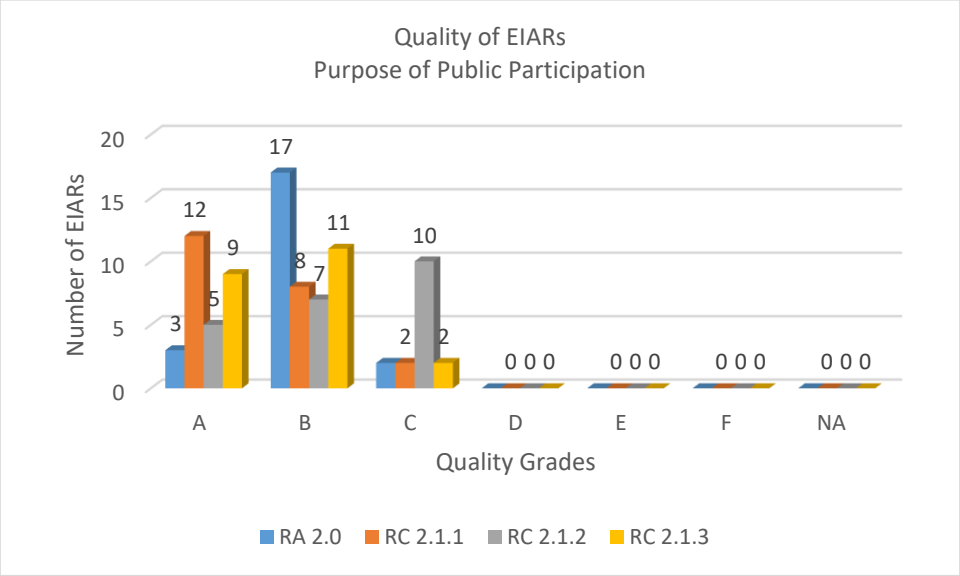


Figure 4.2: Results on the quality of EIARs based on Review Area 2 requirements.

The results regarding **Review Category (RC 2.1.1)** (Submission of scoping reports and EIARs by applicants) are shown in **Table 4.4** and in **Figure 4.2.** The quality rating “A” was assigned to 12 out of 22 EIARs (54.5%) while 8 out of 22 (36.4%) obtained a “B” rating. The remaining two EIARs (9.1%) received a “C” quality rating. “A” quality symbol stands for EIARs that were “well performed with no important tasks left incomplete”. When the purpose of PP is provided to the I&APs this means that the rationale and the role of this activity during the EIA process is clearly recognised and understood by interested and affected parties, and this is in addition to the regulators or competent authorities. In this way, the potential for joint and collaborative decision-making is raised, especially in terms of the effects description, prediction as well as examination, thereof (Mnengwane, 2014).

The results on **Review Category (RC 2.1.2)** (PPP to provide access to information pertaining to the EIA application) are portrayed in **Table 4.4** and in **Figure 4.2**. In terms of this category, 5 (22.7%)

EIARs were assigned an “A” grade, 7 (31.8%) a “B” grade and 10 (45.5%) others received a “C” quality rating. Such effective compliance is not only in line with the 2014 EIA Regulations but also with the Promotion of Access to Information Act (PAIA) (Act No. 2 of 2000). The latter Act has provisions for the constitutional rights of citizens (for example, I&APs) to access any information held by the State. This Act also allows for access to any information that is held by another person (for example, an Environmental Assessment Practitioner (EAP)) that is needed for the exercise or protection of any rights; and to provide for matters connected therewith.

Regarding the **Review Category (RC 2.1.3)** (“Comments received from interested and affected parties”), most of the EIARs were populated relatively well. This is because close to 41% (9 out of 22) of EIARs scored an “A” level and the quality symbol “B” was allocated to 50% (11 out of 22 EIARs) of them. In the NEMA EIA Regulations (2014), it is specified in Section 40(3) that potential or registered I&APS must be allowed to comment on EIARs due for submission to the competent authorities. Furthermore, the “C” score was allocated to the remaining two EIARs (9.1%).

4.2.3 Review Area 3: Public Participation Process

Table 4.5 and **Figure 4.3** show results on **Review Area 3.0** (Public participation process) together with results of the corresponding 7 review categories. On the whole, the quality scores varied between “A”, “B”, “C” and “NA” and no EIARs were assigned scores “D”, “E”, and “F” which represents unsatisfactory EIAR quality. Generally, the EIARs were allocated a “B” rating (81.8%, 18/22) due to their conformance with stipulated requirements in the 2014 NEMA EIA Regulations.

Table 4.5: Results on the quality of EIARs based on Review Area 3 requirements.

Review Areas and Review Categories	A	B	C	D	E	F	NA	Total
RA 3.0	0	4	15	3	0	0	0	22
RC 3.1.1	2	15	5	0	0	0	0	22
RC 3.1.2	8	9	5	0	0	0	0	22
RC 3.1.3	3	6	13	0	0	0	0	22
RC 3.1.4	0	0	0	4	0	18	0	22
RC 3.1.5	0	0	0	0	0	0	22	22
RC 3.1.6	7	11	4	0	0	0	0	22
RC 3.1.7	15	5	1	0	0	0	1	22

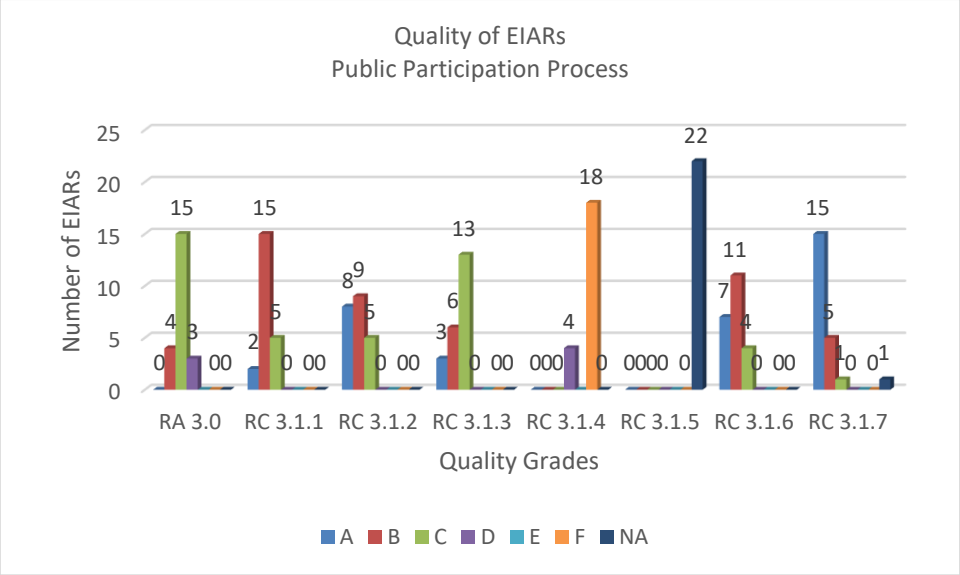


Figure 4.3: Results on the quality of EIARs based on Review Area 3 requirements.

Regarding **Review Category (RC 3.1.1)** (Adherence to NEMA EIA Regulations of 2014), the quality grading "A" was allocated to only 1 out of 22 EIARs (4.5%) while 18 out of 22 (81.8%) reports obtained a "B" rating, and the last three EIARs (13.6%) were assigned a "C" score. Where the "A" symbol was allocated, more detailed explanations were provided on the public participation process whereas the "B" symbol denoted general level of satisfactory legal compliance. On the other hand, the "C" symbol was given where regulatory compliance was "just satisfactory" with respect to the requirements.

Review Category (RC 3.1.2) (Giving notice to I&APs by the applicant as part of PPP requirements) gave rise to the following results. The 22 EIARs were completed reasonably well in that 8 (36.4%) scored "A", 9 (40.9%) scored "B", and 5 (22.7%) scored "C". These results are similar in one way and different in another way to the ones from the previous studies. Using the **2006 EIA Regulations**, regarding the notices to be published on the media, this category was satisfactorily complied with and met the requirements while for onsite notices it was unsatisfactory populated (Sandham *et al.,* 2008b). Kruger (2012) as well as Sandham & Pretorius (2008) scored the provision of details of public participation process as satisfactory using EIA Regulations of 2006 and 2010, even though specific details on notices were not included. It is therefore very important to give notices to all the I&APs so that they become aware of the EIA process. Such notices also mean that the consultation process is inclusive, thus improving effectiveness of the communication process amongst relevant stakeholders. In terms of the criteria associated with **Review Category (RC 3.1.3)** (Requirements related to the notices for PP), 13.6% (3) of EIARs were graded "A" in terms of their quality, while 27.3% (6) were scored "B", and 59.1% (13) scored "C", respectively. What was missing in the reports that scored a "C" was sufficient details regarding the advertisement or notice. According to **Review Category (RC 3.1.3)** as derived from the 2014 NEMA EIA Regulations, an advertisement or notice issued by the

EAP or developer must: (a) provide details of the proposed application which is subjected to PP and it must also (b) state: (i) if basic assessments or EIAR procedures are being used on the application; (ii) the nature and the location relating to the application; (iii) where additional information can be obtained; and (iv) the person represented as well as the manner of liaising with that applicant. The results in this study are predominantly similar and to a less extent different to some of the findings from previous EIAR quality research executed in South Africa in the following ways. For example, Sandham & Pretorius (2008); Sandham *et al.* (2008b); and Kruger (2012) scored the EIARs satisfactory with regards to their EIAR scoping reports, therefore similar to the results of the current study. Also, Sandham *et al.* (2008a) scored their EIAR scoping reports as satisfactory. On the other hand, Sandham *et al.* (2010) scored their EIARs as unsatisfactory in terms of the **RC3.1.3** category, and therefore different (which brings contrast) to the findings of the current study. The unsatisfactory scores for PP are due to constrained PP that led to very few to no comments from I&APs and also the unclear view of the decision-maker.

Four (18.2%) EIARs out of the 22 selected for evaluation were awarded a "D" rating while 18 (81.8%) received an "F" rating with respect to meeting the requirements of **Review Category (RC 3.1.4)** (Notice-board requirements for PPP). The poor quality of the information from EIARs that alluded to the correct dimensions or display of notice-boards led to unsatisfactory "D" symbol. At the same time, poorly detailed EIARs which could not furnish any relevant particulars on the stipulated dimensions (i.e. 60 cm by 42 cm) of notice-boards were evaluated to be of an unacceptable "F" quality.

Regarding **Review Category (RC 3.1.5)** (PP non-compliance to the regulations), all the quality scores (100%) were rated "NA". This means that all 22 EIARs conformed to 2014 EIA Regulations, without deviations because the review category was not relevant to them.

The EIARs for **Review Category (RC 3.1.6)** (Accessibility of PPP information to I&APs for their comments) were assigned the following quality ratings: 7 out of 22 reports (31.8%) were rated "A", 11 (50%) were given a "B" score, and 4 (18.2%) were awarded a "C" standard. The "A" quality rating was awarded because of the satisfactory and sufficient information seen and verified on these EIARs. The "B" quality level was given because of the general satisfaction regarding the requirements of accessibility of PPP information to relevant stakeholders. Also, comments made by interested and affected parties were incorporated into the finalised EIARs. On the other hand, the allocation of a "C" quality rating meant that EIARs were compiled in a 'just satisfactory' manner regarding the requirements of **RC 3.1.6.** This was, again, due to lack of critical information regarding this **Review Category** on the EIARs.

Regarding compliance with the **Review Category (RC 3.1.7)** (Merger of PP processes on different sites), 68.2% (15/22) EIARs were awarded "A" symbols, 22.7% (5/22) scored "B", 4.5% (1/22) were given a "C", and a further 4.5% (1/22) were assigned "NA". In this quality review, in most EIARs, the

EAPs completing one EIAR for one site would combine in the same application with the public participation processes of another site thus merging such sites together as one. The “A” quality grading for EIARs mean that EIARs were completed with all the pertinent information to meet the necessary conditions of merging such processes, therefore were deemed to be of a superior quality rating. On the other hand, a “B” quality level was assigned for generally satisfactory EIARs, while the “C” quality rating was given for a ‘just satisfactory’ standard. The quality score of “NA” was awarded for only one report where there was no merging of associated PP processes on different sites.

From the evaluation of the EIARs’ quality performance, the requirements of **Review Area 3.0** were complied with satisfactorily. On the whole, **Review Area 3.0** was allocated a “C” rating (68.2%, 15/22 reports) due to good conformance. The following conclusion can be made from these results. According to the quality ratings from previous research carried out by Sandham & Pretorius (2008); Sandham *et al.* (2008b); Kruger (2012); Wylie *et al.* (2018); it was established that the public participation process was carried out fairly well and satisfactory, thus aligned with the findings of this research. However, in another research conducted by Sandham *et al.* (2008a), the same requirements for public participation process were compiled in a poor and unsatisfactory manner. This was due to insufficient information supplied on the public participation process.

4.2.4 Review Area 4: Register of I&APs and their comments.

The results on **Review Area 4.0** (Register of I&APs and their comments) as well as related review categories are shown in **Table 4.6** and in **Figure 4.4**. In summary, the quality scores ranged between “A”, “B”, “C”, as well as “F” and no EIARs were scored “D”, “E”, and/or “NA”.

Table 4.6: Results on the quality of EIARs based on Review Area 4 requirements.

Review Areas and Review Categories	A	B	C	D	E	F	NA	Total
RA 4.0	0	18	4	0	0	0	0	22
RC 4.1.1	11	6	5	0	0	0	0	22
RC 4.1.2	10	9	3	0	0	0	0	22
RC 4.1.3	10	7	5	0	0	0	0	22
RC 4.1.4	6	6	10	0	0	0	0	22
RC 4.1.5	0	0	0	0	0	22	0	22

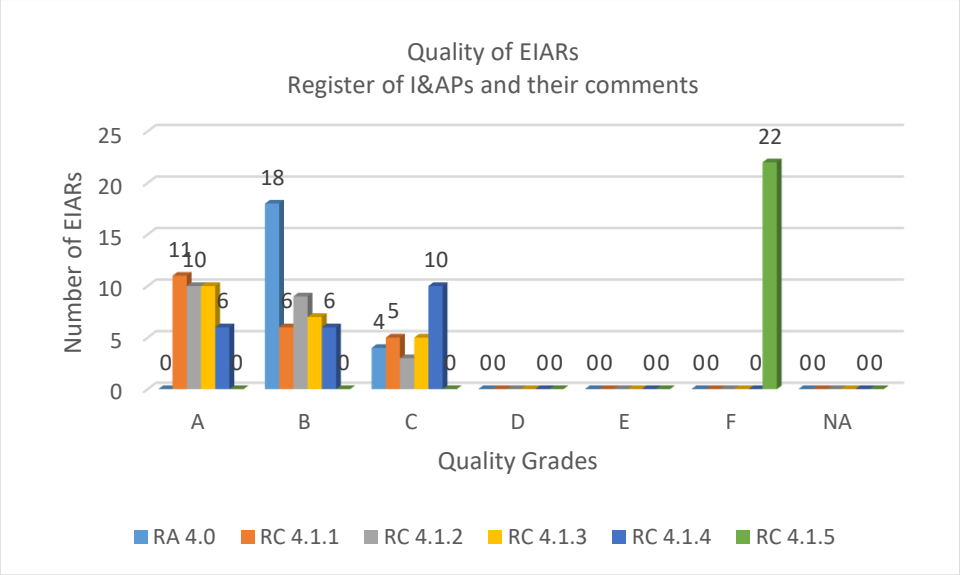


Figure 4.4: Results on the quality of EIARs based on Review Area 4 requirements.

According to the results on **Review Category (RC 4.1.1)** (Register or database of I&APs) 50% (11/22) of EIARs were graded "A" because this requirement was duly and fully complied with. In 27.3% (6/22) of the EIARs, a "B" rating was given because of general satisfaction regarding the opening and maintenance of registers by the EAPs. However, a "C" rating was assigned to 22.7% (5/22) of EIARs because they only met the minimum requirements regarding the provision of information that represented registers. Such registers can also be used by competent authorities for managing and monitoring the effectiveness of the PP process. Comparing these findings with previous quality studies carried out in South Africa, the following points can be mentioned. Sandham & Pretorius (2008) found that this requirement (i.e. for keeping records of registered and unregistered I&APs' public participation) was met by about 64% of EIARs in their evaluation. These findings compare well with the current study in terms of meeting the same requirements. Sandham *et al.* (2008a) in their study graded this **Review Category** (i.e. scoping) as 'good' to 'general satisfactory' (i.e. "A" - "B"), therefore similar to the current research. Meanwhile, Sandham *et al.* (2008b) scored the reports on their analysis as general to just satisfactory (i.e. quality graded as "B" - "C"), thus similar to this study. However, the results in this research were different to the study by Sandham *et al.* (2010) as scoping (i.e. public participation processes) was completely unsatisfactory (i.e. "D" - "F" scores). This was due to the fact that the **Review Area** that involved scoping showed most shortcomings and non-conformances.

The 22 EIARs on **Review Category (RC 4.1.2)** (Comments on reports by registered I&APs) were allocated the following scores: 10 EIARs (45.5%) scored "A", a further 9 (40.9%) scored "B", and the last 3 EIARs (13.6%) scored "C". This means that there is sufficient evidence in the EIARs to prove that the comments made by I&APs were recorded in a meaningful manner. Comments made by

I&APs are important to the EIA process because this provides a platform whereby stakeholders can have a say on what their concerns are, thus leading to joint communications and decision making processes.

The results on **Review Category 4.1.3** (Comments by other government department(s)) regarding EIARs were assigned the following ratings: 10 out of 22 EIARs (45.5%) were graded “A”, 7 out of 22 (31.8%) scored “B”, and 5 out of 22 EIARs (22.7%) scored “C”. The “A” grading means that the government commented on EIAs within the specified timeframe in a satisfactory manner, and scoring the “B” level means that EIARs were generally satisfactory, while “C” meant that EIARs were just satisfactory based on the supplied information. A “C” quality grading was assigned due to insufficient detail supplied on EIARs.

Based on the results shown in **Table 4.6** and in **Figure 4.4** regarding compliance of EIARs to the criteria of **Review Category 4.1.4** (Documenting of I&APs’ comments on plans sent to DEA), the following patterns emerged. The proportion of EIARs that were given “A” and “B” ratings were equal, 27.3% (6/22) and 27.3% (6/22) respectively. However, those allocated a “C” rating constituted 45.5% (10/22) of the total.

In terms of complying with **Review Category 4.1.5** (Alternative methods of recording comments by special group(s) of I&APs), all EIARs (100%) were granted an “F” quality symbol; mainly because they failed to recognise the different challenges that were constraining the participation of various stakeholders. Given the diversity of languages that are spoken in the Northern Cape province, it could have been prudent for EIA consultants to use not only English and Afrikaans but also IsiXhosa, Sesotho, and Setswana languages in certain parts of the public participation process. In this way, all stakeholder groups would have been afforded equal opportunities in understanding not only the scope of the EIA processes, but also the magnitude and significance of the anticipated environmental impacts and how they could be mitigated accordingly.

4.3 STRENGTHS AND WEAKNESSES

As stated in Chapter 3 (Methods), in instances where EIARs received at least 61% of “A”, “B”, and “C” quality symbols in the manner in which they were compiled and populated with respect to the requirements of the various review areas and review categories, these were regarded as areas of strengths. The following instances in this study were regarded as areas of strength (% “A”- “C”) for the public participation processes that were conducted by EAPs:

- **RC 2.1.1** (Submission of scoping reports and EIARs by applicants) = 100%;
- **RC 2.1.2** (PPP to provide access to information pertaining to the EIA application) = 100%;
- **RC 2.1.3** (Comments received from I&APs) = 100%;

- **RC 3.1.1** (Adherence to NEMA EIA Regulations of 2014) = 100%;
- **RC 3.1.2** (Giving notice to I&APs by the applicant as part of PPP requirements) = 100%;
- **RC 3.1.6** (Accessibility of PPP information to I&APs for their comments) = 100%;
- **RC 3.1.7** (Merger of PP processes on different sites) = 95%;
- **RC 4.1.2** (Comments on reports by registered I&APs) = 100%.

On the other hand, the EIARs that were allocated 60% and below in terms of quality scores such as “A”, “B”, and “C” were regarded as areas of weaknesses. The weaknesses are depicted as follows:

- **RC 1.1.1** (Granting of landowner’s written permission) = 0%;
- **RC 3.1.4** (Notice-board requirements for public participation process) = 0%;
- **RC 4.1.5** (Alternative methods of recording comments by special group(s) of I&APs) = 0%.

CHAPTER 5

CONCLUSIONS AND RECOMMENDATIONS

The conclusions and recommendations of this research are presented in this chapter. This chapter is further sub-divided into two sections, Section 5.1 focuses on the conclusions emanating from the current study while section 5.2 is based on the recommendations for improved quality of public participation (PP) in the EIA process together with the recommendations for further studies.

5.1 CONCLUSIONS

5.1.1 Quality of the selected Environmental Impact Assessment Reports (EIARs)

The current study has determined and distinguished the quality of public participation on the chosen EIARs. At this stage, it is necessary to re-state the research objectives formulated for the current study, namely:

1) To determine and characterise the quality of public participation in the selected EIARs;

2) To determine the degree of legal and regulatory compliance, using 2014 NEMA EIA Regulations (annexure A of this research report);

3) To identify the strengths and weaknesses in the selected EIARs regarding public participation; and

4) To make recommendations that can enhance the quality of public participation in the sampled EIARs.

Regarding **Review Area 1.0**, the quality of EIARs was found to be generally unsatisfactory as none of the EIARs were in the “A - C” quality standard. This shortcoming is related to the poor descriptions that were given for proposed sites. More specifically, there was no information mentioned on whether or not the landowners granted written permission for projects earmarked for their land. Furthermore, although the reported public participation processes (PPPs) in 86% of the EIARs were in the “A – C” quality category, there were some areas of weaknesses. Such shortcomings related to the issuing of notice boards that were not designed according to the specifications (i.e. 60 cm x 42 cm) (i.e. **RC 3.1.4)** as well as the lack of alternative methods of soliciting and recording comments by special group(s) of I&APs (i.e. **RC 4.1.5**).

The review areas **RA 2.0** – (Purpose of public participation); **RA 3.0** – (Public participation process); and **RA 4.0** – (Register of the I&APs and their comments) were duly complied with in terms of how the EIARs were populated. Given the patterns seen in all results, it can be concluded that the

documented PP processes for the proposed renewable energy projects in the Northern Cape province only met the minimum requirements specified in the 2014 NEMA EIA Regulations.

5.2 RECOMMENDATIONS

Based on the findings that came from this research, the following recommendations are proposed.

5.2.1 Recommendations for improved EIA practice regarding public participation

Lack of information on the selected EIARs regarding the landowners granting written permission for proposed projects on their land (**RC 1.1.1**) was found to be an area of weakness. Therefore, it is recommended that such information must be duly granted before EIARs are submitted to the competent authorities for environmental authorisation.

As some of the EIARs in this research referred to non-existent Appendices/Annexures and Websites, it is imperative that EIARs are thoroughly checked for complete information before they are released to the public and the competent authorities.

Regarding comments obtained from I&APs (**RC 4.1.2**), there seems to be little communication between certain I&APs and EAPs than is the case between EAPs and government departments during the PP process. It is, therefore, recommended that interventions or measures must be put in place to ensure comprehensive stakeholder analyses.

With regards to Regulations 44(2) of 2014 NEMA EIA Regulations (see annexure A), it is recommended that different ways and methods to engage stakeholders must be considered (including the utilisation of different languages of communication). This will accommodate disadvantaged I&APs as well as enhance their contribution to PP processes, therefore improving environmental decision-making processes. Moreover, this could enhance the relations and trust between affected communities and developers, thus leading to joint decision-making and win-win situation (Kruger, 2012; Wasserman, 2012; Mareddy, 2017; Khodyakov *et al.,* 2018).

5.2.2 Recommendations for further studies

Given that this research has identified the strengths and weaknesses on how the PPP was documented in the analysed EIARs, it is recommended that a complete SWOT analyses be conducted to give a comprehensive overview. Such an analyses will also reveal untapped opportunities and threats to the quality of EIA reporting.

Since the findings in the current research were drawn from previous copies of EIARs, it is recommended that future studies must also involve and include the opinions and viewpoints of environmental assessment practitioners as well as those who serve as competent authorities or regulatory authorities in the different government departments in South Africa.

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ANNEXURE A

Requirements of Environmental Impact Assessment Report in line with the South African NEMA EIA Regulations of 2014.

CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT REPORTS RELATED TO PUBLIC PARTICIPATION.

CHAPTER 6

PUBLIC PARTICIPATION

Activity on land owned by person other than proponent

39. (1) If the proponent is not the owner or person in control of the land on which the activity is

to be undertaken, the proponent must, before applying for an environmental authorisation in respect of such activity, obtain the written consent of the landowner or person in control of the land to undertake such activity on that land.

(2) Sub-regulation (1) does not apply in respect of

(a) linear activities;

(b) activities directly related to prospecting or exploration of a mineral and petroleum resource or extraction and primary processing of a mineral resource; and

(c) strategic integrated projects as contemplated in the Infrastructure Development Act, 2014.

Purpose of public participation

40. (1) The public participation process to which:

(a) the basic assessment report and EMPr, and where applicable the closure plan, submitted in terms of regulation 19; and

(b) scoping report submitted in terms of regulation 21 and the environmental impact assessment report and EMPr submitted in terms of regulation 23; was subjected to must give all potential or registered interested and affected parties, including the competent authority, a period of at least 30 days to submit comments on each of the basic assessment report, EMPr, scoping report and environmental impact assessment report, and where applicable the closure plan, as well as the report contemplated in regulation 32, if such reports or plans are submitted at different times.

(2) The public participation process contemplated in this regulation must provide access to all information that reasonably has or may have the potential to influence any decision with regard to an application unless access to that information is protected by law and must include consultation with:

(a) the competent authority;

(b) every State department that administers a law relating to a matter affecting the

environment relevant to an application for an environmental authorisation;

(c) all organs of state which have jurisdiction in respect of the activity to which the

application relates; and

(d) all potential, or, where relevant, registered interested and affected parties.

Potential or registered interested and affected parties, including the competent authority, may be provided with an opportunity to comment on reports and plans contemplated in sub-regulation (1) prior to submission of an application but must be provided an opportunity to comment on such reports once an application has been submitted to the competent authority.

Public participation process

41. (1) This regulation only applies in instances where adherence to the provisions of this regulation is specifically required.

(2) The person conducting a public participation process must take into account any relevant guidelines applicable to public participation as contemplated in section 24J of the Act and must give notice to all potential interested and affected parties of an application or proposed application which is subjected to public participation by:

(a) fixing a notice board at a place conspicuous to and accessible by the public at the boundary, on the fence or along the corridor of (i) the site where the activity to which the application or proposed application relates is or is to be undertaken; and (ii) any alternative site;

(b) giving written notice, in any of the manners provided for in section 47D of the

Act, to:

(i) the occupiers of the site and, if the proponent or applicant is not the owner or person in control of the site on which the activity is to be undertaken, the owner or person in control of the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(ii) owners, persons in control of, and occupiers of land adjacent to the site where the activity is or is to be undertaken or to any alternative site where the activity is to be undertaken;

(iii) the municipal councillor of the ward in which the site or alternative site is situated and any organisation of ratepayers that represent the community in the area;

(iv) the municipality which has jurisdiction in the area;

(v) any organ of state having jurisdiction in respect of any aspect of the activity; and

(vi) any other party as required by the competent authority;

(c) placing an advertisement in (i) one local newspaper; or (ii) any official Gazette that is published specifically for the purpose of providing public notice of applications or other submissions made in

terms of these Regulations;

(d) placing an advertisement in at least one provincial newspaper or national newspaper, if the activity has or may have an impact that extends beyond the boundaries of the metropolitan or district municipality in which it is or will be undertaken: Provided that this paragraph need not be complied with if an advertisement has been placed in an official Gazette referred to in paragraph

(c)(ii); and

(e) using reasonable alternative methods, as agreed to by the competent authority, in those instances where a person is desirous of but unable to participate in the process due to

(i) illiteracy;

(ii) disability; or

(iii) any other disadvantage.

(3) A notice, notice board or advertisement referred.to in sub-regulation (2) must (a) give details of the application or proposed application which is subjected to public participation; and

(b) state:

(I) whether basic assessment or S&EIR procedures are being applied to

the application;

(ii) the nature and location of the activity to which the application relates;

(iii) where further information on the application or proposed application can be obtained; and

(iv) the manner in which and the person to whom representations in respect of the application or proposed application may be made.

(4) A notice board referred to in sub-regulation (2) must

(a) be of a size at least 60cm by 42cm; and

(b) display the required information in lettering and in a format as may be determined by the competent authority.

(5) Where public participation is conducted in terms of this regulation for an application or proposed application, sub-regulation (2)(a), (b), (c) and (d) need not be complied with again during the additional public participation process contemplated in regulations 19(1)(b) or 23(1)(b) or the public

participation process contemplated in regulation 21(2)(d), on condition that:

(a) such process has been preceded by a public participation process which included

compliance with sub-regulation (2)(a), (b), (c) and (d); and

(b) written notice is given to registered interested and affected parties regarding where the

(I) revised basic assessment report or, EMPr or closure plan, as

contemplated in regulation 19(1)(b);

(ii) revised environmental impact report or EMPr as contemplated in

regulation 23(1)(b); or

(iii) environmental impact report and EMPr as contemplated in regulation 21(2)(d);

may be obtained, the manner in which and the person to whom representations on these

reports or plans may be made and the date on which such representations are due.

(6) When complying with this regulation, the person conducting the public participation process must ensure that:

(a) information containing all relevant facts in respect of the application or proposed application is made available to potential interested and affected parties; and

(b) participation by potential or registered interested and affected parties is facilitated in such a manner that all potential or registered interested and affected parties are provided with a reasonable opportunity to comment on the application or proposed application.

(7) Where an environmental authorisation is required in terms of these Regulations and an authorisation, permit or licence is required in terms of a specific environmental management Act, the

public participation process contemplated in this Chapter may be combined with any public participation processes prescribed in terms of a specific environmental management Act, on condition that all relevant authorities agree to such combination of processes.

Register of interested and affected parties

42. A proponent or applicant must ensure the opening and maintenance of a register of

interested and affected parties and submit such a register to the competent authority, which register

must contain the names, contact details and addresses of:

(a) all persons who, as a consequence of the public participation process conducted in respect of that application, have submitted written comments or attended meetings with the proponent, applicant or EAP;

(b) all persons who have requested the proponent or applicant, in writing, for their names to be placed on the register; and

(c) all organs of state which have jurisdiction in respect of the activity to which the application relates. Registered interested and affected parties entitled to comment on reports and plans

43. (1) A registered interested and affected party is entitled to comment, in writing, on all reports or plans submitted to such party during the public participation process contemplated in these Regulations and to bring to the attention of the proponent or applicant any issues which that party

believes may be of significance to the consideration of the application, provided that the interested and affected party discloses any direct business, financial, personal or other interest which that party may have in the approval or refusal of the application.

(2) In order to give effect to section 240 of the Act, any State department that administers a law

relating to a matter affecting the environment must be requested, subject to regulation 7(2), to comment within 30 days. Comments of interested and affected parties to be recorded in reports and plans

44. (1) The applicant must ensure that the comments of interested and affected parties are

recorded in reports and plans and that such written comments, including responses to such comments and records of meetings, are attached to the reports and plans that are submitted to the competent authority in terms of these Regulations.

(2) Where a person desires but is unable to access written comments as contemplated in

sub-regulation (1) due to:

(i) a lack of skills to read or write;

(ii) disability; or

(iii) any other disadvantage;

reasonable alternative methods of recording comments must be provided for.

Annexure B:

Review Areas, Review Categories and Sub-Categories on the modified Lee and Colley Review Package used in the study

2014 NEMA EIA Regulations of South Africa were used in evaluating the 22 sampled environmental impact assessment reports from the Northern Cape province of South Africa. Chapter 6 deals with public participation in the NEMA EIA Regulations of 2014. Modified Lee and Colley Review Package was generated using Clauses 39 – 44 of the Regulations to develop Review Areas. Under these Clauses the sub-Clauses were used to produce Review Categories and sub-Categories.

Table A - B: The modified Lee and Colley review package instrument

ITEM	Type of Renewable Energy	Quality Assessment Result/Score						
		A	B	C	D	E	F	N/A
	Description of Public Participation Activities.							
1.0	**Public participation activities on land not owned by the developer.**							
1.1.1	The developer must acquire the written permission of the landowner or person who the land belongs to on the planned project, prior to environmental authorisation of the planned activity.							
1.1.2	Sub-regulation 1.1.1 is irrelevant regarding linear activities, development that has to do with searching for minerals or energy resource, and strategic integrated projects.							
2.0	**The purpose of public participation (PP).**							
2.1.1	The PP process (PPP) to which the scoping report is submitted according to the regulation 21 (NEMA: EIA Regulations, 2014) as well as the EIAR and EMPr, submitted in terms of the regulation 23. PPP must give all I&APs (potential and/or registered), including environmental authority, a 30-day period to submit comments on scoping and EIA reports.							
2.1.2	The PPP referred to in the regulation should make all the details available that are likely to affect resolution regarding the application except in situations where the availability to information is legally secured and should incorporate discussion with (a) the environmental authority; (b) state departments that deal with environmental laws and regulations; (c) organs of the state involved in activities where the application relates; and (d) all I&APs.							
2.1.3	All I&APs and environmental authority should be allowed and enabled to comment on reports and plans referred to in sub-regulation 1.1.1 before submitting the application to environmental authority.							
3.0	**Public participation process (PPP).**							
3.1.1	The regulation on public participation process applies to situations where adherence to the provisions of the 2014 NEMA EIA Regulations is required.							
3.1.2	The person executing a PPP must also use the regulation in conjunction with section 24 J of the National Environmental Management (NEMA) Act 107 of 1998. The person carrying out PPP is to notify all I&APs of an application or suggested application which is subjected to PP by: (a)							

	placing a notice-board in a place visible to the public; (b) give written notice in line with section 47D of the Act to : (i) persons occupying the site for anticipated development; (ii) owners in the neighbouring vicinity of the anticipated development site; (iii) the site municipal councillor, municipality and any ratepayers organisation representing the community in the location; (iv) organ of state involved in running that area with the site as well as any party as stipulated by the environmental authority; (c) put the advertisement in neighbourhood newspaper, in the government gazette, in the provincial newspaper or national newspaper; (d) using reasonable alternative means approved by the environmental authority to accommodate people who are illiterate, disabled or people with any other disadvantage.							
3.1.3	An advertisement or notice should: (1) provide details of the application for the anticipated project; (2) mention if basic assessment or EIAR procedures are used in the application; and (3) description of the project location, where additional information can be obtained regarding the project as well as the contact person regarding the project.							
3.1.4	A noticeboard mentioned in sub-regulation 3.1.2 should: (a) have specification of 60cm by 42cm in size; and (b) show the critical information in the manner stipulated by the environmental authorities.							
3.1.5	Where PP is carried out according to 2014 NEMA EIA Regulations then sub-regulation 3.1.2 above need not be conformed to during additional PPP.							
3.1.6	If PP is conforming to 2014 NEMA EIA Regulations then the person executing the PPP shall ensure that: (a) the application information is fully accessible to all potential and registered I&APs; and (b) he/she encourages comments from potential and registered I&APs.							
3.1.7	If an environmental authorisation is needed according to these regulations and a consent or license is needed according to a particular environmental management act, the PPP referred to in these regulations may be combined or merged with the other PP processes stipulated in that specific environmental management act as long as all I&APs agree to the merger of processes.							
4.0	**Register of I&APs; registered I&APs allowed to comment on the reports and plans; and the comments of the I&APs to be recorded in the reports and plans.**							
4.1.1	A developer or an applicant must ensure that a register is generated and maintained regarding the participation of the I&APs. This register should be submitted to the environmental authority and should have the names, contact details and addresses of: (a) all persons who participated in the meetings with the developer, applicant or environmental assessment practitioner (EAP); (b) people that have asked the developer or EAP to enter their names on the register or database; and (c) all organs of the state who have authority relating to some aspects of the application.							
4.1.2	Registered I&APs are permitted to comment, in writing, on all plans or reports sent to them as part of the PPP to make the applicant aware of their concerns and have these addressed.							
4.1.3	Any state department that regulates the law that relates to the matters pertaining to the environment is expected to comment inside of the 30 days stipulated period.							
4.1.4	The applicant should ascertain that the I&APs comments are recorded in the reports and in the plans. These comments must be incorporated within the submitted reports and plans to the environmental authority under the NEMA: EIA Regulations, 2014.							
4.1.5	If a participant would like to view the comments but is unable to do so due to: (a) challenged regarding reading and writing; (b) physical disorder; or (c) any other difficulty, then other fair options should be used to capture their comments.							