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Reaching for Sustainability: Ecological Modernisation and Environmental Justice in South African Energy Policy and Practice

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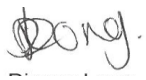
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A Dissertation submitted to the Faculty of Humanities University of the Witwatersrand, Johannesburg in fulfilment of the requirements for the degree of Doctor of Philosophy.

April 2017

Declaration

I, Dianne Patricia Long, declare that this thesis is my own, unaided work. It is being submitted for the degree of Doctor of Philosophy at the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in any other University.



Dianne Patricia Long
April 2017

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Completed in Christ, to Him be the glory.

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List of abbreviations

CONNEP: Consultative National Environmental Policy Process

CSO: Civil Society Organisation

EIA: Environmental Impact Assessment

EIP: Environmental Impact Practitioner

EM: Ecological Modernisation

SDG's: Sustainable Development Goals

MDG's: Millennium Development Goals

NEMA: National Environmental Management Act 107 of 1998

NGO: Non-governmental Organisation

NIMBY: Not In My Back Yard

NPO: Not for Profit Organisation

Pers.com: Personal communication

UNFCC: United Nations Framework Convention on Climate Change

WCED: World Commission on Environment and Development

CHAPTER ONE
Frames of Reference

1.1 Introduction

Sustainable development is one of the major discourses of the twenty first century. This discourse has not only captured the attention of the scholarly society, but governments and the general public as a whole (Giddings et al., 2002). Whilst definitions of sustainable development have varied, leading to much debate concerning exactly what sustainable development is, there is no doubt that it is an ideal worth pursuing (Blewitt, 2008; Patel, 2000). Ecological modernisation, as a discourse, has been proposed as an entreating means to reach the ideal of development that is sustainable (Gibbs, 2000a; Murphy and Gouldson, 2000). One of the basic tenets of ecological modernisation is that society will pressure industry into 'cleaning up its act' through product boycotts (Mol, 2000). In conjunction with this, an increased focus on technology will lead to more environmentally and economically efficient means of production (Blewitt, 2008). A combination of the availability of more efficient means of production with societal pressure will potentially force industry to adopt these ever more efficient means of production (Mol, 2000).

Ecological modernisation, having been developed in Germany, has by and large only been tested within developed nations, and as some might argue has proved to be rather successful in curbing the environmental impacts associated with development (Christoff, 2009; Spaargaren and Mol, 2009). There is, however, a prominent academic debate centred on the potential social and environmental justice concerns that may emanate from the promotion of ecological modernisation in policy (Beck, 1997; Blowers, 1997; Bond, 2000; Oelofse et al., 2006; Long and Patel, 2011). Eco-modernist theorists are said to be unaware or unconcerned with both the procedural and distributional injustices that would occur as a result of relying on this growth-centred approach to the environment and the economy (Bailey et al., 2011; Langhelle, 2000).

At present, modern society is composed of already existent inequalities in both wealth and power that are the result of the very capitalist market economy that ecological modernisation seeks to promote (Blowers, 1997). The potential therefore exists to steepen these inequalities

through the promotion of ecological modernisation in policy and practice and is cause for concern (Blowers, 1997). Furthermore, the very technocratic and science centred nature of the ecological modernisation approach will aid in deepening already existent power disparities in environmental decision making (Berger et al., 2001). Scientists, and the scientific terminology that will be used to address environmental issues will exclude those not 'in the know', and therefore will actively centre environmental problems and solutions in the hands of a few while excluding the majority of society who are not scientifically trained (Berger et al., 2001).

A further argument illustrating a potential environmental justice concern is put forward by Ulrich Beck (1997) and his theory of *Risk Society.* Both Ulrich Beck and his theory of *Risk Society* are commonly cited as opponents to ecological modernisation. Beck (1997) argues that an increased reliance on science and technology in the means of production aids to place society in a precarious position of risk. Technologies and their increased use are not benign; there exists the potential for great disaster (Beck, 1997). Nuclear energy is the foremost cited example used to substantiate this argument. Ecological modernisation theory is said to be inadequate in that it is incapable of dealing with, "high-risk/low-probability technologies where the risk of catastrophe, no matter how remote, nevertheless exists and is potentially global" (Blowers, 1997, p. 854).

In light of these and other concerns centred around the use of ecological modernisation theory, it is evident that environmental justice concerns need to be addressed, for ecological modernisation to be successful in any substantial measure. This thesis therefore, aims to contribute to ecological modernisation and environmental justice debates by specifically trying to integrate the social realm of sustainable development into the policy discourse of ecological modernisation. This will be achieved through developing an environmental justice policy framework to work alongside the existing ecological modernisation policy framework developed by Maarten Hajer (1995). This environmental justice framework will then be used to analyse South Africa's energy policies. This is done in a bid to understand the extent to which environmental justice principles are incorporated into energy policy to influence governance in practice. Furthermore, this framework will be analysed by civil society in the context of the South African energy sector to understand if policy and practice can be improved to hopefully ensure just outcomes.

1.2. Thematic Considerations

Sustainable development is not an entirely new discourse, its roots lie in many decades of concern and contemplation over environmental impacts, impacts that have been the result of continued economic growth and industrialisation (Waas et al., 2011). This concern arose in the 1960s, continued throughout the 1970s, and culminated in mainstream debates that dominated the 1990s, and still continue today (Hopwood et al., 2005). Ensuing from these debates is the discourse of sustainable development which introduced the notion of resource frugality (Ott, 2014). Conserving environmental resources is essential to ensure the presence of these resources for future generations (WCED, 1987). Within half a century of its inception, sustainable development went from an, "alternative view on development towards a broadly acknowledged and formal politically endorsed development model" (Waas et al., 2011, p. 1641). Sustainable development, as it is understood today, has been the result of more than several decades of understanding and contemplation, and is presently seen as an attempt to combine environmental issues with socio-economic issues (Hopwood et al., 2005; Waas et al., 2011). It is within the human social environment that sustainable development operates. Casper and Barnett (2001, p. 465) have defined this human social environment as environments that, "encompass the immediate physical surroundings, social relationships, and cultural milieus within which defined groups of people function and interact".

Sustainable development, as a discourse guiding policy formation, has not gone unscathed. Scrutiny is most often cited in relation to the definition of sustainable development (Berger et al., 2001; Blewitt, 2008; Patel, 2000). According to the World Commission on Environment and Development (1987, p. 8), sustainable development entails, "meeting the needs of the present without compromising the ability of future generations to meet their needs". This definition allows for a broad range of interpretations, and at the same time ineffectively deals with the conflict that exists between the economy and the environment (Berger et al., 2001; Patel, 2000). The lack of a clear definition of sustainable development has allowed for the broad range of interpretations to ensue, and additionally be tailored to suit the needs of each stakeholder (Hopwood et al., 2005). Therefore, the effective implementation of policies based on sustainable development is lacking as conflict arises over the interpretation of theory and policy (Hopwood et al., 2005). This conflict however, has not been performed on equal grounds, as within a capitalist society, issues of domination and oppression are rife, where the wealthy and those in power tend to dominate the agenda (Young, 2011). Therefore, equal weighting is not given to

each of the different interpretations and so policy development favours the understanding and interpretation of those who are empowered.

In its early inception, classic sustainable development theories identified sustainable development as a three pronged approached aimed at guiding the sustainable use of environmental resources (Hopwood et al., 2005). This three pronged approach sought to manage the relationship between the economy, the environment, and society, so as to allow for each to thrive simultaneously (Gibbs, 2000a). In earlier works on sustainable development, the environment, economy, and society were seen to operate in independent spheres, and only where the sustainable objectives of all three met was sustainable development achieved (Giddings et al., 2002). This view of sustainable development, has been labelled as a weak framework due to it often resulting in a system of trade-offs, where the needs of one entity could only be met at the expense of another (Hopwood et al., 2005). An example of one of these classic sustainable development discourses is the limits to growth approach where economic growth and resource use are limited to favour environmental protection (Meadows et al., 1972). Progressing on from this, the current favoured framework is one where both spheres of society and the economy are seen to be nested within the environment (Giddings et al., 2002). This is arguably a stronger framework for achieving sustainable development as society and the economy are not separate entities to both each other and the environment, but rather operate wholly within the environment (Giddings et al., 2002). Therefore, there can be no trade-offs as all three are intertwined. Thus, in order for policies to be considered as strong sustainable development policies this more recent and stronger sustainable development framework needs to be utilised.

Prior to the emergence of sustainable development was the introduction of an approach to environmental management known as ecological modernisation. Ecological modernisation theory was developed by Joseph Huber, Martin Jänicke, and Udo E. Simonis, in the 1980s, in the industrialised North (Mol and Jänicke, 2009; Spaargaren and Mol, 2009). Ecological modernisation emerged in response to the ineffective pollution controls at the time, and has since become a topic of debate among environmental thinkers and policy makers (Andersen and Massa, 2000; Cohen, 1997; Murphy, 2000). Sustainable development is said to be heavily vested in ecological modernisation, whereby sustainable development conceptualises moral and ethical issues around broader scale environmental management, and ecological modernisation addresses how to achieve this broader sustainable development by addressing

local scale environmental management issues (Langhelle, 2000). Some authors have observed that sustainable development theory is comprised of eco-modernist principals, and thus ecological modernisation is the very means by which to achieve sustainable development (Hajer, 1996; Murphy and Gouldson, 2000). “Hajer (1995) and Harvey (1996) link ecological modernisation and sustainable development together such that the latter is the *central story line* of the policy discourse of ecological modernisation” (cited in Gibbs, 2000a, p. 11). Whilst ecological modernisation is argued to be the means to achieving sustainability, for some it is an approach to environmental management independent of sustainable development (Gibbs, 2000b).

Given the eco-modernist nature of sustainable development theory, this thesis follows on from arguments that detail ecological modernisation as the means by which to achieve sustainable development. Additionally, in light of the dominant capitalist market economy present today, ecological modernisation arguably seems best fit to guide the way towards achieving sustainable development (Gibbs, 2000a). It has been suggested that environmental protection and economic growth can occur simultaneously with positive gains for both, thus environmental protection is not seen as a brake on development (Berger et al., 2001; Gouldson and Murphy, 1997). Through added investment in industry, science, and technology, development will in fact result in more efficient, less environmentally damaging forms of production, thus achieving the ideal of sustainable development (Blewitt, 2008). The strength of ecological modernisation, where sustainable development fails, is the crosscutting of theory and practice which allows for its practical implementation (Gibbs, 2000a). This strong practical policy approach of ecological modernisation, as argued by Murphy and Gouldson (2000), has the potential to guide policies towards sustainable development.

In order to promote this move towards environmental sustainability, industry and society are seen as key stakeholders (Mol, 2000). Through societal groups that have taken a vested interest in sustainability and environmental protection, pressure from civil society (through potential lobbying and boycotts of products) can potentially make industry aware of its impacts on the environment, and proponents of industry can then take the appropriate measures for environmental conservation and preservation (Mol, 2000). Society, through lobbying efforts, are not the only means to pressure industry into more environmentally benign forms of production. Government, through pollution taxes and investment in the fields of scientific and technological advancement, is also key in guiding this shift in the means of production (Hajer, 1995). This

approach is ideal for the dominant capitalist economy (Gibbs, 2000a). In this way, ecological modernisation deals with the problem of environmental degradation at the source, rather than through end-of-pipe solutions that tend to deal with the consequences of degradation post production (Berger et al., 2001).

Whilst ecological modernisation theory actuates the reconciliation of environmental and economic objectives, there remains some contestation over its ability to reconcile the environment and the economy in a socially sustainable manner (Long and Patel, 2011). Economic and environmental goals are reconciled through using improved technologies in the means of production which are both more environmentally and economically efficient (Blewitt, 2008). However, ecological modernisation and environmental justice have often been cited as being in contestation, with it being classified as one or the other (Blowers, 1997; Bond, 2000). As mentioned above, this is a form of a weak approach to sustainability.

The movement for environmental justice originates from local communities dissatisfaction with the inequitable distribution of environmental bads, along racial lines, in the United States (Sze, 2002). The resultant discourse of environmental justice is therefore, concerned with the equitable distribution of both environmental goods and bads (Holifield, 2001; Scott and Oelofse, 2005). Included in the literature on environmental justice are issues of power, domination and oppression, and how each of these acts to exclude members of society from active participation in decision making (Fraser, 2008; Young, 2011). The ideal of justice therefore extends far beyond addressing the distribution of environmental 'bads' but also seeks to address issues of power within environmental decision making (Fraser, 1995a). The overarching goal of the environmental justice movement is to ensure that, "all people, regardless of race, national origin or income, are protected from the disproportionate impacts of environmental hazards" (Schlosberg, 2013, p. 80). In line with this, environmental justice is concerned with the geographical distribution of environmental risk and quality, as well as the nature of environmental decision making (Scott and Oelofse, 2005).

Acting to impede just outcomes are issues such as a lack of public participation and power relations among policy stakeholders that hinder effective participation, ensuring outcomes that favour the most influential (Patel, 2009; Scott and Oelofse, 2005). Additionally, the risk posed to society with advancing technologies is an added concern (Beck, 1997). Many of these concerns emanate through the literature on ecological modernisation, and in South Africa ecological

modernisation as a policy approach is said to hinder equity (Scott and Oelofse, 2005). Scott and Oelofse (2005) mention that the efficiency based ecological modernisation approach, that dominates environmental governance in South Africa, is unfavourable, and a policy approach favouring environmental justice is far more fitting. Scott and Oelofse (2005) go on to argue that the South African landscape is coloured by Apartheid remnants of injustice, and that using the approach of environmental justice in policy discourse will help redress some of these injustices. Thus, ecological modernisation in theory has nested the economy within the environment, but has failed to do the same for society. In light of the above review of weak and strong sustainability, ecological modernisation must at present be considered a weak framework to achieve the desired goals of sustainable development.

It is within this realm of concern and contestation that this research study is centred. This research study aims to integrate these environmental justice concerns into ecological modernisation theory and implementation by developing a policy framework for environmental justice that can be used in policy formulation. This framework will, in essence, be an environmental justice guide/checklist for policy writers of things they should consider and include in policy. This to ensure that the social pillar of sustainable development is hopefully given as much emphasis in policy and practice as the economy and the environment. Upon the development of this framework it will be analysed using the South African energy sector.

1.3. Research Questions

This thesis therefore seeks to answer the following questions:

i) What is the present state of governance in South Africa relative to ecological modernisation.
ii) What criteria would need to be present in an environmental justice framework for ecological modernisation, given the technocratic approach of this theory?
iii) Can an environmental justice framework applied within the theory of ecological modernisation aid in meeting the social justice criterion crucial to sustainable development?
iv) Would implementing an environmentally just approach to energy policy based on ecological modernisation in South Africa be appropriate, given the developing world context in which it will be implemented?

v) What are the implications of the findings of this research in a wider context?

1.4. Aims/Objectives

The aims of this study are as follows:

I. To investigate how contemporary energy policy and practice has been framed by sustainable development and ecological modernisation in South Africa.
II. Secondly, to investigate how civil society see environmental justice issues reflecting themselves within South Africa.
III. Thirdly, to investigate environmental justice in energy policy and practice.

In view of the above aims, the objectives of this research are as follows:

i. To develop an environmental justice framework that can potentially contribute to policy formation reflecting ecological modernisation as a socially just discourse.
ii. To identify if South African energy production can potentially attain the goals of all sustainable development, (i.e. environmental, economic and social sustainability equally), through using ecological modernisation as an analytical and operational framework.
iii. To establish if ecological modernisation, as a potential policy framework, can be taken from one that is centred on a weak sustainable development framework to one based on the strong sustainable development framework. And finally,
iv. To contribute to the body of knowledge on ecological modernisation, environmental justice and sustainable development.

1.5. Theoretical perspectives and literature review

1.5.1. Sustainable development, ecological modernisation and environmental justice

Sustainable development has failed as a discourse in providing an adequate definition of its meaning (Hopwood et al., 2005). Added to this, researchers have also failed to give adequate attention to ensuring that the environment, the economy, and society are all equally represented (Opp and Saunders, 2013). Sustainable development theorists claim that all three pillars are essential for sustainable development; however, Opp and Saunders (2013) contend that

sustainability researchers have failed to assess all three of these pillars. This is also the case with ecological modernisation, whereby environmental and economic objectives are given adequate attention, with the social, namely social justice, considerations lagging far behind (Oelofse et al., 2006).

Ecological modernisation was developed in the 1980s as a response to the failure of existing policies to control environmental degradation (Andersen and Massa, 2000). In its true essence, "ecological modernization managed to merge the concerns for ecology and employment into a powerful message about the assets of innovation" (Andersen and Massa, 2000, p. 337). The argument is that industrial development can become more environmentally friendly through innovation and advances in technology, thus allowing for both environmental and economic objectives to be met (Gouldson and Murphy, 1997). However, it has been argued that industry is inherently selfish and will not change to more environmentally benign forms of production without it being in the best interest of industry to do so (Berger et al., 2001). Mol (2000) has argued that society can play a vital role in pressuring industry to change to more environmentally benign forms of production through lobbying and the boycotting of industries that do not conform.

Other ecological modernists, such as Hajer (1995), see the role of government, and effective governance, as essential in promoting this transition to more environmentally benign forms of production. In order for industry to want to move towards more environmentally benign forms of production, pollution of the environment has to become far more expensive (Berger et al., 2001). Consequently, ecological modernists argue that it is essential that the cost of environmental degradation be internalized within the costs of production (Bond, 2000). This will, in essence, assert the polluter-pays principle by decreasing profit margins, and forcing industry to seek more environmentally benign forms of production (Berger et al., 2001; Bond, 2000). By doing this, it is evident that ecological modernists view the market economy as the most effective way of reconciling economic and environmental objectives (Blowers, 1997).

In addition to requiring the polluting party to pay for environmental damages, Hajer (1995) also contends that it is important to promote pollution prevention through the use of the market economy as well. Tax incentives for pollution prevention are seen as another measure used to promote the move of industries from that of high to low polluting (Hajer, 1995). Along with using the market place as a means to promote the shift in industry, the promotion of science and

technology is also essential (Blewitt, 2008; Gouldson and Murphy, 1997). Through adequate investment in science and technology it is argued that new environmentally friendly forms of production will be found that will, in essence, reduce the amount of environmental pollution (Gouldson and Murphy, 1997). This will aid in streamlining the means of production to be more effective and less cost intensive (Gouldson and Murphy, 1997). With all the economic incentives, as well as the potential for more efficient means of production, industry will no doubt absorb these new technologies and thus environmental protection and industrial efficiency can be attained simultaneously (Blewitt, 2008).

Gouldson and Murphey (1997) have highlighted the fact that ecological modernisation, and all that it proposes, can only be effective upon the stringent implementation of environmental policy. In order to guide this stringent implementation of policies based on ecological modernisation, Hajer (1995) has detailed a policy framework that should be used to guide and assess policies using the approach of ecological modernisation. Hayer's (1995) policy framework details six criteria that must be present in any environmental policy based on ecological modernisation. These six criteria being: prevention of environmental degradation is preferred over dealing with resultant environmental degradation; internalising the costs of environmental degradation; requiring the party responsible for pollution to pay; the importance of the promotion of science in policy; economic benefits for pollution prevention; and lastly promoting participation within the governance of the environment (Hajer, 1995).

Whilst Hajer (1995) has made allowance for public participation to be included in the drafting and implementation of environmental policy, this does not necessarily result in environmentally just policies based on fair and equitable input of all stakeholders (Long and Patel, 2011). Added to this, the definite bias towards economic and environmental concerns, as seen in the literature above, has overshadowed concerns within the social realm. Fear of environmental injustices therefore emanates through ecological modernisation theory and practice. In the case of Hajer's (1995) policy framework this is perhaps due to the lack of sub-criteria that dictate what exactly would constitute effective participation (Long and Patel, 2011). This therefore, allows for any measure of public participation to be as vague as this policy framework allows for, and in turn allows for environmental injustices to perpetuate. Additionally, there are justice concerns over the use of new technologies, and the dangers posed to society by their development and use (Beck, 1997). Concern over the distribution of environmental bads in relation to environmental goods is yet another disparity not addressed within ecological modernisation theory (Holifield,

2001). Concerns such as these make an environmental justice policy framework tailored to ecological modernisation imperative. Such a framework may work alongside Hajer's (1995) policy framework to ensure that ecological modernisation can be just in both policy and practice.

Mol (2000) has found that the role of non-governmental organisations is key in environmental governance, and they are therefore crucial to ecological modernisation. He argues that, "it is no longer sufficient for industries to follow only governmental standards and policies; they increasingly have to take non-state environmental requirements from civil society into account" (Mol, 2000, p. 51). Therefore, there is a place for civil society within environmental governance and policy frameworks centred on ecological modernisation. Mol's (2000) argument has illustrated that it is possible to take the concerns of civil society into consideration, and at times it is impossible not to. Given this, and the need to cater for environmental justice concerns, civil society may prove to be useful. Ecological modernisation aims to deal with the problem of pollution at source rather than end-of-pipe solutions, if this care can be shown for the environment then the same concern can be afforded to society. Environmental justice concerns must therefore be dealt with at source, before they have a chance to perpetuate.

In South Africa, ecological modernisation has been identified within policy however, it is argued that these are weaker forms of ecological modernisation, focusing mainly on technological advancement (Long and Patel, 2011; Oelofse et al., 2006). Oelofse et al. (2006) examined the National Principles, Criteria, Indicators and Standards (PCI&S) for Sustainable Forest Management in South Africa and the City of Cape Town's Integrated Metropolitan Environmental Policy (IMEP) to conclude this, while Long and Patel (2011) reviewed the country's nuclear energy policies to formulate their conclusion. South African policies, whilst being technocratic in approach, are non-democratic and economistic rather than ecological in nature (Oelofse et al., 2006). Oelofse et al. (2006, p. 66) have found that the, "weak relationship between the state and civil society under weaker forms of ecological modernization leads to the neglect of social questions in environmental decision-making". This weaker approach to ecological modernisation leads to the externalisation of social questions in practice too. This weaker non-democratic take on ecological modernisation within South Africa highlights the importance to develop polices with stronger democratic and ecological strands. An increase in the democratic and environmental agendas within ecological modernisation policy and practice in South Africa could potentially aid to eliminate the current view that ecological modernisation and environmental justice are at odds within the country (Bond, 2000). Stronger policy

frameworks are essential to achieve this, and would hopefully promote, not only stronger policy principles, but also responsibility for the implementation of policy (Rossouw and Wiseman, 2004).

While this thesis is aiming to integrate social concerns into the milieu of ecological modernisation theory to make it stronger in approach to sustainable development, there are other concerns at play within the governance of the South African environment that perhaps undermine the suitability of ecological modernisation as a whole. A lack of political will to enforce environmental legislation and penalties for non-compliance is an issue at hand, and while ecological modernisation posits that civil society will be able to enforce compliance through product boycotts and lobbies this has yet to happen (Lund-Thomsen, 2005; Börzel and Risse, 2010). In conjunction with this it seems that society as a whole has yet to be able to pressure government to enforce industrial compliance and this has resulted in mass environmental degradation and social injustices to date, the case of the South Durban basin is one of grave concern (Lund-Thomsen, 2005). It would seem therefore that government has favoured ecological modernisation to mean the self regulation of industry in a capitalist economy which has hindered environmental protection and environmental justice. Within this capitalist economy, nature has become controlled through the capitalist system and only those with capital to spend have access to nature while those without are subjected to environmental 'bads' (Leonard, 2016). These are issues plaguing environmental governance in South Africa, and it is unlikely that a push for advances in technology will alter these power relations, hence it is important that these power relations be addressed and if ecological modernisation cannot address these it is left wanting and alternate solutions must be posed.

If ecological modernisation cannot sufficiently reform the current power dynamics and concerns over the capitalist system that have been expressed then there are potentially alternative theories that can be used to govern the environment. Some authors have called for a strictly environmental justice approach to the governance of the environment (Oelofse et al., 2006a). This would hopefully allow for a better balance of power between those in government and those with extensive capital as they relate to the more disempowered and disenfranchised members of society. There have also been strong calls for the use of the green economy as a means by which governance should be acted out in South Africa, yet another possibility that stands in contrast to ecological modernisation (Death, 2014; Musango et al., 2014; Nhamo, 2013). However, given that ecological modernisation is currently the dominant theoretical

underpinning of South African environmental governance there does exist the possibility to try and amend its practical shortfalls without having to overhaul the entire economic and environmental structure.

This thesis has chosen to look into the current approach to environmental governance, namely that framed by ecological modernisation, in the hopes of investigating whether or not we can, with a number of changes, continue to use ecological modernisation. As such this thesis will be able to identify how much of a corrective action will be needed for ecological modernisation to incorporate the social sphere within its governance approach. It is through engaging with members of civil society that this degree of corrective action will be identified.

However, the notion of what constitutes civil society needs to be clearly defined. For the purposes of this study, civil society are organisations of individuals, not governance by the formal government of the country, but are organized actors that challenge the authority of the state (Bernhard et al., 2015; Van Rooy, 2009). For this study, these actors are not necessarily those who refuse to work with the state on certain projects or matters.

Energy was chosen as a case study for a number of reasons. Firstly, South Africa's national nuclear energy policies have already been assessed using Hajers' (1995) ecological modernisation policy framework, and were found to be eco-modernist and technocratic in many respects (Long and Patel, 2011). This therefore, provides a base from which to assess the environmental justice framework, given that South Africa's national energy policy is eco-modernist and technocratic in approach. Secondly, the energy sector is rife with conflict and concern over the environmental justice implications of the means of production, such as the potential risk of using infancy technologies; the health effects associated with energy production; and the lack of participation in the process of decision making (Long and Patel, 2011; Pegels, 2010; Winkler, 2005). Energy, as a case study, therefore provides a solid base from which to assess the robustness of the developed framework.

Furthermore, the South African energy intensive economy constitutes the energy sector as vital for industrial growth, job creation, and economic stability within the country (Winkler, 2007). Expansion of this sector is therefore necessary to ensure this growth and stability. South Africa has abundant coal reserves that have, by and large, dominated the highly polluting electricity generation industry within the country (Winkler, 2007). However, given the finite nature of South

Africa's coal reserves, the isolation of these reserves, and concerns over climate change, nuclear energy has been put forward as an alternative means of energy production (Department of Energy, 2016b). This has not been without concern, as commentators have highlighted the potential for natural disaster, as well as the environmental justice concerns that have distilled from the policy formation and the practical implementation of South Africa's technocratic nuclear energy policy (Fig, 2007).

1.6. Methodological considerations

South Africa, a developing country, forms the backdrop upon which this study will take place. The overall methodological approach of this research study is qualitative (Badenhorst, 2008). In order to understand if South Africa has in fact embraced ecological modernisation as a frame for its polices that inform governmental practice, several policy analyses were undertaken within the energy sector. Informing this methodology is the fact that many eco-modernists such as Spaargaren (Spaargaren and Mol, 2009), Buttel (2000), and Mol (2000) see ecological modernisation as an inherently social theory, whereby society as a whole plays an important role in the process of change. Mol (2000) identifies societal groups, with a vested interest in governance and the environment, as central to this process of change. Because societal groups are central to the theory of ecological modernisation, they will also be central to the methodology of this research study.

In a bid to understand the environmental justice implications of embracing ecological modernisation a number of civil society activists were interviewed. In addition to this they were asked to propose solutions to these injustices and these solutions were used to construct an environmental justice policy framework for South Africa. Semi-structured, in-depth interviews were used for this step. Furthermore, to understand whether or not South Africa has already embedded any environmental justice principles in its energy policy, these policies were further analysed. Lastly, through a structured questionnaire, civil society were asked to review the appropriateness of the developed environmental justice framework in the context of energy policy and practice.

The methodology used to analyse the data found in this study was that of thematic content analysis. Both deductive and inductive content analysis were used. Inductive thematic content

analysis is a methodology employed that seeks to identify themes within the data that can be used to create a code (Boyatzis, 1998). Deductive thematic content analysis on the other hand is used when there are already themes in place and the data is analysed looking for those themes (Guest et al., 2012). The methodological approach of this study is extensively presented in **Chapter three** of this research thesis.

1.6.1. Scope of study

In conducting this research project there were a number of factors that influenced the scope of the study. One of the key things influencing this study was the desire to understand the environmental justice implications of embracing ecological modernisation in a developing world context. South Africa, being a developing country was therefore ideal. In addition to this Scott and Barnett (2009) and Scott and Oelofse (2005) have posited that South Africa has in fact embraced ecological modernisation, and has used it as a framework to guide policy and practice in the country. As a result of this South Africa being a developing country, and a country having embraced ecological modernisation made it an ideal context to study ecological modernisation and environmental justice.

The scope of the study was therefore delineated to the South African context. In further confining the scope of the study civil society were used as key informants in the data gathering process. In trying to understand environmental justice in the country, society as a whole could have formed the potential participant base, however, limiting the scope of participation to civil society activists meant that only key informed opinions would be gained. It would also be unrealistic to try and sample the entire South African population for this study. It is unlikely that the general public would be able to effectively participate in a conversation on environmental justice. In addition to this, ecological modernisation scholars posit that civil society, active in environmental governance, will keep industry and government in check (Mol, 2000). With this theoretical backing in mind, it was deemed appropriate to limit the scope of participation to civil society.

Lastly, the scope of the study was also limited to cover energy policy and practice in South Africa. The study could have been conducted using any sector of the economy, but energy was deemed the most appropriate sector as research has already been conducted on ecological modernisation and energy governance in the country, and it was found that South Africa's

nuclear energy policy has clearly been framed by principles of ecological modernisation (Long and Patel, 2011). Therefore, with this in mind, energy was deemed the most likely sector from which results could be obtained. Therefore, the scope of the study was limited to energy governance in the country.

1.6.2. Ethical considerations

Within the social sciences there is always a need to consider the ethics of a study; this is so as human beings comprise the research subjects (Neuman, 2011). Essential research ethics entails a number of procedures that should be followed. Of consideration here is the fact that no research subjects' participation should be the result of exploitation, where for example a researcher uses the boss of a workplace to demand that employees participate (Silverman, 2011). All participation should be informed, understood and voluntary (Neuman, 2011). One of the concerns for gaining consent when doing research is that of vulnerable group ethics, children and adults with diminished capacity present ethical dilemmas where consent is involved, as they do not have the ability to make an informed decision to consent or to withdraw (Silverman, 2011). Consent that has been bought or bargained for represents unethical research behaviour, consent should be willing and unaided (Neuman, 2011; Silverman, 2011).

Consent may be granted in the form of a signed declaration to participate (Silverman, 2011). This declaration form should contain information about the research project in a language that the researched can fully understand in order to affirm that consent is in fact informed (Silverman, 2011). Once consent has been granted the subject must be aware that at any time he or she may stop the interview and refuse to participate further (Silverman, 2011). When conducting ethical research, it is imperative that the researcher not deceive participants about the research project, unless there is a justifiable methodological reason for this deception (Neuman, 2011). Deception may be unethical as it could potentially expose a research subject to harm they had not intended to consent to (Silverman, 2011).

A further ethical consideration is that of confidentiality. The identities of research subjects should remain anonymous or at least confidential in the written report unless the researched chooses otherwise (Neuman, 2011; Silverman, 2011). Silverman (2011) has observed that in some cases research subjects have found it beneficial to be named in the written report and

thus have requested it, it seems that the ethical thing to do here is let the researched decide for him/her-self whether to be named or not.

Keeping all of the above in mind we must consider what Wysocki (2004) observes: often research is not subjected to ethical review as the researcher often bases the need for ethical review on his or her own personal values which is concerning. Therefore, a researcher may not be aware of any ethical dilemmas that may become present or may deem those that do as not of any concern (Wysocki, 2004). This may lead to a compromising situation for both the institution for, or in which, the research is being conducted, the participants, and the researcher. In order to minimize the ethical risk associated with this research project, the research will follow the ethical guidelines adhered to by the University of the Witwatersrand (2016). The University has set out ethical guidelines for researchers based on guidelines laid out by the Singapore Statement on Research Integrity (2010). Following these guidelines the research proposal, along with the interview questions, information letter, and consent forms were drafted and sent to the University of the Witwatersrand ethical clearance board, changes made and ethical clearance obtained (see Appendix 4).

CHAPTER TWO
Theoretical Considerations and Literature Review

2.1. Introduction

Ecological modernisation has been identified as an entreating means by which to achieve development that is sustainable, but little is known about the applicability of using ecological modernisation as a normative approach in a developing world context, thus despite an upsurge in its use within this context. In light of this, the aim of this literature review is to call attention to the key features of the two discourses, namely ecological modernisation and sustainable development, and to bring to the fore some of the concerns regarding the implementation of these approaches. The major concern, to be highlighted here, is the inherent lack of justice, and more specifically environmental justice, considerations that have not been taken into account in the sustainable development discourse as a whole, as well as, and more specifically, ecological modernisation as a normative approach to achieving sustainable development. An overview of what social justice is, and more specifically environmental justice, will be discussed in a bid to illuminate the extent to which a lack of concern for justice has the ability to undermine society and thus sustainable development as a whole. Given the developing world context in which these discourses are being analysed, an overview of the gap which exists between ecological modernisation and sustainable development will be given. Additionally, the importance of embedding environmental justice into each of these discourses, specifically for developing nations, will be covered.

Furthermore, this research seeks to engage with issues of energy policy and practice in South Africa. To inform this end, literature on ecological modernisation in South Africa will be covered. In addition to this, literature covering environmental justice and energy policy and practice in South Africa will also be covered.

2.2. Ecological Modernisation and Sustainable Development

Ecological modernisation has its roots in the developed North and was initially proposed as a pathway to 'super-industrialisation' for European economies (Spaargaren and Mol, 2009). As such academics from the global North have dominated the thinking on this discourse as a whole. For some of these academics, ecological modernisation is merely a synonym for sustainable development, albeit an improved one (Buttel, 2009). For many governments and scholars, ecological modernisation is not necessarily a synonym, but rather the means by which sustainable development can be achieved. The European Union, as a whole, has identified ecological modernisation as the development pathway that is sustainable (Fudge and Rowe, 2001). Buy-in for the use of ecological modernisation is founded on the premise that ecological modernisation unites the goals of both environmental and economic objectives (Gouldson and Murphy, 1997). Nevertheless, for some, commitment to sustainable development in the form of ecological modernisation is merely symbolic and a means to maintain the status quo (Fudge and Rowe, 2001).

Baker (2007) has argued that while ecological modernisation and sustainable development are often used as synonyms they should in fact not be used as such. The premise for the argument is that the Brundtland report, which promotes sustainable development, conceptualizes the pathway to sustainability as one composed of a reduction in the growth of high consumption societies, namely in the North, to make way for development in the South (Baker, 2007). Ecological modernisation, on the other hand, promotes eco-efficient growth in industrialized nations; growth that is premised on industrial and societal reformation (Jänicke, 2008).

2.2.1. Seminal works and thinking on ecological modernisation

Ecological modernisation as a concept originates from the works of Huber and Jänicke. While introduced as a political programme, ecological modernisation was originally intended to be an interpretation of the development of environmental policy in Germany and the Netherlands. Weale (1992), referring to Germany, describes the 'ideology' of ecological modernisation as a denial of the weaknesses of the assumptions underlying the pollution control strategies of the 1970s (cited in Langhelle, 2000). These strategies were, according to Weale (1992), and as cited by Langhelle (2000, p. 305), based on the assumptions:

> . . . that environmental problems could be dealt with adequately by a specialist branch of the machinery of government; that the character of environmental problems was well understood; that environmental problems could be handled discretely; that end-of pipe technologies were typically adequate; and that in the setting of pollution control standards a balance had to be struck between environmental protection and economic growth and development.

Upon its inception the ideas of ecological modernisation actively challenged the demodernisation and deindustrialisation theories of the day (Mol and Spaargaren, 2000). Arguably more rigorously than sustainable development, it favoured capitalist development and the outcomes that increased development could have for improving environmental standards (Breukers and Wolsink, 2007).

Ecological modernisation theory has two scopes that illustrate its usefulness with regards to environmental management. Firstly, it can be seen as a theoretical framework used to analyse environmental management and secondly, and more practically, it can be used as a policy guide, steering policy making towards potentially sound environmental management and governance (Berger et al., 2001; Spaargaren and Mol, 2009). Huber (2009) acknowledges that the dynamics and linkages of technological advancement, policy framework, and social transformations, and how they impact ecological systems and natural resource use have been studied, and the findings have been largely embraced in the policy arena in country's of the developed North such as Germany and The Netherlands. He further states that by embracing these findings as a means to inform policy the developed North have made significant gains in restructuring their institutional, legislative and policy frameworks.

Ecological modernisation has gone through three phases during its evolution as a theory. In its early inception it was considered mainly a technocratic approach to environmental management (Gibbs, 2006; Mol and Sonnenfeld, 2000). This first wave of ecological modernisation was highly criticized for being too optimistic about the role technological innovation could and would play in addressing the mismanagement of the environment in the 1970s and 80s, and its inherent optimism regarding the self-regulation of the market (Mol and Sonnenfeld, 2000). As such, this technologically focused approach has been hailed as the weaker form of ecological modernisation (Milanez and Bührs, 2007).

The second phase in response to these criticisms looked less to the role technology would play, was less skeptical of the role of the state, and began to see state and market relations as intertwined, and therefore the notion of state regulation was re-introduced despite previous skepticism (Gibbs, 2006). Within this phase the important role society had to play in ecological modernisation was also acknowledged (Mol et al., 2014). It has been documented that within a capitalist society, proponents of development are not necessarily the most willing to concede to a change in the means of production. Therefore, government and society need to play an active role in holding the proponents of industry accountable by forcing them to take up these technologies even when the initial outlay may be costly (Breukers and Wolsink, 2007; Gibbs, 2000a). The inclusion of government and society within this process towards technological superiority, along with harnessing the power of production and environmental sustainability, has been labelled as the stronger approach to ecological modernisation (Berger et al., 2001).

The last and most recent phase of ecological modernisation is still developing as eco-modernists are actively trying to address criticisms stemming from the theories moot approach to dealing with consumption (Gibbs, 2006). Ecological modernisation throughout these phases of development has addressed a number of key themes; ecological modernisation and the economy; the role of science and technology; the role of the state, policy, and society. Each of these themes will be discussed below.

Historically the relationship between the environment and the economy has been highlighted as one of antagonism, where achieving the objective of economic growth resulted in mass environmental degradation (Gouldson and Murphy, 1997). For eco-modernists, the central tenet of ecological modernisation, is that the main objectives of environmental protection and economic growth can be aligned to great effect for the promotion of both environmental protection and economic growth (Milanez and Bührs, 2007). Consideration for the environment is therefore no longer a brake for growth and development (Gouldson and Murphy, 1997). Rather, it is acknowledged that a sound environment is a necessary precondition to ensure long term economic viability (Berger et al., 2001). This perspective on growth makes ecological modernisation a particularly attractive approach for both government and market actors. Additionally, ecological modernisation seeks to maintain the capitalist economy and is therefore favourable for economic actors as well (Mol and Jänicke, 2009). Although, it is accepted that the capitalist system has been a key driver of environmental degradation, ecological modernisation seeks to exploit this same system in order to effect change (Mol and Jänicke, 2009).

In order to bring about this change, proponents of ecological modernisation argue that economic actors should not be identified merely as environmental polluters, but should rather be seen as the bearers of reform (Mol and Jänicke, 2009). This viewpoint has clearly gone against the grain of environmental activists and thinkers since the inception of ecological modernisation in the 1970s (Mol and Jänicke, 2009). Market actors can facilitate change through the uptake of more efficient technologies in industry, and by doing so reform production to a means that has far less of an impact on the environment (Mol and Jänicke, 2009). This, in essence, would then allow for continued growth with minimal environmental impacts.

Both Huber and Jänicke, the originators of ecological modernisation, were optimistic about the role science and technology could play in alleviating the tensions that exist between the environment and the economy (Mol and Jänicke, 2009). The emphasis however, is a move away from end-of-pipe solutions and toward technologies that prevent the creation of pollution as a whole (Mol and Jänicke, 2009). Jänicke (2008) comments that in a world where resources are limited and the need for alternatives is obvious, there is an inherent demand within the market for the uptake of eco-efficient technologies. These technologies could then potentially increase both the quantity and quality of production which then furthers the demand for eco-efficient solutions in order for the industry to remain competitive with early adaptors. In a study of ten companies, undertaken by Gouldson and Murphy (1997), it was found that clean production resulting from manufacturing improvements offered both environmental and economic benefits for the proprietors.

For Jänicke (2008), it is present concerns that drive innovation, however there is a shortfall in that ecological modernisation and its techno-centric solutions fail to address issues such as species loss. Additionally, Milanez and Bührs (2007) argue that the technocratic strand of ecological modernisation is limited in that it is solely concerned with the means of production and neglects the rather paramount concern of overconsumption. Jänicke (2008) observes that if ecological modernisation is to be considered as a process of technological innovation and absorption then the political implications of this must be taken into consideration. He remarks that environmental innovations need political buy-in, or at minimum social buy-in, as a result of the failure of the market to naturally take responsibility for absorbing these technologies (Jänicke, 2008).

Whilst technological advancement is set to be the means by which environmental degradation will be halted, it has to first be absorbed by industry. Smart governance can use the economy and the capitalist system as the means by which to hopefully force industry to take up more efficient technologies in the means of production (Jänicke, 2008). In order to achieve this uptake the state is identified as having a crucial role to play in promoting ecological modernity. The state is seen as a regulator and emphasis is placed on the importance of the state being a 'smart' regulator at that (Jänicke, 2008). Smart governance applies to the important role government can play in keeping industry and pollution in check. By making the costs of environmental degradation too expensive, government in essence raises the business risks associated with being a polluter, and thereby coaxes industry into absorbing eco-efficient technologies in their means of production (Jänicke, 2008). However, the global mobility of capital does limit governments ability to effectively regulate (Mol and Jänicke, 2009).

In the founding days of ecological modernisation thinking, scholars were uncertain as to the degree to which environmental reform was the result of policy prescription, many believed these gains to be purely a coincidence. However Gouldson and Murphy (1997) argue that this is no longer the case, government using policy as a tool, could potentially make significant inroads into aligning the goals of environmental and economic programmes. By implementing policies that promote the absorption of eco-efficient technologies, environmental impacts are reduced at source rather than through end-of-pipe solutions (Gouldson and Murphy, 1997). These changes will, in essence, lead to significant improvements in the impacts of industry, and thus, environmental protection is not necessarily a threat to capitalism and economic growth (Gouldson and Murphy, 1997).

Ecological modernisation, in practice can be used as a policy guide, steering policy making towards potentially sound environmental management and governance (Berger et al., 2001; Spaargaren and Mol, 2009). There are a few writings addressing exactly what a policy written from eco-modernist principals should look like. One of the few key texts that has sought to engage on this topic was written by Maarten Hajer (1995). Hajer (1995) has identified six criteria that must be present in policies which seek to promote a sound pathway towards ecological modernity. The *first* criterion anchors on the importance of all stakeholders accepting the simple fact that prevention is always better than cure: it is better to prevent environmental degradation by looking at the chain of production as a whole and making it more sustainable, instead of the

reactive add on, or end of pipe solutions that are so often times embarked on (Hajer, 1995; Jänicke, 2008).

Secondly, there must be an internalisation of the cost of environmental degradation: no longer should damage to the environment be seen as an external in the costs of production, but rather through ecological pricing it should be incorporated within the cost of manufacturing (Mol, 2002). This should be done in a bid to ensure that continued environmental degradation (e.g. pollution) and exploitative natural resource use become too expensive for industries to ignore. This in turn will add financial pressure, and further incentivise industries into adopting more effective and efficient technologies in the means of production (Mol, 2002).

Thirdly, the polluting party must be held responsible and charged the cost of environmental degradation rather than those impacted upon (Hajer, 1995). This would be done through a system of pollution taxes to ensure that those industries and consumers responsible for the production of harmful goods absorb the costs of manufacturing them (Hajer, 1995). This has meant that ecological modernisation, as a policy process, has mainly been responsible for the economisation of the environment. Whereby the environment is identified as an economic resource, and a properly functioning environment is the result of good corporate management and cost saving (Berger et al., 2001). This is a direct result of the polluter pays principal that is engrained in ecological modernisation thinking (Berger et al., 2001).

Additionally, there should be an extensive focus on science within the policy framework. Science can be a vital tool for proving the extent of environmental degradation and can also be used for seeking the means by which these problems may be addressed (Blewitt, 2008; Gouldson and Murphy, 1997; Hajer, 1995). Therefore, in order to address environmental degradation through the uptake of efficient technologies, it is important to first invest a great deal of time and money into developing such technologies.

The *Fifth* criterion is based on the notion that pollution prevention will ultimately be cheaper. Through the use of advanced and more efficient technologies, Hajer (1995) argues that the price of production can potentially drop; resulting in the reduction or avoidance of environmental and other associated taxes (Hajer, 1995). This fifth aspect clearly alludes to the benefits of state regulation for eco-modernist policies, this contrary to the view that regulation is a hold on innovation. Gouldson and Murphy (1997) argue that industries' preempting regulation might

actually promote innovation and the uptake of eco-efficient technologies in a bid to reduce the ultimate costs of regulation charges. Regulation could also be viewed as a necessity in a world where companies perhaps need to be coerced into the uptake of costly technologies (Mol, 1999). Coercion is a necessity as market actors tend not to be altruistic (Mol, 1999).

Ecological modernisation having pointed to the failure of the state in managing the environment has highlighted the importance of including society and corporate actors in decision making. It can be argued that this needs to be included in policy if ecological modernisation is to be effective (Berger et al., 2001). Policy must therefore be participatory in its making and implementation, including both state and non-state actors (Berger et al., 2001). In addressing this, Hajer (1995) *lastly* identified that any policy framework must dictate and promote the participation of all stakeholders at all stages of environmental management. The state must ensure that it recognizes the impacts of all stakeholders on the environment, and in doing so encourage the engagement and participation of all interested and affected parties in environmental governance. Such an approach would not only promote a sense of resource ownership by all interest groups, but would also eradicate the mistrust and conflict that normally exists between the state and environmental groups (Hajer, 1995). By following Hajer's six policy criteria the state can facilitate the uptake of eco-technologies which promote the process of ecological modernisation and bridge the gap between theory and practice.

While Hajer (1995) has highlighted the various aspects that should guide policy makers towards writing policies that are more eco-modernist in nature, he has not alluded to the fact that polices should speak to each other. In addressing this, Gouldson and Murphy (1997) stressed that for gains to be made in the environmental sector, environmental goals should not only be written into an environmental policy, but rather into all policies. This would make all policy more pre-emptive in nature, rather than having one environmental policy that can be rather reactive in nature (Gouldson and Murphy, 1997).

Policy can arguably be used as a means to foster smart governance, as smart governance entails changing the role of the state in environmental governance. The state, as is argued, needs to declare a moratorium on acting as the sole governor of the environment and should rather become more reflexive, and share the burden of managing industry with vital societal actors (Mol and Jänicke, 2009). This process known as political modernisation is viewed as the

answer to the state failure that dominated the 1970s and 80s and led to mass environmental degradation (Mol and Jänicke, 2009).

Society as a whole also has a role to play within the process of modernisation. This role is founded in the belief that environmental damage is socially unacceptable (Hajer, 2009). However, much like the role of the state, it is also one of contention (Hajer, 1995; Martínez-Alier, 2012). Society is considered by some scholars and policy practitioners as irrational and anti-modernist which can impede growth. In the view of these scholars, society is of little or no help in advancing and promoting ecological modernity (Hajer, 1995; Martínez-Alier, 2012). Additionally, the opposition to technological innovations, by way of Not In My Back Yard (NIMBY) protests, in some societies or groups of activists for example, is cited as the 'selfish' attribute of society that can act as a hindrance towards attaining ecological modernisation (Hajer, 2009). While these arguments are evident in the literature there are also arguments to the contrary that have been used to cite the usefulness of society in the process of environmental change (see Buttel, 2009; Mol, 2000). Societies form the consumer base within the capitalist market economy, therefore society can change trends in the demand for products and in so doing can influence markets and production (Huber, 2009). It is therefore important for industry to take into consideration the opinions and concerns of society at large.

It is essential to emphasize that ecological modernisation also seeks to acknowledge the reflexive relationship that exists between the state, social movements and Non-governmental Organisations (NGOs) (Toke, 2011). Hajer (1995) is of the view that it is imperative for the state to identify environmental problems so as to avoid further conflict with social movements. From this line of argument, it is evident that social groups are considered proponents of environmental preservation and are used as a means to pressure the state into acknowledging and responding to environmental threats (Christoff, 2009; Hajer, 1995). While social movements and NGOs form an integral part of ecological modernisation theory, very little work has been done to examine these movements in relation to ecological modernisation (Mol, 2000).

Ultimately, in providing a potential solution to the problem of environmental degradation, ecological modernisation seeks to maintain the capitalist economic system with reflexive governance and an increased emphasis on social actors to promote environmentally sound means of production through innovation (Gouldson and Murphy, 1997). Policies framed by ecological modernisation are essential for ensuring that this happens (Hajer, 1995).

2.2.2. Ecological modernisation as sustainable development

Ecological modernisation has been put forward as a means by which to achieve the broad goal of development that is sustainable (Fudge and Rowe, 2001). The sustainability discourse, as it is understood today, has been a lengthy process of consideration and debate that began in the 1950s and culminated in the 1980s when it became part of the mainstream debate surrounding the impacts of development (Hopwood et al., 2005). Sustainable development is defined as, "development that meets the needs of the present without compromising the ability of future generations to meet their own" (McCauley, 2013, p. 284; WCED, 1987, p. 1). Consequently, behind this now well-developed discourse, is the implicit understanding that present generations should conserve the environment and its resources to ensure that future generations can survive (Ott, 2014).

There are three broad schools of thought within sustainable development, one favours an eco-centric approach, the second is in favour of an anthropocentric approach and the last favours a techno-centric approach (Davidson, 2014; Imran et al., 2014). The techno-centric approach favours economic development and advancement in science and technology as a means to combat environmental limits. Alternatively, the eco-centric approach favours environmental preservation above all else (Davidson, 2014; Imran et al., 2014). Ecological modernisation fits within this techno-centric approach and has a detailed account of how sustainable development can be achieved (Spaargaren and Mol, 2009).

While ecological modernisation details a normative approach to achieving sustainable development, sustainable development, in and of itself, is a largely ambiguous term, void of any definitive meaning. As a result, actors are left to attribute meaning in order to make it unambiguous in any given context (Robinson, 2004). Some believe this vagueness is rather deliberate to allow for an increased focus on economic development under the guise of sustainability (Cordero et al., 2005).

As a broad discourse sustainable development is hinged upon three goals, or imperatives, that could potentially secure a favourable outcome for future generations, these being: economic growth; a progressive society; and environmental protection (see Figure 2.1) (Opp and Saunders, 2013). For the first time since the inception of the development debate, sustainability as a discourse has added and popularised consideration for the environment (Waas et al.,

2011). While economic growth, environmental protection, and social progress are inherent components of sustainable development, one of its most defining features is the acknowledgement that these three components do not act in isolation, but are interlinked (Waas et al., 2011). The bringing together of the economy, the environment and social concerns has meant that sustainable development has become the umbrella approach used to guide policy and decision-makers (Hugé et al., 2013). In addition, this three-pronged ideal of sustainability has become the framework by which sustainability has been analysed (Chang, 2013).

Sustainability has been broadly categorised as being either strong or weak in its intensity (Rozema et al., 2012). Weak sustainability is characterised by the belief that both natural and human forms of capital can be substituted and sustainability still attained (Ekins et al., 2003). Strong sustainability, on the other hand, denotes that human and natural capital are not substitutable and must be preserved in their own right, such as ecosystem services[1] essential for life (Jain and Jain, 2013). However, Ekins et al. (2003), comment that there exists a gap between the reality of development and the appreciation of natural capital and calls this 'the sustainability gap'.

In the past the dominant approach to sustainable development was to view the economy, the environment and society as three separate spheres that interlinked, and where all three spheres overlapped sustainable development would occur, see Figure 2.1 (Hopwood et al., 2005). This particular approach allowed for each sphere to be seen as separate, and as such made it possible for one sphere to be focused on at the expense of the other two (Hopwood et al., 2005). A system of trade-offs has been the result, trade-offs that do not necessarily translate into development which is sustainable (Hopwood et al., 2005). This approach is therefore the weaker form of sustainable development.

[1] Ecosystem services can be defined as the benefits or support that people derive from the environment (*Millennium Ecosystem Assessment: Ecosystems and Human Well-Being: Synthesis*, 2005).

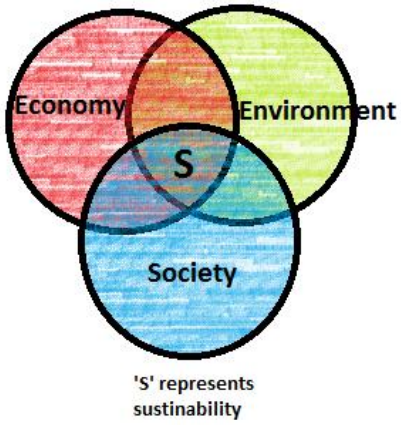


Figure 2.1: Illustration of weak sustainable development (adapted from Lozano (2008))

In response to this system of trade-offs a new model has been put forward which promotes the nesting of each sphere within one another, see Figure 2.2. This model has the environment as its outermost sphere, as society and the economy are inherently dependent upon natural resources for development and sustained livelihoods (Giddings et al., 2002). Nested within the environment is society, and within society is the economy, as such the approach to sustainable development must acknowledge that economic development does not happen without consequences for the environment and society, and therefore cannot happen independent of these two spheres (Giddings et al., 2002). As a result of this model, there is an understanding of the interrelatedness and dependence of each of the spheres; therefore development is more likely to be sustainable if this approach is adopted (Giddings et al., 2002). From this model it is also evident that a trade-off in one sphere would compromise all. This understanding has brought to the fore the understanding of what strong sustainability is.

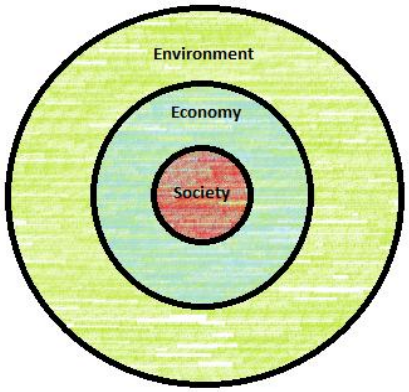


Figure 2.2: An illustration of strong sustainable development (adapted from Lozano, 2008))

2.2.3. Critiquing ecological modernisation and sustainable development: where is the justice?

Thus far, concerns over definitions, interpretations and implementation of sustainable development have been brought to light. Whilst these debates continue to circulate there is still the consensus that achieving sustainable development is a necessity. Ecological modernisation as a proposed means to achieve this has not gone unscathed. There are critics who raise fundamental concerns regarding ecological modernisation as a theory and a political program. A leading concern amongst critics is that ecological modernisation does not promote any significant change, it is simply a means by which business can carry on as usual without being hindered by any deep 'green' sentiments (Gibbs, 2000b). In a similar vein, it is argued that government and business have mutual interests and so any substantial policy restructuring to promote ecological modernisation will be limited and ineffective (Gouldson and Murphy, 1997).

One of the core concerns or criticisms of ecological modernisation is the fact that ecological modernisation deals mainly with the problem of production, and as such, negates the problem of consumption or over consumption in some cases (Carolan, 2004). Where environmental gains have been made in reducing the impact of production, they have been off-set by a growth in the amount of consumers, resulting in no or limited net gain (Gouldson and Murphy, 1997). Compounding the problem is the fact that much of the gains that have been claimed, are not necessarily a true reflection of gains on a global scale. There has been a great deal of displacement of the means of production as opposed to costly restructuring (Langhelle, 2000).

In line with this the increase in distance between consumers and the means of production has meant that consumers rarely see or feel the impacts of the products that they use and as such they are unlikely, as ecological modernisation posits, to pressure industry to change (Carolan, 2004). As concluded by Carolan (2004, p. 252) it would be a grave mistake to, “conflate efficiency with sustainability”.

Hovardas (2016) has posited an interesting critique to the ecological gains claimed by eco-modernist nations. His argument is as follows: “Demand for new means of production to replace less efficient, outdated equipment would lead to an additional demand for raw materials and equipment in the department of production that manufactures means of production” (Hovardas, 2016, p. 6). Therefore, it is possible that net gains are initially offset by this need for increased production in the means of production.

Capital, as argued by Gouldson and Murphy (1997), has a limited capacity to promote innovation, and therefore relying on capital to be one of the main proponents of innovation is not ideal. As a result ecological modernisation and its reflexive stance on governance is unable to deal with issues of overpopulation and climate change, present in the twenty first century (Andersen and Massa, 2000). In line with this the ‘softer’ forms of governance, as proposed in weak ecological modernisation have largely been untested, and while capital capacity may be limited the role social and environmental groups may play is brought into question (Milanez and Bührs, 2007). It is unknown whether environmental groups will push their own idealized mandates at the expense of more far reaching public interests (Milanez and Bührs, 2007).

Social justice is a crucial, but neglected, component within the discourse and implementation of sustainable development (Hopwood et al., 2005). The importance of the inclusion of social justice within the discourse of sustainable development is essential, as sustainability can only be achieved when issues of inequality of living conditions and unequal wealth distribution, among others are addressed (Davidson, 2014). Within the category of social justice, environmental justice is one of the major areas of concern as it deals with the unequal distribution of ecological benefits and burdens (Warlenius et al., 2015). An example of such injustice is the fact that the development of open spaces and parks crucial for eco-system services, as well as social benefits have been found to mainly benefit white and affluent communities in the United States and China (Wolch et al., 2014). In response to this there has been an upsurge of calls to make sustainable development more ethical by including issues of

poverty and by promoting an acknowledgement of the inherent value of natural beings (Ott, 2014). Ott (2014) argues that it is unethical to concentrate so much effort on intergenerational equity when there is so little focus on this generation and the rife poverty that exists.

In response to such injustices, on a local scale, Deutz (2014) has taken a Marxist approach to assess the true nature of the social sphere within sustainability. He has found that class does in fact perpetuate inequality and injustice within the sustainable development approach. Governments who are aligned with the proponents of capital often do not intervene on behalf of labour, and decisions taken to implement green development as a means to promote job growth for social sustainability have proven fruitless (Deutz, 2014). The result of this is an increased promotion of competition between capitalists, while the labour class is subjected to fragile jobs reliant on capital. Deutz, (2014) in conclusion advocates for the abolishment of the capitalist market economy as it is not, and cannot be, conducive to social sustainability.

Agyeman and Evans, (2004) have found that while a commitment has been made to sustainable development in some form or another by many states, they have not done so within the setting of social justice, whereby human rights and equity for all are a necessity. Ecological modernisation, as a theoretical and normative approach, falls short in this area as well. While ecological modernisation has been widely embraced as a means to sustainability, it remains severely critiqued for its lack of social justice (Mol and Jänicke, 2009). Baker (2007) argues that the result of the industrial rather than the capitalist focus of ecological modernisation is a lack in emphasis, or even acknowledgement, of issues concerning social justice and wealth distribution. The fact that ecological modernisation promotes growth, rather than hinders it, as well as the emphasis placed on technology and industries reducing their ecological impacts, has resulted in the approach being labelled ‘sustainable’ (Mol et al., 2009). While the theory does evidently allow for further economic growth and does call for a reduction in ecological damage through technological advancement no mention is made of the potential social justice implications of embracing an ecological modernisation approach (Scott and Oelofse, 2005). Eco-modernist theorists are said, by some, to be unaware or unconcerned with both the procedural and distributional injustices that would occur as a result of relying on this growth-centred approach to the environment and the economy (Bailey et al., 2011; Langhelle, 2000). Modern society is composed of already existent inequalities in both wealth and power that are the result of the capitalist market economy that ecological modernisation seeks to promote (Blowers, 1997). The potential therefore exists to steepen these inequalities through the

promotion of ecological modernisation in policy and practice and is cause for concern (Blowers, 1997). Therefore, when all three pillars of sustainability are considered, ecological modernisation as such, cannot be considered an approach that leads to strong sustainability.

Huber (2009) argues that issues of social justice, such as environmental health-and-safety hazards, will motivate industry to join the drive for modernisation in a bid to restore the 'image' of industry. Therefore, social justice claims may actively drive industrial modernisation. However, there may also be social justice claims that come about as a result of this modernisation. Ulrich Beck (1997) heeds that advances in technology have placed society in a precarious position of risk. An example of such a technological failure is Chernobyl, an incident that has resulted in prolonged social justice implications, not only for those immediately affected, but for future generations as well (Christoff, 2009). Technological failures such as these have generated scepticism and distrust towards industry amongst society which may be a hindrance to the process of modernisation (Christoff, 2009). Thus social justice claims may very well promote modernisation, but may also stem from this process. Bearing this in mind, it is impossible for ecological modernisation theorists to ignore the usefulness of social justice, and also the potential resultant hindrances to justice if ecological modernisation is embraced as a guide to sustainability.

Hajer (2009, p. 86) argues that the "social sciences should […] search for the conceptual apparatus that can facilitate instrumental control over nature and minimise social disturbances". He goes on to argue that, "the social sciences role in solving the puzzle of ecologisation is to come up with ideas of how behavioural patterns might be changed and to help understand how 'anti-ecological' cultural patterns might be modified" (Hajer, 2009, p. 86). In this sense Hajers' argument seeks to abate social opposition to 'anti-ecological' thinking. Hajer (2009), however, follows the two tier unsustainable thinking, he is concerned only with anti-ecological thinking and not necessarily societies claims to justice, that may also be anti-ecological. He further identifies Not In My Back Yard (NIMBY) protests as essentially selfish and therefore these protests must be restricted. This however, fails to consider legitimate NIMBY claims that are selfish only in that the claimants wish not be put at risk. Christoff (2009) argues that this focus only on the ecological is an example of weak ecological modernisation. Strong ecological modernisation in contrast must be critical and reflexive of, and towards, the use of technology that acknowledges not only the environment but human rights as well (Christoff, 2009).

Both ecological modernisation and sustainable development have been criticised for not embedding issues of social justice. In terms of sustainable development, this would mean that there has been a failure to embed the social within the economic and environmental realms, thus sustainable development as it stands can be classified as weak. Ecological modernisation too has failed to embed the social realm within its conceptualisation and normative use and thus it is also a form of weaker sustainable development. Therefore, in order to achieve strong sustainability, using ecological modernisation, it is imperative that justice be incorporated into the theoretical and normative understandings of both sustainable development and ecological modernisation. It is to this end that ecological modernisation scholars are beginning to engage with issues of justice, power and globalisation in a bid to address some of the more substantial critiques of earlier theorising (Mol et al., 2014). This thesis fits squarely within this engagement on issues of justice.

2.2.4. Bringing justice into the mix

The discourses of social and environmental justice have been around for quite some time, and embedding them into ecological modernisation as a means to sustainable development would only add to strengthen sustainability on the whole. This next section of the review will seek to outline the key components of the literature on social and environmental justice in a bid to get a clearer understanding of what is lacking in the discourses of ecological modernisation as well as sustainable development. Sustainable development, it seems, is the discourse that all other approaches to governance must curtail to. Like ecological modernisation, scholars are calling for the intersection of environmental justice and sustainability (Agyeman et al., 2002; Agyeman and Evans, 2004; Outka, 2012). It is argued that the Brundlandt report calls for an emphasis upon justice as the grounding for development (Agyeman et al., 2002). Outka (2012) acknowledges sustainable development, but puts forward that justice refines this discourse by focusing on the distribution of environmental ‘goods’ and ‘bads’ within and between communities. Therefore, for any development to be considered sustainable it must be just. Agyeman and Evans (2004) have termed this intersection ‘just sustainability’ and argue its necessity. In order to achieve just sustainability, Agyeman and Evans (2004) would see government and policy makers influenced by the very practical environmental justice movement which seeks to abate risks all together as opposed to distributing them evenly. In doing so the top down approach of sustainable development will meet the grassroots approach of

environmental justice, and an alliance can be made to better reach 'just sustainability' (Agyeman et al., 2002).

Environmental justice first originated in the United States, amidst what was evident racism in the location of polluting facilities, however, in the subsequent years the discourse has expanded both theoretically and in terms of the locality of study (Mohai et al., 2009). Schlosberg (2013) investigates the horizontal and vertical expansion of environmental injustice studies. By vertically, it is meant that the number of countries that are now looking at the internal workings of environmental justice has grown in number. By horizontally, what is meant is that in more recent times studies of environmental justice are no longer contained within the borders of the nation state. Academics are starting to explore the cases and causes of environmental injustice on a global scale, where the actions of one state has an implicit effect on claims to justice in another (Schlosberg, 2013). Authors such as Gibson-Wood and Wakefield (2013), Pellow et al. (2000), and Raddatz and Mennis (2013), to name a few, have explored the causes of environmental justice within the nation states of Canada, the United States and Germany respectively. While the effects of one nation state on another have more recently been included in the scope of environmental justice research by Bullard and Johnson (2000), Pellow et al. (2001), Pellow and Brulle (2005) and Schlosberg (2013).

From this increase in the number and locality of environmental justice research, it is clear to see that the prominence of this discourse and the social ills it aims to address are still pertinent today. However, the theoretical underpinnings of this discourse have evolved as research and understanding of the topic has increased. In its inception, environmental justice in the United States was based solely on racial discrimination and thus was termed environmental racism. It has since adapted as evidence came to light, that environmental discrimination was not always based solely on race, but in many instances societies were discriminated against on the basis of class, as such it is now termed environmental justice (Pellow and Brulle, 2005). Whilst much of the theoretical understandings of justice have changed, two of the most influential thinkers on the discourse of social justice are Iris Marion Young and Nancy Fraser. Even though majority of their work was written in the late nineties it is still cited with much fervour in recent studies.

As a discourse, many of the studies that sought to highlight evidence of environmental justice were focused mainly on the distribution of environmental 'bads', and how some communities bore the brunt of these 'bads' whilst others received little to none (Schlosberg, 2013).

Environmental justice therefore speaks to the equitable distribution of both environmental goods and 'bads' amongst people. Therefore, in reference to sustainable development, it is important that this distribution be both fair, within this generation, as well as for generations to come (Martínez-Alier, 2012; Scott and Oelofse, 2005). Environmental injustice does not occur in isolation, Agyeman et al. (2002, p. 77) comment that environmental injustice is linked to issues of, "social justice, equity, rights and people's quality of life". Environmental justice is therefore based on issues surrounding the functioning of society and people within their respective society. As such the work on environmental justice has since moved from a sole distributional focus to attempts to incorporate issues of procedure and recognition that act to impede the realisation of justice goals (Agyeman and Evans, 2004).

Defining environmental justice, much like sustainable development, has been a tricky endeavour. Often scholars find themselves unable to identify the geographic distribution of environmental 'bads' as "evidence of inequity, injustice, or racism" (Holifield, 2001, p.78). In addition to this, various actors choose to define environmental justice as they see fit, this leaves room for misguided attempts to achieve justice, similar to the way in which vague definitions of sustainability can be manipulated (Holifield, 2001). As such environmental activists, at the grassroots level, call for justice that eradicates all production of toxic waste. In stark contrast to this, as evidenced in the United States, government has chosen to interpret and define environmental justice as a process whereby toxic waste can still be produced as long as the resultant 'bads' are not disproportionately laid to bare on disadvantaged communities (Holifield, 2001).

Agyeman and Evans (2004) favor the definition set out by the Commonwealth of Massachusetts regarding environmental justice. Here the guiding principal of environmental justice is that of equity and the right to be protected from harm that results from an unclean, unhealthy environment (Agyeman and Evans, 2004). It extends beyond this to include participatory decision making in all aspects of environmental governance, namely laws and policy development and implementation (Agyeman and Evans, 2004). This definition is favored as it brings to light the necessity for environmental policy to be proactive rather than reactive in instances of injustice. As such it aligns with the thinking of ecological modernisation in that prevention is better than cure. In this instance, it would be better to prevent injustices from occurring rather than reacting to an impact once it has already been felt.

Agyeman and Evans (2004) remark that there are two means by which environmental justice can be practiced. The first can be described as environmental justice in social action whereby environmental justice is used to mobilise and promote action within communities. The second aspect of environmental justice is its use as a policy principle in guiding decision making (Agyeman and Evans, 2004).

Concern has been raised over the discourse and practice of environmental justice. By including issues of justice into environmental discussions, the potential exists for environmental justice advocates to undermine conservation efforts by placing human wellbeing over the wellbeing of the natural world (Holifield, 2001). Another concern raised by Holifield (2001) is that because the interpretation of environmental justice at a grassroots level is not open to scientific analysis, it has been discounted by social scientists. Ecological modernisation on the other hand seeks to include environmental activists in the governance of the environment as they are imperative to keeping capital in line. For this reason it is vitally important that social scientists start to recognise the value of alternative arguments, not grounded in analysis, as a means to help address issues of justice.

In attempting to understand the causes of environmental injustice, Mohai et al. (2009) identified economic considerations, socio-political or race, to be among the most cited causes of this type of injustice. Economic factors pertain to impoverished communities who carry the burden of industrial growth simply because they live in areas where land and other externalities are cheaper and therefore are attractive for industry (Mohai et al., 2009). Socio-political causes stem from the fact that governments and industry will develop in areas where social resistance is minimum; such communities are often impoverished communities that are usually a racial minority (Mohai et al., 2009). Lastly, racial causes are found where industrial pollutants are most vehemently imposed on communities of colour who rarely benefit (Mohai et al., 2009). These racial minorities are usually communities who do not have abundant resources and the political power to oppose polluting industries as opposed to many white, wealthy, politically allied communities.

2.2.5. Theorising social justice and its links to environmental justice

This section of the literature review will seek to review two of the more influential theorists of justice, namely Iris Marion Young and Nancy Fraser. Both of these women have been influential

scholars in debates of justice and how injustice should be addressed. Their arguments have had extended influence on environmental justice thinking as a whole. Young (2011) contends that when assessing justice, the distribution of 'goods and bads' should not be the focus of analysis, but rather the issue of domination and oppression should take centre stage (Young, 2011). As such she has chosen to define justice as the "elimination of institutionalized domination and oppression" (Young, 2011, p. 15). If distribution is the sole focus of any justice claim this could potentially result in an oversight of issues arising from institutional organisation. Therefore, the distributive focus of justice is imperative, but should be limited to claims on material goods. Young (2011) also argues that instead of trying to extend the scope of distribution to non-material goods, as some have tried to do, theorists should rather let "oppression and domination [...] be the primary terms for conceptualizing injustice" (Young, 2011, p. 9). By including domination and oppression, the result will be calling into question assumptions such as power relations within a society, which includes the power to make decisions on how labour is distributed, as well as issues of cultural oppression (Young, 2011).

Young (2011) has identified five faces of oppression that occur in modern society that, as she illustrates, are often enacted on groups of people and go beyond distributive conceptions of justice. These five faces can be used to assess whether a particular group has a claim to justice or not. The ***first*** of these faces is exploitation. Young (2011), argues that the injustice of exploitation that allows for capitalists to gain power and wealth at the expense of labour cannot be addressed through mere redistribution, what is required here is restructuring institutions and the processes that result in decision making (Young, 2011, p. 53).

The ***second*** face of oppression is that of marginalisation (Young, 2011). Marginalisation is the exclusion of certain groups of people from the labour market. Reasons for exclusion vary, but Young (2011) has given the examples of race, older people, single mothers and the physically disabled. The result of this is a material deprivation experienced in these groups of people, as well as, bearing the burden of social exclusion on the basis of not contributing to maintaining society. The first of these can be addressed using a distributive paradigm, but the second cannot (Young, 2011).

Powerlessness is the ***third*** face of oppression (Young, 2011). Shaped by Marxist thinking powerlessness is a condition of the inherent hierarchy in a capitalist society. Not only is there a power disparity between the capitalist and the labour force, but there are also various power

disparities between various factions of labour, where professionals have more power than non-professionals and are benefitting somewhat from the exploitation of non-professionals. These non-professionals lack power and this is illustrated in the hierarchical way decisions and policies are made, resulting in a vehement lack of respect for these individuals. A distributive approach to seeking justice will not be able to address these forms of injustice embedded in the social construction of labour; it is the construction itself that needs to be addressed (Young, 2011).

Fourth on the line up of faces is cultural imperialism. This form of oppression sees the marginalisation of communities whose culture is not in the majority, and does not ascribe to the norm. Dominant groups therefore project their opinions, views and experiences of events onto the remainder of society. As a result of being in the majority, and being able to shape and project certain interpretations, these dominant social groups often view any break from the norm as a deficiency and these lesser groups are then alienated. In this instance, once again a distributional approach to seeking justice will not suffice, what is required here is political will to alter this stigmatization, and to allow for people who are 'othered' to be included (Young, 2011).

The ***fifth,*** and last face of oppression identified by Young (2011) is systemic violence enacted upon various groups within society. This violence is described as random violence without provocation in order to humiliate the person or group the violence in enacted upon. Examples of such violence would be xenophobia, violence against homosexuals, women and children. Young (2011) remarks that it is not the act of violence itself that is of concern here, although deplorable, but rather the social acceptability of these acts. Therefore, of concern is the existence of a social practice that allows such systemic violence to occur in the first instance. Once again, a distributive notion of justice will not be able to address violence as a face of oppression and injustice. What is needed here is to address the institutions and social practices that allow for this kind of violence to be condoned (Young, 2011).

In contrast to other environmental justice thinkers, Young (2011) calls for recognition of social group differences. She reasons that only through recognising cultural differences that have resulted in injustice, will true equity and justice prevail. Young (2011), unlike some of her counterparts, feels that in assessing claims to justice it is essential that group politics be considered. She claims that it is imperative that different social groups be identified in situations of injustice and through this recognition amends can be made. This is important as she goes on to state that, in a democracy, it is through the politics of groups that decisions are made that

affect all, and as such majority groups dominate the minority, which leads to situations of injustice. This contrasts with a distributional focus that tends to focus on the individual.

Welfare capitalism, according to Young (2011), has only exacerbated the problem of injustice in that it has actively depoliticised the process of governance. A vast minority of interest groups in a system such as this are responsible for policy writing and decision making that, in essence, determines the distribution of goods and ills (Young, 2011). Welfare capitalism has therefore allowed for the creation of groups, these groups are in positions of power to varying degrees. When analysing claims to justice, using the distributive paradigm only, Young (2011) argues will only perpetuate injustice. What is called for is a democratic decision making process that removes power from the few and returns it to the many (Young, 2011).

Discussions of justice, framed by Marxist thinking, critiques the capitalist system and the distributional injustices that occur when wealth is owned by the few. Young (2011) argues that this Marxist critique of capitalism, and its inherent injustices, is incomplete as it fails to address the social structures that have been used to construct this capitalist system. Class and the modes of production, she argues, must be viewed through the lens of the societal relations that have structured them. Hence, there is a vital need to include issues of domination and oppression when considering issues of justice.

Young (2011) ultimately argues that using a distributive justice paradigm to address injustice in a welfare capitalist society is not sufficient. The capitalist welfare system has actively reduced citizens of the state to mere producers and consumers and in doing so, has minimized the political aspect of life. Without any political power individuals cannot influence decisions that will ultimately impact upon them (Young, 2011). These forms of injustice cannot be addressed using a distributive paradigm and therefore this paradigm is unsuited to states following a capitalist welfare system. It is social movements that have often pushed the state to consider such issues of injustice. However, the alliance that exists between state and capital makes this a difficult issue to address, even though the welfare system serves the public better than a capitalist system (Young, 2011).

Social movements have come to understand that issues of justice extend far beyond distributive causes. They have started to address issues of domination and oppression by questioning the relationship that exists between state and capital, and the impact that this hegemonic

relationship has on the general public (Young, 2011). Young (2011) argues that to address these issues of justice there needs to be a complete shift towards a more democratic decision making procedure, where society can influence the outcome of decisions that directly affect them. Since ecological modernisation seeks to exploit, rather than abandon capitalism, this would be an issue that would need to be addressed when ecological modernisation is put into practice.

Fraser (2008), much like Young, also grapples with justice and how to best address issues related to injustice. According to Fraser (2008, p. 16), "the most general meaning of justice is parity of participation. According to this radical-democratic interpretation of the principle of equal moral worth, justice requires social arrangements that permit all to participate as peers in social life". For Fraser (2008), it therefore becomes a question of whether redistribution, recognition, or representation would be best suited to dealing with claims of injustice. She contends that given the geographic scope of many claims to justice (state citizens versus humanity as a whole); it is of great importance that scholars find the best way to address concerns over who gets to make a claim for justice. Fraser (2008) argues that allowing for representation will aid in addressing claims to justice within a politically distinct area. It is now accepted that in our globalised world the actions of states and capital are often not confined to territorial borders and therefore neither are their impacts. Adding representation to the order of justice, would also allow for consideration to be given to communities who have claims against states that are not their own, thus allowing for previously silenced claims to be heard.

Given that Fraser (2008) chooses to define justice in terms of equal participation for all, any obstructions that impede participation, must be abolished. Causes of injustice can be either economic in nature, where there is a maldistribution of resources impeding participation, or misrecognition where institutions and cultural practices hinder equity in decision making. Fraser (2008), argues that issues of distribution and recognition are important, however, in today's society we must first establish recognition. Fraser (2008) terms this a transformative approach and it seeks to use the 'all-affected principle', which supersedes state boundaries in identifying claimants. Ultimately, for Fraser (1995b), justice will only be achieved through a process of recognition that is combined with redistribution, for every claim for justice encompasses these two demands.

The works of Fraser and Young on social justice, have influenced environmental justice scholars in more recent times. Martin (2013), like Fraser and Young, suggests that in order to address injustice there needs to be a focus on the underlying causes. Schlosberg (2013) in an attempt to theorize environmental justice remarks that equity has always been an important component of discussions on justice, but with the added racial component, there is also concern over recognition, which is a prerequisite for justice as argued by Young and Fraser. In addition, efforts to democratize decision making, in an attempt to allow for those affected the ability to speak has also been a major part of the environmental justice discourse that mirrors Fraser's (2008) call for parity of participation (Schlosberg, 2013). This is just one of the many instances where the works of Young and Fraser have come to influence the environmental justice movement by considering more than just distributive forms of injustice.

Both Young and Fraser are not willing to dismiss the importance of distributional justice; environmental justice scholars are much the same. There is still a great deal of concern over the distributional element of justice in readings on environmental justice. Within environmental justice much of the talk of distribution is concerned with the division of environmental 'goods and bads' (Martin, 2013; Walker, 2009). Associated with this is the more recent concern of the distribution of risk associated with the use of technologies (Schlosberg, 2013). Schlosberg (2004) goes so far as to state that definitions of environmental justice are far too limited in that they do not incorporate the ideas of Fraser and Young and lack consideration for issues of recognition, distribution and participation.

The international scope of the environmental justice movement, and the growing number of cross border justice claims signify the importance of Fraser's (2008) theorizing on parity of participation as a tool to address injustice. Recognition for all affected parties, regardless of state borders, could potentially aid in effective environmental justice. Environmental justice movements, both locally and globally, do identify with the distributional element of justice but this is almost always linked to a broader claim for recognition and parity of participation (Schlosberg, 2004). Environmental justice movements lay claims that align with the call for a distributional focus, recognition and participation that Young (2011), Fraser (2008), Schlosberg (2004) and Martin (2013) call for. Whilst all three of these elements are essential for justice, the cornerstone for achieving justice is based on recognition (Schlosberg, 2004).

Environmental racism has been identified as one of the defining factors depicting the call for environmental justice. Environmental racism is characterised by the fact that the poor and people of colour are subject to a disproportionately higher burden of pollution when compared to their wealthy white counterparts (Pellow et al., 2001). In a review of studies of environmental racism, Pellow et al. (2001) observe that scholars have come to identify with the theme of power and powerlessness and the difference between wealth and poverty. Communities of colour and the poor are disproportionately impacted upon as they are arguably less powerful than both capital and the state (Pellow et al., 2001).

Martin (2013) has looked into the procedure of environmental justice and argues that procedure in decision making is one of the ways injustice is perpetuated, and like Fraser (2008), Martin (2013) calls for parity of participation. Walker (2009) has looked into the spatial characteristic of parity of participation and argues that geography in fact does play a role in determining who gets included and excluded in decision making bodies. He describes this as a "closed geography of information, access and power" and argues that only by opening up this closed system can justice start to be attained (Walker, 2009, p. 627).

Within the literature there is also concern about the use of the capitalist market economy and the influence this has on achieving justice. Concern has been leveled over the fact that the capitalist market economy promotes an ever growing need for capital, therefore, promoting production and consumption at the cost of the environment and those living within it (Pellow and Brulle, 2005). It is the job of the state to regulate this process between capital and society, however, the state has failed to do so, and hence there exists environmental injustice (Pellow and Brulle, 2005).

Whilst theorists influence thinking around environmental justice, it is social movements who have turned the discourse into practice on a global and local scale. First world exploitation of the third world in the form of waste dumping first received international attention in 1991 (Bullard and Johnson, 2000). This process of dumping has created a pattern of consumption led communities dumping on poorer communities incapable of the same level of consumption, both within and between states (Bullard and Johnson, 2000). These are, "unequal and unjust waste burdens" and highlight the immoral and unethical nature of society as it exists today (Bullard and Johnson, 2000, p. 572).

In response to the increasing instances of injustice and the globalized nature of environmental injustice, efforts have been made to expand the environmental justice movement to match, both through rooting new organizations within states and also through examining injustice as it exists on a global scale (Schlosberg, 2013). However, it should be pointed out that the environmental movement, in first world countries, has had a detrimental effect on justice in the third world. Environmental movements have pushed for more stringent regulation and oversight of industry within their own nations, thus making a shift to the third world more desirable for these industries (Pellow et al., 2001; Pellow and Brulle, 2005).

On a local scale, Pellow et al. (2001) have found the environmental justice movement to be most positive in the United States as it has been able to effectively influence policy making. The movement has sought to bring to the fore the equal rights of all citizens, to a healthy and safe environment (Bullard and Johnson, 2000). As such, the movement was formed and gained impetus from the disenfranchised members of society who are generally racial minorities (Bullard and Johnson, 2000). There are active movements around the world in countries such as the United Kingdom (Agyeman, 2002), Germany (Raddatz and Mennis, 2013) and Canada (Gibson-Wood and Wakefield, 2013) all seeking justice. Some of these movements, however, are fraught with issues of dominance and class within themselves (see Gibson-Wood and Wakefield, 2013; Zeitoun, 2013).

2.3. A case for ecological modernisation for developing nations

Ecological modernisation, having been developed and practiced mainly in the global North, has been influenced by the level of development in each of these countries and tailored to suit that specific context. However, ecological modernisation has come to be studied and applied in developing countries such as China, Brazil and Russia (Mol et al., 2014). With this in mind, perhaps both the theoretical and normative approaches of ecological modernisation need to be reconsidered and adapted to better suit this new context.

Ecological modernisation was developed as a means for post-industrial nations to abate environmental damages that had occurred due to increased industrial activities (Spaargaren and Mol, 2009). As an approach for environmental management, ecological modernisation was considered a promising analytical and operational approach with which to harmonise

environmental protection, while at the same time increasing productivity and economic growth (Baker, 2007; Huber, 2009; Mol and Jänicke, 2009). Because of the focus of ecological modernisation, it was well received by both industry and government, as an important development and planning tool, integrating environmental conservation, economic growth, and sustainable development. Thus, the need to find viable and more effective ways of natural resource use, through the balancing of environmental protection, economic growth, and social development, triggered the discourse of sustainable development. Sustainable development now dictates that for any form of growth to occur in the South, all nations, particularly those in the developed North, will be required to rethink their development paradigm – from one that is high in natural resource use and consumption to one that is based on equitable distribution of resources across the globe (Baker, 2006a cited in Baker, 2007).

From this perspective however, Baker (2007) observes that ecological modernisation in the context of sustainable development does not denote an argument that is against the economic progress of post-industrialised nations, but rather advocates for the need to ensure that poor nations, and those still within the initial phase of industrialisation, reap the benefits of natural resource endowment. Huber (2009) for example, identifies the focus of ecological modernisation as the restructuring of industries within already industrialised nations in a bid to reduce ecological damage. Edifying this observation, Hajer (2009) states that the reorganising of industry is imperative as ecological damage is socially and environmentally unacceptable and unjust.

Although ecological modernisation, as a discourse, has gained ground within academia and policy discussions, mostly in post-industrial nations, the effect of these discussions still remains questionable. While it is true that developed countries are now experiencing reduced environmental degradation, due to reduced natural resource exploitation, this success cannot be attributed to increased ecological modernisation, but is a result of many industries from developed country's sourcing their productive materials, or even relocating and establishing their industries, in developing countries where environmental legislation is either weak or absent (Christoff, 2009). This development, according to Christoff (2009), has been facilitated by a number of factors, among which, the process of globalisation is paramount. Globalisation has not only entailed increased economic cooperation among country's of the world, but has resulted in increased resource consumption, particularly in country's of the developed North. Therefore, it can be argued that these country's have simply shifted their impacts on the

environment to country's rich in natural resources within the developing south. Thus, the relocation of production and the sourcing of raw materials from developed to developing countries, has essentially undermined the ultimate goal of ecological modernisation.

There are many examples of the shifting burdens of production from post-industrial nations to the global south (Meyfroidt et al., 2013; Ryan et al., 2014; Wiedmann et al., 2015; Yu et al., 2013). Steen-Olsen et al. (2012) found that Europe, who as seen above, has promoted ecological modernisation and claimed relative success, has rather a large impact globally due to its displaced impacts of production and consumption. Arumugam (2015) has argued that even though the impacts of production are often not in the same location as the consumer, consumers are becoming more aware of the impacts and are pushing for global reform. In contrast to this Steen-Olsen et al. (2012) argue that it is this very distance that allows for consumers to consume at the rate they do without due consideration for the environmental impacts. Whilst developed country's claim positive results from their process of modernisation, consumers living in these states may in fact feel that their actions, as sanctioned by the government, are in fact not all that detrimental to the environment. The culmination of Steen-Olsen et al. (2012) work resulted in a call for any assessment that is made to determine sustainability, be made with the entire production chain in mind, even when the consumer is distanced from the producer (Steen-Olsen et al., 2012). This may help consumers take full responsibility for their actions without being misled by governments who claim localised success.

Implications of production displacement and consumption can be devastating, especially when one considers the impact resource extraction has had on the African continent. The recent discovery of vast amounts of diamonds in Zimbabwe resulted in the profits being used to fund security forces and high ranking factions of the ruling party, thus further embedding corruption and diminishing the hope of democratic transition in the country (Saunders, 2014). In addition to this, corruption within these developing country's has been found to impact the poor the most, as they do not possess the material wealth to move away from corrupt officials and so are forced to pay bribes (Justesen and Bjørnskov, 2014). Deforestation of the Congo Forest, one of the largest forests in the world, has been pinned on the developed world, and will ultimately impact local livelihoods (Maathai, 2011). Additionally, resource wars throughout the African continent have resulted in the mass loss of life and continued underdevelopment (Maathai, 2011). The drive for resources, fuelled by the mass consumers of this world, has actively

displaced the environmental impacts of their consumption, and has resulted in human rights violations and mass social injustice when one compares these African country's to those in Europe. The case of exploitation is not only an African one, other developing nations in South America and Asia are experiencing similar environmental impacts that are the result of exportation to consumers in the North (Hosonuma et al., 2012).

Therefore, post-industrialising nations, whilst following the pathway of ecological modernisation to super-industrialisation, have merely shifted the burden of resource extraction onto developing nations. As such, any claim to development that is deemed economically, environmentally, and socially sustainable in these country's is at the global level unsustainable, and most importantly, is unsustainable in developing nations. The environmental and social justice implications for these country's are profound, to the extent that resources are considered a curse, as is the case in oil rich Nigeria (Idemudia, 2012).

Not only is resource extraction an issue in the developing world, but the shift of industry from the developed world, to developing nations, has also garnered further impacts on the south for production destined elsewhere. Amongst the reasons for this shift is the fact that developing countries who are in need of investment and job opportunities have weak institutions to control and govern multinational corporations (Idemudia, 2011). In addition to these weak regulations, there exists a power relationship that sees developing country's carrying much of the burden of production (Idemudia, 2011). In some cases developing country's merely lack governments who take a proactive role in corporate governance as far as impacts are concerned (Ackah-Baidoo, 2012). In Africa, weak institutions have meant that multinational corporations have extracted large sums of money through tax evasion back to the developed world, in addition to this, much of the profits made are the result of a process whereby the costs of production are externalised leaving local governments to pay for the social and environmental impacts of production (Idemudia, 2011).

The case of China-Africa relations illustrates the fact that exploitation is not only between developed and developing nations. China has been identified as a country taking hold of the ecological modernisation banner and has seen vast amounts of economic growth as a result of its development (Wang et al., 2011; Yee et al., 2013; Zhu et al., 2011). China's impressive growth rate has impacted rather substantially on the African environment, and whilst China is

not yet developed it has been able to exploit its developing counterparts along the way (Mol, 2011).

Given the fact that resource extraction has resulted in much exploitation of the developing world, it is more imperative that developing nations implement ecological modernisation in a bid to ensure that extraction by external parties, production and growth become sustainable. In doing so perhaps global sustainability could potentially be achieved. Whilst we have addressed global injustice here, and identified the importance for developing country's to seek modernisation, we now turn to issues of justice at a local scale. Issues that would need to be addressed if developing countries were to embrace ecological modernisation.

In order to move forward the constructive role social movements can play in modernisation needs to be embraced (Buttel, 2009). Social movements have, through their critique, and opposition to ecological degradation, pushed industry to modernise, and thus have aided in the advancement of ecological modernisation (Buttel, 2009). Therefore, it is argued here that if environmental movements have been successful in pushing forward the advancement of industry to abate ecological damage, perhaps they can also be useful in stemming injustices that may result from further industrial development.

Environmental justice, as both a theoretical and practical movement, is concerned not only with the inequitable distribution of environmental 'bads' but is also concerned with the eradication of environmental degradation as a whole (Holifield, 2001; Schlosberg, 2013). In addition, environmental justice movements and scholars alike are also particularly concerned with not only the production of toxic waste, but also the human risks associated with such wastes (Holifield, 2001; Raddatz and Mennis, 2013). It is acknowledged that a working environment is a precondition for social justice to be attained (Schlosberg, 2013). As such, environmental justice scholars, much like their ecological modernisation counterparts, favour the precautionary principal, or the notion that prevention is better than cure, when it comes to managing the environment (Sze and London, 2008).

Within the practical implementation of justice theory, social movements are perceived as favouring degrowth in developed countries rather than justice through further modernisation (Martínez-Alier, 2012). In addition to favouring degrowth environmental movements are identified by some as being sceptical of scientific analyses and, as a movement, are anti-

technological advancement with scepticism reigning over the potential risks associated with the use of technology (Holifield, 2001; Martínez-Alier, 2012).This opinion however is not universal as social movements have been seen to not only identify with the potential of technological advancement, but also play an active role in the development and implementation of newer more efficient means of production (Pellow et al., 2001).

Social movements can be, and are, instrumental in the promotion of sustainable development. Environmental justice movements seek to address justice issues both at the individual and community level, and thus aid in making sure that the third pillar of sustainable development, i.e. social sustainability, is met (Schlosberg, 2013). Through conflict and negotiation between various stakeholders environmental inequalities can be minimised to ensure social sustainability. Social movements, as community representatives, are once again useful in the process of argumentation and negotiation (Pellow et al., 2001). Through conflict and negotiation, social movements in the United States have managed to alter policy and ensure that their environment is better protected (Holifield, 2001; Pellow et al., 2001).

Given the justice shortfall of ecological modernisation, it is argued here that a method of critical rationality be used to strengthen the approach of ecological modernisation (Benton and Craib, 2001). Critical rationality, as an approach to knowledge, identifies that through finding an antithesis to a thesis and combining the two, the synthesis will result in a stronger more apt theory. Here it would seem that the theory of justice has been found to be the antithesis of ecological modernisation. Therefore, by synthesising the two a more apt approach that meets all three of the criteria for sustainability and sustainable development may be found. Schlosberg (2004) argues that theorists of justice must also consider the demands made by civil society organisations, so as to develop an understanding of environmental justice in practice. As presented earlier, ecological modernisation scholars also acknowledge the importance of social movements for achieving better governance of industry, and therefore are essential in the process of modernisation. If social movements can be used as a means to promote environmental sustainability within the process of modernisation, they may yet be useful in the promotion of social sustainability as well.

Ecological modernisation theory states that society will become morally opposed to environmental degradation and thus push industry into taking up more efficient technologies. Whether this is the case in industrialised nations is questionable. The displacement of industries

to developing nations as well as the increase of consumerism within these states making this unlikely (Christoff, 2009). Whether these nations will, through lobbies and boycotts, push for a socially just industrial sector, when through displacement of industry, they are separated from the impacts of their consumerism is unlikely. It would seem that societies in the industrialising world, experiencing the environmental and social impacts of manufacturing, are best suited to push for sustainable practices in industry. Therein lies the question of whether the application of ecological modernisation is not in fact better suited to the industrialising world, as it is within these countries, where basic human rights are compromised, that the greatest potential for the development of environmental justice, which as the antithesis of ecological modernisation, may serve to better apply this approach in achieving sustainability. What would be needed, however, is an active society in these developing nations that can push industry into confirming to environmental and social standards.

2.4. South Africa

2.4.1. Ecological Modernisation and Environmental Justice in a South African context

South Africa's economic history has not always been geared towards capitalism and ecological modernisation. Initially the African National Congress (ANC) established The Reconstruction and Development Programme which was geared towards growth through redistribution (Williams and Taylor, 2000). After much pressure from wealthy capitalists, who favoured competing in the global economy, the ANC shifted its economic policy towards neoliberalism, which is an economic centred approach rather than people centred (Williams and Taylor, 2000). This has had notable implications for South Africa, but specifically the rich who benefited from a move away from redistribution and the poor who lost out from a lack of redistribution of the country's wealth (Williams and Taylor, 2000).

Given that South Africa has now taken to a neoliberal capitalist economy the country, as a case study, highlights the importance of economic growth given the need for development. As an industrialising country, South Africa, in following an ecological modernisation approach to sustainability, provides an opportunity to determine the potential implications of using this approach in an industrialising world context (Scott and Barnett, 2009). Therefore, in analysing South Africa's progress, since adopting ecological modernisation as a guide for development, it

is possible to identify the potential shortfalls of using ecological modernisation in policy and practice in a developing world context, whilst simultaneously allowing for the identification of potential solutions to these shortfalls.

South Africa's present day environmental concerns have been shaped by a history as controversial as it was unequal. During the apartheid era, conservation of the country's natural areas was a greater priority for the then government than providing adequate service delivery to the country's majority black population (Rossouw and Wiseman, 2004). The result of this has been a legacy of unequal development, and the unfair distribution of environmental 'goods and bads' that persists even today (Patel, 2014). In a means to redress these maldistributions environmental justice has been cited by academics as the ideal approach to guide environmental policy and practice within the post-apartheid era (Scott and Barnett, 2009). South Africa on the other hand, in following international trends has chosen to make sustainable development its mantra, using the highly technocratic approach of ecological modernisation to guide policy and practice (Scott and Barnett, 2009; Scott and Oelofse, 2005). This section aims to examine how this choice has subsequently played out, and been examined in the literature.

In this process of policy development, the new government, in a bid to align the three pillars of sustainability: the economy, the environment and society, in a manner suited to ecological modernisation, hosted the Consultative National Environmental Policy Process (CONNEP). The outcome of which was the National Environmental Management Act 107 of 1998 (NEMA) (Rossouw and Wiseman, 2004). In the development of the NEMA, the CONNEP process was the means by which the government effectively engaged with civil society organisations, as is called for by ecological modernisation theory, to draft the NEMA (Scott and Barnett, 2009). As a result, the CONNEP was praised for being both a democratic and consultative process that lead to the NEMA, which was itself praised for the principals of justice and democratic governing that were enshrined within it (Rossouw and Wiseman, 2004). This bold and promising first step towards an inclusive and just process of governance, which strived towards the ultimate goal of sustainable development, seems promising.

In the years post-apartheid and the affirmation of the NEMA as the guide for environmental management, South Africa has not attained a society built on the principles of justice, but rather one that has, as argued by some, followed only a pathway towards economic growth and development at the expense of environmental justice (Myers, 2008). Bond and Dugard (2008)

have identified injustice in water distribution as an example of this. As a result of the South African government pursuing neoliberal economic growth, favouring privatisation, South Africa's water sector has been privatised; companies therefore have control over a substance basic to human rights and yet care little for the just distribution of this (Bond and Dugard, 2008). Environmental justice and ecological modernisation are therefore seen to be at odds with one another, which has resulted in the subsequent criticism of using ecological modernisation as a guide for policy, and a call to use a strictly environmental justice based approach (Scott and Barnett, 2009). This is a far cry from the promising starting point of the CONNEP and the resultant NEMA.

In assessment of the CONNEP and the NEMA process and implementation scholars have actively tried to deduce what went wrong. It has been found that a lack of continued and meaningful public participation, and the failure to actively include and promote civil society in an ongoing and consultative process, as being one of the reasons for this now apparent disjuncture (Barnett and Scott, 2007; Scott and Barnett, 2009). Civil societies are now seen to be in opposition to both government and many economic actors, rather than working with them, for the purposes of pushing the country's brown agenda and issues of environmental justice (Barnett and Scott, 2007; Leonard, 2012; Scott and Barnett, 2009). This opposition is mainly due to civil society identifying environmental injustice as being the result of the pro-economic development approach taken by the government (Barnett and Scott, 2007). This approach encompassing a lack of meaningful pollution limits and the enforcement of pollution controls on industry, even in light of the social injustices that emanate from this (Barnett and Scott, 2007).

Additionally, the country's very technocratic, science based policies, and the use of science to prove degradation and seek solutions, has arguably aided in limiting effective public 'non-scientific' participation (Patel, 2009). Civil society organisations within the country have tried to counter this by employing scientists to compile empirical data that is used to prove the lack of proper governance of industry (Scott and Barnett, 2009). Civil societies have therefore actively found a way to use science to prove their problem and promote the environmental justice agenda in the country (Scott and Barnett, 2009). This need to oppose stems from innate power relations embedded in the policy formulation and practice arena, which have actively excluded the marginalised and powerless (Patel, 2009; Scott and Oelofse, 2005). Unlike with the initial drafting of the NEMA, civil societies are no longer included in governance and thus no longer have the power to make meaningful contributions as they did to the NEMA (Scott and Barnett,

2009). Therefore, the terms of the practice ideals within the NEMA have been sidelined in order to actively seek economic development, only one of the three pillars of sustainable development (Bond, 2000).

Given these shortfalls it is easy to see that a chasm exists between the structures and documents used to govern the environment and the process of practicing governance (Rossouw and Wiseman, 2004; Todes et al., 2009). South Africa is therefore an example of a weak approach to ecological modernisation and sustainable development resulting in persistent environmental justice concerns (Death, 2011; Oelofse et al., 2006; Patel, 2014). At present, if South Africa is to continue on its chosen pathway of sustainable development, using ecological modernisation to guide this process, government, academics, and civil society need to find a way to bridge this chasm so as to re-join and realign society, the economy, and the environment. From this case, it can be seen that the desperate need for development in countries such as South Africa can potentially see the side-lining of the environment and society in favour of economic development. Thus, providing further evidence as to why aligning ecological modernisation with environmental justice is so imperative for developing nations who still deal with persistent brown issues, within a global society pushing for the development of greener economies. A more dramatic alternative is put forward by Lawhon (2013) who calls for countries in the south, such as South Africa, to abandon environmentalisms that stem from the industrialised North and develop our own, rich in context, and therefore more applicable. Perhaps a happy medium can be found if we as academics can tailor environmentalisms to our specific contexts and build on the experience of those who have already passed through our very complex phase of development. Therefore, if we as a industrialising nation in the south, could tailor ecological modernisation so as to imbed environmental justice concerns therein, we could make headway as a country towards development that is sustainable and better aligns with all three spheres of sustainability.

2.4.2. Energy policy and practice in South Africa

Energy is a vital resource for South Africa, and is an essential prerequisite for development in any country (Kebede et al., 2010). An estimated 15% of the world's population do not have access to energy (Kaygusuz, 2012). This divide between those who do and do not have access is rather concerning, especially when considering its implications for environmental justice.

Energy and the means of producing it are therefore key concerns for sustainable development agendas (Bugaje, 2006).

Even though energy is essential for sustainable development, its production has been somewhat stymied. As society has shifted along the pathway to development, there has come to bare some concern and discord over the application and use of new technologies that pose a risk when used (Martínez-Alier, 2012). This is plainly evident in South Africa's energy sector where there has been a substantial increase in energy demand since the early 1990s, putting pressure on the state to supply (Inglesi-Lotz and Blignaut, 2011). The means of that supply has however been controversial, especially when examining the case for nuclear energy. Coal mined in South Africa supplies 77% of the country's electricity generation needs through Eskom (Department of Energy, 2016b). Aside from coal, South African energy production is shared between nuclear generation and renewables (Department of Energy, 2016b and c).

Both coal and nuclear energy generation have become an issue of contention within the country. This contention is fuelled by the fact that South Africa has an energy intensive economy, making an increased supply essential (Winkler, 2007). In a bid to increase supply South Africa has chosen to increase its reliance on coal, however, there was much opposition garnered in response to South Africa securing a US$3.75 billion loan from the World Bank to expand on its coal based electricity generation (Bond, 2011b). Contestation over the use of coal is not the only controversy with regards to energy production in South Africa. Nuclear energy has often been presented in a controversial light, especially by some of South Africa's key environmental movements, one such movement being Earthlife Africa (2015). Earthlife Africa, through its campaigning against nuclear energy, has been most influential within the South African context (Death, 2006). This controversy has been coupled with a desperate call for a shift to renewables, which South Africa has the potential to produce a great portion of its electricity needs from (Bugaje, 2006; Krupa and Burch, 2011; Winkler, 2005).

A shift to renewables will not be easy as within South Africa there is a, "strongly entrenched energy sector interest in maintaining the status quo" (Tyler, 2010, p. 575). In addition to this, as proposed by Pegels (2010), any shift to renewable energy will be an enormous task not easily achieved. Some of the limiting factors in this transition are both the cost of the shift itself, as well as, the risk involved with the uptake and use of new technologies (Pegels, 2010). These limiting factors as well as the entrenched attachment to the current generation mix, may in fact restrict

the uptake of renewables in South Africa. As such the country still relies heavily on coal power stations with an increased impetus on the potential for nuclear energy (Van Wyk, 2014).

The energy sector is therefore characterised by high demand for increased provision of electricity, with a great emphasis on technological innovation. Long and Patel (2011) have reviewed the governance of the nuclear energy sector in South Africa and have found it to be framed by ecological modernisation principles. As such, the energy sector potentially provides a suitable study for examining the issues of justice when ecological modernisation is used to frame policy.

When examining the most recent literature on energy and environmental justice, a paper written by Hess and Ribeiro (2016), which mirrors the first objective of this thesis was found. These authors attempted to build an environmental justice policy framework for energy governance. These authors built their environmental justice framework using the categories of distribution, recognition and procedure as being important factors in the process to justice (Hess and Ribeiro, 2016). The framework was developed using an energy case study in Brasil, as such this framework is highly case specific (Hess and Ribeiro, 2016). It is a valuable framework as it details many aspects that need to be considered within the themes of distribution, recognition and procedure. The framework however, is a detailed set of questions to be asked about a proposed project rather than a set of principles. These questions are very well positioned to bring to light community concerns. Questions are asked to establish the distributional justice aspects of the project, i.e. who will benefit and who will carry the burdens (Hess and Ribeiro, 2016)? Under recognition, the authors have posited a set of questions that will help to identify exactly who will be affected by the project. Under procedure, the authors have posited questions that seek to identify how participants should be engaged, and whether issues of power may come into play (Hess and Ribeiro, 2016). Essentially, this framework has put forward many questions that this research study sought to answer in order to build a policy framework built on principles rather than on questions. However, the fact that this research has been conducted means that in the future a very well researched and effective framework can potentially be put forward.

2.5. Gaps in knowledge and relevance of study

It has been illustrated in this chapter that ecological modernisation has been a topic that has been extensively studied on a global level with much concern over the environmental justice implications thereof. It is out of this concern that this study has come to be. One of the objectives of this study was to develop and test an environmental justice policy framework for ecological modernisation. The framework is to be utilized in a bid to potentially make ecological modernisation a stronger form of sustainable development than it currently is, the third objective of this study. This policy framework, much like Hajers' (1995) policy framework, is a set of environmental justice principles that would need to be present in policy. By creating a set of principles, what has been produced is a check system for policy writers. If a policy can integrate all the criteria present in the framework then it can potentially be deemed a policy based on a strong sustainable development approach using ecological modernisation.

To date, the appropriateness of using ecological modernisation as a means to guide policy has, by and large, only been substantially tested within the developed world, ***leaving the developing world relatively unstudied*** (Long and Patel, 2011; Murphy, 2000). The unique characteristics that are found in the developing world, such as poverty and the need for job creation, culminate in the necessity for sustained economic growth (Patel, 2000). These characteristics make the developing world context, in which a policy guided by ecological modernisation can be tested, far different from that of the developed world. Within this context too there also exists a large portion of the population who are disenfranchised, as well as marginalised in the process of policy formulation and implementation, yet these marginalised individuals often bear the brunt of development (Parnell, 2005; Patel, 2005). Therefore, ***understanding how contemporary policy, in this study energy policy, and practice has been framed by sustainable development and ecological modernisation, and the environmental justice implications thereof*** is essential. In addition to this, ***analysing the appropriateness of this theory in a developing world context guided by an environmental justice framework is a necessity*** prior to adopting such a technocratic approach. This research therefore contributes to taking ecological modernisation from a weak to a potentially strong sustainability approach.

The environmental justice policy framework was analysed within the South African energy sector to determine whether this framework can potentially 'unite' the

environmental, economic, and social spheres of sustainable development using an eco-modernist approach. The South African energy sector provides the ideal case study for analysing an environmental justice policy framework for ecological modernisation. This sector, while characterised as necessary for economic growth, is marred with conflict over environmental impacts, as well as, concerns over environmental justice (Fig, 2007). This study, as a result, contributes to the body of knowledge on ecological modernisation through the addition of an environmental justice framework that has been analysed for appropriateness.

CHAPTER THREE
Methodological Considerations

3.1. Introduction

The word methodology is derived from Greek, and when translated means “a rational way or journey undertaken in pursuit of some specified goal” (Dann et al., 1988, p. 3). In this research study the specified goal was to develop and test an environmental justice policy framework for ecological modernisation. The ultimate goal was to strengthen ecological modernisation as an approach to sustainability. Informing this methodology was the fact that many eco-modernists such as Spaargaren (Spaargaren and Mol, 2009), Buttel (2000) and Mol (2000) see ecological modernisation as an inherently social theory, whereby, society as a whole plays an important role in the process of change. Mol (2000) identifies societal groups, with a vested interest in governance and the environment, as central to this process of change. Because societal groups are central to the theory of ecological modernisation, they were also central to the methodology of this research study. This research project took place in a number of steps.

The ***first step*** was to conduct a policy analysis on South Africa’s energy policies and Acts for evidence of ecological modernisation. The ***second step*** was to construct an environmental justice policy framework for the theory of ecological modernisation for governance in general. The ***third step*** was to identify if any of these principles in the environmental justice policy framework are evident in South African energy policy. The ***last step*** was to determine if the implementation of the environmental justice policy framework developed is appropriate for the energy sector.

There are a number of methodological approaches that need to be considered in relation to undertaking such a study. With regards to these the methodological chapter will unfold as follows: firstly there will be a discussion on the epistemological and philosophical positions that relate to this study. Secondly, the research design will be detailed, followed by a discussion on the process of data collection, data analysis as well as a few methodological reflections.

3.2. The researchers philosophical positions

The art of pursuing knowledge and staking a claim to knowing is a subject of contention (Sayer, 1992). This epistemological question will be addressed here. Following on from claims to knowledge there are a variety of different philosophical positions that need to be taken into account before embarking on any research project within the social sciences (Graham, 1997). At the forefront, there are two distinct, but broad categories of philosophical distinction that the researcher must choose between: naturalism and anti-naturalism (Graham, 1997). Following this, is a further choice between the opposing approaches of realism and anti-realism (Graham, 1997). Once these have been determined there are a variety of philosophies that are founded in these two schools of thought that must also be considered (Graham, 1997). This section of the thesis will firstly discuss the epistemological considerations of undertaking any research endeavor. Lastly, this section will turn to discuss subsequent philosophies that fall within either naturalism or anti-naturalism that hold sway within this research.

The act of acquiring knowledge and the analysis of the process undertaken to acquire knowledge is under consideration here. According to Sober (2005), for any individual to have a claim to knowledge three criteria must be met; that is to say, to have knowledge one must have a belief in something, it must be true, and it must be justified (Sober, 2005). For a person who believes something that turns out to be false, that person never had knowledge of that something, they simply thought they did (Sober, 2005). Therefore, both belief and truth are needed in claims of knowledge. Furthermore, there is the premise of justification that is necessary for all knowledge claims (Audi, 2003; Sober, 2005). “Belief justification occurs when a belief is *grounded in,* and thus in a way supported by, something” (Audi, 2003, p. 3). In other words, in order to acquire knowledge there must be a belief that has a situational justification grounding it. de Gialdino (2009) mentions that there are principles and assumptions that will be used when gaining such knowledge, and that these may lead to the subjective analyses of results. Therefore, knowledge has both a subjective and objective truth. The thing that is to be known must be objectively true, and the observer must subjectively come to believe this (Sober, 2005).

Claiming subjectivity in knowledge building is known as anti-naturalism (Graham, 1997). As its name suggests this is in opposition to naturalism. Naturalism is the belief that claims to knowledge can be objective in nature. This understanding comes from the physical sciences

and has had some influence on the social sciences (Sherratt, 2006). Anti-naturalism, originally conceptualized by post-empiricists in the late twentieth century, when science was no longer the academic authority, challenged the predominant approach of naturalism (Sherratt, 2006). Anti-naturalism has its foundations in Humanism and Hermeneutics which identifies human actions as purposeful with inherent meaning (Sherratt, 2006). Because human actions are purposive and meaningful they cannot be examined as inanimate objects and therefore scientific methods fall short (Benton and Craib, 2001). As seen from the above arguments the two approaches of naturalism and anti-naturalism are inherently and fundamentally different, and as such the researcher will have to decide on his or her own philosophical position (Graham, 1997).

Sayer (1992) helps to clarify this choice by identifying two different means by which knowledge is gained, each of which is influenced by the situation of the researcher and the researched in the social sciences. The two means by which to gain knowledge are through work that allows one to learn and through communication with others (Sayer, 1992). Each of these forms of knowledge is influenced by subjectivity, and this subjectivity is grounded in what Sayer (1992) identifies as the 'realist approach'. He argues that because realism identifies an alternative to socially accepted norms there must be an alternative method of interpretation at play, and this is influenced by the subjectivity of each researcher (Sayer, 1992). Each individual in society is influenced by his or her own beliefs, and the belief of the society in which that individual lives also constitutes an influence upon that persons thinking (Sayer, 1992). However, it is not only the researcher who has to take into account potential belief influences, Sayer (1992) identifies a 'double hermeneutic' that is at play. This double hermeneutic is evident in the fact that both the researcher and the researched have preconceived beliefs of their own and of the societies in which they live, and these beliefs influence the thinking of each other (Sayer, 1992). This is illustrated in Figure 3.1, where the subject (S) is influenced by other subjects that form part of their community and the object (O) or the person being researched is influenced just the same by those who surround them in their community. Therefore, there is a clear subjectivity in claims to knowledge that are made by social scientists and as such anti-naturalism is preferred here over naturalism.

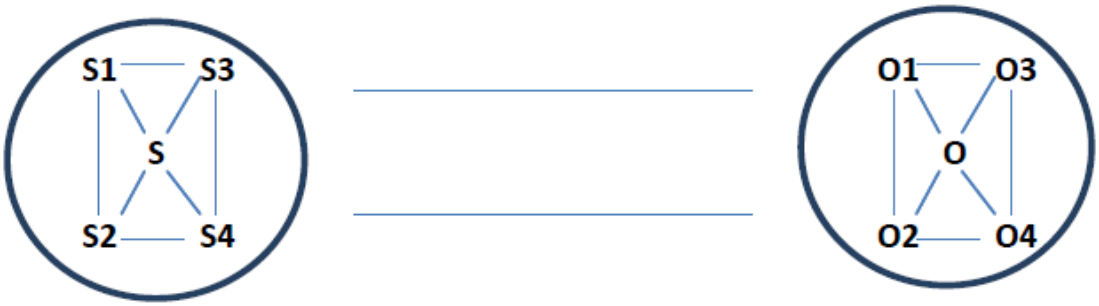


Figure 3.1: A diagram to show the influence of communities on both the researcher and the researched (after Sayer, 1992)

Another philosophical consideration is to identify how the researcher views the world and reality. In this instance a transformative bias needs to be taken into account. The transformative belief recognises that there are many versions of reality and these versions are inherently based on social positioning (Mertens, 2005). Within environmental justice studies this is undoubtedly the case, as ones position within society will determine whether a person is living within an environment of goods or bads, and it is upon this very basis that the environmental justice movement came into being (Sze, 2002). It is from this belief stance that research in this thesis will be conducted as well as analysed.

3.2.1. Critical realism, rationality and Marxism

As a result of identifying with an anti-naturalist, realist understanding of the world and how societies operate within it, a number of philosophical approaches will hold sway for this research study. As a researcher it is difficult to identify with just one philosophical understanding of the world and the way in which it operates. There have already been some realistic influences mentioned above, and now to further this, each of the philosophies that hold some sway with this research will be discussed here, namely critical realism, critical rationality and Marxism.

Sayer (1992, p. 39) in his understanding of the generation of knowledge states that because "social science includes common sense among its objects, it cannot avoid a critical relationship with it, for in seeking to understand popular consciousness, *as it is*, in examining what is normally unexamined, we cannot help but become aware of its illusions". In this way Sayer (1992) identifies the important aspect of being critical in our engagement with research in the

social sciences. It is through critical engagement that we bring forth some of the illusions present in society and perhaps move to a better understanding of society.

Being critical can also be seen as a means to improve upon the way in which society functions. Critical realism as an approach seeks, through the process of critique, to change the aspects of society that are negative. Improving upon the way in which society functions is one of the key hopes for the outcome of this research study. Therefore the means to do this is to be critical, for through critique faults can be identified and changed. In order to become an environmentally just society, we must critique the social processes that have allowed for environmental injustices to perpetuate and in so doing the potential exists to rectify these.

Critical rationality contends that the way we as humans conceive the world, is in fact, the way the world is (Benton and Craib, 2001). Critical rationality identifies with meaning laden societies that have been influenced by past events. There is evidence of this in practice; South Africa has undergone political change through the ending of apartheid, however remnants of the era have continued to influence its citizen's post-apartheid (Christopher, 2001; Møller, 1998; Patel, 2009; Scott and Oelofse, 2005).

Critical rationality follows on from the interpretavist and rational choice schools of thought. Interpretavism proposes that humans are self-conscious beings, who live a life of meaning and it is this meaning that determines the actions of actors within a society (Benton and Craib, 2001). Rational choice theory is built on the premise that individuals are rational and as such will act in a rational way (Elster, 2007). Critical rationality builds on this idea, arguing that rationality is not only the means by which we can determine individual behavior, but is also the means by which we can judge societies (Benton and Craib, 2001). Benton and Craib (2001, p. 107) illustrate this argument by stating that "if all human beings possess reason, then any society which excludes people, on the grounds of a human characteristic such as race or sex, from the rights and duties of citizenship, from exercising their reason as part of the collective life, is an irrational society". This line of thinking has been developed, altered and built upon by a number of authors.

One of the main contributors to critical rationality theory is Jürgen Habermas. Habermas was greatly influenced by the potential role the act of communication could have as a means to achieving a rational society (Benton and Craib, 2001). Communication, as identified by

Habermas, allows us to reach consensus and cooperate as a society with one another (Heath, 2001; Joas and Knöbl, 2009). Habermas was not merely referring to political elites, as the basis upon which he substantiates his argument is the process of debate which occurs in middle class public places (Joas and Knöbl, 2009). Habermas is also rather pragmatic in his approach to communication, he is of the thinking that when societies communicate it is rational and they will therefore inevitably reach consensus, this consensus will also be rational and therefore will be the right thing to do (Benton and Craib, 2001). It is rational as it will allow for each individual to put forward their view opening up a rational discussion that may end up in the affirmation or potential discarding of that particular view (Heath, 2001). Most importantly Habermas argues that, "only in the public sphere can autonomous decisions be reached on matters of general interest" (Joas and Knöbl, 2009, p. 211). There is also an element of accountability following on from these autonomous decisions, as all actions that follow after the norm has been agreed upon, and will be held liable to conform (Heath, 2001). Lastly, Habermas also observes that in order to be autonomous beings, we must emancipate ourselves through self-understanding and an understanding of the world (Joas and Knöbl, 2009).

Habermas' work and theories were all based on the immense respect he had for communication (Joas and Knöbl, 2009). Communication for Habermas is the means by which all rationality can be achieved, and thus it is imperative that a society be open enough to allow for each man to put forward his view for discussion so as to retain it as rational or to discard it as irrational (Joas and Knöbl, 2009). Habermas, however acknowledges that his arguments are written and informed by societies that are in cultural decline, and thus societies that are improving are not considered here, this he acknowledges is one of the downfalls of his theory (Joas and Knöbl, 2009).

Habermas was not entirely anti studies based on empirical evidence in the social sciences. His view was that the sciences represented only one form of knowledge. The second form of knowledge for Habermas was that of finding meaning in life, and thirdly to reach the goal of emancipation and liberation from social violence (Joas and Knöbl, 2009). Habermas therefore identifies himself, and his understanding of knowledge, as having a basis within Hermeneutics. Therefore, it can be concluded that for Habermas humans are meaning creating animals that are rational in their pursuit of knowledge.

On the more critical side of critical rationality is the belief that through critique society can be better understood and improved upon (Benton and Craib, 2001). In this line of thought critical rationalists identify a thesis or particular knowledge claim as the starting point (Benton and Craib, 2001). The existence of which inevitably promotes critique which results in an antithesis, following this there can be a synthesis of the two which results in a more apt theory (Benton and Craib, 2001). This understanding of knowledge building will be useful in this study as ecological modernisation is the thesis and environmental justice is the antithesis with the goal that the framework developed here will synthesize the two. This synthesis will potentially better the approach to environmental governance and governance theory as a whole. Therefore, it is possible, through the approach of critical rationality, to improve upon society.

Marx's ideas of the functioning of society were built upon this critical rationality and his ideas emanate throughout environmental justice literature and are therefore important for this study. Marx identifies society as an evolving rational unit. Firstly, actors in society pursue their own best interests which have culminated in the rise of capitalism (Benton and Craib, 2001). Capitalists are the minority elite class in competition with each other for market share, but superseding this competition is unity. Unity is upheld by their own class and the will to dominate the working class (Thompson, 1992). These capitalists therefore maintain exploitation of the majority working class (Thompson, 1992). This exploitation will eventually culminate in a working class revolt, this being rational as it is in their best interests to do so (Benton and Craib, 2001). This is the economic revolution that Marxists believe is one of only two ways in which world peace and justice can be achieved, the second being a drastic change in moral relations (Thompson, 1992).

Through these proposed changes in the economic structure of society, we can endeavor to see how Marx has taken a critically rational line of thinking. This would be the most rational outcome (Benton and Craib, 2001). This illustration also brings us to another key tenant of Marxist argumentation: things can only be understood in relation to their opposites (Benton and Craib, 2001). For example exploitation is only understood by an understanding of justice. Therefore, one of the key components of critical rationality is to be critical, to find opposites in order to understand what is happening and in doing so, facilitate improvement (Benton and Craib, 2001).

The ideas of Marx have been proposed as a means to understand injustice in the world. Given that injustice is derived from the creation of class that has resulted from a capitalist market economy (Thompson, 1992). While I am not as convinced as Marx is about the extent to which revolution will occur through the means of (an unlikely) war, I do concede that disparities in wealth, that are created and maintained by the capitalist economy, have resulted in many social and environmental injustices. Therefore, Marxism as a philosophical guide to understanding the way in which society operates does have some influence on me as a social researcher and thus I have endeavored to state that here.

Furthermore, Marx argues that the capitalist state seeks to maintain a class disparity as it is this exploitation that ensures competitiveness on a state level (Thompson, 1992). While I do believe that states seek to remain at all times competitive, I do believe that states with democratically elected governments cannot afford to be so at the expense of a majority working class nation. If the working class is as vast as Marx declares it to be and the capitalist class is in the minority, then it is not in the best interest of parties to government to ignore the plight of the working class. Therefore, I do believe that it would be irrational for states to be solely concerned with preserving the status-quo of exploitation. Therefore, the states obligation is to impose a Marxist moral revolution within their own states to accomplish a just social order.

As a researcher, I relate to critical realism and critical rationality, and thus have stated this as a means to clarify subjectivity that may result on my part. I am particularly fond of the idea that a thesis can be met with an antithesis and the synthesis of these two is the most rational outcome (Benton and Craib, 2001). This is a guiding belief in this research. It is believed that ecological modernisation is the thesis, and environmental justice the antithesis, and the framework developed here could potentially aid in the creation of a synthesis that will alleviate some of the conflict that exists between the two. I have also made an effort to clarify my stance as it relates to Marxist philosophy.

3.3. Research Design

This section of the methodological chapter will outline the methods used to obtain the information gathered in the study. First of all an overview of the study site will be given followed by a description of the study population and the sampling procedure used to gather participants.

The data collection tools will then be discussed, in a bid to elaborate on how the information was gathered. A section is then dedicated to the interviewing technique used to conduct this study. The penultimate section consists of a discussion on the method employed for data analysis. Lastly, a look into the methodological reflections of this research will be presented.

3.3.1. Study Site

South Africa is situated at the southernmost tip of Africa, and is surrounded by four Southern African country's to the North, Swaziland to the east and land locks Lesotho (see Figure 3.2). The country hosts nine provinces of which Gauteng is the economic heartland. The country has three capital cities, namely Bloemfontein the judicial capital, Cape Town the legislative capital, and Pretoria the administrative capital.

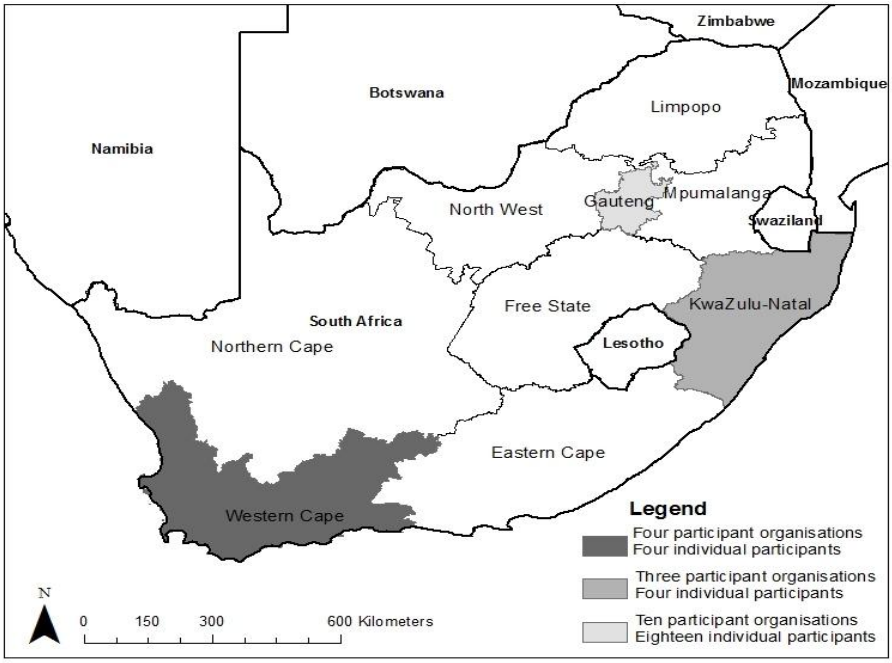


Figure 3.2: Map of South Africa and neighbouring country's illustrating the location of the study participants (map layers courtesy of the South African National Space Agency).

South Africa has had a turbulent history with Apartheid dominating much of the recent history. The remnants of Apartheid combined with the failure of the present government to deliver on basic services, corruption, and the ever present degree of poverty (which has resulted in protests against payments for services) in the country has resulted in a fairly unjust society

(Alexander, 2010; Fjeldstad, 2004). One of the ways injustice is perpetuated within South Africa can be characterized as environmental injustice (Myers, 2008; Scott et al., 2002). Because of this the country has a vast array of environmental civil society groups that have emerged over the years.

3.3.2. Research Materials and research design

Various research materials were used to gain an insight into ecological modernisation, environmental justice and sustainable development in South Africa. Various policies and participants were engaged with, and form the basis of data gathered for this research. Below is a description of each of the research materials used in this study.

3.3.2.1. Policy reviews

The first step in conducting this research project was to determine if South Africa has in fact embraced ecological modernisation. In order to do this five energy polices and two Acts were analysed using Hajer's (1995) six policy principles for ecological modernisation. These six principles being: prevention of environmental degradation is preferred over dealing with resultant environmental degradation; internalising the costs of environmental degradation; requiring the party responsible for pollution to pay; the importance of the promotion of science in policy; economic benefits for pollution prevention; and lastly promoting participation within the governance of the environment (Hajer, 1995). The five policies and two Acts included:

1. *White Paper on the Energy Policy of the Republic of South Africa* (Department of Minerals and Energy, 1998).
2. *The White Paper on Renewable Energy* (Department of Minerals and Energy, 2003b).
3. *The Integrated Energy Plan for the Republic of South Africa* (Department of Minerals and Energy, 2003a).
4. *The Nuclear Energy Policy for the Republic of South Africa* (Department of Minerals and Energy, 2008).
5. *The Radioactive Waste Management Policy and Strategy for the Republic of South Africa 2005* (Department of Minerals and Energy, 2005).
6. *The National Nuclear Regulator Act 47 of 1999* (Republic of South Africa, 1999).

7. *National Environmental Management Act 107 of 1998 (Revised on the 18 December 2014)* (Republic of South Africa, 1998).

Each of these policies and Acts were chosen as they are the governing documents that inform energy governance in South Africa. In order to gain the suite of policies and Acts analysed, the Department of Energy website was perused for all relevant documents (Department of Energy, 2016b).

In addition to analysing these documents for evidence of ecological modernisation, they were also analysed to gain an understanding of the environmental justice principles enshrined therein. This study aimed to analyze the applicability of this framework when applied to the case of energy in South Africa. Upon completion of developing the framework the very same five energy policies and two Acts were analyzed. This time each of these documents was analyzed in order to ascertain whether or not South African energy policies hosted any of the environmental justice principles put forward by civil society. By doing this it could be determined if the absence of such principles could be the very reason for injustice in the country. If the absence of these principles is the reason for injustice, then perhaps the solution lies in embracing the principles in this developed framework.

3.3.2.2. Study Population and sampling procedure

The second step for this research study was to develop an environmental justice framework for ecological modernisation. Thematic content analysis was deemed a useful methodology to employ. For thematic content analysis, participants are generally comprised of a smaller group of key informants who hold specific knowledge on the issue under investigation (Flick, 1998). As such purposive samples are ideal and were used here. In this instance the smaller group of key informants are members of civil society organisations. In order to develop the policy framework the study population is comprised of civil society groups active in the field of environmental justice. These civil society groups are not concentrated in one geographic area, but are spread out across the country, this means that if civil society groups are to form the sample for this research study the study site would have to encompass the whole of South Africa. The only mandate for participation in this study was that the civil society group be active in environmental justice campaigning. As such the sample population is made up of civil society organizations that campaign within the energy sector, urban landscapes, and basic services to name a few. In

addition to this, through participant interviews the technique of snowballing was used to find further potential participants (Noy, 2008). These further participants were added to the database and contacted for a potential interview.

Once the sample group was identified the question of sample size was raised. Baker and Edwards (2012) have put together a most helpful publication that addresses just this question, however the consensus amongst a number of authors and experienced researchers is that 'it depends'. The scope of the project, the field the research is being conducted in, the point of saturation, and the potential size of the group under study all play a role in determining the sample size that should be obtained (Adler and Adler, 2012; Back, 2012; Baker and Edwards, 2012; Bryman, 2012; Charmaz, 2012). Unlike quantitative studies, qualitative studies seek to delve deeper into understanding a specific aspect of social life, and thus often times do not require the vast numbers in order to attain significance that quantitative studies do (Adler and Adler, 2012).

Qualitative studies do not require the vast numbers of participants as do quantitative studies, however adequate sample size is still a cause for concern. Given that the scope of this project deals with a very specific group of people it is inherent that the sample size will be smaller than studies where the sample group could compromise an entire society. Adler and Adler (2012), Becker and Bryman (2012) all allude to saturation being the key to knowing when you have your ideal sample size. Saturation is the point at which no new themes emerge when interviewing candidates, and again varies depending on the scope and nature of the study (Bryman, 2012). Adler and Adler (2012) pronounce that the number of participants required can vary from one to a hundred and in some cases can exceed this, but they advocate for a sample that ranges between 12 and 60 with a mean of 30 participants as the ideal to reach saturation. A sample size of 30 participants allows for a deeper look than a very small sample size without excessive unnecessary data gathering (Adler and Adler, 2012).

In order to find potential participants to build the initial framework an extensive internet search was conducted. This framework in intended to be a generic framework and therefore civil society organizations from all sectors were consulted. Only later on during the testing of this framework in the energy sector were civil society participants confined to those who operate within this sector. Key words used in this search included: environmental groups South Africa; South African non-governmental organisations; environmental justice groups South Africa; and

South African non-profit organisations. The South African government also hosts a database of all registered non-profit organisations, with contact details, this database can easily be searched through using key words such as environment and justice (Department of Social Development, 2014). A list of 66 organizations was compiled for potential participation. An attempt was made to contact each of these organizations via email. If there was a direct contact in the organization this person was then emailed, if no direct contact information was available the administrator of each organization was contacted and asked to advise on potential participants; this proved rather a useful method. In the initial contact an information letter detailing the study and a letter of consent was sent (see appendix 1 for a copy of the letter). Reminders were sent out in cases where no response was had. Seven of these organizations did not have relevant contact information and thus could not be contacted, the sample was therefore reduced to 59. Upon being contacted one respondent said they did not feel able to comment on issues of environmental justice and refused participation. A further two respondents felt that they had been out of civil activism for too many years to make a relevant contribution and as such declined. One organization claimed to have no staff available due to excessive workloads and therefore could not assist. A further respondent had the same problem and could not assist, but was very willing to receive the questions by email and if possible would send written responses back, the respondent unfortunately did not manage to do so. In some instances respondents were willing, but then continually failed to firm up appointments for the interview to take place.

A limitation encountered during the setting up of interviews and meeting with respondents is that of safety. One respondent requested to meet at a location that was deemed unsafe and so the interview was cancelled and as a result that participant was lost. This combined with the aforementioned problems meant that of the 59 viable participant organizations only 26 successful interviews were had. These 26 interviews were conducted across a broad spectrum of 17 organizations campaigning various issues in various locations around the country. A further one participant who did decline to be interviewed, but in her declining gave a valuable response, and upon consent this participant and the response gained was included in the study. As such the sample size grew to 27, this therefore comes fairly close to the mean recommended sample of thirty participants by Adler and Adler (2012), who acknowledge that reaching this number is not always possible. Given that only 27 participants were able to participate the recommended sample size was used to underscore this methodology rather than saturation. The geographic distribution of each of the participants and participant organizations across South Africa has been mapped and can be seen on Figure 3.2.

Raosoft sample size calculator and the SurveyMokey sample size calculator were used to verify the validity of the results gained from these twenty six interviews (Raosoft, 2004; SurveyMonkey, 2016). With a sample size of 57 possible representatives, having 26 respondents, if we assume that the margin of error is 10% (this is the range that the populations responses may deviate from the sample), the confidence level of responses is 82 percent (this indicates that there is a 82 percent probability that all individuals in the sample would respond that same way). The mean of the standard deviation of responses within the sample is 3.33, therefore accounting for a 10% deviation here is rather generous. When we look at the response rate of the various organisations, representatives from 21 organizations relative to 57 organizations participated in this study, therefore, for a 10% margin of error a 74% confidence level can be expected between organisational responses.

In addition to these initial interviews, civil society organizations who originally participated, and who specifically campaign within the energy sector, formed the basis for participants who would analyze the framework and its applicability for use in the energy sector. When the first interview was conducted participants were asked if they were involved in the energy sector and if so would they be willing to participate in a follow up questionnaire. Fourteen (14) participants agreed to this. Each participant was sent the developed framework and asked four short questions regarding the appropriateness of the framework, and also if they would add or remove anything in the specific context of energy governance. Only six (6) responses (43% response rate) were gathered. Two (2) participants no longer work at their respective organizations and so contact could not be made. Three (3) participants could not engage as their workloads did not allow them time, and the remaining three (3) simply did not respond.

3.3.3. Data Collection Tools

In conducting this research project various data collection tools were used. Below is an appraisal of each of the different tools that were used throughout the lifespan of the project.

1. *Gathering polices for review.* The various policies and Acts analysed in this study were easily accessed through a web search. The Department of Energy hosts a web page that has links to each of the policies and Acts related to energy governance in the country. Each of these documents were easily downloaded for later analysis.

2. *Interviewing members of South African civil society.* With regards to gathering empirical data from civil society the process was far more complex. Due to rapid social change, qualitative research is best suited to try and understand social phenomena and the ever changing social landscapes and stakeholder opinions (Flick, 1998). In order to understand these changes research must be done from the ground up and not from the basis of testing existing theories (Flick, 1998). While these studies can be influenced by existing theories the basis is empirical and therefore can be used to build new understandings and theories (Flick, 1998). Given that this research seeks to analyse social change and stakeholder opinions with regards to ecological modernisation and environmental justice in a developing country, it was decided that a qualitative approach would be the method best suited to this undertaking.

   As such, data for this section of the study was collected via interviews conducted with twenty six (26) participants from seventeen (17) civil society organizations whose mandate aimed to achieve environmental justice in South Africa. Due to the fact that these organizations are scattered across the country, all interviews could not be conducted in person; this being the ideal. Therefore some of these interviews were conducted in person, others telephonically, and where possible some were conducted via Skype ®. These interviews ranged in time from thirty to sixty minutes, only one interview exceeded this time limit.

   These interviews were conducted in a semi-structured format in order to gain this information. Semi-structured interviews were used as it has been found that participants are more likely to express their thoughts on a matter if the interview is fairly open and proceeds more as a conversation rather than a questionnaire or structured interview (Flick, 1998). A result of this type of interview, one that proved to be most successful here, is that interviewees tend to introduce material of their own that can be off the original question, but is still vitally important to the study as a whole (Flick, 1998).

   Following the semi-structured interview format unstructured questions were asked first followed by structured questions so as to minimise the amount of influence the researcher had on the response (Flick, 1998). (See appendix 2 for a copy of the questions posed). Because this research was seeking to investigate issues of environmental justice and

ecological modernisation, each of these theories was used to inform what questions were asked. Ecological modernisation as a theory has a number of facets that have been discussed in the literature, such as the use of technology and the role of the state in governance, literary themes such as these were used to frame questions posed to civil society in order to understand how civil society view the process of ecological modernisation. Environmental justice was explored in a less structured way so as not to limit respondents to issues of distribution or power, therefore questions developed were more broad and allowed for participants to elaborate as they felt the need. In order to ensure that the questionnaire was effective the first two interviews were completed as pilot studies. The questionnaire proved useful, however interview technique was found wanting. As an interviewer I found that I needed to be more flexible and flow with the natural progression of the conversation rather than rigidly trying to follow the structure of the questionnaire. Failure to do so meant that the two pilot participants found themselves repeating information. As such using the semi-structured interview technique and improving my skill set when using such a technique was valuable.

There are a number of limitations that must be addressed when using semi-structured interviews. Firstly, most of the decision making happens on the spot, in the field, and thus the researcher needs to ideally remain clear and thoughtful throughout the whole interview process (Flick, 1998). Decisions such as leaving a question out as it was answered earlier in response to another question or the decision to shift the order of questions asked so as to accommodate the flow of the conversation have to be made in an instant (Flick, 1998). Conducting interviews in this format therefore required a level of skill and a calm composure in the field.

Each of these interviews was recorded using a digital recorder. Because the interviews were semi-structured in nature the potential existed for conversations to shift naturally between various questions not in the order intended, this could potentially make note taking very difficult. Therefore, these interviews were recorded so as to take some of the pressure off of having to take notes while at the same time ensuring that all questions were covered in the interview.

3. *Second round of policy reviews.* Subsequent to this, the very same policies that were analysed at first were reanalysed for evidence of each of these social justice principles, and so no further policies were sought.

4. *Getting civil society to analyse the developed framework.* For the second set of data collection, members of civil society who had a vested interest in energy governance were already identified in the first round of interviews and therefore no further identification was needed. Civil society participants with a vested interest in energy governance in South Africa were asked to review the developed framework and comment on its applicability in the energy governance sector. In order to do this participants were emailed the framework along with four very short structured questions. (See appendix 3 for a copy of this questionnaire).

3.3.4. Data Analysis

Data analysis was undertaken in this study that relied on the methodological approach of thematic content analysis. This methodology was deemed to be most suited for both policy analysis and the development of the environmental justice framework. In addition to this it was also best suited to analyze the second set of data gathered relating to the applicability of the framework for use in energy governance.

Thematic content analysis is a methodology employed that seeks to identify themes that emerge within data from multiple sources, these themes in total comprise a thematic code (Boyatzis, 1998). Based on the workings of grounded theory, thematic content analysis is a versatile methodology in that it can be used by any researcher regardless of the researchers' epistemology or ontology (Boyatzis, 1998; Burnard, 1991). This made it an ideal method to employ in this study. In conjunction with this, thematic content analysis is a methodology that enables the analysis of qualitative data, such as verbal data, that has ideally been transcribed (Boyatzis, 1998; Harwood and Garry, 2003). This technique is suitable for open-ended data, such as was obtained from the interviews conducted in this study, and allows for the analysis of such (Harwood and Garry, 2003). Thematic content analysis is also a versatile approach in that it can be used in studies both inductive and deductive in nature (Boyatzis, 1998). The emphasis of thematic content analysis is to support claims made with the data that was obtained, and thus as a methodology, it ensures that claims made can be substantiated (Guest et al., 2012). It is

this rigorous emphasis on ensuring that claims be substantiated that links thematic content analysis with grounded theory (Guest et al., 2012).

Thematic content analysis can be undertaken either inductively or deductively. Inductive or exploratory thematic content analysis is a process whereby new understandings or theories are developed. These new understandings or theories are grounded in data that has been acquired typically from a purposive sample (Guest et al., 2012). Here, the "goal of research is less to test the already well known (for example theories already formulated in advance) than to discover the new and to develop empirically grounded theories" (Flick, 1998, p. 5). Therefore, the essence of inductive content analysis is to develop themes that emerge from empirical data that are true to the data. The collection of these themes is known as the thematic code. Deductive or confirmatory thematic content analysis on the other hand is the process of testing a theory or a ready developed code (Guest et al., 2012).

The first step of this research study is to analyse the identified energy policies and Acts for Hajer's (1995) six policy criteria for ecological modernisation. These six criteria are predetermined, and therefore deductive content analysis was used. Following the deductive method the policies were analysed to identify instances where any of the themes could be identified. These were marked and entered into a table next to the theme so as to aid in the discussion of each of these themes as they pertain to energy policy in South Africa.

As set out in the objectives of this research study one of the main goals was to create a policy framework that could be used in conjunction with Hajer's (1995) policy framework to ensure that eco-modernist policy writing and implementation is more just. Civil society being held in high esteem amongst ecological modernisation scholars was identified as the group of informants key to developing this framework. As a result of the research methodology employed here data collected was in the form of qualitative semi-structured interviews that have subsequently been transcribed. A method of analysis suitable to not only this objective, but also the form of data collected is essential. Given that the objective is to compile a list of key factors gained from these interviews that will form the framework a methodology suited to this is needed. A methodology that can also be employed on a great deal of text that comprises the data is also needed. As such thematic content analysis was deemed ideal and was employed as the method of data analysis in the development of the policy framework. From the data gathered through qualitative interviews a set of criteria were developed that constitutes the code. This code then

becomes the framework. What follows below is a review of the proposed steps for thematic content analysis that exist in the literature. Following on from this is an indication of the steps used in this study.

Many authors have compiled a number of steps that ought to be undertaken in inductive thematic content analysis, each varies but the basic methodological units are the same. For the analysis of data for this research study a combination of the approach as outlined by Boyatzis (1998) and Guest (2012) was used. Guest (2012), has very usefully defined all the terms used in thematic content analysis that have been most helpful in understanding the process thematic content analysis should undertake. Firstly, what is meant by data is the "textual representation of a conversation, observation, or interaction" (Guest et al., 2012, p. 50). A theme is a "unit of meaning that is observed (noticed) in the data by a reader of the text" and a code is the "textual description of the semantic boundaries of a theme or a component of a theme" (Guest et al., 2012, p. 50). Coding is the process "by which a qualitative analyst links specific codes and specific data segments" and this culminates in the codebook which is a "structured compendium of codes that includes a description of how the codes are related to each other" (Guest et al., 2012, p. 50).

According to Boyatzis (1998) there are three steps to practicing thematic content analysis: first the pattern must be identified, it must then be categorized into a theme and the code found, and lastly the code can be used to analyse the rest of the data. For inductive content analysis the second step of developing the theme or the code is data driven i.e. it is found through analysing the raw data that has been gathered (Boyatzis, 1998). Boyatzis (1998) states that a good code should have five elements present. The first of these is a label or name, this should however be developed last. This label should communicate the crux of the theme and should be as few words as possible. Secondly, there should be a definition of what the theme covers; a description of the theme so as to identify any occurrence in the data. Lastly, there should be examples of what could constitute an occurrence of the theme, and what could constitute the dispelling of data from the theme, this is done to maintain consistency and avoid confusion.

Boyatzis (1998) has outlined five steps that can be used in order to develop themes in analysis and ultimately the code. The first step entails summarising the raw data so as to reduce the amount of data, but also so that the researcher can become familiar with the data. The second step is to identify themes within a sub-sample of the data, here what is necessary is for the

researcher to do comparisons and identify any similarities. The third step entails comparing the similarities found across all groups of data, if there are no groups to be compared, as is the case here, then this step may be left out. Step four is the creation of the code. Here what is meant is the process by which a set of statements are constructed using the list of themes that have been found. Here, ideally the researcher will read and reread the data to ensure the presence or absence of each of the themes to entail the accuracy of the code. Finally, step five entails applying the code to the rest of the sample and ensure that it holds up.

Guest (2012) has argued that segmentation of data is key in thematic content analysis, one example of this would be to identify a key word in text that can be searched throughout all the data and used to link the data together in order to identify a theme. Another way is to identify the start and end of each idea in the text and segment each of those off. When a segment is identified asking questions relative to the meaning of the segment allows for the development of themes. By identifying themes one can identify clusters of themes that may represent a code, "codes represent a greater level of abstraction than themes, and a single theme can engender multiple codes" (Guest et al., 2012, p. 52).

Throughout this process the creation of a codebook is key. Codebooks are used to sort through meanings in texts to categorise them and identify relationships of meaning (Guest et al., 2012). The text is then reread in its various segments to identify these categories and the relationships that exist (Guest et al., 2012). Whilst undertaking this step the codebook can be constantly modified to allow for the inclusion of new ideas and information and the amalgamation of similar ideas (Guest et al., 2012). Once this is done the text is reread and coded according to the codebook to ensure its succinctness. When completed the overall picture is examined in light of the discourse and observations and arguments made (Guest et al., 2012).

For this study an amalgamation of these two guides was used to compile the policy framework (code). Within the interview members of civil society were asked to elaborate on environmental justice concerns in South Africa. Subsequent to this these same members were asked to pose solutions to these environmental justice concerns. These solutions were then used to develop the set of policy principles that need to guide ecological modernisation policies. Furthermore, from discussions on the various aspects of ecological modernisation, recommendations made by civil society on how to, for example use science and technology in a just manner, were also used to develop the principles.

In order to do this, all interviews were transcribed, read, segmented and key words highlighted and flagged in order to find them easily when making comparisons. Secondly, a sample group of five interviews were chosen randomly to develop the initial code. By reading through the summarised and segmented data with key words highlighted themes began to emerge. A code book was started so as to guide the process and maintain efficiency. Each theme was labelled, themes were defined and described to help identify when they occur. A note was made as to what characteristics would imply inclusion and exclusion from the theme. Once this was completed the various themes were analysed to see if any amalgamations or refinements could be made. Once this was done the code was then used to analyse the rest of the data. During this process the code was continually reworked to make sure that any new themes or added criteria to the definitions was included. The final product was a code that was labelled. This code now constitutes all the themes as found and is here known as the environmental justice policy framework for ecological modernisation.

This code for the framework was then used to analyse energy policy in order to understand the extent to which justice principles are enshrined in these policies. Once again a pre-determined set of criteria were used and so the content analysis was done deductively. Finally, the framework was used in a discussion with civil society as it related to energy. Here the goal was to find out if the framework could be applied to energy policy in any useful way to amend some of the environmental injustices that have resulted in this sector. Here again inductive content analysis was ideal to use in assessing the views and opinions as expressed by civil society participants. Inductive content analysis was ideal as the data was new and could therefore be coded as such into new themes.

3.3.4.1. Precautions, criticisms and limitations of using thematic content analysis

There are a few precautionary elements to using thematic content analysis. Namely, it is the researchers responsibility to keep the themes as close to the raw data as possible to maintain authenticity and reliability (Boyatzis, 1998). In order to maintain the rigor in conducting thematic content analysis transparency of the methodology employed is crucial and this methodology must, for all intents and purposes, be logical (Schutz, 1973 cited in Fereday and Muir-Cochrane,

2008). In addition to this the method employed must be consistent and logical with everyday experiences (Schutz, 1973 cited in Fereday and Muir-Cochrane, 2008).

One of the criticisms levelled against thematic content analysis is its subjective bias (Boyatzis, 1998; Guest et al., 2012). It is argued that the researcher has a bias that can affect the process of thematic analysis as a whole and therefore has direct implications for the results (Harwood and Garry, 2003). Researcher bias is always acknowledged in qualitative studies and hence researchers are called to acknowledge and claim these biases. For this very reason it is imperative that themes remain as close to the raw data as is possible (Guest et al., 2012). For all that it has a precautionary bias towards the researcher, Guest et al. (2012) still maintain that it is one of the more useful methodologies to employ for analysing complex cases and data.

3.4. Methodological reflections

The aim of this section is to reflect on the various aspects of the methodology employed in this study and to discuss some of the benefits and shortfalls of each of these along with some of the other more interesting encounters that were had during the gathering of data. Various facets of the methodology employed and the value of choosing one approach over another will be explored here in the context of this research.

Prior to conducting the research, the research questions were thought out and drafted along with an information letter and a consent letter. These were then sent to the universities ethics committee for approval. It was the opinion of the reviewer that the information letter and the questions posed to individuals in this study were far too technical and that respondents would be unable to understand the questions and therefore would be unable to answer. At first this was upsetting as it was felt that the reviewer was making some very stern judgements about the intellectual abilities of civil society respondents. In order to gain the relevant clearance some of the suggested changes were made and clearance was obtained. When conducting the research many conversations were had with civil society activists who wanted to know more about the research, it was explained to them in detail, in the form of the original information letter, and respondents understood perfectly well and were able to meaningfully engage. To this end, one of the major lessons learned throughout this research project was to never underestimate the intelligence of people, and to always be willing to engage meaningfully with individuals rather

than to offhand expect their intellectual abilities to be limited, and thus limit the scope of research. These adjustments can be made in the field in individual instances if it is found that respondents are having difficulty.

Some interesting encounters were had with individuals during the data gathering process. In dealing with human subjects often times it is easy to forget that each individual person is going to have their own opinion about your research topic and agenda. These opinions can have a very detrimental impact on the researcher and therefore it is important to remember that it is not always necessary, or even possible, to have everyone agree with what it is the researcher is trying to achieve. Opposing views are always going to exist and these can be important in research as they aid in the construction of better arguments and thinking. Three such encounters were had during the gathering of empirical data.

Firstly, an interview was set up with a potential participant who is within the field of academia, but who has also run one of the most successful civil society organisations in the country. Upon briefing the interviewee on what the research was all about she begun a lengthy critique of the topic and insisted that it was a pointless endeavour given that environmental justice cannot be achieved using ecological modernisation. She expressed her deep concern on whether this research would result in the successful completion of a doctoral degree and tried to steer the research in an entirely different direction. When this happened the obvious response was to take her considerations with much seriousness and the gravity of what was said was rather destructive, especially given the power dynamic that existed between herself as a successful academic and a student researcher.

Another such instance occurred over an email exchange with another academic also involved with the same civil society organisation, this too was taken to heart. Upon reflection of what was said, together with the research supervisor, it was concluded that each of these two individuals belonged to a group of researchers and campaigners that held a very strong ideological opposition to ecological modernisation and that their unwillingness to engage with the topic was due to this. Therefore, whilst originally taking these comments rather harshly it was later put into perspective that we cannot all share the same beliefs or opinions. A critique of ecological modernisation is what brought this research into being, and perhaps further critique of this research will aid in making the findings better, and ultimately better the implementation of ecological modernisation.

This methodology employed open ended semi-structured interviews with members of civil society. This proved to be one of the most beneficial methodological techniques as it allowed for a wealth of information and experiential accounts to surface, and be explored with the various participants. Learning to master this skill did take some time, and the first couple of interviews were not as flexible as the later ones. However, the wealth of knowledge gained from these experiential accounts was immensely useful, and added an element of depth to the research that would not have been gained otherwise. This style of data gathering is a lengthy process, and the interviews themselves were at times rather long, and for some participants this proved to be problematic as they were keen to get back to their work. This however, was an acceptable limitation to what on the whole proved to be a most useful data gathering technique.

For some organisations, various individuals did not want to be interviewed individually and wished to be interviewed as a group in order to save time. This had some benefits and also some limitations. The limitation was that not all individuals would answer each question and responses were therefore at times limited. The great advantage of this was that it was easy for the researcher to ask a question and then disappear into the background whilst the members present would discuss the question and debate the answer. At times conflicting opinions would arise, and the wealth of concerns raised in these instances was very interesting. Group interviews therefore are a great tool to use when interviewing complex and contentious topics.

Many valuable lessons were learned in the various methodological aspects of this research. The value of knowledge, and how the assumptions people make can limit the wealth of data gathered. Secondly, the value of opposition and the importance of owning a research topic, being vested in the value of it, whilst still being open to criticism is a valuable lesson, and a hard one learned. Lastly, it was most helpful here to learn that the style of interview used can drastically affect the type of data gathered, and the degree to which it can be usefully interrogated in a group setting. All these lessons have provided a valuable skill set that can only be of value in further research endeavours.

CHAPTER FOUR
Empirical Evidence

4.1. Introduction

This chapter begins the presentation of the empirical evidence. Empirical evidence was gathered to answer each of the research questions posed in this study. The evidence gathered will be presented in five sections, and each section will relate to one of the research questions posed in this study. Section one of this chapter presents data gathered for understanding what the present state of governance in South Africa is relative to ecological modernisation. The empirical evidence presented here will detail findings gained from conducting policy analyses on seven different documents using Hajer's (1995) six ecological modernisation policy principles.

The second section of this chapter details evidence gained for understanding what criteria would need to be present in an environmental justice framework for ecological modernisation. Members of various civil society organisations were interviewed in order to understand what they felt were the most prominent environmental justice concerns for South Africa. After civil society members identified the causes of these injustices they were asked to pose solutions to each of these. These solutions form the basis of the criteria needed in policy.

The third section of empirical evidence presented in this chapter is qualitative data gained from interviews conducted with civil society. This section revolves around understanding whether or not policies based on ecological modernisation would be appropriate for implementation in a developing world context. There are two aspects of ecological modernisation that are under review here. The first of these is the necessity of having a capitalist market economy, and the second being the emphasis placed on science and technology. Each of these two aspects were posed to civil society in order to understand whether or not they were desirable in South Africa. If undesirable, ecological modernisation as a whole would be an inappropriate basis from which to write and implement environmental policies.

Following on from this, a turn is made to assess further empirical evidence gained from interviews with civil society. What was investigated here was whether or not implementing a social justice aspect within environmental policy was deemed a valuable strategy. As such the

question of whether or not social concerns should be embedded in environmental policy was raised. This was done so as to ascertain whether this would be an appropriate means to address environmental injustice.

4.2. The present state of governance in South Africa relative to ecological modernisation: principles guiding energy policy.

Governance of the South African energy sector is guided by a range of documents. In a bid to answer the first research question, this section of the results chapter presents findings gained from analyses carried out on these documents. South African energy policies and Acts were analysed in order to understand the extent to which sustainable development and ecological modernisation principles have been used to guide the writing of these policies and Acts. The methodology employed here is deductive content analysis. Policies were analysed deductively for evidence of sustainable development. Following on from this, these same documents were analysed deductively for evidence of the six ecological modernisation principles put forward by Hajer (1995). The culmination of this is an understanding of where South Africa's energy policy currently stands with regards to both sustainable development and ecological modernisation.

Seven such documents were identified and analysed in this study. The following documents are those under consideration. A brief description of the purpose of each of these documents is also given in the footnotes:

1. *White Paper on the Energy Policy of the Republic of South Africa*[2] (Department of Minerals and Energy, 1998).
2. The White Paper on Renewable Energy[3] (Department of Minerals and Energy, 2003b).

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[2] The writing of the White Paper on Energy Policy commenced in 1994, with the recently transitioned government wishing to write a new policy that would include the needs of the entire population (Department of Minerals and Energy, 1998, p. 5). The purpose of this policy can be summed up as follows, the "general approach to policy formulation is to recognise problems; to identify causes and solutions; to analyse their implications and make choices; and to implement, monitor and evaluate the effects of policy" (Department of Minerals and Energy, 1998, p. 6).

[3] The White Paper on Renewable Energy was released in 2003. The purpose statement of this policy document is rather extensive but can be summarised as follows:

> South Africa relies heavily on coal to meet its energy needs […]. However, at the same time South Africa recognises that the emissions of greenhouse gases […] has led to increasing concerns worldwide, about global climate change. […] For this purpose, the Government will

3. *The Integrated Energy Plan for the Republic of South Africa*[4] (Department of Minerals and Energy, 2003a).
4. *The Nuclear Energy Policy for the Republic of South Africa*[5] (Department of Minerals and Energy, 2008).
5. *The Radioactive Waste Management Policy and Strategy for the Republic of South Africa 2005*[6] (Department of Minerals and Energy, 2005).
6. *The National Nuclear Regulator Act 47 of 1999*[7] (Republic of South Africa, 1999).
7. *National Environmental Management Act 107 of 1998*[8] *(Revised on the 18 December 2014)* (Republic of South Africa, 1998).

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develop the framework within which the renewable energy industry can operate, grow, and contribute positively to the South African economy and to the global environment (Department of Minerals and Energy, 2003b, p. vii- viii).

[4] The Integrated Energy Plan for the Republic of South Africa was published in 1993 with the key understanding that "energy is a necessary but insufficient requirement for development" (Department of Minerals and Energy, 2003a, p. 4). With this in mind, "the purpose of the integrated energy plan or strategy is to balance energy demand with supply resources in concert with safety, health and environmental considerations" (Department of Minerals and Energy, 2003a, p. 5).

[5] Nuclear energy is a unique form of energy production in that it has its own set of documents governing its production. The Nuclear Energy Policy for the Republic of South Africa document, "presents a policy framework within which prospecting, mining, milling and use of nuclear materials as well as the development and utilisation of nuclear energy for peaceful purposes in South Africa shall take place" (Department of Minerals and Energy, 2008, p.3). Therefore, it is important that this policy document be included in the analysis as it governs a specific form of energy production.

[6] The Radioactive Waste Management Policy and Strategy for the Republic of South Africa is another document that is set to guide nuclear energy production, and has therefore also been included is this study. The purpose of this document is to, "ensure that the establishment of a comprehensive radioactive waste governance framework by formulating, additional to nuclear and other applicable legislation, a policy and implementation strategy in consultation with stakeholders" (Department of Minerals and Energy, 2005, p. 4).

[7] It is essential that The National Nuclear Regulator Act 47 of 1999 also be analysed here, as it is the purpose of this act to, "provide for the establishment of a National Nuclear Regulator in order to regulate nuclear activities" (Republic of South Africa, 1999, p. 1). This regulator will therefore play a vital role in the governance of the environment, and therefore it is important to understand the function, purpose and vision of this regulator in the context of sustainable development and ecological modernisation.

[8] The National Environmental Management Act 107 of 1998, is the last document to be reviewed. This Act was deemed essential for review as its purpose is, "To provide for co-operative governance by establishing principles for decision-making for matters affecting the environment" (Republic of South Africa, 1998, p. 2). Therefore, when energy related decisions are made that could impact on the environment the NEMA will provide the decision making principles. It was therefore vital that this Act be included in the study.

4.2.1. Sustainable development in South Africa's energy policy

In the literature review, it was argued that ecological modernisation is the possible means by which to achieve sustainable development. With reference to this, each of the above mentioned documents were analysed to determine if sustainable development is desired by government. Once this is established, policies can then be analysed to see if government and policy writers have chosen ecological modernisation as the means by which to achieve this.

In the White Paper on the Energy Policy of the Republic of South Africa, in the section dedicated to the environment, health and safety on page 88, the desire to achieve sustainable development is made evident. South Africa is committed to, "ensuring that developments in energy are socially, environmentally and economically sustainable" (Department of Minerals and Energy, 1998, p. 88). However, this commitment is made in a developing country where environmental injustices perpetuate, and therefore, "Whilst the long-term ecological sustainability of the energy sector is desirable, government's current view is that the immediate priority is to address those environmental problems which affect the living conditions of millions of people on a daily basis" (Department of Minerals and Energy, 1998, p. 88). In the developing world context it is also more difficult for South Africa to implement wholesale measures to achieve sustainability. In the section on *Greenhouse gas impacts* on page 92 of the document, it is acknowledged that although South Africa has made various commitments to, and ratified, The United Nations Framework Convention on Climate Change, it "is unlikely to be faced with obligations to reduce its greenhouse gas emissions in the near future" and therefore, implementing measures such as carbon taxes to curb greenhouse gases are not an immediate option for the country, "the implementation of such a tax at present will decrease South Africa's international competitiveness. Although South Africa carries clear responsibilities towards the global environment and will increasingly have to factor these considerations into its resource investment and management decisions, there is at present no justification for the voluntary imposition of a carbon tax in South Africa" (Department of Minerals and Energy, 1998, p. 92 and 93).

The Integrated Energy Plan for the Republic of South Africa is a strategy document that seeks to "balance energy demand with supply resources in concert with safety, health and environmental considerations" (Department of Minerals and Energy, 2003a, p. 5). Investigations into various strategy scenarios were conducted and these "investigations were aimed at

sustainable energy options, the development of the economy, poverty alleviation, energy efficiency, environmental protection and renewable technologies" (Department of Minerals and Energy, 2003a, p. 22). Therefore, The Integrated Energy Plan for the Republic of South Africa is concerned with sustainable energy options, and this in light of all three spheres of sustainable development, namely the economy, the environment and society.

The Nuclear Energy Policy for the Republic of South Africa illustrates the country's commitment to sustainable development rather emphatically. In section seven of this document under the heading Policy Principles for Nuclear Energy use in South Africa, policy principle eight on page 15 states that, "South Africa shall endeavour to use uranium resources in a sustainable manner through the recognition of the three interdependent and mutually reinforcing pillars of sustainable development namely economic development, social development and environmental protection" (Department of Minerals and Energy, 2008, p. 15). Here, again, all three spheres of sustainable development are acknowledged.

In the Radioactive Waste Management Policy and Strategy for the Republic of South Africa, sustainable development is a clear objective. The policy makers of this document have gone so far as to include principles that should be used in governing the environment towards this objective. The understanding of sustainable development in this document is that of "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (Department of Minerals and Energy, 2005, p. 8). There are nine principles that will be used to govern the attainment of such development. These principles can be found in section 3 of the policy, titled the National Radioactive Waste Management Policy Principles, page 9, and are: the polluter pays principle; transparency regarding all aspects of radioactive waste management; sound decision-making based on scientific information, risk analysis and optimisation of resources; the precautionary principle; no import nor export of radioactive waste; co-operative governance and efficient national co-ordination; international cooperation; public participation; and capacity building and education (Department of Minerals and Energy, 2005, p. 9).

The White Paper on Renewable Energy has a very strong emphasis on sustainable development written into it. There is evidence of this from the very start of the document, in the Deputy Minister's Forward, the Minister states that:

> I am confident that in this dynamic new era of the African Renaissance and in the spirit of the World Summit on Sustainable Development, hosted by South Africa (2002), we shall see Renewable Energy taking its rightful place in the South African Energy Sector and playing a significant role in contributing towards sustainable development (Department of Minerals and Energy, 2003b, p. i).

This sentiment is echoed throughout the document. Concerning sustainable development, it is noted in the section titled “Essential Elements for Renewable Energy Implementation” on page x of the executive summary, that renewable energy “produced from sustainable natural sources will contribute to sustainable development […]. Mitigating the use of fossil fuels through the implementation of renewable energy will contribute to emission reductions while providing incremental financial resources to stimulate sustainable development” (Department of Minerals and Energy, 2003b, p. x). The thinking evident here is that renewable energy is not only in and of itself sustainable, but that it will provide an energy source for the further sustainable growth of the economy. This sentiment is echoed in the vision statement of this policy document, this being: “An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation” (Department of Minerals and Energy, 2003b, p. 1).

The five policies reviewed thus far illustrate the commitment of the South African government to sustainable development. This commitment is continued in the National Environmental Management Act 107 of 1998 (NEMA). Right from the very beginning, in the preamble of the NEMA, on page 3, sustainable development is mentioned as development that “requires the integration of social, economic and environmental factors in the planning, implementation and evaluation of decisions to ensure that development serves present and future generations” (Republic of South Africa, 1998, p. 3). Because the NEMA is the country’s Environmental Management Act, the mention of sustainable development within the preamble, and throughout the document, is evidence of the importance of considering sustainable development in all environmental management decisions. In fact the NEMA lists eight factors that are to be considered in decision making for sustainable development. These can be found in the Principles section of the NEMA, on page 17, and include, among others, that disturbances of ecosystems be considered; that pollution be minimised or mitigated; and most important in light of environmental justice that, “negative impacts on the environment and on people's

environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied" (Republic of South Africa, 1998, p. 17).

Unlike all six documents analysed thus far, The National Nuclear Regulator Act 47 of 1999 does not make reference to sustainable development at all. Reflecting on the above evidence, it is fair to say that South African policy writers, for all but one document, have taken the discourse of sustainable development to heart. However, strong sustainability requires that each of the three spheres of sustainable development be acknowledged, namely the social, environmental, and economic spheres (Republic of South Africa, 1999). Therefore, simply acknowledging sustainable development as a guiding discourse is not enough to consider the policies strong in approach, they must host an understanding that there are three spheres to sustainability and that a system of trade-offs is unacceptable.

Each of the documents analysed illustrate to a certain extent that the writers and government are aware of each of these three spheres. In the White Paper on the Energy Policy of the Republic of South Africa, in section 7.1.5, on page 50, where electricity pricing is being discussed, it is stated that in "approach to electricity pricing policy government has to achieve an appropriate balance between meeting equity, economic growth and environmental goals" (Department of Minerals and Energy, 2003b, p. 50). There is however some evidence presented that may be construed as government being willing to employ a system of trade-offs. Long-term sustainability is desired by government, however, "government's current view is that the immediate priority is to address those environmental problems which affect the living conditions of millions of people on a daily basis" (Department of Minerals and Energy, 1998, p. 88). Therefore, as this statement illustrates, addressing the brown agenda is paramount to achieving sustainability in the country. In addition to this, a system of trade-offs is essential in order for South Africa to remain competitive in the global economy. In realization of this, it is stated that, "the implementation of such a [carbon] tax at present will decrease South Africa's international competitiveness. Although South Africa carries clear responsibilities towards the global environment […] there is at present no justification for the voluntary imposition of a carbon tax in South Africa" (Department of Minerals and Energy, 1998, p. 92 and 93 respectively). White Paper on the Energy Policy of the Republic of South Africa is therefore weak in its approach to sustainability.

Unlike the White Paper on the Energy Policy of the Republic of South Africa, The Integrated Energy Plan for the Republic of South Africa has a rather different understanding and approach to governance presented therein. It is stated, in section 5.7 on page 22 of this plan, under the heading Discussion of Results, that each of the investigations into potential energy futures, "were aimed at sustainable energy options, the development of the economy, poverty alleviation, energy efficiency, environmental protection and renewable technologies" (Department of Minerals and Energy, 2003a, p. 22). In the midst of all of these considerations it is evident that society, the economy and the environment have been considered, no mention is given as to which one, if any, take preference, and therefore there is no indication of a trade-off mentality.

The best evidence of an understanding of sustainable development is found in The Nuclear Energy Policy for the Republic of South Africa (Department of Minerals and Energy, 2008). Listed on page 15, as the eighth principle of the document, is the principle that, "South Africa shall endeavor to use uranium resources in a sustainable manner through the recognition of the three interdependent and mutually reinforcing pillars of sustainable development namely economic development, social development and environmental protection" (Department of Minerals and Energy, 2008, p. 15). Here we see the understanding of the three spheres of sustainability, however, these three aspects of sustainability are listed as pillars rather than embedded spheres.

In considering options for a radioactive waste management site, the writers of the Radio Active Waste Management Policy and Strategy for the Republic of South Africa have a systematic process for site evaluation that illustrates the concern of the writers with regards to the three spheres of sustainability (Department of Minerals and Energy, 2005). It is written in the policy in section 9, titled "National process for implementing the radioactive waste management strategy" on page 16, that a "Systematic evaluation of the merits and disadvantages of each option […] covering cost-effectiveness, technological status, operational safety, social and environmental factors" (Department of Minerals and Energy, 2005, p. 16). Here all three pillars of sustainability are considered, and therefore the understanding in this document lends itself towards strong sustainability.

The National Environmental Management Act 107 of 1998 (Republic of South Africa, 1998) possibly has one of the best outright statements that acknowledge three sphere sustainability.

Listed as one of the definitions of this Act, on page 10 is sustainable development. Here, “"sustainable development" means the integration of social, economic and environmental factors into planning, implementation and decision-making so as to ensure that development serves present and future generations”. An illustration of the commitment to sustainable development is present in the Principles section, in **Chapter one**, of this Act, where principle 3 states that, “Development must be socially, environmentally and economically sustainable” (Republic of South Africa, 1998, p. 10). The White Paper on renewable Energy, having excerpts of quotes from the NEMA, detailing exactly the above mentioned understanding of sustainable development, illustrates the importance of this understanding and how it has come to influence the governance of renewable energy. Therefore, these two documents both have principles of strong sustainability embedded into them.

In conclusion, sustainable development is rather a dominant discourse in all, but one, of the energy documents meant to guide decision making in South Africa. The National Nuclear Regulator Act 47 of 1999 being the only document analysed to not have any mention of sustainable development written into it. The only concern is that in some of these the approach to sustainability that has been taken is rather weak with trade-offs being made between each of the spheres of sustainable development. Table 4.1 represents a summary of the evidence presented above. Under the column ‘mentions sustainable development’ a tick indicates that sustainable development is mentioned and a cross indicates that no mention of sustainable development is made. For the columns dedicated to ‘strong or weak approach’ a tick in either column represents which approach has been taken.

Table 4.1: A summary of sustainable development in South African energy policies and other documents

	Mentions sustainable development	Strong Approach (understanding of the importance of all three spheres)	Weak approach to sustainability (system of trade-offs)
White Paper on Energy Policy	✓		✓
White Paper on Renewable Energy	✓	✓	
Nuclear Energy Policy	✓	✓	
Integrated Energy Plan	✓	✓	
Radioactive Waste Management Policy	✓	✓	
National Environmental Management Act	✓	✓	
National Nuclear Regulator Act	X	No mention, therefore unknown	No mention, therefore unknown

(Source: based on policy analyses, 2015**)**

4.2.2. Ecological modernisation principles in South Africa's energy policies

Sustainable development, has been identified in some of the documents analysed. It is to the presence of ecological modernisation principles in these documents that we now turn. In analysing the presence or absence of ecological modernisation principles in these policies, using deductive content analysis, Hajer's (1995) six policy principles for ecological modernisation were looked for. From the literature reviewed previously these six principles are: prevention of environmental degradation is preferred over dealing with resultant environmental degradation; internalising the costs of environmental degradation; requiring the party responsible for pollution to pay; the importance of the promotion of science in policy; economic

benefits for pollution prevention; and lastly promoting participation within the governance of the environment (Hajer, 1995).

The first of the policy principles that has been put forward by Hajer (1995), that should be present in all policies based on ecological modernisation, is that of the understanding that preventing environmental degradation is far better than trying to remediate the after effects of degradation. The principle of prevention of environmental degradation being better than cure was a difficult one to identify in each of the documents. For the most part each of the documents analysed mainly showed concern for preventing further pollution in a bid to prevent further climate change, rather than having prevention altogether. The White Paper on Energy Policy for The Republic of South Africa, places South Africa's commitment to this in the context of being party to the United Nations Framework Convention on Climate Change, "As a signatory to the Framework Convention on Climate Change, South Africa intends to play a constructive role in the alleviation of environmental emissions" (Department of Minerals and Energy, 1998, p. 21).

Government has made a rather significant commitment in the White Paper on Energy Policy for The Republic of South Africa to address issues of climate change. With regards to greenhouse gas emissions, it is stated in section 3.5.4 Environment Health and Safety on page 93, that:

> Government will monitor international developments and will participate in negotiations around response strategies to global climate change, in order to progressively balance its environmental responsibilities and development interests, along with health related local issues, in these processes. The Department of Minerals and Energy will follow a 'no regrets' approach in the energy sector with regard to the potential global environmental impacts of energy activities (Department of Minerals and Energy, 1998, p. 93).

From this quote it is evident that government is engaging with the issue of climate change, and is vested in partaking in international conversations to better prevent further impacts. Evident from this quote is the fact that government is not only concerned with preventing further environmental impacts, but also further impacts on human health.

South Africa's Nuclear Energy Policy posits that concern over climate change, among others, needs to be addressed. In this manner what is proposed, in section 2, the 'Background' on page

7, is a preventative shift away from coal based energy production. “Further, South Africa’s electricity generation capacity has to be increased significantly in the next few decades to facilitate economic growth and social progress, while remaining sensitive to climate change” (Department of Minerals and Energy, 2008, p. 7). However, to say that prevention of further environmental degradation is the only driving factor would be untrue. The cost of coal based energy production and the potential for reserve exhaustion pre-empt concerns over climate change. Also in the ‘Background’ it is stated that, “Concerns over increases in the price of coal, reserve exhaustion and global warming, partly as a result of greenhouse gas emissions and other atmospheric pollutants, necessitate a departure from the over-reliance on electricity generated from coal” (Department of Minerals and Energy, 2008, p. 7). Therefore, policy makers posit that nuclear energy is seen as a potential means to prevent further climate change.

Adopting nuclear energy, however, has preventative concerns of its own. Managing the radioactive waste that is produced from this means of energy production also requires an understanding that prevention is better than cure. In the National Radioactive Waste Management Policy and Strategy for the Republic of South Africa, within the list of principles on page 9, is the precautionary principle which states that: “Where there are threats of serious irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation (Rio Principle 15)” (Department of Minerals and Energy, 2005, p. 9).

The National Nuclear Regulator Act 47 of 1999 is the guiding document aimed at preventing nuclear impacts. The preventative purpose of the Act is summed in its introductory statement on the second page, and is as follows:

> To provide for the establishment of a National Nuclear Regulator in order to regulate nuclear activities, for its objects and functions, for the manner in which it is to be managed and for its staff matters; to provide for safety standards and regulatory practices for protection of persons, property and the environment against nuclear damage; and to provide for matters connected therewith (Republic of South Africa, 1999, p. 2).

Because these standards are put in place to protect persons, property and the environment from nuclear damage, they are in essence regulations to prevent rather than to 'cure' nuclear impacts. The National Nuclear Regulator is assigned the task of setting these standards and of regulating (Republic of South Africa, 1999, p. 10).

In a similar tradition, the White Paper on the Energy Policy of the Republic of South Africa has identified pollution and climate change as being in need of prevention and the country will therefore commit to mitigating greenhouse gas emissions. The purpose of the policy is summed up in the 'Purpose of the Policy; statement of the problem' on page vi, as follows:

> The above-mentioned concerns about global climate change were articulated at the Johannesburg World Summit on Sustainable Development in 2002 and a corresponding commitment to promote renewable energy in all the participating nations was made in the Johannesburg Declaration. Correspondingly, it is the intention of the Government to make South Africa's due contribution to the global effort to mitigate greenhouse gas emissions (Department of Minerals and Energy, 2003b, p. vi).

To this end government will "develop the framework within which the renewable energy industry can operate, grow, and contribute positively to the South African economy and to the global environment" (Department of Minerals and Energy, 2003b, p. vii).

As has been articulated above, the goal of The Integrated Energy Plan for the Republic of South Africa was to investigate sustainable energy options for the country. However, much of the study was concerned with the economic basis from which the different means of energy production can be considered sustainable rather than pollution prevention. The Plan indicates in section '5.7.2 Energy Transformation' on page 23 that, "All scenarios show that electricity generation based on coal remains the most economic available to South Africa under current national environmental legislation. Alternative electricity generation technologies have been identified to diversify supply and environmental concerns. These are ranked approximately in increasing economic cost to the economy over coal-fired electricity generation plant" (Department of Minerals and Energy, 2003a, p. 23). Therefore, preventing environmental impacts is not the core concern here.

The National Environmental Management Act 107 of 1998 is the document that is most aligned with the precautionary principle. In the principles of the NEMA on page 17, it is stated that "Sustainable development requires the consideration of all relevant factors including the following: [...] that negative impacts on the environment and on people's environmental rights be anticipated and prevented, and where they cannot be altogether prevented, are minimised and remedied" (Republic of South Africa, 1998, p. 17). Prevention is therefore the ideal.

Most of the policy documents analysed thus far acknowledge that prevention, in some way or another, is essential. It is the National Environmental Management Act 107 of 1998 this notion is written into an assertion for governing the environment, in Chapter seven, under the heading 'Compliance, Enforcement and Protection' on page 63 it is stated that:

> Every person who causes, has caused or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is authorised by law or cannot reasonably be avoided or stopped, to minimise and rectify such pollution or degradation of the environment (Republic of South Africa, 1998, p. 63).

Prevention is key in this statement. Therefore, while the Policy documents that govern energy production are ideologically positioned with Hajer (1995), it is the NEMA that this is explicitly written this into a practicing principle.

Hajer's (1995) principle of prevention being better than cure is further endorsed with the polluter pays principle. For South African governance to be identified as ecomodernist in approach there must be evidence of this principle in policy as well. The polluter pays principle is identified in the White Paper on Energy Policy in section 3.5.9 'Fiscal and pricing issues' on page 16 and states that:

> Tax differentials may be used to support government's policy of promoting more efficient and environmentally sound transport modes, such as diesel-driven motor vehicles where they form part of a holistic approach and are simultaneously underpinned by other supporting measures. Government will investigate an environmental levy on energy sales, together with appropriate fiscal support for more environmentally benign and

> sustainable energy options including energy efficiency (Department of Minerals and Energy, 1998, p. 16).

There is a very proactive approach taken to implementing the polluter pays principle in this document. In section eight, under the heading 'Environmental costs' on page 15 it is proposed that, "[g]overnment will investigate an environmental levy on energy sales" (Department of Minerals and Energy, 1998, p. 15).

This sentiment is echoed in the Radioactive Waste Management Policy and Strategy for the Republic of South Africa. In this policy the polluter pays principle is most evident and clear. In the "National Radioactive Waste Management Policy Principles", section 3 on page 9, it is stated that "The financial burden for the management of radioactive waste shall be borne by the generator of that waste" (Department of Minerals and Energy, 2005, p. 9). Governments commitment to the establishment of this polluter pays principle as a means of governance is also evident in this policy:

> Government shall within five years following approval of this policy, establish a Radioactive Waste Management Fund (RWMF) by statute. The funds paid into the RWMF shall not be subject to tax. In keeping with the polluter pays principle, the contributions to the fund will be from the generators of radioactive waste. The contributions shall be managed in an equitable manner, without cross-subsidization and amongst others be based on classification of the waste as well as the volumes (Department of Minerals and Energy, 2005, p. 22).

From the evidence found within this policy we can see that government is rather committed to seeing this principle of ecological modernisation put into practice within the energy sector.

The polluter pays principle evidenced in the Radioactive Waste Management Policy and Strategy for the Republic of South Africa is echoed in The National Nuclear Regulator Act 47 of 1999. In this Act it is made clear that the liability of any nuclear damage will be the responsibility of the proprietor in accordance with the law. In section 32 on page 35 it states that:

(1) The liability of a holder of a certificate of registration, for any nuclear damage caused by or resulting from any action carried out by virtue of that certificate during his or her period of responsibility, must be determined in accordance with—

(a) the common law; or

(b) the Compensation for Occupational Injuries and Diseases Act, 1993 (Act No. 130 of 1993), as the case may be (Republic of South Africa, 1999, p. 35).

The example above, although not labeled as the polluting party should pay within the Act, does follow the reasoning of this ecological modernisation principle, as the cost of damage should not be that of those impacted, but rather that of the proprietor.

Principle P on page 19 of the National Environmental Management Act 107 of 1998 says that:

p) The costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising further pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment (Republic of South Africa, 1998, p. 14).

The NEMA, being the Act that guides the practice of environmental management, in having this as one of the core principles of the document, indicates that government is committed to seeing the polluter pays principle put into action.

No evidence of the polluter pays principle could be found in three of the documents analysed. These being: The White Paper on Renewable Energy, The Nuclear Energy Policy for the Republic of South Africa, and The Integrated Energy Plan for the Republic of South Africa (Department of Minerals and Energy, 2003a, 2003b, 2008).

In maintaining the belief that prevention is better than cure, there is the understanding that there should be benefits assigned for the prevention of pollution, and these should be identified as a policy strategy (Hajer, 1995). There is clear evidence of this understanding in only two of the policies and Acts analyzed, namely White Paper on the Energy Policy of the Republic of South Africa and the White Paper on Renewable Energy. White Paper on the Energy Policy of the Republic of South Africa has made it a government imperative to provide benefits for pollution prevention. In a section of the document dedicated to environmental costs on page 105, it is

stated that, “Government will investigate an environmental levy on energy sales, together with appropriate fiscal support for more environmentally benign and sustainable energy options including energy efficiency” (Department of Minerals and Energy, 1998, p. 105). This same reasoning is found in the White Paper on Renewable Energy. Amongst the strategic goals and objectives of this White Paper is one that is associated with benefits for pollution prevention. The first of these, on page xi, states that the goal is to, “To introduce appropriate fiscal incentives for renewable energy” (Department of Minerals and Energy, 2003b, p. xi). Furthermore, it is acknowledged in this document, under a heading that details the factors that will affect the prospects for implementing renewable energy that, “The incentives provided” will play a direct role in the advancement of renewable energy implementation (Department of Minerals and Energy, 2003b, p. 25).

Internalizing the costs of environmental degradation is noted by Hajer (1995) as one of the fundamental steps in the ecological modernisation process. There is evidence of this understanding present in South Africa’s policies that govern energy production. Firstly, the White Paper on the Energy Policy of the Republic of South Africa has placed a great deal of emphasis on the internalization of environmental costs throughout the policy document. It is written in relation to industry, commerce and mining on page 10, section 3.3.2 that, “Cleaner energy end-use technologies, environmental performance auditing and incorporating environmental costs could reduce the environmental impacts of energy use by industry, mining and commerce” (Department of Minerals and Energy, 1998, p. 10). In relation to households though, government has had to take into consideration the fact that South Africa is still a developing country with many households unable to pay for electricity if full cost accounting is taken into consideration. Therefore, government, in “Recognising that many households are presently unable to afford cost based tariffs, government acknowledges that moderately subsidised tariffs for poor domestic consumers are necessary for equity reasons” (Department of Minerals and Energy, 1998, p. 51). In light of this, government has sought measures that can be implemented in order to offset the impacts of full cost accounting. Namely,

> the advantages of renewable energy are set out, particularly for remote areas where grid electricity supply is not feasible. Government believes that renewables can in many cases provide the least cost energy service, particularly when social and environmental costs are included, and will therefore provide focused support for the development,

demonstration and applications of renewable energy (Department of Minerals and Energy, 1998, p. 14).

It is important to note what the White Paper on Renewable Energy has stated within it on this matter.

The White Paper on Renewable Energy has full cost accounting listed as one of the policy principles. On page 26, listed as one of the principles, it is stated that: “Pricing policies will be based on an assessment of the full economic, social and environmental costs and benefits of policies, plans, programmes, projects and activities of energy production and utilization” (Department of Minerals and Energy, 2003b, p. 26). With this as one of the policy principles it is reiterated that one of the key deliverables on page 34 for implementing the White Paper on Renewable Energy is the “Phasing in of regulations requiring power generator's tariffs to be based on full cost accounting and the incorporation of environmental externalities” (Department of Minerals and Energy, 2003b, p. 34). However, including the social and environmental costs of energy production into pricing structures will not be enough to push for the uptake of renewables and so, “there would still be a need to support individual renewable technologies in the market until they achieve the necessary economies of scale, technological development and investor confidence” (Department of Minerals and Energy, 2003b, p. 27).

Within the Nuclear Energy Policy for the Republic of South Africa, full cost accounting is listed as one of the responsibilities held by government. Here government is responsible for ensuring that, “cost calculations for nuclear power shall be based on the full nuclear fuel cycle, including decommissioning and decontamination as well as waste disposal” (Department of Minerals and Energy, 2008, p. 18). Even though the three documents contain the principle of internalizing environmental externalities, it is The Integrated Energy Plan for the Republic of South Africa that lists this one principle as a challenge and a gap in policy. It is stated in this Plan that “reliable local data and uncertainty as to how such external costs would be constituted in [is] a policy void” (Department of Minerals and Energy, 2008, p. 28).

The National Environmental Management Act 107 of 1998, as illustrated above does acknowledge that the polluting party must pay for environmental impacts, however there is no indication of including environmental externalities in the costs of production as a principle used in the writing of the NEMA. In the NEMA Principle 4b, on page 12, says that “Environmental

management […] must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option" (Republic of South Africa, 1998, p. 12). In the documents list of definitions, the best practicable option is defined as: "the option that provides the most benefit or causes the least damage to the environment as a whole, at a cost acceptable to society, in the long term as well as in the short term" (Republic of South Africa, 1998, p. 8). Here the very principle of internalizing the costs of the environment is undermined as only options with acceptable costs will be chosen rather than the promotion of a full cost accounting system.

Both The National Nuclear Regulator Act 47 of 1999 and the Radioactive Waste Management Policy and Strategy for the Republic of South Africa made no mention of internalizing the costs of degradation (Department of Minerals and Energy, 2005, 2005). This is rather surprising as both these documents had the polluting party pays principle written into them.

A focus on science and technology, and the promotion thereof, is the penultimate ecological modernisation policy principle that will be looked at. Four of the policies and Acts analysed here have a very undeniable stance on the promotion of science and technology within the energy sector. The overarching policy on energy governance, namely the White Paper on the Energy Policy of the Republic of South Africa, has as its second objective, of medium-term policy priorities listed on page 29, that in order to improve energy governance, government must, "Facilitate the development of a research strategy to improve energy research and development" (Department of Minerals and Energy, 1998, p. 29). In conjunction with facilitating the research strategy it is also committed to allocate funding for this research. "Government will consider the development of a system to prioritise national research funding" (Department of Minerals and Energy, 1998, p. 78). Not only will research be facilitated and funded, but there is also a commitment made in this White Paper to facilitate the uptake of more efficient technologies. "Clean coal technologies will be monitored, and promising technologies evaluated and demonstrated, and their adoption, introduction and implementation will be facilitated where applicable" (Department of Minerals and Energy, 1998, p. 78).

The promotion of research and technological advancement in the energy sector is most evident in the vision statement of the country's Nuclear Energy Policy, which identifies the vision as, "Industrial and technological leadership, to secure alternative energy resources for the future, through the development of a globally competitive infrastructure and skills for the peaceful

utilisation of Nuclear Energy and Technology" (Department of Minerals and Energy, 2008, p. 3). The Nuclear Energy Policy for the Republic of South Africa identifies South Africa as a nation that will, "strive to acquire technology know-how and skills to enable design, development, construction and marketing of its own nuclear reactor and fuel cycle systems" (Department of Minerals and Energy, 2008, p. 16). In order to achieve this end government, "shall support research, development and innovation in the use of nuclear technology. Government shall also support participation in global nuclear energy technology innovation programmes" (Department of Minerals and Energy, 2008, p. 16). The Radioactive Waste Management Act follows suit detailing that all decision making will be done on the basis of sound scientific reasoning and recommendation (Department of Minerals and Energy, 2005). The Radioactive Waste Management Policy and Strategy for the Republic of South Africa echoes governments sentiments on the supremacy of science in informing decision making. It is stated therein that, ''Decision-making shall be based on proven scientific information and recommendation of competent national and international institutions dealing with radioactive waste management" (Department of Minerals and Energy, 2005, p. 9). Therefore, in the nuclear energy sector, South Africa is committed to scientific analysis and recommendations.

The overarching White Paper on the Energy Policy of the Republic of South Africa and South Africa's nuclear energy documents are not the only indicators of this thinking (Department of Minerals and Energy, 1998). In the White Paper on Renewable Energy there is a great deal of emphasis placed on scientific research and the absorption of more efficient technologies. The sentiment therein can be summed up in this quote, from a paragraph in the policy titled "Renewable Energy Technologies" on page xi:

> It is necessary to consider which technologies can be promoted by measures to stimulate the market. In the short-term it is important that technologies that are currently available in South Africa are implemented. The local content of equipment needs to be maximised in order to minimise the costs associated with implementation and operation, as well as the promotion of employment opportunities. The establishment of technology support centres within existing research and development institutions will facilitate the promotion and ongoing development of technologies and will assist Government in the certification of systems (Department of Minerals and Energy, 2003b, p. xi).

Government is not only committed to research into such technologies it is also interested in facilitating their uptake. As such, there is, “a need for Government to create an enabling environment through the introduction of fiscal and financial support mechanisms within an appropriate legal and regulatory framework to allow renewable energy technologies to compete with fossil-based technologies” (Department of Minerals and Energy, 2003b, p. x).

The Integrated Energy Plan, the National Environmental Management Act 107 of 1998 and The National Nuclear Regulator Act 47 of 1999 all make no mention of the importance of investing in science and the promotion of technological advancement (Department of Minerals and Energy, 2003a; Republic of South Africa, 1998, 1999).

The final principle of ecological modernisation that should be present in all policies according to Hajer (1995) is that of public participation. There is no attention given as to the intricate details of how and when this public participation should be fulfilled, Hajer (1995) has simply noted the need for public participation to form a part of environmental governance. A commitment to public participation in this sense is not hard to find in South Africa’s energy policies. The White Paper on the Energy Policy of the Republic of South Africa lists, as its second objective, the goal of improving energy governance (Department of Minerals and Energy, 1998). Under this objective it is argued that the secretive nature of the governance of the energy sector under the previous dispensation was inappropriate, and therefore the current dispensation will aim to remedy this through the consultation of stakeholders in the formulation and implementation of new policies (Department of Minerals and Energy, 1998). It is stated that, “Stakeholders will be consulted in the formulation and implementation of new energy policies, in order to ensure that policies are sympathetic to the needs of a wider range of stakeholder communities” (Department of Minerals and Energy, 1998, p. 24).

The Nuclear Energy Policy for the Republic of South Africa, much like the White Paper on the Energy Policy of the Republic of South Africa, also illustrates the fact that government seeks to involve the public in decision making. It is written in this document under the section headed ‘Background’ on page 8 that:

> Government will ensure that decisions to construct new nuclear power stations are taken within the context of an integrated energy policy planning process with due consideration

given to all relevant legislation and the process subject to structured participation and consultation with all stakeholders" (Department of Minerals and Energy, 2008, p. 8).

This sentiment is echoed in the Radioactive Waste Management Policy and Strategy for the Republic of South Africa, where public participation is one of the policy principles. It is stated therein, on page 9 that, "Radioactive waste management shall take into account the interests and concerns of all interested and affected, when decisions are being made" (Department of Minerals and Energy, 2005, p. 9). This theme runs throughout nuclear governance documents. In The National Nuclear Regulator Act 47 of 1999, public participation is also permitted with regards to the granting of a nuclear licence, be it an installation or vessel licence there is a process to protest the granting of either of these licences. *"*Any person who may be directly affected by the granting of a nuclear installation or vessel licence pursuant to an application in terms of subsection (1) or (2), may make representations to the board, relating to health, safety and environmental issues connected with the application, within 30 days of the date of publication in the *Gazette"* (Republic of South Africa, 1999, p. 26).

The country's White Paper on Renewable Energy, on the other hand, has no mention of public participation. It does however have a strong emphasis on education and awareness raising written into it. It is stated under the 'Strategic Goals and Objectives' of the policy on page xii that the, "goal is to develop mechanisms to raise public awareness of the benefits and opportunities of renewable energy" (Department of Minerals and Energy, 2003b, p. xii). While education and information dissemination is important it cannot be misappropriated for active public participation.

The National Environmental Management Act 107 of 1998 is the country's guiding document on exactly how this public participation should be carried out (Republic of South Africa, 1998). The NEMA defines public participation as being, "in relation to the assessment of the environmental impact of any application for an environmental authorisation, means a process by which potential interested and affected parties are given opportunity to comment on, or raise issues relevant to, the application" (Republic of South Africa, 1998, p. 14). This public participation is one of the founding principles of the NEMA. The process entails the, "participation of all interested and affected parties in environmental governance must be promoted, and all people must have the opportunity to develop the understanding, skills and capacity necessary for achieving equitable and effective participation, and participation by vulnerable and

disadvantaged persons must be ensured" (Republic of South Africa, 1998, p. 18). Public participation is so fundamental in the NEMA that it is also one of the general objectives listed on page 34, and the objective is to, "ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment" (Republic of South Africa, 1998, p. 34).

Table 4.2 is a visual representation of the presence, absence or contrary stance taken in each policy relative to each of Hajer's (1995) six policy principles. Where the principle is present in a policy it is represented with a tick, the absence is represented with a cross, and if the policy has a completely opposing principle it is represented with a 'does not equal' symbol.

From this table it is clear to see that certain policies contain more ecological modernisation principles than others. Ranked in order of the most eco-modernist to the least, the order would go as follows:

1. The White Paper on Energy Policy Governance for the Republic of South Africa with six of the six principles present.
2. The White Paper on Renewable Energy with five of the six principles present.
3. The Nuclear Energy Policy for the Republic of South Africa with four of the six principles present.
4. The Radioactive Waste Management Policy and Strategy for the Republic of South Africa also with four of the six principles present.
5. The National Nuclear Regulator Act 47 of 1999 with three of the six policy principles present.
6. The National Environmental Management Act 107 of 1998 with three of the six policy principles present, but contains the antithesis to the principle of internalizing the costs of degradation therein.
7. Lastly, is the Integrated Energy Plan, which has only one of the six policy principles present.

Table 4.2: Ecological modernisation principles evident in energy policy

	Prevention is better than cure	Polluting party pays	Benefits for pollution prevention	Internalising the costs of environmental degradation	Emphasis on science and technology	Promotion of public participation
White Paper on Energy Policy	✓	✓	✓	✓	✓	✓
White Paper on Renewable Energy	✓	✓	✓	✓	✓	X
Nuclear Energy Policy	✓	X	X	✓	✓	✓
Integrated Energy Plan	X	X	X	X	X	✓
Radioactive Waste Management Policy	✓	✓	X	X	✓	✓
National Environmental Management Act	✓	✓	X	≠	X	✓
National Nuclear Regulator Act	✓	✓	X	X	X	✓

(Source: based on policy analyses, 2015**)**

Therefore, there are some policies that can be considered eco-modernist to a greater degree than others. However, while not all elements of ecological modernisation identified by Hajer (1995), as essential principles for policies, are evident in each policy, all six guiding principles are evident across the entire suite of policies and Acts that guide energy governance in the country. As such South Africa has evidently chosen ecological modernisation as its means to achieve sustainable development. Thus the results here serve to solidify those made by Long

and Patel (2011) and (Oelofse et al., 2006) that South Africa has embraced ecological modernisation as the chosen policy framework. Therefore, it is important to understand the challenges of implementing ecomodernist policies.

4.3. Introducing the research participants: the empirical evidence

It has been made very clear by the policy analysis conducted that South Africa has, for the most part, used ecological modernisation as its institutional framework guiding the writing of its policies. Given that ecological modernisation theorists hold civil society organisations in much esteem with regards to how much they can influence the governing of the environment, the members of civil society organisations were interviewed to gain an understanding of the practical implications of implementing such policies based on ecological modernisation. In engaging with civil society understanding the role they have played in South African governance was deemed essential. As such civil society members were asked about their contributions to environmental governance. Below is a short introduction of the role these South African civil societies are playing in environmental governance in the country.

There were 26 participants in this study who work for, or who are members of, 17 various organisations. An additional participant, not included in this count, but who will be discussed below, is no longer involved in the civil society network. The environmental issues each of these 17 organisations work with is varied and crosses a wide spectrum of environmental justice concerns. Multiple themes emerged and many of these fell within the brown agenda, a few in the green and a number that cross both of these spectrums.

Civil society organisations are engaging with a variety of environmental concerns, and therefore have a very broad spectrum of potential influence when engaging with environmental governance. Five (5) civil society organisations understand that climate change is a very broad area of study, encompassing a wide spectrum of environmental issues, and therefore have chosen to engage with climate change as an umbrella approach. In addition to climate change, another broad area of concern to emerge and dominate the agenda was that of the minerals and energy complex in South Africa. Thirteen (13) of the seventeen (17) organisations are actively engaging with this sector, illustrating its prominence as an area of environmental concern in South Africa. The contested approval of mines in and around areas that are world

heritage sites is an example of one of the concerns for one participant. Another respondent in the same line of thinking states that it is the approval of mines in sensitive areas that illustrates the prioritization of mining in the country, regardless of the environmental and social impacts.

This prioritization is not a new concern, one respondent argues that it stems from years of exploitation of mineral resources in the country to fund a coal based energy system. Three (3) organisations are looking specifically at South Africa's inappropriate reliance on coal, and the mining thereof, as a means of electricity generation. Six (6) are looking at energy specifically, and a move away from carbon intensive forms of energy production towards renewable energy sources is sought. Nine (9) organisations are specifically looking at the impacts the minerals and energy complex has on both the physical environment and society at large.

In relation to the minerals and energy complex at large, and also in relation to the industrial sector in South Africa, eleven (11) organisations are trying to address issues of pollution. This extends to air, water and land pollution. Within the areas of concern that arise for civil society organisations are issues that are generated by both the public and private sector. Engaging with corporations in a bid to improve business practice, lobbing support for causes, as well as holding corporations accountable for their actions is an area in which two (2) civil society organisations are engaging.

Many of the environmental concerns raised by civil society participants were in relation to the broader theme of development. A lack of low carbon development, concerns over the means of production, and the rate of consumption were highlighted in relation to achieving the broader goal of sustainable development. Four (4) civil society organisations are addressing environmental concerns within the public sector by engaging in formal appeal processes. Eight (8) organisations are dealing with issues of human rights; access to resources, both natural and provisional such as electricity; the health implications of a degraded environment; the disparity of power in decision making; and a broad area of concern is the limited access to information regarding the environmental impacts of industries. CSO2[9] is engaging with a wide range of environmental justice concerns from a human rights centred approach and as such are most

[9] CSO refers to civil society organisation

interested in the kind of inherent and systemic power inequalities that exist between the decision makers and the two primary repositories of power, these being government and the private sector, and the communities that are affected by those decisions and what needs to happen in order to address those conveyed symmetries of power, both in terms of access to information, in terms of community mobilisation, public participation processes, what kinds of information gets valued (Pers.com, 2015a).

Ecological modernisation presupposes that civil society will be able to influence environmental governance significantly to effect change. The degree to which that is true is illustrated here. Civil society organisations were asked to quantify their perceived degree of influence on environmental governance. Seventeen (17) organisations in this study are engaging on the issue of environmental governance and justice, and their perceived influence in effecting change is rather encouraging. Four options were presented and respondents were allowed to elaborate if they wished. The four options included no contribution, a little contribution, a fair amount and a lot. Of the twenty two respondents to this question some found it a difficult task to try quantify their contribution. Figure 4.1 is a graphic representation of the responses given by civil society organisations and as can be seen the majority of the respondents believe they contribute a fair amount or a lot. This is very encouraging given the plethora of concerns they are engaging with.

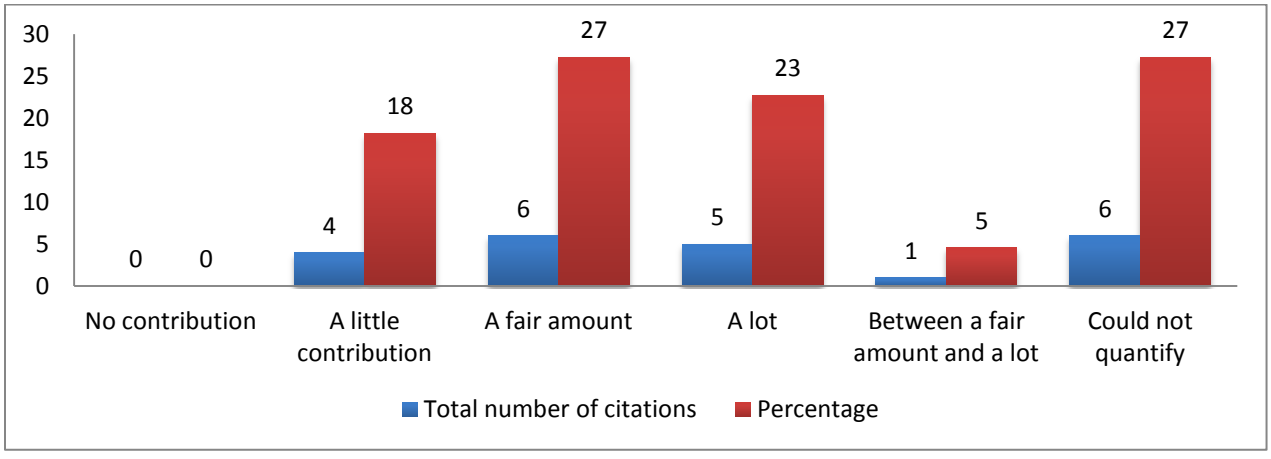


Figure 4.1: Bar graph visually representing civil societies perceived contributions (Source: fieldwork material, 2015**).**

The presupposition that civil society can influence governance on the environment is not unfounded as not one of the respondents felt that they made no contribution. Each felt that they made a contribution. Of those that could not quantify their contributions, it was just the degree of contribution that varied amongst respondents. It is important to note here that one potential participant, upon being contacted to participate in the study, replied with this response:

> *I no longer have or work for an environmental organisation because I don't think either the South African government or world leaders are receptive to the human crisis of a damaged planet. I worked for 20+ years trying to make a difference, and things are worse now. […]. When the government started pushing fracking through, I gave up, and now I do something else for a living. […]. I used to believe in awareness raising - if we only understand the depths of the crisis, we would change our behaviour. I don't anymore (Pers.com, 2015b).*

Here the assumption of eco-modernists on the role civil society can play is undermined entirely. Table 4.3 is dedicated to highlighting the contributions made by civil society. One respondent notes that civil society are in many ways responsible for the fact that South Africa has one of the most progressive environmental legislations in the world, and this is a great indicator of how civil society can be used in governance to effect change. In conjunction with this, respondents felt they were making a difference by most prominently commenting on policy and legislation. It was argued that using the legal system as a resource has aided in giving the movement some clout when faced with powerful corporations and government. Additionally, being a party to the decision making process allows civil society to engage meaningfully and effect change.

Whilst some inroads have been made, and some organizations are feeling that their contributions have had an influence, this has been limited (see Table 4.4). These limitations hinder the influence of the movement to the point where they are, "*only scratching the surface*" (Pers.com, 2015c). Reasons cited for this include: a disconnect between the ideas of government and civil society, and the fact that there exists a mutual suspicion between both parties. In addition to this one respondent notes that it is difficult to effect change because of the disparity in power, between government and industrial lobbies on the one hand, and civil society on the other. Furthermore, there is a disparity in power between government and the industrial sector it regulates in that, "*mines or corporates are just too powerful for government to regulate"*

(Pers.com, 2015d). All this in effect means that government reciprocity of civil societies ideas has been compromised and as a result, *"government ignores us*" (Pers.com, 2015e).

Table 4.3: Positive influences on governance

Positive inroads	**Total number of citations**[10]	**Percentage**
Comment on policy and legislation as well as partaking in lobbying	***** *** (8)	53
Using the legal system	** (2)	13
Watch dog for the state and industry	** (2)	13
Working in partnership with government	** (2)	13
Being party to decision making bodies	* (1)	7
Total	******* ***** ***** (15)**	**100**

(Source: fieldwork material, 2015**)**

Table 4.4: Summary of factors limiting civil society engagement

Limiting factors	**Tally Of citations**	**Total number of citations**	**Percentage**
Limited by organisations capacity	IIIII IIIII	10	53
Government as a limiting factor	IIII	4	21
Limited by inaccessible decision making forums/ Lack of inclusive voices	II	2	11
Drafting standards to which exemptions are given	I	1	5
Power of corporates and mines	I	1	5
Slow process to effect change	I	1	5
Total		**19**	**100**

(Source: fieldwork material, 2015**)**

The final factor to be discussed here is the fact that civil society are limited by their capacity to engage. Civil society members have identified a lack of human and financial capital as a

[10] The number of citations refers to the number of times an item was identified as a matter of importance by respondents.

limitation to ensuring widespread engagement across a broader range of issues. Perhaps civil society can, as noted by one respondent, enforce more change if each organisation worked in cooperation with one another as much as possible, and in such a way combine their power in a bid to try and equalise that of government and industry.

When asked in what ways civil society could further get involved in governance a number of potential means were raised. Nine (9) of the thirteen (13) respondents to this question simply stressed the lack of capacity, and so could not see scope for further involvement. The most commonly sighted manner by which civil society felt they could further get involved was through strengthening their relationship with government (3 of the 13 respondents), and one suggested even a stronger relationship with corporates, and as a result of working together there would be benefits for both society and the environment.

One despondent interviewee said that it is possible to do more, but when government doesn't listen what could more involvement possibly result in? Other areas of further involvement included lobbying; increasing the pressure on government; using research to get baseline data that could be used to make stronger arguments. Further engagement with the law seemed a promising route to effect change. One respondent remarked that they need to litigate more, to get to court, to get judgements that set precedents, and in doing so give actual meaning to constitutional rights. Legal challenges would also shift the bargaining power, and so were also highlighted as an area to engage more in.

Therefore, while ecological modernisation proposes that civil society have an active and influential role to play in the governing of the environment, interviews with members of these very organisations prove this to be the case, but only in so much as the limited power of civil society relative to government allows. Civil society are engaging with a variety of issues, and this illustrates the broad scope of potential environmental injustices in South Africa that need to be addressed. It is to these injustices that we now turn.

4.4. Looking into the environmental justice concerns and embracing ecological modernisation

It is now evident, from the policy analysis conducted, that South Africa has embraced ecological modernisation as its governing framework. It is also evident from the range of issues civil society are engaging with that South Africa has a suite of environmental concerns that need to be addressed. This being the case it is important to understand the consequences thereof. This section of the presentation of the empirical evidence aims to do just that. The empirical evidence used to identify and understand these concerns was gained from interviews with members of various civil society organisations who focus on environmental justice. In conjunction with identifying issues of environmental injustice, civil society were also asked to put forward various solutions to address these injustices. As such the empirical evidence presented here can be used to answer the second research question posed by this thesis. Namely, what criteria would need to be present in an environmental justice framework for ecological modernisation, given the technocratic approach of this theory?

4.4.1. Environmental injustices in a developing nation

It is with environmental injustices that this section begins. There are various environmental justice concerns in South Africa that have been highlighted by civil society participants. These are displayed here along with the various causes. Each of the twenty six (26) participants in the study were asked whether they would consider South Africa an environmentally just society. Only one participant in a group interview did not voice her opinion. Of the 25 interviewees that did respond to this question all said with resounding confidence that South Africa could not be considered an environmentally just society.

For those who chose to elaborate, the reason for environmental injustice in South Africa is the ill distribution of benefits and burdens within society and is largely based on class. Disparities in class are considered by some participants to be a product of Apartheid style planning. Separated on the notion of class, two participants believe that the rich consume excessively whilst the poor, who barely consume, bear the brunt of the environmental burdens of the nation's appetite. In response to this question, a further two respondents chose to emphasise that capitalism and the development path that South Africa has chosen to follow has played an

influential role in the creation of an unjust society. Therefore, it seems that there is a theme of conflict that resonates between the economy, the environment and aspirations for a just society.

One participant was keen to note that environmental injustices might be unevenly distributed at the moment, but this may not always be the case:

> *the environment as far as I'm concerned, does not, it doesn't have boundaries and borders. If it's affecting them there, it might only be affecting them now, but it will definitely affect us later when those guys have no trees left and health and all the issues. They then come knocking on doors of other people; it is a collective problem* (Pers.com, 2015f).

This argument is pertinent in light of climate change and the impacts that are seen at a global level, even in countries that have, to a lesser extent, contributed to the problem. This may therefore be a very selfish motivational tool used to force society and governments to address environmental injustice.

Following on from the question of whether the interviewees thought that South Africa was a just society a series of questions regarding environmental justice concerns in South Africa were asked. Participants were first asked to highlight specific injustices in South Africa, secondly they were asked what they felt the most prominent injustice is, this was done in order to rank the responses. Participants were then asked to identify what they thought the cause of each of these concerns were, and lastly, to propose solutions. Table 4.5 illustrates the environmental justice concerns as raised by civil society, these have been grouped into themes. Responses stem from 'everything' in the country being highlighted as unjust, to more umbrella concerns such as pollution, down to very specific concerns about access to water as a resource. The last column in Table 4.5 is the number of participants who ranked that particular concern as the most prominent in the country.

Table 4.5: Environmental Injustice in South Africa

Environmental justice concerns in South Africa	Total number of citations	Percentage	Number of participants who ranked each issue as their top concern (n=22)
Benefits and burdens not equally shared (affluent versus poor; great disparity)	20	34	4
Inability to access resources and services Examples: water, land and food	17	29	7
Pollution Examples: water, air, soil and land (mainly associated with mining and energy generation)	11	19	3
Energy production and consumption	4	7	2
Exporting the country's wealth (benefits not kept in house)	3	5	1
Corruption	1	2	1
Economic inequality/ class division	1	2	3
Everything	1	2	1
Not quantifiable	1	2	
Total	**59**	**100**	

(Source: fieldwork material, 2015**)**

To illustrate the weight of each of these concerns a pie graph (Figure 4.2) was used to give the responses a graphic representation. This graphic representation allows for a very clear understanding of what some of the most prominent environmental justice concerns are for civil society.

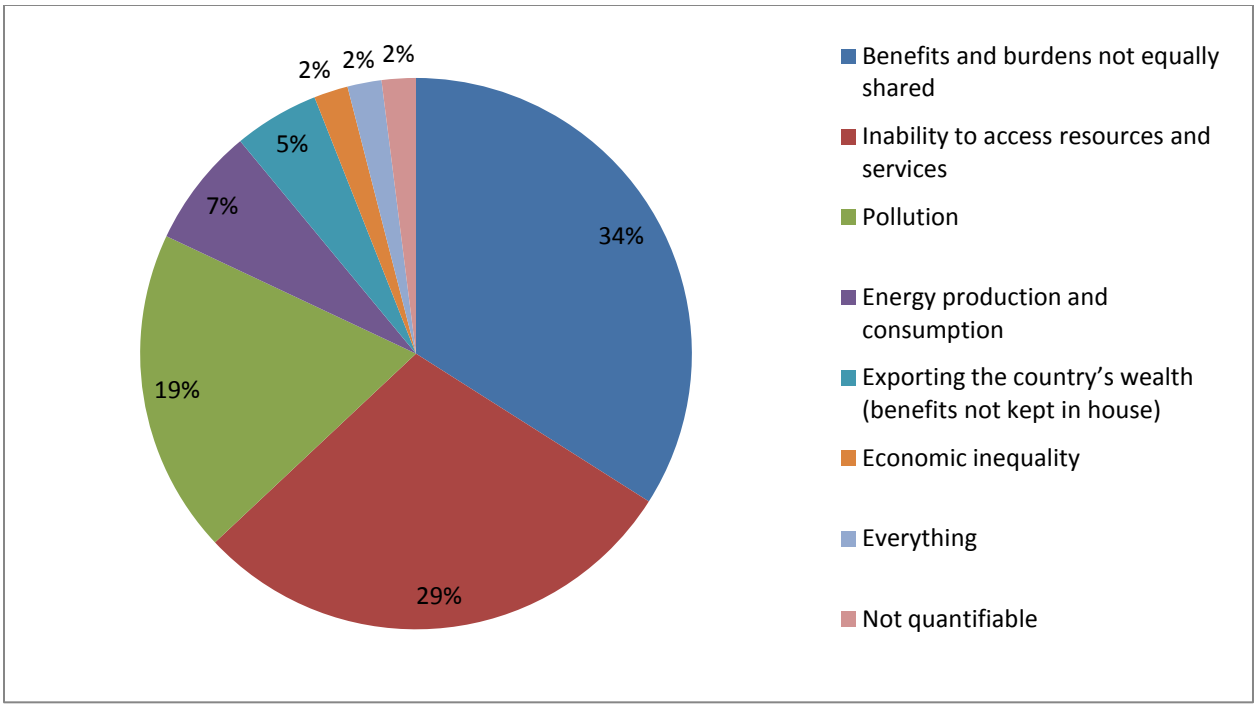


Figure 4.2: Pie graph illustrating environmental injustice concerns in South Africa (Source: based on Table 4.5**)**

A great deal of the environmental justice concerns brought up in response to this question relate specifically to the distribution of the benefits and burdens (34% from Figure 4.2) associated with the use of the environment. A few of these responses will be put forward here. Some of these responses illustrate the complex nature of environmental justice as it relates to the environment, and the economic drive for development that has spurred mining in the country. This drive has meant that the benefits and burdens of mining are not evenly distributed. One respondent from CSO2 was very eloquent in explaining the complex nature of the mining industry, and how it has come to impact so vastly on the distribution of benefits and burdens for the host communities and the owners of mines:

> *I think what happens in the mining industry [...] if you look at where the profits predominantly go to, to the investors and the shareholders, but once the profits are paid out into wages by employers of the company those disproportionately go to management and top management so you'll have senior managers make twenty million plus and they will have many homes and their daily life won't be impacted by the pollution of the mine, while they benefit immensely. Further tax*

revenue primarily goes into the national fiscus rather than into local communities that are most impacted by mines (Pers.com, 2015g).

While this is true it is not always positive for all involved. This respondent carries on to note that there are environmental and health impacts that are felt very locally, and host communities are left with land that has a very limited capacity to carry out alternative land uses once the mine has closed.

A respondent from a different civil society organisation (CSO4) argued that addressing the very disproportionate benefit of mining with the associated burdens would be very difficult given that it is very much based on geography. Here a key point is raised, much of these concerns are based on geography, namely the geography of resource distribution and community location. This in essence makes the distribution of burdens rather difficult to assimilate. Furthermore, another respondent has articulated that, *"the Minerals and Petroleum Resources Development Act says that mining can't be conducted in residential areas which basically means that middle class people in cities can't be affected by mining"* (Pers.com, 2015h). This highlights the fact that government and its steering documents are also key players in maintaining geographies of injustice. In a similar vein of reasoning a further respondent argues that these geographies of injustice result from a power disparity that exists amongst poorer communities in relation to developers, "*developers will always go with the path of least resistance, and the path of least resistance is people who do not have a voice within the political landscape"* (Pers.com, 2015i). Therefore, geographies of resource distribution and power sharing are two ways in which environmental injustices are perpetuated.

One of the most profound insights into just how far this injustice extends came from a participant from CSO7. This participant notes that this unequal distribution of benefits and burdens is especially unfair when one considers that, "*the resources of the country and the world belong to all of its people and not just a few"* (Pers.com., 2015j). This is especially true in South Africa where it is enshrined in our constitution that the mineral wealth of the country belongs to all its citizens, and government acts as the custodian thereof (South African Government, 2016). This makes the disparate distribution of the benefits far more concerning as the resource is owned by all.

Mining was not the only context in which majority of these environmental justice concerns were raised. Energy production was also cited as one of the drivers of the concerns highlighted in Figure 4.2. Energy production as a process, right from the extraction of the fossil fuel to distribution of the resource, is a clear example of this:

> *well I think the biggest environmental justice concern is the impact of Eskom on communities in the Highveld, I mean we all benefit from electricity but these communities, the communities that live in and around the coal fired power stations, are all sick, they all have health problems (Pers.com, 2015k).*

This participant went on to note that in this case the benefits and burdens are once again not equally distributed as it is these same people that do not have access to electricity. These two case studies are powerful illustrations of how there are many environmental impacts and ultimately injustices that are caused through resource extraction and the products that are generated/made there from.

Having the highest number of total citations, the ill distribution of benefits and burdens in South Africa is clearly an issue. However, only four (4) respondents ranked this issue as their most prominent environmental justice concern for the country (see Table 4.5 for the rankings). The environmental justice concern that ranked the most important, by seven (7) participants was that of the inability to access resources and services, such as water, housing and sanitation. This illustrates that environmental justice concerns are not only green concerns, but can be brown as well.

When asked to identify the root cause of these injustices multiple answers were given and they have been categorised into themes in Table 4.6. The unique history of South Africa and its latent effects, was pointed to by 17% of the respondents, as one of the causes of injustice in the country. Participants argued that Apartheid has yet to be redressed sufficiently in South African society and still plays a fundamental role in perpetuating injustice in the country. "*Apartheid has separated both race and class in a way that allows for affluent communities to be removed from spaces that are being affected by the environment, and that previously disadvantaged communities are essentially located closer to places that are negatively affected in terms of environmental justice*" (Pers.com, 2015l). It is therefore vital that issues of the past be addressed if ever justice is to be attained in South Africa. Whether a development pathway that

encompasses ecological modernisation can do this alone is highly unlikely, and it may take far more efficacious governance and distribution of the country's wealth along with reductions in the impacts of development.

Table 4.6: The causes of injustice

Cause	**Sub-causes**	**Total number of citations**						**Percentage**
		1	2	3	4	5	6	
The history of the country							X	17
Capitalism as the economic system					X			11
	Economic activity			X				8
	Industrial exploitation of resources limits community access			X				8
	Class division		X					6
	Power and capital gives you access to resources		X					6
	Flight of capital	X						3
	Fundamental failure to respect individuals	X						3
Failure of government				X				8
	Exclusive justice system only caters to the elite/Informed			X				8
	Corruption		X					6
	Lack of political will and enforcement		X					6
	Lack of capacity		X					6
	Environment viewed as an anti-development discourse	X						3
	Myth that all development is sustainable	X						3
Total		**36**						**100**

(Source: fieldwork material, 2015**)**

A mere four (4) respondents outright indicated that the cause of environmental injustice in South Africa was capitalism. A large portion of the respondents, inadvertently argued, that the issue of injustice stems from the free market capitalist economic system, and have thus been grouped together under this main heading in Table 4.6. Class division and the power money can give members of society to avoid living in areas of high pollution was alluded to. Additionally, the class of a person directly affects that person's ability to be able to access resources.

The failure of government was the third major theme to emerge in conversation with civil society. One respondent elaborated that often, in conversation with government officials, as a member of civil society you are inevitably seen as anti-development, but the argument is that, "*you [government officials] say we are anti-development, but in my mind you are, because when you have, for lack of a better word, screwed all our resources then what are we going to achieve*" (Pers.com, 2015m). This illustrates the friction that exists between the environment and the economy in South Africa.

As acknowledged by one participant, it is this bad governance and a lack of long term planning, that hampers the attainment of sustainable development as a whole. Another respondent in the same line of reasoning argues that poor governance allows industry to exploit, not only the environment, but also the communities living in areas of development. This poor long term planning on the part of government creates the impression that government has failed to integrate all three spheres of sustainable development, and as one respondent argued, the environment is not very high on the agenda at all.

Solutions to concerns raised are presented in Figure 4.3 and were varied, but a large number of respondents sought the empowerment of civil society and communities. Empowerment, it is argued, would allow civil society and communities the ability to have a say, and to have that say weighted into environmental decision-making as it directly affects their wellbeing.

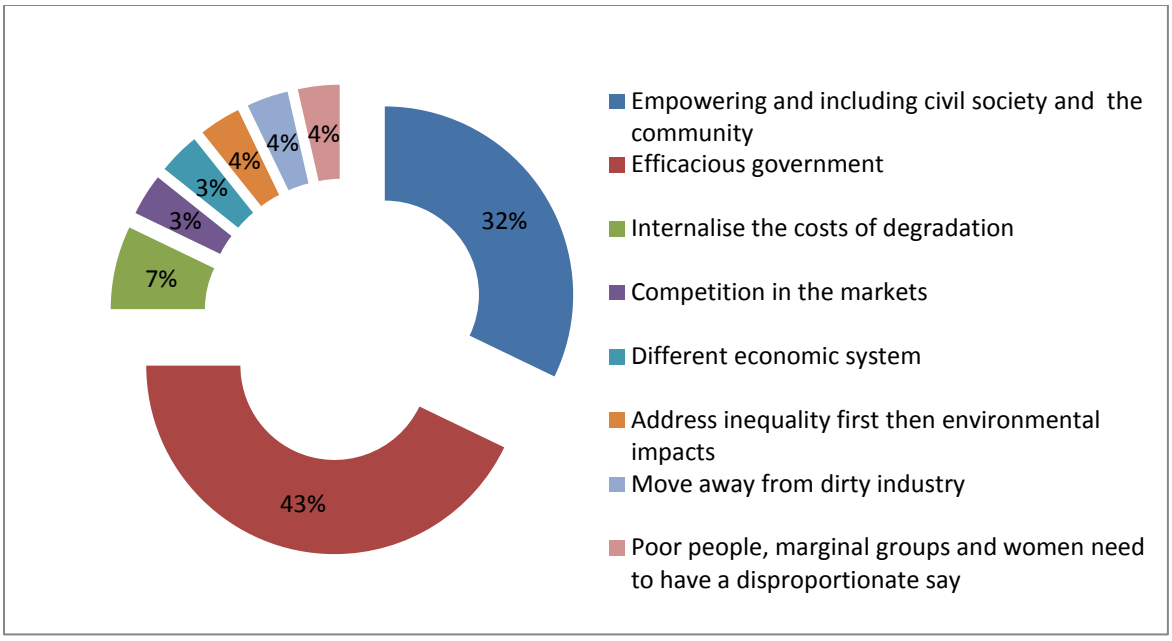


Figure 4.3: Solutions posed to address environmental injustice in South Africa (Number of responses to this question:28) (Source: fieldwork material, 2015**).**

Having an efficacious government was also a major theme to emerge along with a number of ways to achieve this. Under efficacious government respondents included political will; enforcement of regulations; having a progressive government; cooperative governance and a mature government not bound by capital. A great account as to why this is so important was given by one respondent from CSO14. This respondent refers to three things that are essential for good governance and a thriving society:

> *you need rule of law, democracy and a functioning state, so in South Africa, we have rule of law, we have democracy but we don't have a functioning state and then these become meaningless, rule of law becomes meaningless because government can't even settle these cases (Pers.com, 2015n).*

However, as one participant points out, at present the departments that govern the environment are lacking this political will, and are as such dysfunctional. In addition to having an efficacious government, respondents would have a space created where society can lodge complaints when government fails. The setting up of an environmental court was an example of how this could be achieved. One solution posed that aligns with ecological modernisation is to internalise

the costs of production, but again for this to be possible an effective regulator will need to be instated to enforce this.

Another response that highlights the friction that exists between society and the environment is the call to address inequality first and then consider environmental impacts. This links back to two of the causes of injustice as identified by civil society, the first is social inequality that disempowers people and the second industrial development and the environmental injustices that stem from this. The root causes and the solutions proposed are not simple. But, as pointed out by one respondent, if we ultimately try and address each of these root causes we are going to need a stronger government to regulate industry in terms of pollution, and give a disproportionate say to communities and individuals who will be impacted upon by industrialisation. Furthermore, as noted by one respondent, we need government to spend capital gains on social reconstruction to address the social injustices of the past.

Ecological modernisation scholars have for some time been concerned with how to address the problem of consumption in society. In conversation with one respondent this very issue of overconsumption came to the fore, and an interesting, yet rather simplistic, means of addressing this concern was put forward.

> *Well realistically I don't think consumption is going to go down, and its disparate between nations, and certain nations do not even possess the basics, so if you are going to tell them not to consume it's a massive issue and its unfair, that's a justice issue right. So the question should be how do we shift consumption to the right kind of things or say that we produce and consume more efficiently (Pers.com, 2015o).*

The problem of overconsumption is to be addressed through pushing for the right kinds of consumption, consumption that will not have the environmental and social impact that present consumption has. Examples of this would be switching to renewable energy and to solar powered cars. "*So it's that discourse that needs to be shifted, it doesn't need to be cancelled or stopped to say no consumption is what we want it's not going to happen*" (Pers.com, 2015p).

Various environmental justice concerns have been highlighted and the causes identified. In putting forward the potential solutions to each of these concerns, civil society have identified

various principles that need to be included in policies based on ecological modernisation in a bid to address the environmental justice concerns that could result.

4.4.2. The role of the state in achieving justice: concerns and possible solutions

There has been some debate amongst ecological modernisation theorists about whether or not it is applicable for government to act as a regulator in the market. What is investigated here is whether or not civil society deem state regulation as desirable in order to address environmental justice concerns. In understanding whether or not government regulation is desirable, and how civil society feel this should happen, additional principles for just governance, that should be written into policy, are identified. Many issues were raised with regards to the current political dispensation and the way regulation, or the lack thereof, has played out to date, but twenty one (21) of the twenty four (24) respondents to this question were not willing to remove the state as a regulator. Two respondents said that in its current format, government should not regulate but they did not dismiss the notion of government regulation entirely. Only one respondent said that a regulator was imperative but was uncertain as to whether it should be government or not.

In response to this question a number of reasons came to the fore about why the government should in fact be a regulator in environmental governance to bring about environmental justice. Firstly, as noted by three participants, it is the government's responsibility, it is their mandate to do so:

> *[...] government has a lot of capacity and its obviously governments constitutional responsibility, and chief responsibility, to govern the public interest and to protect constitutional rights, including the right to a healthy environment, and the government is equipped with a vast amount of resources and can access the expertise and has the potential to play that role and so I think, and I think that because […] it's not in the short term interest of developers to prioritise the environment and communities environmental justice, even if it's in the long term then, there needs to be another body at least in theory, in practice it doesn't always work that way (Pers.com, 2015q).*

A further respondent similarly argues that governments are the elected representatives of the people, and should therefore regulate in the interests of these people. One respondent,

interestingly emphasises this point by acknowledging that, in South Africa, government is the custodian of natural resources on behalf of the people and therefore it is their legal responsibility to do so.

Two (2) commentators opinions lined up well with criticisms leaned against ecological modernisation and the theoretical bantering about whether there should or should not be government regulation. One comment arguing that it is, "*not in the short term interest of developers to prioritise [the] environment and communities environmental justice*" (Pers.com, 2015r). The second comment being: "*in every single case where you find there is self-regulation by any industry, I mean in every single case I can think of, it's been a disaster. You know self-regulation is […] expecting vivacious self-interested people to act in the best interests of others [and] is really quite ridiculous*" (Pers.com, 2015s).

While the vast majority of respondents were in favour of government acting as a regulator there were a number of concerns cited with regards to regulation, many of which stem from the inappropriate regulation by the current government. The leading cause of concern, as cited by five (5) participants, is the fact that government is at times both the transgressor and the judge. This comment made by a participant from CSO14 sums up the concern in a very compelling way:

> *on the one hand government must promote economic development, government must regulate, government must be the appeal authority and government must be the player itself. [...] I think an independent institution, as we have seen with the likes of the human rights commission and the public protector, perhaps then you can have a regulator who is not conflicted (Pers.com, 2015t).*

This problem of vested interests of a regulator extends beyond government interests and interests of political parties, to the vested interests of individual members within government, as pointed out by one respondent. This participant emphasises the point by noting that there are high ranking officials in government who have shares in big industry, and this presents a conflict of interests and a potential abuse of power.

Another concern raised is that just because government should be a regulator for environmental justice, does not mean that it does, or even that it can, regulate. One of the leading concerns

pointed to here by three (3) participants is that government is pro-corporate and pro-development, and thus is more accountable to industry than society. What is sought is a government that is, *"more sincere on the side of the weakest, which is the basis that we elect them for, not to look after the strongest"* (Pers.com, 2015u). Current regulation by government is seen as inadequate. Three (3) respondents point to the fact that there are revolving doors between regulators and industry, and that it is this very fact that leads to inadequacy in regulation. Further noted by one respondent, corruption within government taints any official capacity they have, and so this would hinder regulation.

After all these concerns were put forward some solutions to better government regulation were offered. These solutions could potentially be policy principles for ecological modernisation that could address environmental injustices that stem from ineffective governmental regulation needed for ecological modernisation. Firstly, it is acknowledged by two participants that government must enforce its regulations, incentive measures are not effective, proper regulation is needed. One participant argued that government must take up a preventative role rather than simply reacting to the problem of pollution, and as such there needs to be strict rules against revolving doors in government. Additionally, there should also be cooperative governance between different facets of government to ensure accountable management. There should also be a system of peer appraisal for all environmental impact assessments (EIA's) done in the country. This one is of grave importance, as it is through EIA's that developments and mines are given the go ahead, therefore regulation of these is absolutely key.

When it became apparent in interviews that state-regulation and vested interest was proving to be an area of concern, participants were asked how they would address this. Eighteen people responded to this question. Responses were varied and as follows: the role of the public and civil society exercising their interest and opposition to instances of bad regulation is vital. Nine (9) participants felt that civil society could have a very positive role to play in regulating government owned utilities and industries where government, or the individuals therein, have vested interests. However, a key component to this being effective was that civil society be empowered to do so.

Another popular solution to this problem was to capacitate another department within government to regulate. This solution proved palpable to many involved in the minerals and energy complex, where the Department of Minerals and Resources, who is responsible for

promoting mining development in the country, is also in charge of regulating the environment. As such, all four participants favour the Department of Environmental Affairs regulating all environmental decisions and having their power weighted to match the more powerful Department of Minerals and Resources. In addition to these four (4), a further three (3) participants, whilst not using the specific example of those specific departments, also favoured interdepartmental regulation.

The second solution desired by seven participants was that of an external/independent regulator. Examples of these are a well-resourced public protector and a regulator that is accountable to parliament rather than the minister of the department. While an independent regulator is equally as desirable as interdepartmental regulation, only three (3) participants could bring to the fore potential regulators. These principles are key to include in polices based on ecological modernisation to achieve justice.

4.4.3. Public Participation as a means to justice: concerns and possible solutions

Public participation was identified by Hajer (1995) as one of the key components to achieving ecological modernisation. South Africa has chosen to include a public participation process in the conducting of environmental impact assessments for proposed developments. In order to understand how effective South Africa's public participation process's the interviewees were asked a series of questions. The first question, so as to identify possible solutions to any problems, was for interviewees to describe their ideal public participation process. They were then asked to describe the process as it is enacted in South Africa and then to propose solutions to any issues highlighted. The ideal process, and the remedies, could be used to compile a public participation process that could hopefully be a helpful addition to the process of governance as a whole.

Public participation in South Africa, "in principal is very thorough" (Pers.com, 2015v). However, as described by nine (9) participants, the process of public participation in South Africa is a tick-box exercise, where the concerns of society are largely ignored. One participant described the process as such: "*what they do is they bring you tea and coffee and lovely biscuits and then they tick a box that says they've done a public participation, and that's nonsense, and so we contest that*" (Pers.com, 2015w). This highlights the lack of meaningful engagement with communities around decisions that will have a direct impact on their environment and ultimately

them. This could potentially be because the framework around public participation in South Africa has been identified as vague by one participant.

Public participation in South Africa has failed in many respects and in some instances is actually cited as a means:

> *to discriminate against groups of people who might not, for instance, be with the development. I think there's been a new job that's been created in south Africa which is community liaison officers of companies, which actually, we've seen them divide and conquer communities and create rifts where there weren't any and how that's when you have a divided community you have a split opposition, its far easier to create the perception that's it's a minority that dissents against this so yes I think that currently it's being used as a tool to marginalise people (Pers.com, 2015x).*

Having a company in control of a process, which could potentially not suit their best interest of passing a development is not at all a sound method of garnering effective and meaningful community engagement, and this will be discussed below in the areas of concern.

The areas of concern for civil society with regards to the public participation process in South Africa start right at its inception. Four (4) participants have found that notices of the upcoming meetings are inadequately displayed in places where majority of the community would not visit on a daily basis, such as the magistrates court or the library. In addition to this, three (3) participants have found that the process as a whole can be inaccessible to many in terms of location and the times that the meetings are held (often during working hours).

Other issues include a lack of knowledge on the communities part, effectively disabling any meaningful engagement they could have on the proposed development; a concern for three (3) respondents. In conjunction with this, one participant further notes that the engagement is too brief and there is a lack of information provided to communities. This dismissal of community interests has resulted in mistrust, and "*that mistrust is starting to turn to anger, starting to turn to frustration, starting to turn into anger and that anger is starting to turn into violence and this didn't come out of nowhere*" (Pers.com, 2015y). In addition to this, the process is, on occasion, '*bought out'* by corporations who will provide incentives to impoverished communities for

compliance. Whilst this was highlighted by only one respondent it points to the power of capital relative to the class of the communities they are exploiting.

One of the most concerning issues highlighted by four (4) civil society members is the abuse of power that surrounds these public participation engagements, found mainly in the fact that the proponent of the development gets to choose the consulting environmental impact practitioner. This is an issue of great concern as:

> *we have an unsustainable case where the proponent pays for the study, I don't know any consultant that will say 'no this is a bad idea', because this means that they will never work again so we need to shift. I do think the proponents should pay, but I don't think they should be involved in appointing the consultants (Pers.com, 2015z).*

In addition to this insightful remedy many others were proposed and are presented in Table 4.7. For many the ideal public participation would be one that allows for meaningful engagement as noted by four (4) participants. It is hoped that the criteria below will allow for this.

One of the solutions put forward is that before any development takes place it is important that public participation occur. This involvement must start at the very beginning, and continue throughout the lifespan of the project.

> *[W]hat happens now is that you have people behind closed doors drafting something and then giving it to us to consider. Uh and then the problem with that [...] is that once you've drafted something, you have something to defend, and once you have a document you want to defend you are unlikely to change it very much (Pers.com, 2015aa).*

The reason this is not done at the moment is that, "*developers like certainty, and involving the public creates this uncertain future where the ultimate decision [...] is influenced by things that are not under your control*" (Pers.com, 2015ab).

Table 4.7: A summary of civil society's thoughts on public participation

A guide to public participation	Criteria to be addressed (where applicable)	Total number of citations	Percentage
The process should be so well Informed	• Access to accurate information • Full Transparency • Digestible information in an appropriate language • Access to information prior to the meeting	14	32
Involvement of all interested and affected parties from inception; these interactions and all decisions made should be public	• This participation should not be coerced or intimidated	10	23
Government to regulate the EIA process from start to finish	• State to capacitate upskilling in departments to achieve adequate regulation • Government to elect environmental impact practitioners at the cost of the proponent • Community consultant or mediator appointed by government and paid for by the proponent ○ The communities concerns must be dealt with by the consultant to the satisfaction of the community consultant • Adequate time must be allocated for the process	8	18

	○ To be negotiated by the community consultant, the EIA practitioner and the regulator		
Make the engagement accessible	• Various times of day • In an accessible location or provide transportation at the cost of the proponent • Adequate advertising in places that the community actually gather (will require a case by case analysis)	7	16
Community holds the right of refusal		2	5
Weight community input		2	5
Allow the community time to speak		1	2
Total		**43**	**100**

(**Source**: fieldwork material, 2015)

Roughly 23% of the responses called for well-informed participation meetings with accurate and accessible information. However, as reiterated by a member of CSO11, it is not just the value of having accurate information, this information must be understandable in order for it to really be meaningful in the process. One of the proposed ways of doing this is by providing the community with a representative or technical expert of their own.

Six (6) participants alluded to public participation not in the sense that it has been discussed above, but rather as a process by which society get involved in a less formal way through protests, civil disobedience and mobilisation. One participants' ideal public participation would be a socialist revolution. It is felt that this form of public participation can have immense power in influencing decision making processes in the country. However, this participant scrutinises government for repressing this kind of public participation.

4.4.4. The governance of unjust pollution

Ecological modernisation as a normative project has some clear ideas about how the problem of pollution should be dealt with from a governance perspective, such as the polluter pays principal, and internalising the costs of degradation into the cost of the product. These approaches to pollution control, whilst being developed in the industrial North, may not be applicable when transferred into the governing policies of developing nations. Civil society organisations were thus asked how they would like the problem of pollution to be governed. Numerous responses were given which are laid out in Table 4.8. A few of these will be elaborated on here, and these could once again point to potential principles that could be used to guide the writing of policy in a bid to address injustice.

Table 4.8: Addressing pollution

Steps to addressing pollution	**Tally of citations**	**Total number of citations**	**Percentage**
Monitoring and enforcement of regulations	IIIII IIIII I	11	30
Laws and regulations in policy	IIIII	5	14
Human centred approach	IIII	4	11
Internalise costs	III	3	8
No concessions	III	3	8
Prevention is better than cure	III	3	8
Promote efficient technologies	III	3	8
Address the brown agenda	II	2	5
Compulsive proactive disclosure by industry	I	1	3
Do not discriminate when citing industry	I	1	3
Socialist revolution	I	1	3
Total	**37**	**37**	**100**

(**Source**: fieldwork material, 2015)

From the responses in Table 4.8 it can be seen that there is a great deal of importance attributed to having government regulate capital through the monitoring and enforcement of regulations. In relation to this one respondent noted that concessions for powerful corporate

lobbies actively undermines the call for regulations and standards to be set and enforced. A further participant argued that without unwavering implementation the drafting of regulations in policy will be a fruitless endeavour.

Three (3) individuals argued that in order to address pollution in the country the government must address our energy mix and promote renewable energy. This illustrates the need for government to push for more efficient technologies in order to address the injustice of pollution. This, however, needs to be done with regards to the cautionary elements of promoting technological solutions as identified earlier. Two (2) participants pointed to the fact that all of these solutions, if actively implemented, will aid in addressing environmental justice concerns within the current system, however none of this is relevant without the political will that is currently lacking, as argued two participants.

A further two themes raised resonate with the logic of ecological modernisation, these being prevention is better than cure and the internalisation of the costs of pollution. Externalising the costs of pollution are a cause for concern for some respondents. A respondent from CSO2 acknowledges that:

> *two of the most important and incredibly useful principles on which our kind of pollution control regulatory system is based is the precautionary principle and the polluter pays, and if we can get that right then we are most of the way there […] because it would curb the kind of rampant power of capitalism, because it would start to acknowledge and address the true cost of development which is where a lot of the environmental justice concerns come in (Pers.com, 2015ac).*

One individual respondent does not see the solution as being one that can work within the current economic system and seeks a socialist revolution. Until society rise up and empower themselves and obliterate the power of the corporate capitalist there will be no justice in terms of environmental pollution.

Once again the responses given in this table highlight the importance of government regulation for pollution control. In order to keep industry in check it is important that government regulate. Industry is not altruistic and hence we have the concerns we do. Therefore, government needs to be effective in ensuring that each of these solutions posed are implemented.

4.5. Three sphere sustainability: ecological modernisation and social justice in a developing country

The section above has illustrated how ecological modernisation as a policy framework in South Africa has practical implications that are rather concerning in the developing world context. Given the environmental justice implications of these it is pertinent that these concerns be addressed. However, if such solutions are proposed, and these issues addressed, there still needs to be some discussion on whether this would be an appropriate framework to guide environmental governance in the country. As such empirical evidence gained through interviewing civil society members will be presented here that seeks to answer just that. In this section, empirical evidence relating to the fourth research question will be presented, namely, would implementing and environmentally just approach to energy policy be appropriate, given the developing world context in which it will be implemented. It is important to note that in discussing these themes with civil society, further guidelines were identified that need to be included in the framework for justice to be used alongside ecological modernisation.

4.5.1. Capitalism: a necessity for ecological modernisation, but is this the ideal?

Having a free market economy is an essential component of ecological modernisation; it is proposed that this type of market economy will foster innovation and allow for industrial efficiency. In light of this, one of the issues the study investigated revolved around understanding how civil society feel about South Africa's capitalist development path with regards to environmental justice. It was found here that there exists some disjuncture between the views and opinions of civil society. Some seek reform of the economic system while others propose solutions that work within the capitalist system.

Of the twenty six (26) participants, interestingly, nine (9) participants felt that their knowledge on the subject was inadequate and so could not make an informed response. This is surprising given the nature of work these participants do, and the issues they face in their daily fight for justice. Even though nine (9) respondents felt they could not respond to this question seventeen (17) did. The responses, as detailed by these seventeen (17) varied and illustrations were made of the various impacts that capitalism has had on environmental justice. Table 4.9 presents each of these themes.

Table 4.9: Capitalism and environmental justice concerns

The effects of capitalism on achieving environmental justice	Total Number of citations	Percentage
Increases inequality/breeds selfishness and injustice	17	45
Empowers corporations to the detriment of the environment and society At odds with the environment/Externalises the environment Short term, profit oriented Limits incentives for alternative means of production	8	21
Side-lines people and limits their power	4	11
Capitalism has no influence on justice	3	8
Developmental concerns trump environmental concerns	3	8
Top heavy decision making alienates justice concerns	2	5
Less transparency	1	3
Total	**38**	**100**

(Source: fieldwork material, 2015**).**

For the majority of the respondents to this question the capitalist market system has influenced environmental justice concerns in a number of ways, and a few of these concerns will be discussed here. The vast majority of responses (45% from Table 4.9) to this question made it very clear that following a capitalist market system has been unfavourable in terms of promoting justice. For some respondents, the mere fact that we have made such an economic policy decision demonstrates that we are simply not interested in environmental justice concerns. Additionally, this displays the prominence of corporate interests in the country, and how these interests trump justice concerns to the extent that social issues are not given their due consideration.

Numerous respondents detailed that this profit orientated approach is very much a development path that is geared towards the privileged and is very much 'anti-poor'. One participant goes on to say that the fact that we have made these economic decisions means we have chosen a top down governance approach, and environmental justice is very much a bottom up approach. Given that environmental justice is so focused on alleviating the burden placed on the poor these two discourses in theory and practice are not aligned.

This pro-privileged development, as pointed out by three (3) responses (11%), leads to a power disparity between corporates, government and society, and it is this power disparity that acts to impede the realisation of a just society through top heavy decision making processes (2 responses; 5%). It was identified that government is bent on attracting corporate investment in the country, and has demonstrated its alignment to this in ways that impede justice. Statements to substantiate this argument were made with regards to corporate tax breaks that are given, weak regulations that are put in place, where regulations exist they are not enforced, and all this is done in a bid to create a safe haven for industry. Corporate power on the other hand, as noted by one respondent, is wielded against both society and government in the crudest forms. Corporates have played an active role in transforming government into a weak regulatory body. This is a display of the, "*power of profit to pollute*"; pollution that actively places a burden on certain members of society (Pers.com, 2015ad).

The regard that government has for economic growth and corporate led development, and the brazen way corporates exploit the inherent power they have, is illustrated so plainly in this very personal account as told by one of the interviewees in response to how capitalism influences environmental justice concerns:

> *In my own environment, ten kilometres away from me, there are three refineries and they have been allowed to grow there in amongst a residential area and the impact on that is huge. There are people, well I have been a teacher in the past and that's the reason that got me so involved, because I think it was around about 1994 when previously white schools opened their doors to people of other races and for the first time we had students from this cats alley. One day there was a sports day and all the coloured girls fell on the wayside and they were heaving and they had asthma and they had to be rushed off to hospital and I couldn't understand what was happening. I didn't understand that because of where they live they had decreased lung capacity, they couldn't breathe. So they were very keen to participate in the sports day, but they were unable to, and then ultimately it grew until there was three students in my class who died of leukaemia. So one day you've got somebody coming back to school with no hair because she's had chemotherapy and radiation and then a week later she's dead. Then I knew that something terrible was happening and that's how I*

> *discovered how dangerous it is that they've put all this manufacturing and refineries in the middle of a residential area. So I think that it's a tragedy. I think that it is one of the most horrific things that the government has ever done (Pers.com, 2015ae).*

It is acknowledged that being a developing nation does place government in a precarious position. One respondent acknowledges that we need to develop to provide basic services and jobs for our citizens, therefore we do need to attract investment. Balancing the need for development and corporate investment with environmental justice has not been an easy task. Government was identified as making some attempt to address social concerns through various policies, however, operating within a capitalist market economy has not made this a clear cut pathway to encompass development, the environment and the needs of society. The interplay of these three aspects was so beautifully illustrated by a member of CSO2, as he notes that the new Integrated Development Plan, as proposed by government, has put in place committees to fast track EIA's for big developments to ease for developers. But, whilst the:

> *capitalist model has provided a lot of opportunity, [it] has also side-lined a lot of people, as soon as someone kind of steps up and says hang on this is against, for instance section 24 or something like that, they will go ok well you are then excluded from the conversation and you are not a part of the benefit stream because you are against this huge kind of bulldozer that is capitalism in South Africa.So it becomes a very big 'us and them' conversation and I don't know how you balance that though, it's a very slippery slope, you need it in order, especially 25% unemployment. I admire the kind of ingenuity behind the national development plan, but it's definitely not a one hit wonder that's just going to solve all these problems (Pers.com, 2015af).*

Being a developing country therefore means balancing social concerns with the power of capital. This power is perhaps far more prevalent in this context than in the developed North; who are often times the source of foreign direct investment in developing nations. However, one participant argues that with the correct leadership, being a developing country is not necessarily an excuse for environmental injustice. This participant went on to detail how there are developing countries, like Rwanda, who have chosen to place a strong emphasis on environmental conservation. Therefore, it is the focus that government chooses to take that has

a great deal of impact on the type of development pursued. Therefore, "*there is definitely room, with the right kind of leadership, to create good environmental practice which will essentially affect, in a positive way, the social fabric of South Africa (Pers.com, 2015ag).*

As a developing nation that has ascribed to the capitalist market economy the attainment of environmental justice has been hampered. In light of this, a few of the candidates offered solutions to deal with environmental justice concerns. For the most part solutions offered are ones that propose a nuanced capitalist system. Two respondents from CSO1 and CSO13, however, called for an entire overhaul of the system, calling for a socialist revolution. Whilst this is desirable for these two respondents, it would mean an entire collapse of ecological modernisation, or at minimum, a rethinking of the role of government as the promoters of industrial progression rather than capital.

It is clear to see from the arguments outlined here that capitalism as a system of governance, does have a role to play in perpetuating environmental injustice in the country. Therefore, it is important to question whether or not this system, and ecological modernisation, are appropriately used in a developing country. At present, from the views outlined above, it cannot. Furthering on from this, civil society were asked to pose solutions to the issues they had found resulting from the use of the capitalist system of governance. This was done in order to identify whether or not civil society would maintain this system or wish to have it overhauled entirely.

Majority of the solutions offered work within the current capitalist system, and when examined, are steps that should be taken to try and balance out the power imbalance between government and corporations, and society and the environment. Respondents noted that, within the development context, more weight needs to be attributed to the value of a working environment and the ecosystem services it provides. One (1) respondent offered a potential pathway to achieve this, stating that this can be done through analysing the environment and deciding what kind of development that environment can sustain, and make all development decisions based on the capacity of the environment. This is a change from the current system where development decisions are made before the environment is assessed. This is problematic, as a second respondent has seen that once a development decision has been made there is an inherent vested interest in seeing it go forward, even if this is at the expense of the environment and society. One (1) response from a member of CSO3 simply called for an overhaul in the bargaining power of society to address this issue.

A further solution offered by civil society which falls within the scope of ecological modernisation is that of increasing the costs of development when it fails to be inclusive. In this manner laying the burden of exclusive development on the corporation is much like the polluter pays principal of ecological modernisation. This can be done by charging social impacts to the company, for example the costs of healthcare, that result from degradation.

A further respondent argued that the problem stems from a lax approach to policy and not necessarily capitalism. However, where capitalism was highlighted as a cause for concern in attaining a just society one of the solutions was simply to regulate industry properly. In order to do this the respondent notes that we require regulatory institutions that are independent, who can regulate without the bias that currently plagues government as a regulator. These problems highlight the inappropriateness of the power dynamics at play when using a capitalist market economy, and therefore ecological modernisation, in a developing world context. However, given that majority of civil society participants have put forward solutions that work within this system it is worth exploring the potential for improvement. Also important to take into consideration here is that many of the solutions posed deal with government as a regulator in this system and do not call for an overhaul of the system in its entirety.

In a complete turnabout from the responses and solutions posed above it can be seen in Table 4.9 that only 8% of the responses given highlight the fact that capitalism is not the reason for injustice in South Africa. One (1) respondent from CSO15 argued that environmental injustices are perpetuated regardless of the economic system a country ascribes to, and to illustrate the point China was used as an example. The identification of perpetual environmental injustices, according to this participant, is not as a result of capitalism, but rather the failure of stakeholder groups to address the distribution of resources and wealth. This is further echoed by a second participant from CSO8 who maintains that it is a crisis in the upper echelons of the management of the country, and the mismanaged spending of corporate taxes. Having an active and effective government is therefore a matter of importance for these participants, arguably more important than the economic system ascribed to. Once again the role of government is interrogated and needs to be revisited.

Civil society do tend to see capitalism as a cause of environmental injustice in South Africa, but by posing solutions that work within this very system they also, to an extent, confirm its

continued use. Only two (2) respondents called for a social revolution. If majority had called for such a change it would most definitely have to be concluded that ecological modernisation and the capitalist system it works within would most definitely need to be abandoned as inappropriate in this context. However, this has not been the case and therefore a nuanced approach to governance is what is needed. An approach that seeks to improve the role of government as a means to addressing environmental injustice. Whilst these issues were not interrogated for the purposes building the framework, these solutions are important to include in any environmental justice framework for ecological modernisation.

4.5.2. The appropriateness of science and technology in achieving justice: concerns and possible solutions

The second method of determining whether or not it was appropriate to use ecological modernisation as a means to guide policy in South Africa was by looking into the sentiments of civil society as they relate to the promotion of science and technology. Given that a reliance on science and technology is such a fundamental component of ecological modernisation, it was deemed necessary to investigate how civil society feel about this reliance. It was hoped that by doing this it could either establish merit for using ecological modernisation in a developing country, dismiss it entirely, or potentially rely on it with some guidelines. Twenty four (24) individuals in total responded to this question and responses were grouped into two categories. The first of these were respondents who felt it was appropriate to use science and technology in both proving environmental degradation and also in inventing potential technological solutions to address environmental degradation. The second category was made up of individuals who were in favour of using science and technology, but who felt there could be drawbacks, and thus would use it whilst exercising caution. Before each of these two categories are discussed it is important to highlight that two respondents, in line with ecological modernisation thinking, acknowledged that we are currently in the situation we are in because of the very promotion and use of science and technology.

In the first group of individuals there were nine (9) respondents (38%). This group of respondents felt it appropriate to use science and technology in the promotion of development and in governance. For one (1) individual the use of science and technology has improved the governance of the environment. Two (2) responses indicated that in the hands of communities, science and technology (something as simple as a cell phone video), can actually be used to

positive effect as communities can monitor their own environments and prove degradation from polluters. This quote from a member of CSO7 illustrates this point well:

> *I'm very much in favour of it, quite a long way back one of our funders […] taught us how important science is in getting our point across. So he was the one who first began the whole thing of what a smell smells like and then what it means and so we realised as soon as that started to work for us that that was the way forward (Pers.com, 2015ah).*

Similarly the benefits of using science and technology in terms of legal ramifications are immense. To date people are dying around the world as a result of environmental pollution and a participant from CSO18 asks and answers a fundamental question: *"why aren't we taking people to court and holding them accountable? One of the reasons is that it's difficult to show this causality, to show that hey this pollution is causing this death, and science and technology can definitely play a role in that"* (Pers.com, 2015ai). Subsequently, science and technology, in use by civil society and individual communities, can actually be used to address environmental justice harms in South Africa simply through the generation of evidence for legal proceedings.

Furthermore, important for one participant is the fact that science and technology is needed to prove that the environment is a value ad. Science can be used to quantify and give a monetary value to the environment and any potential degradation that may occur and thus is appropriate because, "*it's very difficult to quantify section 24, when you say that someone has the right to a clean and healthy living environment, if you can't quantify it, it's completely objective*" (Pers.com, 2015aj).

In the second group of individuals some of these sentiments were echoed, however where echoed a cautionary element was added. Of the twenty four (24) respondents to this question, 62% comprise this second group. Much like the first they are in favour of the potential benefits that can be gained from using science and technology in the environmental context. Two (2) respondents here feel that being able to quantify environmental impacts has aided in giving their claims for justice more credibility. In addition to these two (2), a further two (2) respondents, felt that science and technology in the hands of the community and civil society, as a means to monitor environmental impacts was incredibly beneficial. Ultimately, the sum of these

arguments is that science and technology has the potential to aid in the realization of environmental justice.

These respondents however, along with the remainder in this group, had one or more areas where they were apprehensive about using science and technology. Firstly, as pointed out by one (1) participant, when the environment and its value can be quantified people know the value of certain goods and will seek to exploit them. The incredibly profitable poaching of rhino horn was used as the example here. It was stated by a further three (3) respondents that it is not science and technology that is necessarily the problem, but rather it is the way people chose to use it, not in the service of humanity, but rather in the service of capital.

In addition to science and technology being used in the service of capital, one (1) participant is concerned over the fact that having capital also allows members of the bourgeois to manipulate the use of science to their advantage. This participant went on to point out that they can do this simply through operating in a free market economy where they have the ability to employ their own scientists and environmental impact practitioners. "*If you were a developer would you use an environmental practitioner that said no a lot, no you wouldn't, so its yeah, it defeats the purpose I think. Where it is used properly and where it is peer reviewed I think that is fantastic*" (Pers.com, 2015ak). Scientific experts also operating within a free market economy are only going to do what is best in service of their client in a bid to gain a share of the market.

In addition to this, science and technology are rather exclusionary and this is an area of concern for five (5) respondents. For two (2) respondents, companies and EIA practitioners hide behind science and the fact that communities often times do not understand the scientific data reflecting the true impact of a project. A further respondent argued that by framing environmental concerns as specifically problems for science to solve means the solutions are in effect taken out of the hands of communities and as such they are excluded from decision making. Lastly, the theme of exclusion was brought to the fore in these interviews. It is observed that whilst science and technology has come up with rather innovative technologies, the cost of these (such as solar power) acts to exclude the poor.

One of the major concerns, for five (5) respondents, in achieving environmental justice as a whole was the potential risks and delayed consequences of using science and technology. The classic example of nuclear energy and Chernobyl were cited here to add merit to the concern.

This risk, and the unfair distribution of burdens and benefits, or the mere use of such technology, needs to be considered if ecological modernisation is to go forward. In response to this it is deemed necessary by five (5) respondents that caution be exercised and ethical standards be applied in the field of science and technological innovation. It was put forward that applying ethical standards in this regard will aid in alleviating the concern of two (2) respondents who view science and innovation as 'bought about' by industry.

Public participation is an essential component of addressing environmental justice concerns in this context. The importance of including public participation is illustrated in this vitally important commentary as given by a member of CSO3:

> *I think its critically important that the government is consulting with the necessary environmental organisations and public participation forums in order to understand what do the people want, because this country is not governed by the government, its governed by the people because it's a democracy and if we're making critical decisions that are going to outlast this government, you know a power station is not going to be built in the next six months it's probably going to be built in the next five ten years and it's going to last for another thirty years. So I don't think that the government should have the liberty to make these decisions without having a real accurate understanding what the broader public insight and objections are around it (Pers.com, 2015al).*

In a similar vein, and also promoting the inclusion of the voices of society in the mix, a further participant from CSO2, expresses that *"scientific data should be one of the top considerations along with the sentiment of the people" (Pers.com, 2015am).* By doing so, science and technology, as presented by ecological modernisation does have the potential to bridge the divide between the economy and the environment and also between the economy and society. When you invent and implement appropriate technologies, "*you stop environmental degradation and you are basically creating an environmentally just, low resource intensive and a greener mining sector, it's as simple as that"* (Pers.com, 2015an).

One (1) respondent in being interviewed referred to the '*proper'* use of science and technology and did so on three occasions. When asked what was meant by *proper,* a key component of consideration for the use of science and technology was found for environmental governance.

By proper, it is meant that the cumulative impact of projects be taken into consideration, rather than the very localised impacts as is currently done.

As such, civil society participants who engage with environmental justice on an everyday basis are not quick to dismiss science and technology and the promotion thereof as a means to improving environmental impacts and industrial standards. Quite to the contrary, the majority of these respondents feel it rather an appropriate and useful means to achieve justice. Therefore, the central tenant of ecological modernisation is affirmed in this context, and therefore there is no need to abandon ecological modernisation all together. However, as has been seen, some respondents did exercise caution and proposed measures that should be taken to ensure that injustices are not tolerated. Once again, whilst not the sole purpose of this question, a few more guidelines were found that need to be considered when putting together an environmental justice framework for ecological modernisation.

4.5.3. Using policy as a tool for governance and justice: concerns and possible solutions

The third research question specifically sought to understand whether or not implementing an environmental justice framework alongside ecological modernisation in energy policy could be favourable for a developing country such as South Africa. If this were desirable for civil society, there would need to be a desire for the social sphere of governance to be included in policy. At present ecological modernisation calls for the environment and the economy to be seen as two integrated spheres, but there is no mention of the social sphere of sustainable development. Therefore, in response to this civil society were asked if they felt the economy, society and the environment were presently integrated in South African policy, and if they feel it would be a good idea to integrate each of these spheres in our understanding and practical implementation of policy.

Initially, in order to understand the extent to which South Africa has integrated the two sustainability spheres of the environment and society, civil society members were asked how the concerns of society have been given attention in environmental governance and environmental policy. Ecological modernisation pushes for the alignment of the economy and the environment and here the attempt was to establish if there was a potential for society to be included in that mix, and if civil society even deemed integration a desirable thing.

The responses have been tabulated and can be seen in Table 4.10 and these vary. 30% Of responses to this question observe that social concerns are given inadequate attention in governance and policy, but even where attention is given it does not amount to much when implementation is lacking (17% of responses). As pointed out by one (1) participant, implementation is lacking within government departments in that cooperative governance is yet to be realised. As insightfully noted by another participant, cooperative governance is essential given that the environment, the economy and society are so inextricably linked and a decision in one will affect all.

A further example of the lack of integration of social concerns into environmental and economic spheres was in the practical implementation of governing policies. Civil society respondents argued that this is clearly illustrated in the environmental impact assessment where social concerns are meant to be incorporated and addressed. But it has been identified by a member of CSO2 that if you, "*look at actual EIAs and if you look at EPRs which are the programmes to implement and address uh mitigate the impacts found in the EIA, you'll find that there's not that much space or detail given to the result of the social*" (Pers.com, 2015ao). A further participant from CSO11 reiterates this and notes that in these processes, at times, the concerns of host communities are simply omitted from the report.

Table 4.10: Concern for social consideration in environmental governance

Social concerns been given attention?	**Total number of citations**	**Percentage**
Lack of integration/Inadequate integration	7	30
They are given attention its implementation that is lacking	4	17
Seen as separate and at odds	3	13
Becoming increasingly more important	2	9
Social concerns trump environmental concerns	2	9
Unsure	2	9
No adequate grievance mechanism	1	4
Not placed at the centre as they should be	1	4
Misunderstood to be about conservation	1	4
Total	**23**	**100**

(Source: fieldwork material, 2015**)**

Three (3) respondents (13%) argued that the environment and society are seen at odds within governance and policy and this is ultimately alluded to by the fact that environmental issues are seen as less important issues to be dealt with only once the more important issues have been addressed. One respondent from CSO2 has identified the fact that the history of South Africa has played a major role in underplaying the environmental agenda in governance, "*environmental issues are still broadly misunderstood to be about conservation, to be about endangered species, and to be about the rhino and more anthropocentric side of environmental issues" (Pers.com, 2015ap).*

Another respondent discerned that social concerns are not at the centre of environmental policy and planning as they should be and this is simply because of, "*collusion between government and corporates*" (Pers.com, 2015aq). Additionally, "*government itself and polluting industries themselves allow for big business to have a much bigger say, so there's this unequal balance of inequality where people's homes, and people's quality of life, is side-lined in favour of big business interest or profit and money*" (Pers.com, 2015ar).

In addition to this, the fact that South Africa is a developing country does not help the integration of social and environmental concerns. As a few respondents have noted, the social sphere of sustainable development in fact outweighs the environmental, and this is necessary because we are in fact a developing country. Although there is a desire to have them integrated.

All these arguments and varied responses indicate that there is mixed sentiment towards whether social concerns are given attention in environmental governance and whether the attention is sufficient regarding the lack of implementation. What can be said for certain though is that in its entirety, social concerns and the environment are not sufficiently integrated to effect change. In light of this, civil society were asked how they would like to see social concerns included in environmental governance and policy. These suggestions have been tabulated and can be seen in Table 4.11.

The ideal for forty seven percent (47%) of the participants would be to view the two as one concern. They cannot be dealt with in isolation, they are inherently linked and so must be solved in unison. Two (2) responses call for social concerns to top the agenda by changing the system

to one that is more human centred. This would inherently mean social concerns would be assigned more weight in decision making efforts.

Table 4.11: Addressing social concerns

In what way should social concerns be incorporated	**Total number of citations**							**Percentage**
	1	**2**	**3**	**4**	**5**	**6**	**7**	
View environmental and social concerns as one							X	47
Put social concerns at the top of the agenda		X						13
Have a grievance mechanism	X							7
Need democratic decision making (consultation)	X							7
If we view them as one we blur the lines and things slip through cracks	X							7
Fully endorse the constitution	X							7
Strengthen the alliance of departments who deal with the environment and society to have an equal say with the stronger economic departments.	X							7
More time to consider social issues in the EIA decision making process (currently 30 days)	X							7
Total	**15**							**100**

(Source: fieldwork material, 2015**)**

One (1) respondent offered a solution that could be used to address the fact that social concerns are deemphasised, and at times left out of the EIA. This omission of social concerns is due to the fact that including these in the assessment would make it far more difficult to get developments approved. "*One very elegant solution to this is that the EIP shall not be the client of the developer; so you take away that subjectivity*" (Pers.com, 2015as). In order to do this, one respondent proposes, that environmental impact practitioners will be pooled in a government database and assigned at random to a developer. In doing so practitioners can be far more honest about the social concerns without being concerned about their own reputation and ability to get future work with developers who wish to have them side-line concerns.

In sum, there is a majority desire to include the social sphere of sustainable development into policies governing the environment. By doing this, holistic solutions can be made that will in effect bring about stronger sustainability decisions. Therefore, it is pertinent that in all policy, energy policy included, every effort is made to include this sphere. As such, including a policy framework that seeks to address injustice and bring society into the realm of decision making can be used as a solid foundation for achieving this.

4.6. Summary

The empirical evidence has shown that South African energy policies show a great deal of ecological modernisation thinking. It can therefore be effectively argued that South Africa's governmental framework is to an extent influenced by ecological modernisation. As such the many environmental justice concerns raised by civil society need to be addressed within this governance framework. Civil society have put forward many possible solutions that allow for just this to be attempted. The two main areas to be addressed from these solutions posed is the power dynamics that surround environmental governance as a whole, and secondly, to bring about an efficacious government, the lack of which will see any such solutions posed being ineffective. Possibly the most concerning hindrance is the belief that justice can never be attained within a capitalist system of governance and this would mean that an environmental justice framework applied within ecological modernisation will be of absolutely no use.

CHAPTER FIVE
Discussion and Analysis

5.1. Introduction

Scott and Barnett (2009) have identified South Africa as a country that has chosen to follow an ecological modernisation pathway to sustainable development. South Africa, therefore, provides the potential for a unique insight into the current state of governance, in terms of ecological modernisation and the environmental justice implications thereof, in a developing world context. It is this unique context that frames the following discussion of the empirical evidence. This chapter begins with an analysis of South African energy policy. It is here that we form an understanding of how contemporary energy policy and practice has been framed by sustainable development and ecological modernisation, the first aim of this study.

Following on from this is an analysis of the various environmental justice concerns that the citizens of South Africa are exposed to. It is only through understanding each of these concerns that we can understand the consequences of policy put into practice. Therefore, we understand the practical implications of policies framed by sustainable development and ecological modernisation, addressing the second aim of this study. Upon understanding each of these concerns the discussion in this chapter then moves forward to building the environmental justice policy framework for ecological modernisation. This framework is constructed using the various solutions to injustices as proposed by the various members of civil society. The construction of which fulfils the first objective of this study.

With the framework in hand it is then possible to assess whether South African energy production can potentially be strong in terms of sustainable development. What is desired here is an understanding of whether all three spheres of sustainability can be incorporated into policy, namely, social, environmental and economic, through the introduction of this framework. What proceeds here is an analysis of policy, using the environmental justice policy framework developed, to understand how environmental justice concerns are reflected in energy policy, the third aim of this study.

Finally, this chapter turns to include a discussion on whether or not including an environmental justice framework will be enough to incorporate the social sphere of sustainable development into ecological modernisation. And by including this framework can ecological modernisation be deemed a stronger pathway to sustainability? By accomplishing this the second and third objectives of this study are addressed.

5.2. An environmental justice policy framework for ecological modernisation

This section is dedicated to firstly a discussion on the ways in which sustainable development and ecological modernisation have influenced contemporary energy policy in South Africa. Thereafter, the first research objective this theses posed is addressed in this section. This being to develop an environmental justice framework that can assist with making policy formation and implementation of ecological modernisation, as a normative approach, socially just. In order to address this objective an analysis is conducted on the various environmental justice concerns faced in South Africa. In understanding the various environmental justice concerns, potential remedies posed to address these solutions can then be analysed for incorporation in an environmental justice policy framework. It is to accomplishing this that this section of the discussion and analysis chapter is dedicated.

5.2.1. Weak or strong: sustainable development and ecological modernisation in South African policy and practice

South Africa, being a developing country, has a very unique basis from which to analyse the implications of adopting ecological modernisation principles for achieving sustainability. From the empirical evidence it is abundantly clear that South African energy policies have been written with the ultimate goal of sustainable development in mind. All of the five policies have some mention of sustainability being the goal. One of the two Acts analysed, namely the National Environmental Management Act 107 of 1998 (NEMA), also has a strong emphasis placed on achieving sustainable development through sound decision making.

Unfortunately, the White Paper on the Energy Policy of the Republic of South Africa is an example of weak sustainability. Therein is the idea that the immediacy with which brown issues

should be addressed is far more pressing than implementing carbon taxes, which would ultimately be the driver for reforming energy generation to more environmentally friendly renewables. The four remaining policies all illustrate an understanding that the economy, the environment and society are all integral spheres within sustainable development. Of the Acts analysed, the NEMA also illustrates this thinking. The NEMA has been praised for its principles of justice and the basis it provides for democratic decision making processes with regards to the environment (Rossouw and Wiseman, 2004). However, Bond (2000) has argued that the NEMA in practice has been used to further economic development without consideration for the environment and society. Myers (2008) also argues that the NEMA, being weak in practice, trading off the environment and society for economic growth, has meant that the pursuit of environmental justice has been side-lined. Therefore, in practice, all but one of the policies have a strong sustainable development understanding written into them. The implication of having an Act, namely the NEMA, that when put into practice undermines this, means that South Africa is ultimately weak in its practical implementation of sustainable development.

Principles of ecological modernisation, as said by some scholars, dominate the policy development process in South Africa (Scott and Barnett, 2009; Scott and Oelofse, 2005). Through analysing five policies and two Acts, using Hajer's (1995) policy framework for ecological modernisation, evidence gained makes it abundantly clear that South Africa's energy policies and Acts have for the most part identified with ecological modernisation. These six principles are: prevention of environmental degradation is preferred over dealing with resultant environmental degradation; internalising the costs of environmental degradation; requiring the party responsible for pollution to pay; the importance of the promotion of science in policy; economic benefits for pollution prevention; and lastly promoting participation within the governance of the environment (Hajer, 1995). Although, not every document contains all aspects of ecological modernisation, when they are put together and analysed as a whole there is evidence of each of the six policy criteria listed by Hajer (1995). The development of the White Paper on the Energy Policy of the Republic of South Africa has clearly been influenced by ecological modernisation in that it has all six of Hajer's (1995) policy principles written into it. Second to this is the White Paper on Renewable Energy which has evidence of five of these principles. The Integrated Energy Plan for the Republic of South Africa shows the least evidence of ecological modernisation principles. The NEMA, with evidence of three has one completely contradictory guiding principle. This being the fact that internalising the costs of the environment will be far too costly and thus will not be put into practice, rather decisions will be

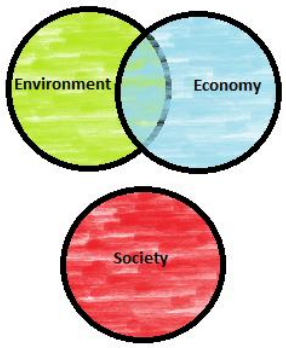
made with the most suitable costs in mind. The fact that each document does not contain each criterion does lead to the inevitable conclusion that South Africa has yet to embrace the full suite of prescriptive policy requirements detailed in ecological modernisation, but has none the less demonstrated significant commitment to these principles of governance.

Upon this evidence it must be concluded that this study confirms the work of previous commentators in acknowledging that there are definite strands of ecological modernisation thinking in South African governance (Long and Patel, 2011; Oelofse et al., 2006). If the five policies and two Acts are ranked according to the number of ecological modernisation principles therein, the ranking would go as follows (to see which principles were contained in which document please see Table 4.1):

1. Prevention is better than cure, present in six of the seven documents;
2. Promotion of public participation, present in six of the seven documents;
3. Polluting party pays, present in five of the seven documents;
4. Emphasis on science and technology, present in four of the seven documents;
5. Internalising the costs of the environment, present in three of the seven documents;
6. Benefits assigned for pollution prevention, present in two of the seven documents.

Therefore, when analysing the presence of ecological modernisation principles it is clear to see that government policies are written to mostly exclude the internalisation of environmental costs. This may be the very reason why it was argued that in practice the environment is traded off for economic growth (Bond, 2000; Myers, 2008). By externalising the costs of environmental impacts government allows for pollution to be emitted into the environment without making a concerted effort to instil a change. This pollution ultimately impacting on human health and wellbeing (Barnett and Scott, 2007). Hence, the conclusion reached by scholars that environmental injustices have been perpetuated for economic growth is supported (Death, 2011; Oelofse et al., 2006; Patel, 2014). However, evidence suggests that it is not the system of governance underpinned by principles of ecological modernisation that has allowed for this. The evidence here points to the contrary, here what can be argued is that government has not fully embraced all aspects of ecological modernisation. In keeping costs to the environment as externalities, industry has no reason to seek cleaner alternatives to production and so ecological modernisation, and ultimately environmental justice, is hindered. Therefore, as it stands ecological modernisation as practiced in South Africa is a weaker form of sustainable development in that a system of trade-offs exists.

In addition to this, Oelofse et al. (2006) have argued that South Africa is operating under weaker forms of ecological modernisation itself. These authors argue that there is an antagonistic relationship between the state and civil society, and as a result social concerns are ignored, effectively weakening ecological modernisation (Oelofse et al., 2006). This is clearly the case in South Africa as antagonism between civil society and the state was raised as a concern by civil society, with one respondent actually having left environmental campaigning as a result of never having been acknowledged by government. Therefore, ecological modernisation is weak in itself with regards to sustainable development. In the literature review it was shown that strong sustainable development is represented by all three spheres of sustainability being embedded within each other (Figure 2.2). What has been shown here is that currently in South Africa this is not the case, as the environment is traded-off for economic growth and society are not included in the equation at all. Figure 5.1 is a graphic representation of this. What can be seen in this figure is that the environment and the economy are only partially overlapping, where they overlap is where sustainable environmental and economic objectives overlap. For the economy and the environment, the area of each sphere that does not overlap is where potential trade-offs occur. Society has not been integrated at all, therefore there is no potential to make sustainable social decisions. Because social questions are excluded from discussions on development, society is marginalised to the outskirts of development decisions, and because the social sphere does no overlap with the environment or the economy, society is traded-off.



5.1: A graphic representation of weak sustainable development and ecological modernisation in South Africa

The scholarly view as held by (Death, 2011; Oelofse et al., 2006; Patel, 2014) that injustices are perpetuated for economic growth is not without merit. Empirical evidence gained from interviewing members of civil society supports this conclusion. Nine (9) organisations are

concerned with the energy sector and the human and environmental impacts of promoting cheap, but highly pollutant coal energy production. A further eleven (11) organisations are involved with addressing polluting industries. The promotion of cheap energy production and the perpetual scourge of polluting industries illustrates how economic growth is favoured over the environment and justice. Not only are the areas of concern engaged with by civil society evidence of this, all but one participant acknowledged that South Africa was an unjust country. From the inability to access resources, which was ranked as the number one issue by participants, to the more generic concern over the distribution of benefits and burdens within society, this ranking second.

Due to the fact that government has failed to put into practice the strong approach to sustainable development that is written into its policies and Acts, the result has been a system of trade-offs. Because of this, civil society have had to actively get involved in a bid to remedy this situation. They have been doing so through various methods. Using the legal system as a means to hold corporations accountable and working with government to try and influence decision making. This dynamic is evidence of the fact that ecological modernisation scholars were right to assume that civil society will push industry and government towards ecological modernisation (Mol, 2000).

However, many of the limiting factors to the involvement of civil society stem from the power of government and the power of the industrial sector relative to civil society. One respondent clearly stated that it is very difficult to bring about any change because of the disparity in power between government and the proponents of development and industry on the one hand, and civil society on the other. Government and proponents of development and industry have come to dominate decision making in the country. Government and proponents have a strong desire for development, this has meant that their ability to enforce their will in decision making is strengthened through this mutual desire. Therefore, ultimately, the ability of civil society to influence decisions in the country has been limited. Figure 5.2 is an illustration of the influence government and proponents have at the expense of civil society. The sphere at the very bottom represents the decision to be made. The two larger overlapping spheres represent, the well-resourced and powerful government and proponents of development respectively. Where the two overlap illustrates their mutual desire to see that decisions made favour development. They therefore, through their relative power and mutual agendas, have a far greater influence over the decision to be made. Civil society on the other hand, who have acknowledged that they are

under resourced and would need to be further capacitated to have a greater impact in governance are very much disempowered. They therefore have very little power to exercise over the decision to be made.

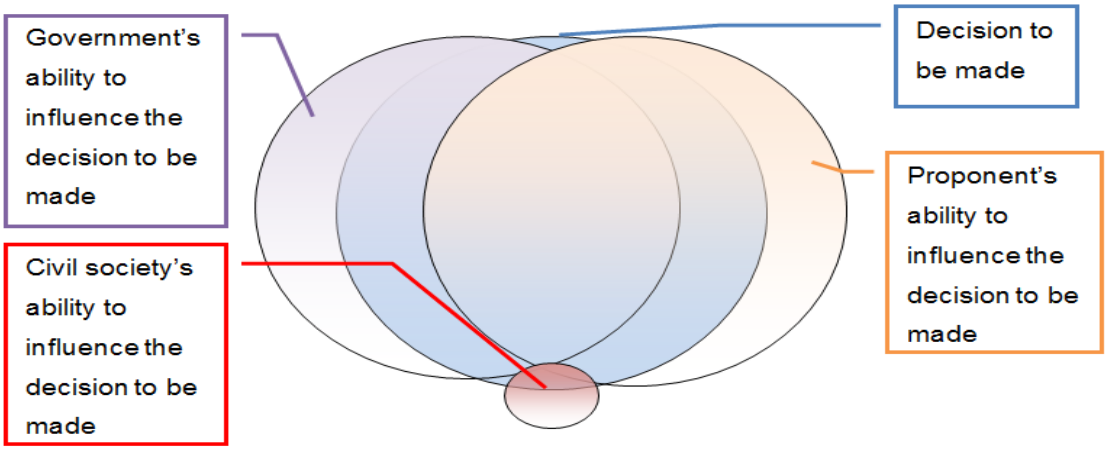


Figure 5.2: Diagram illustrating how decisions are made (source: based on fieldwork analysis, 2015)

Aside from these power dynamics that are exercised with regards to decision making. Participants have also noted that in some instances mines and corporates are just too powerful to be governed and regulated. Therefore, if civil society are to play a more active role in pushing for ecological modernisation, and ultimately strong sustainable development, this power dynamic needs to be addressed.

Understanding the causes of injustice in South Africa was key to this study, as such civil society members were asked their opinions regarding this. Three main themes emerged. The first of these, perhaps a theme unique to South Africa, was that of the history of our country. The legacy of Apartheid planning that saw the majority of South African citizens marginalised has yet to be addressed. Civil society are not alone in their concerns over the country's history. Scholarly articles that engage with the topic of environmental justice in South Africa point to this same concern (Patel, 2014; Rossouw and Wiseman, 2004). Until the current dispensation makes a concerted effort to address the legacy of the past, environmental injustice will continue to plague the country.

The second causal theme that emerged, that lines up well with previous works on ecological modernisation and environmental justice, is that of capitalism. Capitalism is the economic system within which ecological modernisation is to be implemented (Gouldson and Murphy, 1997). However, it is this very system that civil society have identified as one of the root causes of environmental injustice in South Africa. This system, it was argued, allows for the ill distribution of benefits and burdens amongst society. Civil society have highlighted that it is through capitalism that class divisions are created and these class divisions influence susceptibility to injustice, as the rich escape environmental harms whilst the poor are subject to the degraded environments they live in. This is not an undocumented opinion and fits in well with scholarly critiques of capitalism and ecological modernisation as a whole (Martin, 2013; Walker, 2009). It is the very capitalist procedures that govern and allow for this form of distributional injustice to occur[11]. These are clearly issues of distributional justice; the unfair distribution of benefits and burdens within society.

Scholars do perceive that capitalism, as an economic system, is prone to allowing for injustice, but they are quick to note that distributional justice, as identified here, is only one form of injustice, and that injustice is often perpetuated through the systems of governance and the manner in which decisions are made (Fraser, 2008; Martin, 2013; Schlosberg, 2013; Young, 2011). This is the third causal theme of injustice mentioned by civil society. However, it must be noted that the systems of governance and the way decisions are made have, through the evidence, been found to be inextricably linked to the capitalist system. It is these procedures that bring to the fore concerns over power and how it is distributed amongst actors in society.

Civil society are of the opinion that capitalism is a system that allows for a great disparity in bargaining power between actors in environmental governance. Study participants say that government and the owners of industry have formed a strong and powerful allegiance to meet the ideal of development that is so strongly sought after in South Africa. When compared to the bargaining power of society as a whole, civil society note that the power of the government-industrial alliance is far superior, and dominates all environmental decision making, the results of which are rarely just. This suggests that environmental injustices have therefore been

[11] Distributional justice refers to the distribution of environmental goods and bads within society (Scott and Oelofse, 2005).

perpetuated in a system that allows for the empowered owners of industry and government to make decisions without the weighted consideration of society.

The above criticism of the system of governance, as it is acted out in South Africa, is not unique. Scholars state that modern society, a result of the very capitalist system, allows for wealth and power to be synonymous (Blowers, 1997; Pellow et al., 2001). There is also evidence in South African literature that there are inherent power disparities that play a role in the very formation of policies in the country (Patel, 2009; Scott and Oelofse, 2005). In theorising social justice, Young (2011) has argued that as a result of power disparities in decision making procedures, a system of exploitation is allowed for in capitalist societies. Exploitation is the process whereby the owners of capital exploit labour for the purposes of self-gain. Given that this research was conducted in the context of environmental injustices; exploitation here will be changed to refer to the exploitation of the environment and the host community for self-gain. Once again the concerns raised by civil society with regards to the promotion of highly polluting energy production and industries is an illustration of this.

In addition to this, Young (2011) has theorised, with regards to social justice as a whole, another symptom of the capitalist economy, namely powerlessness. Here the owners of capital are seen to exercise a great deal of power over the society they exploit for their own benefit (Young, 2011). Evidence of this referred to in the arguments made by civil society is that there is a great deal of power centred in the hands of the owners of industry to influence procedures and decision making for their own benefit. This, as put forward by civil society participants, is in relation to a fairly disempowered society who cannot meaningfully oppose any decisions as made by capital and government. This argument is in stark contrast to the one made by ecological modernisation scholars Gouldson and Murphy (1997). Gouldson and Murphy (1997) argue the alliance that exists between government and corporates, who have similar interests, can foster a working relationship to promote ecological modernisation. Inherent power dynamics, however, have meant that this very relationship has fostered injustice.

A further instance of procedural injustice that exists in South Africa relates to the legal system which should protect the rights of citizens. An argument made by one civil society participant was that South Africa's justice system at present is too costly for the lower classes and thus is only available to the elite who are often not left with the environmental burden of development. This is evidence yet again of Young's (2011) theorising on marginalisation in social justice. In

social justice, marginalisation according to Young (2011), is a process that acts to exclude certain groups from the workplace because they do not fit the desired criteria of age or race for example. Marginalisation, however, tweaked to fit the environmental justice context in which it is being applied, means that the legal system excludes members of society on the basis of class, which in essence discounts many from a system whose premise is justice. Any framework for justice applied to policy writing to instruct governance would need to amend this.

Much of the analysis thus far, points to the fact that many of the justice concerns of civil society respondents are the result of an evident power disparity between governments, corporates and society. Strengthening the bargaining power and recourse potential of society, in order to push back against governance that hinders justice, is therefore paramount. However, as it stands the central tenant of aligning the economy with the environment and society has failed in South Africa. This is so as society has yet to be meaningfully engaged in the process. Concerns such as these have yet to be raised against ecological modernisation, but they should be as developing countries are named for the very reason that development is tantamount.

However, it must be noted that a minority opinion held (8% of responses) by civil society is that capitalism in fact has no bearing on the environmental justice concerns experienced in the country; rather injustice is rooted in improper governance. The concern here was that improper governance has led to the unequal distribution of resources and wealth in the country. This is a form of distributional injustice perpetuated by the failure of stakeholder groups to address it. Even more specifically, injustice was linked to the mismanagement of government spending. Whilst this was a minority opinion amongst respondents it does point to the role procedure and governance plays in achieving justice. Distributional injustice, as mentioned by Fraser (1995b, 2008) and Young (2011), cannot simply be addressed through redistribution alone, there must be a change in the systems of governance that allow for injustices, such as these, to be found in the first instance. It would seem that in the case of South Africa, civil society concur with this as they believe that injustice is the result of improper governance. Whilst it was the failure of Western governments to effectively govern pollution in the 1970s that gave rise to ecological modernisation in the first instance, in the context of developing countries, it is the failure of ecological modernisation to effectively govern the need for justice that has led to these criticisms. What has become evident here is that it is perhaps not only the failure of ecological modernisation in addressing justice, but also the governance structures that are in place.

In light of the above arguments it could potentially be argued that this may be the result of government not fully embracing ecological modernisation. Whilst there is evidence of ecological modernisation principles in energy policy, it is the implementation of these principles that has failed. Therefore, it is argued here that not only does government need to fully embrace the full suite of ecological modernisation principles it definitely needs to incorporate elements of environmental justice into its policies and Acts and their practical application. Additionally, the antagonistic relationship that exists between government and some civil society organisations needs to be amended to promote the inclusion of social questions in decision making as pointed out by Oelofse et al. (2006).

What is presented in Figure 5.3 is a visual depiction of the current system of governance in South Africa as understood from the analysis of evidence gained from civil society participants. This figure aids to sum up the power disparities in South Africa's present state of governance relative to ecological modernisation and environmental justice. The diagram represents the total amount of power that can be distributed in environmental decision making. This power is represented by the extent of the arrow at the very top of the diagram. To the left margin of the page is society, represented by a rather small block, with a rather small arrow beneath it. The size of the block and arrow representing society is an illustration of the limited amount of power they are able to exercise within the total available power for decision making. The arrow representing the power of society is also rather narrow and small in relation to the arrow representing government and the owners of industry. As seen above these two actors have, as a result of the capitalist system, a larger share of the power to make and influence decision making. In addition to this these two parties, as argued by some respondents, have formed a powerful lobby, to promote the mutually agreed upon development agenda, and hence they are represented in the same block.

Injustice is perpetuated in the space where government should be regulating the actions of the proponents of development and industry relative to society. In the space between proponents and society is also where government should regulate the proponents of development and industry to best incorporate the will of society. In doing this government will be acting as a buffer between corporates and society. Currently this is not the case, where there should be effective regulation, there is a power vacuum created in the absence of an effective regulator. This vacuum allows for development and developers to go ahead unchecked.

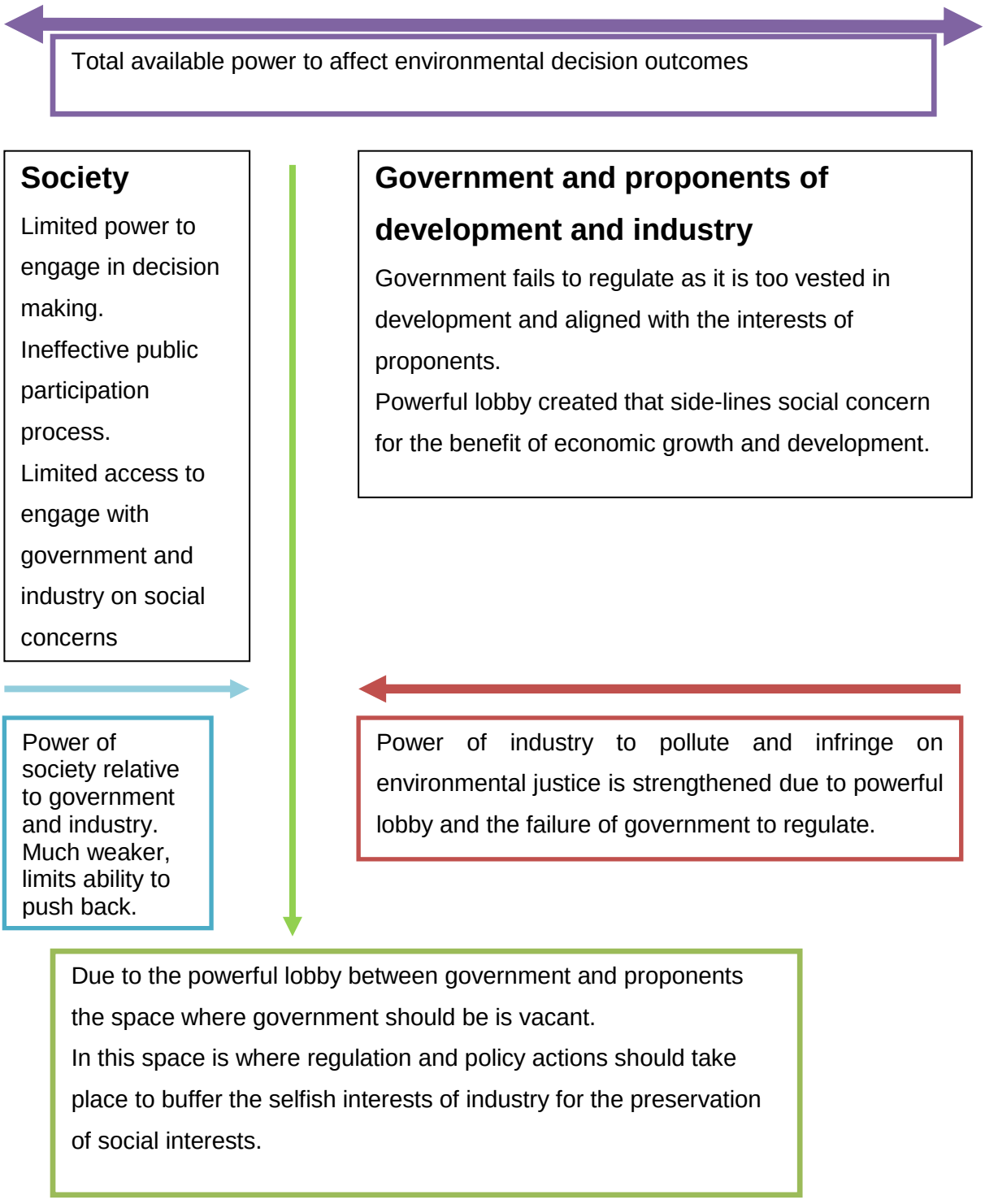


Figure 5.3: A visual representation of environmental governance in South Africa at present (Based on fieldwork notes, 2015).

Addressing the power dynamics in decision making as not the only aspect brought up by civil society participants in the study. There is a great deal of positive attributes that have been highlighted by civil society participants that are principles of ecological modernisation, principles South Africa has embraced in its energy policies and Acts. A very strong illustration of South Africa's commitment to ecological modernisation is the keen emphasis placed on the value of science and technology. The policy analyses have brought to the fore the fact that South Africa is committed to promoting science and technology in the energy sector, and has placed a great deal of emphasis on advancing the research agenda in the energy sector with regards to energy generation technologies. Similar commitments were found throughout all but one document analysed and statements such as, government "shall support research, development and innovation" proved to be the standard (Department of Minerals and Energy, 1998, p.16). This commitment is a clear adherence to the basic understanding of one of ecological modernisations grounding principles, that through innovation in science and technology production will become more efficient and less harmful to the environment (Hajer, 1996).

The South African government is not the only stakeholder committed to the advancement of science and technology, the empirical evidence brought to light the fact that civil society have also come to realise that such advancements are necessary, and can play a vital role in improving the governance of the environment. Of the twenty four civil society respondents who chose to engage with this theme all have embraced science and technology. At best it is used as a means to hold corporations accountable for any environmental infractions, and thus aid in the monitoring and enforcement of environmental regulations on behalf of the societies these organisations operate within. Thus the potential to use science and technology to bring about environmental justice is a massive cornerstone for both environmental justice and ecological modernisation, and speaks to the potential alignment of each of these discourses.

The use of science and technology in governance is clearly a powerful tool for civil society, however when industries are using science and technology there is some cause for concern. Firstly, as raised by 15 (62%) of the 24 respondents with regards to questions posed about the use of science and technology, there is concern over the morality of science and scientists used in the service of capital. While the literature on the use of science and technology, as it relates to environmental justice and ecological modernisation, address some concerns over risk and the justice implications thereof there is no mention made of the potential moral implications of scientists in the service of 'immoral capital'. As such, respondents have argued that a system

has been created that has allowed for corporates to choose scientists based on their needs, scientists who could potentially be corrupt in the service of capital at the expense of society and the environment. It is therefore imperative that this be addressed procedurally in order to gain very real and just solutions to industrial development.

The exclusive nature of scientific knowledge is disturbing to civil society. It was identified through the interviews presented in the empirical evidence that access to accurate and digestible information was a necessity that is sorely lacking. Once again, this is an issue of poor governance surrounding corporate engagements with communities, and therefore would need to be addressed through proper governance of corporate social engagements. Any framework for justice would need to ensure that information is made accessible and digestible.

While civil society respondents did highlight the fact that science and technology, one of the main governing principles of ecological modernisation, has its benefits, one of the most poignant cases of distributional justice to be highlighted stemmed from this very promotion. Concerns were raised in association with risks posed to society from the promotion of science and technology in the service capital. This unfair distribution of potential harms to society is not a new criticism levelled against ecological modernisation and fits squarely within the work of academics on the subject (Beck, 1997; Christoff, 2009). Any framework developed to ensure that the take-up of these technologies is just will have to take this into consideration.

In addition to embracing science and technology, South Africa has chosen to follow capitalism as its system of economic governance and as such maintains a system that is a necessary precondition for ecological modernisation (Gouldson and Murphy, 1997). Capitalism is a necessary precondition for ecological modernisation as a reflexive free market system is ideal for the development and absorption of more efficient technologies (Gouldson and Murphy, 1997). This fundamental commitment to a capitalist system of governance has caused concern for some with regards to environmental justice. The majority consensus (45%) amongst civil society participants interviewed is that capitalism has a definite impact on the attainment of justice in the country, and therefore ecological modernisation, as a promoter thereof, is concerning as well.

What has been presented here is an illustration of how South Africa's current state of governance relative to ecological modernisation is weak. By failing to consider civil societies

social concerns and failing to practically implement all aspects of ecological modernisation in governance many environmental injustices have resulted. Ecological modernisation as practiced in South Africa is not only weak in itself, but is also a weaker form of sustainable development. Environmental justice concerns raised by civil society, therefore need to be addressed in order to take ecological modernisation from a weak approach to sustainable development to a potentially stronger approach.

5.2.2. Achieving justice in practice: building a framework

The analysis of the energy policies and Acts that has preceded this section, in combination with the identification of the many injustices that persist in South Africa illustrate that, in practice, ecological modernisation and environmental justice have not been synonymous. South Africa, while embracing ecological modernisation continues to be unjust. What follows is a discussion of the potential remedies to injustice as proposed by civil society. These solutions will be used to build an environmental justice policy framework for ecological modernisation. This framework will be developed by identifying what environmental justice principles civil society would like to have included in environmental policy. These criteria, as will be seen, are essentially a means by which to incorporate social concerns within the milieu of environmental governance. By doing this it is potentially possible to take ecological modernisation from a weak to a strong approach to sustainability.

A few of the possible means, put forward by civil society, to address injustice in South Africa are already evident in the literature on ecological modernisation. However, here they relate to the attainment of environmental justice. The first of these is the notion that prevention is better than cure. Prevention of environmental degradation, rather than curing it with end of pipe solutions is a well-established understanding amongst eco-modernist thinkers (Jänicke, 2008; Mol and Jänicke, 2009). As such Hajer (1995), has already included this in his ecological modernisation framework. Therefore, the finding here reaffirms the thinking behind one of the founding principles of ecological modernisation. However, the context in which this solution was raised by civil society was that of environmental justice and not environmental preservation. Therefore, it is important that one of the principles that should structure this environmental justice policy framework is *prevention of environmental injustices is far better than remediating injustice.*

A further solution to environmental injustice, that resonates well with ecological modernisation, is to *internalise the costs of injustice*. Internalising the costs of environmental degradation, as a means to promote more sound environmental production is well documented within ecological modernisation literature (Blewitt, 2008; Mol, 2002). Once again the context of conversations had with members of civil society was that of environmental justice, and so whilst this solution does resonate well with current understandings of ecological modernisation, as they relate to the environment, here we are applying these understandings to addressing injustice. Therefore, one of the guiding principles for environmentally just ecological modernisation is that the costs of injustice be internalised in the costs of production. This may be the means by which the prevention of injustice will be achieved.

The third and final solution to injustice posed by civil society members that resonates well with ecological modernisation is that of *the promotion of science and technology to achieve justice*. Ecological modernisation scholars already acknowledge the importance of science and technology in promoting environmentally friendly production, but have not taken into consideration environmental justice (Blewitt, 2008; Gouldson and Murphy, 1997). What was argued by civil society is that science and technology can not only help to innovate for better more environmentally friendly means of production, but can also be used to promote justice in production.

Technological advancement and absorption have a fundamental place in ecological modernisation, however civil society note that the manner by which technologies are chosen, and the governance of these technologies needs to be addressed. As such civil society have proposed that *technological advancement and absorption should be done in line with public sentiment.* As the empirical evidence gained from civil society participants illustrates, majority of these participants are not opposed to all technological development, but are, in fact, rather embracing of science and technology as a means to further their cause. Civil society is not opposed to technology as it is used by industry, but would have its use governed in a democratic manner. As pointed out by one participant, at times embracing certain technologies, such as nuclear technologies, means that the potential social and environmental risks and impacts will extend beyond the term of office of the current governing body, and therefore such decisions should be made by society as a whole. As such effective and meaningful public participation is called for. If society, as premised by ecological modernisation, can pressure industry into adopting more efficient, sound technologies, then their opinions should also be

weighted in decisions where there is a risk involved. Therefore, taking into consideration the sentiment of the people is essential here. Therefore, public participation should be included in such decisions. The proposed method of conducting public participation will be discussed shortly.

What we have so far are three principles that resonate well with eco-modernist thinkers, however these three principles are referring specifically to environmental justice, and not environmentally friendly means of production. It is therefore fundamental that they be included in the policy framework developed here for just ecological modernisation. What follows now are novel solutions to injustice in South Africa posed by civil society, solutions that are not present in any of the literature on ecological modernisation.

The empirical evidence discussed in the previous section has shown that South Africa is presently an unjust nation. According to the majority of respondents' capitalism and an inefficacious government has much to do with this. Whilst some respondents have argued that the only way to address this concern is through a socialist revolution, majority of the respondents, when asked how they would best address these concerns, offered a nuanced approach to governing capital in this system. It is to these solutions that we now turn.

As a fundamental ideology, in all policy and subsequent decision making, *it is important that the economy, the environment and society be seen as integrated spheres in all development*. The overwhelming majority of respondents have argued that social issues and environmental issues need to be seen as one in policy. Currently ecological modernisation proposes that the economy and the environment should be seen as interlinked and should not be treated as separate spheres in policy writing (Mol and Jänicke, 2009). What has become evident from this research is that society is also an integral part of this system, and as such cannot be seen as separate from the environment. By default, this means that society cannot be seen as separate from the economy as well. This understanding will only aid in taking ecological modernisation from being premised on weak sustainability, whereby society was not a consideration, to strong sustainability. Therefore, a further policy principle needed to achieve justice, that is to be included in the framework developed here, is to understand that all three spheres are interlinked, and therefore must always be considered integrated in environmental decision making. This argument lines up well with those made by scholars of sustainable development (Ekins et al., 2003; Jain and Jain, 2013).

It was further argued by civil society participants, that society should be put at the top of the policy agenda, before both the environment and the economy. While the humanitarian ideal behind this is noteworthy, and commendable, this would only serve to form a weaker approach to sustainable development, and would in fact mean a regress back to each of the three spheres of development being seen as separate and only marginally integrated. As such with the ideal of progression and moving towards ecological modernisation being stronger in approach to sustainability it is the majority consensus that is included in the framework. Therefore, underpinning all policy writing must be the understanding that society, the environment and the economy are all integrated, and decisions made must reflect consideration of all three spheres.

In light of this, a few preconditions should exist when making development decisions. One such precondition is to *evaluate the environment before development decisions are made,* rather than making a development decision first, and only then considering whether or not the environment can accommodate such a development. This is a crucial criterion for an environmental justice policy framework. It has been through the practice of the inverse of this principle that civil society respondents have argued that the environment has been degraded, and host communities have carried the burden. The rationale behind this criterion was addressing the concern that, in the current situation, where development decisions are made first, there is an inherent vested interest in seeing the development through. Arguably the inverse can be true, by assessing the environment, and then calling for developments that fit within the environmental capacity there will be a vested interest in seeing environmental protection, and ultimately environmental justice through. It was put forward by one respondent that the analyses of the environment should be carried out in a holistic manner whereby the environment is considered on a broader scale, and not in small isolated pieces of land that will host a development. This is needed as natural systems are interlinked, and the cumulative impacts of all developments need to be considered, rather than developments on an individual bases. Therefore, when assessing the environment for potential developments it is important that this assessment be made on a broad scale.

Ultimately, changing this mind-set does not mean going against the principles of ecological modernisation. Ecological modernisation calls for the alignment of the environment and the economy. The present system does not achieve this synergy, but by changing the order of

development this synergy can be achieved. By doing this there is no brake put on development, this process will simply steer development towards stronger just sustainability and truly allow for economic and environmental synergy.

In order to bring society into this mix of concerns on development there are two conditions brought up by civil society that must be adhered to in policy writing and implementation. The first of these is to *ensure that the polluting party pays for the costs of social impacts*. By including the social cost into development it is hoped that this will force developers to develop, and continue to operate in a manner that takes social considerations into account. This argument follows the very logic of ecological modernisation. At present, ecological modernisation theorists, advocate for the internalisation of the costs of environmental degradation (Mol, 2002). To date this has yet to be practically implemented in South Africa, civil society have pointed out that regulations are seldom adhered to or forced upon industry. Including the social cost in development seems promising, however issues of effective governance will need to be addressed. What effective governance entails will be discussed a little further on.

The second possible means by which to include society into the ecological modernisation mix is through a procedure of *effective and meaningful public participation.* It is hoped that development decisions will reflect societal concerns, and aid in balancing the power disparity that exists between society and a cooperative government and capital. Hajer (1995) does have public participation as an essential element of ecological modernisation. Whilst this is a foundational element, Hajer (1995) has not addressed how this should be undertaken. Furthermore, Hajer (1995) has also failed to take into consideration issues of domination and oppression that overshadow environmental justice concerns in capitalist economies (Martin, 2013; Walker, 2009). Therefore, to be included in the framework here, is a detailed account of how public participation should be undertaken according to civil society activists.

Firstly, *all concerned, affected and interested parties should be allowed a voice and weighted say in decision making*. This criterion is not a new in academic literature on justice, but is new to the literature on ecological modernisation. Parity of participation is a precondition for social justice as thought of by Nancy Fraser (2008). Including this as an inherent understanding in policy writing, as a necessity of participation, would be a powerful addition to incorporating the social sphere into sustainable ecological modernisation, and balancing out the power of governmental and corporate development decision making. By including parity of participation

hopefully the disempowered communities in environmental decision making will be empowered, and the exploitation of these communities by government and the proponents of development and industry minimised. Thus, by doing this Young's (2011) two faces of oppression that were identified by civil society are addressed.

Some of the criteria listed in the guide to public participation are practical with regards to *when and where these meetings should take place*. Additionally, there is emphasis placed on making *all information accessible and easily understandable* so as to allow communities to make informed decisions. When looked at through the lens of environmental justice, the ultimate goal of including these nitty gritty elements in policy is simply to allow for accessible and effective engagement. Thus, these criteria are necessary to ensure that procedurally parity of participation can be meaningfully achieved. This will ultimately change current public participation from simply a dissemination of information from proponents to communities. Therefore, here parity of participation entails more than simply being able to attend a public participation meeting, but includes the ability to effectively engage in the meeting and affect the outcome.

For the process of public participation to be effective it is deemed essential, by civil society participants, that *government regulate the entire Environmental Impact Assessment process*. Once again all this is a necessary precondition to simply address the power disparity that exists between the proponents of development and industry and the host community. Young (2011) notes that, through oppression, capital exploit labour for self-gain. In this context proponents of development and industry have thus far been exploiting host communities for self-gain as a result of their comparatively exponential power when compared to society. Having government regulate this process will minimise exploitation, and hopefully equalise the bargaining power of each of these two stakeholders.

Of the regulatory duties assigned to government the two most important here is that *government assign the Environmental Impact Practitioner* to minimise the influence of developers over the practitioner and ultimately the outcome of the assessment, as well as, *assign a community representative*. This community representative, as argued by civil society, should be skilled and capacitated to help the community understand the process and information disseminated. Once again environmental justice here entails that the power of developers be addressed, which up till now has not been considered in ecological modernisation. This, however, would require a

government committed to good governance, and including society in a meaningful way in decision making.

Government also has a vital role to play in ensuring *just* ecological modernisation, and this role can be incorporated through writing governments' role into policy. Having an efficacious government is essential according to civil society participants, and whilst most of this does depend on the political will within government, and the morals and ideals of individuals in power, having a government that effectively does its job in governing the proponents of development and industry, society and the environment is essential.

As has been discussed, there exists a powerful lobby between government and the proponents of development and industry committed to driving development and production. This has resulted in the perpetuation of injustices in the country as argued by civil society. As such, solutions posed by civil society, when examined are often solutions that simply aim to bring society back into the mix, and are designed to limit the potential that exists for power to be abused in the service of proponents of development and industry. As one participant noted, to have an effective system of governance requires that there be rule of law, democracy and a functioning state. South Africa at present is lacking the functioning state, and each of the framework criteria that have been developed from the views and opinions of civil society are aimed at trying to bring the state back into proper functioning. This is partly to be achieved by addressing the power disparity that exists between society on the one hand and the state and proponents of development and industry on the other. Below details solutions to address the ineffective relationship that exists between the state and proponents of development and industry.

The role of government is tantamount in pollution control. Pollution was identified as one of the major environmental justice concerns by civil society, and therefore needs to be properly addressed if justice is to be attained. Ecological modernisation premises that through social pressure and proper governmental regulation industry will absorb more efficient, less harmful technologies. While this is true, the role government needs to play has been said to be nothing more than regulatory, civil society respondents, on the other hand, have brought to the fore a bit more that government needs to do to ensure that more environmentally friendly, and ultimately just technologies are absorbed by industry.

Government, for one, needs to *write pollution regulations and laws into policy, these must be easily accessible and enforceable with penalties for non-compliance*. Added to this, in order to maintain independence and effective regulation of the proponents of development and industry there should be interdepartmental regulation within government. There should not be any instance of one governmental department solely being in charge of granting, for example, developmental or mining rights. If society, the economy and the environment are to be effectively integrated then all government departments who operate in all, or either, of these spheres should be working cooperatively, and under the premise that they should regulate decision making for each other. In addition to this, government must ensure that there is *compulsive proactive disclosure by industry* on their environmental and social impacts. The withholding of information by industry was identified as an action that disempowers society from making claims of injustice or making informed decisions in the first place. Therefore, proactive disclosure is a necessity for an informed public to make just decisions to push for industrial reform.

Having a *grievance mechanism for society* is also essential. This mechanism will allow that both government and the proponents of development and industry are upholding their duties as laid out above. Communities should have a place to voice their concerns and be assisted. This system will ensure that public participation, and the full process of decision making, as it relates to the environment and development, incorporates society for long term sustainable ecological modernisation.

In light of the above discussion Figure 5.4 is a visual representation of what environmental governance should look like. Figure 5.4 is a reworked schematic of Figure 5.3. Figure 5.3 was a schematic of the current system of governance that has led to the perpetuation of injustices in South Africa. Much like Figure 5.3, at the very top of this Figure we see a purple arrow which represents the total available power to effect environmental decision-making. However, what has changed here is the weighting of that power distribution between society and the proponents of development and industry. Society now, through a more effective and regulated public participation process, can engage far more with the governance of the environment, and therefore can exercise more power in the process of governance as a whole, this for negotiating just outcomes. This increase in power is illustrated by the now larger block representing society within the schematic, as well as an arrow that is equal in size to both government and proponents.

Another change that is illustrated in this figure is the untangling of government from the proponents of development and industry. Now through proper regulation government can ensure that the needs of society, the environment and the proponents are negotiated. As a result, a weighted, considered and just outcome is far more likely. Government, through regulation also acts as a buffer between the very powerful and well-resourced proponents and the, in comparison, under-resourced and disempowered society. The ultimate result of this is a system of governance that allows for all three spheres of sustainable development to be considered, and a system of trade-offs is less likely.

Keeping the above discussion in mind, and the ideal governance structure (see Figure 5.4), what is presented in Table 5.1 is an environmental justice framework for ecological modernisation. This framework is built from analysing the concerns and solutions civil society have posed with regards to environmental governance in the country. It is important to note that this framework is to be used in conjunction with Hajer's (1995) original policy framework which seeks to guide policy writing using ecological modernisation principals. This framework would ensure that those principals are hopefully carried out in an environmentally just manner.

By incorporating all these principles into environmental governance, society and societal concerns are ensured a place at the decision making table. This effectively means that the current situation of society being excluded (represented graphically in Figure 5.1) has now potentially been remedied. Therefore, by including this policy framework into ecological modernisation it is possible for ecological modernisation to meet the social justice criterion crucial to strong sustainable development.

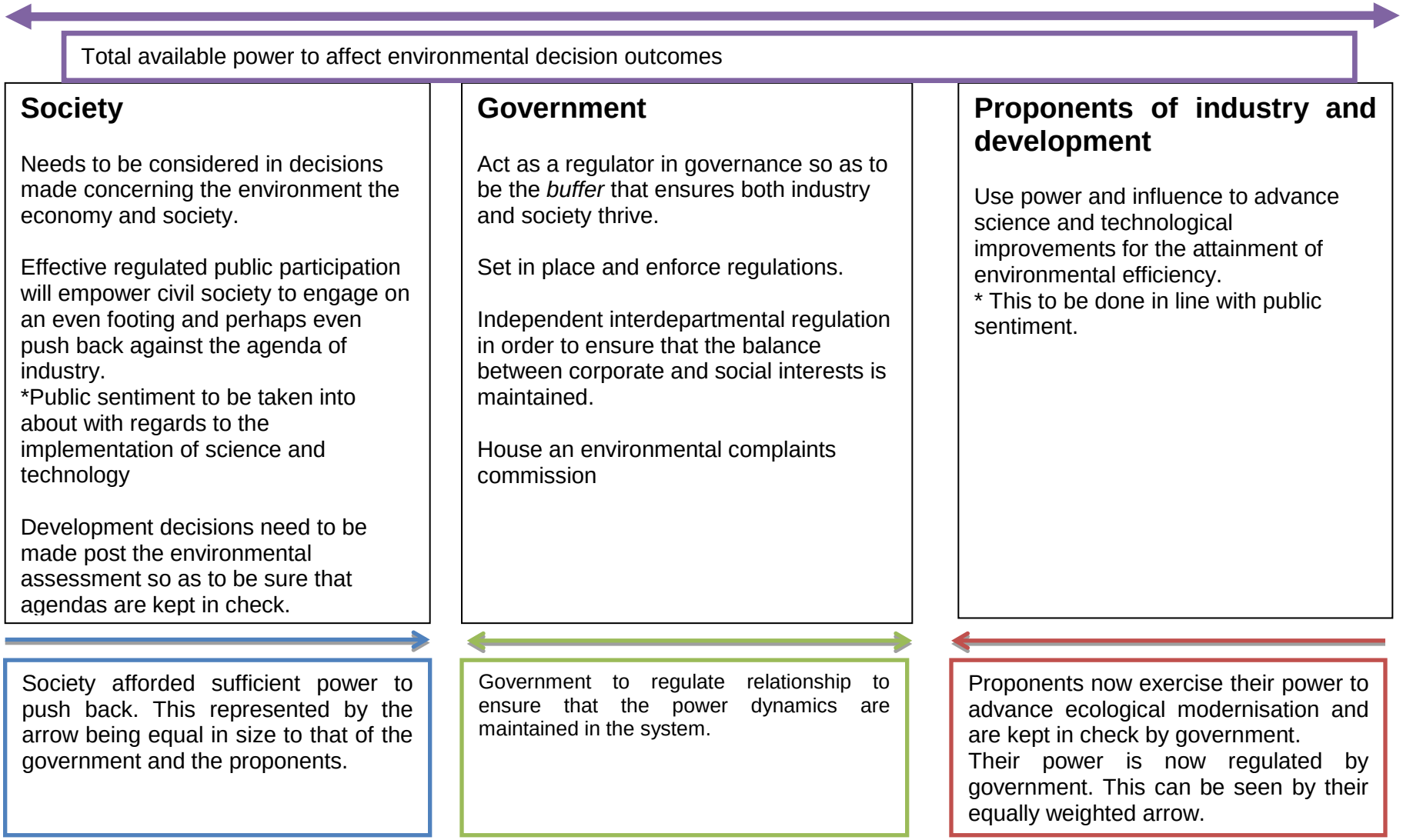


Figure 5.4: A visual representation of what environmental governance should look like (Based on fieldwork notes, 2015).

Table 5.1: Environmental justice policy framework for ecological modernisation

Governing development: including environmental justice in ecological modernisation	
The economy, the environment *and* society are to be viewed as integrated spheres where trade-off are not ideal	
Prevention of environmental injustices is far better than remediating injustice	
Internalise the costs of injustice into the costs of production	
Development decisions made post environmental assessments	
The polluting party pays for any social impacts	
There should be the promotion of science and technology to achieve justice: technological advancement and absorption should be done in line with public sentiment (public participation)	
Effective and meaningful public participation is essential	
A guide to public participation: criteria to be included	
Involvement of all interested and affected parties from inception. These interactions, and all decisions made, should be public.	• This participation should not be coerced or intimidated • The community should be allowed time to speak • Community input should be weighted in decision making • Community holds the right of refusal
Make the engagement accessible	• The engagements should be held at various times of the day • These engagements should take place in an accessible location or transportation should be provided at the cost of the proponent • Adequate advertising in places that the community actually gather (will require a case by case analysis)
The process should be so well Informed	• Society should be given access to accurate information • Full transparency is required from the proponent • All information provided to the community should be digestible and in an appropriate

	language • Society should be given access to information prior to the meeting

Government to regulate the EIA process from start to finish	• The state is to capacitate upskilling in governmental departments to achieve adequate regulation
	• Government to elect environmental impact practitioners at the cost of the proponent
	• Community consultant or mediator appointed by government and paid for by the proponent
	  o The communities concerns must be dealt with by the consultant to the satisfaction of the community consultant
	• Adequate time must be allocated for the process
	  o To be negotiated by the community consultant, the EIA practitioner and the regulator
	• Peer appraisal for environmental impact assessments

The role of government in governing all three spheres of sustainable development	
Government is to write regulations and laws into policy and ensure enforcement (enforce the internalisation of costs both environmental and social)	
Independent interdepartmental regulation is necessary (equal weighting of departmental power)	
Government to ensure compulsive proactive disclosure by industry on pollution and the impacts thereof	
Government is to house an environmental complaints commission	

(Source: based on analysis of fieldwork material, 2015**)**

5.3. Ecological modernisation, environmental justice and energy governance in a developing world context

Environmental justice in South African energy policies and Acts is what is under review here. It is here that the discussion will revolve around identifying whether South African energy production can attain to the to the goals of all three aspects of sustainable development, through using ecological modernisation with the embedded environmental justice framework. This will be achieved through analysing energy policies and Acts for any evidence of justice or any of the aspects of the framework presented earlier. Ultimately the argument can be made that, if little to no recognition is made of any of the concerns and solutions as raised by civil society participants, then the introduction of the environmental justice framework as presented in the previous section, will be beneficial. In ensuring that energy production in South Africa can attain to the goals of all three aspects of sustainable development using ecological modernisation. Here we are addressing the first aim and the second objective of the study.

An astounding fact is that, of all of the policies and Acts reviewed, only one contained the word 'justice'. Some, as will be seen below, did come to mention the social sphere of sustainable development, but did not explicitly acknowledge that justice or environmental justice was something the document, and governing strategy outlined therein, sought to address. The NEMA was the only document to do such. The NEMA states that "Environmental justice must be pursued so that adverse environmental impacts shall not be distributed in such a manner as to unfairly discriminate against any person, particularly vulnerable and disadvantaged persons" (Republic of South Africa, 1998, p. 18). There are two more instances in this document where justice is referred to, one is similar, but the other details that administrative justice should be pursued in all decision making.

While the words environmental justice do not appear in any of the policies reviewed and one of the Acts contains no mention, when analysed using the environmental justice criteria as discussed in the previous section, it is evident that although these policies and Acts do not necessarily overtly mention environmental justice as a necessity some of the content therein does lend itself towards the attainment of justice. The content of these policies and Acts has been reviewed for such instances and the results thereof are discussed here.

The National Environmental Management Act 107 of 1998, White Paper on the Energy Policy of the Republic of South Africa, the White Paper on Renewable Energy, the Radioactive Waste Management Policy and Strategy for the Republic of South Africa, The Integrated Energy Plan for the Republic of South Africa, and The Nuclear Energy Policy for the Republic of South Africa, all acknowledge that development should encompass the social, environmental and economic spheres of sustainable development (Department of Minerals and Energy, 1998, 2003a, 2003b, 2005, 2008; Republic of South Africa, 1998). However, it is simply not enough to acknowledge that the social sphere exists and not speak to justice at all. Environmental justice is therefore a very distant thought in the minds of policy writers. However, in acknowledging the social sphere of governance, there is room for justice to be incorporated into decision making procedures. It is argued that scholars and policy writers should acknowledge this gap and push for justice to be commonplace in all policies and Acts, not just in the energy sector, but across all sectors.

As was mentioned in the previous section, one of the principles of the environmental justice framework is that development decisions should be made post an environmental assessment, this will allow for a more just and consultative form of development to take place. There is no evidence of such an understanding in any of the policies under investigation. Once again, the lack of including such principles in the country's policies and Acts points to the necessity of developing such a framework and using it to guide policies towards just outcomes.

The importance of incorporating the principle of the polluting party paying for the social impacts of development in order to achieve justice is also a key principle of the framework. The NEMA is the only document that asserts this, and is very clear with regards to its stance on this particular remedy for environmental injustice. The NEMA states that the, "costs of remedying pollution, environmental degradation and consequent adverse health effects and of preventing, controlling or minimising future pollution, environmental damage or adverse health effects must be paid for by those responsible for harming the environment" (Republic of South Africa, 1998, p. 4). The fact that the NEMA houses such a principle is promising for environmental justice in the country. However, only one of the Acts and none of the policies assert this. There is therefore potential for furthering the advancement of environmental justice in the country through incorporating this understanding. Regulation by government is essential here, and as such the necessity of housing an efficacious government is brought to the fore.

When analysing the various energy policies and Acts for Hajer's (1995) principles of ecological modernisation, three of the policies had written into them the understanding that it is far better to prevent environmental impacts rather than to remediate the impacts of degradation. This may be so, but the same understanding could not be found for environmental justice. None of these documents would detail the need for environmental injustice to be prevented all together as opposed to remediated.

Internalising the costs of environmental justice is deemed a necessary precondition for justice in the country. In the White Paper on Renewable Energy (Department of Minerals and Energy, 2003b), Blignaut and King (2002) are cited as saying that the coal fired energy industry is being subsidised, not only by the environment, but also by society. As such the policy states that it will seek to mitigate these impacts. One of the ways this policy seeks to do this is through a system based on full cost accounting. By full cost accounting the pricing policies, "will be based on an assessment of the full economic, social and environmental costs and benefits of policies, plans and programmes, projects and activities of energy production and utilisation" (Department of Minerals and Energy, 2003b, p. 26).

In terms of public participation, Hajer (1995) does not detail all the necessary criteria that would require public participation to be effective, however civil society, as can be seen in the previous discussion section, have called for such detail to be included in policy. In the policy analysis done with regards to Hajer's (1995) guiding principles, it was evident that public participation is a principle committed to in all the policies and Acts analysed. However, what is under question here is whether or not it is to the standards of civil society who have called for a just procedure. The presence or absence of these details will be discussed here.

Of the issues highlighted by civil society, very few of the prescriptions for public participation are evident in the policies and Acts. One of the main ones that seems rather concerning is the call by civil society for the community to hold the right of refusal. While this is not explicitly stated in any of the documents, that fact that the Minister holds the right of exemption means that this is not always going to be the case (Republic of South Africa, 1998). Civil society have also called for the involvement of the public from the inception of decision making, but no evidence could be found of this thinking. The White Paper on the Energy Policy of the Republic of South Africa, however, does acknowledge that the process of drafting the policy was made open and transparent to ensure effective public participation (Department of Minerals and Energy, 1998).

In each of the documents, and particularly the NEMA, which hosts majority of the criteria, there is no listing as to the particulars regarding venues and times at which these meetings are to be held (Republic of South Africa, 1998). Therefore, public participation being effective is at the discretion of the environmental impact practitioner. Furthermore, access to information is once again a topic that has not been addressed as it should, especially with regards to proponents of development and industry making information available prior to the actual consultation process. Lastly, in terms of regulation, there is no regulation of the process of public participation or the EIA as a whole, but government does have environmental management inspectors who are designated to ensure that all conditions of the NEMA are met by the proprietor once the approval has already been granted (Republic of South Africa, 1998).

Public participation, as it is written into each of these policies and Acts very much follows Hajer's (1995) simple call for public participation in his ecological modernisation policy framework. But, what is argued here is that this is not enough, and the framework developed here is evidence of this. There needs to be far more prescription and regulation of this process. Hence the call for a community consultant. The community consultant could ensure that such prescriptions, when included in all policies and Acts, will be put into practice, therefore ensuring that sustainability is not just strong in policy, but in practice as well.

Civil society commentators are keen to have environmental regulations written into policy, and not only this, but they would like to have them enforced. White Paper on the Energy Policy of the Republic of South Africa sets out to argue that there may be consideration given to the potential of special levies used to fund a regulatory agency (Department of Minerals and Energy, 1998). In addition to this the policy sets out how and where regulation would take place, namely monitoring residential air quality amongst others. The nuclear energy sector is also set to be closely regulated. While these various aspects are mentioned there are no clear regulatory standards or enforcement strategies. In addition to this, the NEMA states that the minister may make regulations on any activity that may be detrimental to the environment (Republic of South Africa, 1998). The procedures for the creation of these regulations are well listed, but the NEMA itself, does not indicate what the regulations are. Therefore regulated, *just* development is not a priority in policy. Bringing the environmental justice framework into the mix would ensure this happens, in principle at least. It would take an efficacious government to ensure it is all put into practice.

In the previous section it was discussed that civil society participants want independent interdepartmental regulation as a necessity for just sustainable development. However, the policies analysed here are only concerned with interdepartmental cooperative governance rather than with regulating each other (Department of Minerals and Energy, 1998, 2003b, 2005). Co-ordination on all levels is seen as important, not just between government departments, but also within policies, and "the various spheres of government" to ensure effective implementation of energy policy (Department of Minerals and Energy, 1998, p. 8).

This may be the case, but the state and policy writers do seem to understand the possible negative implications of having one entity with sole control over a resource and its regulation, and as such in the White Paper on the Energy Policy of the Republic of South Africa, it is acknowledged that the, "state should establish a clear difference between its primary role as a policy making and regulatory entity of the energy sector, and its secondary role as a facilitator in the supply of energy services" (Department of Minerals and Energy, 1998, p. 3). The same is true in The Nuclear Energy Policy for the Republic of South Africa, where it states that the South African Nuclear Energy Corporation will be wholly owned by the state, and the regulation of this entity will be conducted by the state as well, in the form of the National Nuclear Regulator (Department of Minerals and Energy, 2008). Here we do see interdepartmental regulation as a reality.

In the Radioactive Waste Management Policy and Strategy for the Republic of South Africa, it is clear that there is no room for interdepartmental regulation (Department of Minerals and Energy, 2005). There are eleven state entities at play in waste disposal, from various government departments to research facilities, and each has their own specific mandate. However, none of these mandates include holding any of the other parties accountable for any mismanagement of the radioactive waste produced. However, cooperative governance is deemed a priority in this policy. Therefore, in terms of just governance, there is little departmental regulation to ensure this. Once again efficacious government is lacking in that government regulation is absent, and therefore needs to be written into all of these documents.

Open and transparent decision making procedures, with access to information, was also deemed a necessity for justice. In the NEMA, where one would expect to find explicit statements regarding access to information, and the liability of polluters to disclose such information, there is rather little said. One of the principles of NEMA is that decisions, "must be taken in an open

and transparent manner, and access to information must be provided in accordance with the law" (Republic of South Africa, 1998, p. 18). That is the extent to which access to information is mentioned. Under the heading "Access to environmental information and protection of whistle-blowers" there is no details as to how access to information is to be gained, rather the section is mainly dedicated to elaborating on the protection of whistle blowers under a prescribed set of conditions (Republic of South Africa, 1998, p. 73).

Additionally, there is no emphasis on enforced disclosure. The White Paper on the Energy Policy of the Republic of South Africa details governments willingness to make information transparent and accessible, however accessibility is limited to the public's ability to afford the associated cost, and the imperative that the information made available does not compromise legitimate commercial interests (Department of Minerals and Energy, 1998). In all the other documents under review here there was no mention of access to information or enforced disclosure by industry. It is evident here that proactive and compulsive disclosure that could potentially lead to justice is not a policy principle given much weight in energy governance. Ultimately what is needed here is what civil society have requested. Namely, that there be an environmental complaints commission where society at large can go and voice their concerns when environmental injustices are enacted. In all policies and Acts analysed here there is no mention that this is even a possibility.

As identified earlier, all the policies and Acts under evaluation here have clear earmarking's of scientific and technological advancements being the hallmark of governments progressive thinking. However, there is no real clear indication that scientific advancement should be done in a bid to attain justice, and be carried forward in line with public sentiment. The only time at which public sentiment can come into play is during the environmental impact assessment where the location of the development is under discussion. This is perhaps too late a time to start contemplating public sentiment as time and money have already been invested in the advancement of technologies.

Therefore, whilst justice as a whole is not mentioned in energy policy there is little evidence of subliminal indications that procedures leading to justice, as called for by civil society, is a priority overall. The extent to which this is the case is summed up in Table 5.2, where it can be clearly seen that while these policies and Acts, aside from the NEMA, make no mention of justice, upon closer investigation, there are only some guiding principles for justice evident. The evidence for

even this is scarce and cannot be taken as any indication of governments commitment to justice. In Table 5.2 each of the overarching environmental justice policy principles that have been worked into the framework are listed in the first row. A tick in the corresponding policy or Act block indicates the presence of this principle in the respective policy or Act. A cross indicates the absence.

Table 5.2: Presence of environmental justice principles in energy policy

	White Paper on Energy Policy	White Paper on Renewable Energy	Nuclear Energy Policy	Integrated Energy Plan	Radioactive Waste Management Policy	National Environmental Management Act	National Nuclear Regulatory Act
Economy, environment and society are integrated	✓	✓	✓	✓	✓	✓	✓
Prevention of environmental justice is better than remediation	X	X	X	X	X	X	X
Internalise the costs of environmental injustice	X	✓	X	X	X	X	X
Development decisions made post environmental assessment	X	X	X	X	X	X	X
Polluting party pays for social impacts	X	X	X	X	X	✓	X
Promotion of science and technology for the attainment of environmental justice. Technological advancement should be done in line with public sentiment	X	X	X	X	X	X	X
Effective and meaningful public participation	X	X	X	X	X	X	X
Write regulations into policy and enforce them	X	X	X	X	X	X	X
Independent interdepartmental regulation	✓	X	X	X	X	X	✓
Ensure compulsive proactive disclosure on pollution	✓	X	X	X	X	✓	X
House an environmental complaints commission	X	X	X	X	X	X	X

(Source: based on policy analyses, 2015**)**

The unique third world context in which this research has been undertaken has brought to light the importance of initial development in these countries. As such ecological modernisation is not being applied in a post-development context, but in a context in which development has yet to occur. In this context then promoting ecological modernisation with an element of environmental justice would, in the long run, ensure sustainable development as issues are addressed right from inception.

Energy governance has been analysed in this study through the consideration of numerous policies and Acts. It is argued here that implementing this framework in energy policy, in a developing country such as South Africa would be appropriate. South Africa, as a developing country, still needs to maintain a degree of justice even though there is a strong need for development to occur. While none of the policy principles in the environmental justice policy framework mentioned above limit the scope for development there is no friction between economic growth, environmental protection and environmental justice.

Consideration, must however, be given to the fact that implementing such a framework would possibly force government to consider renewable energy far more seriously. Coal based electricity generation currently dominates electricity generation, and as acknowledged in the White Paper on Energy Governance this is by no means an appropriate from of energy production given the environmental and health implications thereof (Department of Minerals and Energy, 1998). In light of this, it must be argued that while this framework does not precipitate an antagonistic relationship between development goals, society and the environment it does push for development to be done in light of justice. Therefore, in the short term there may be a hold on development as energy generation is switched from coal to renewables, this arguably not ideal for a developing country, however the sustainability of an economy driven by renewables would be far greater than that of coal.

Through the above analysis of South Africa's energy policies it is clear that justice has not been a dominant guiding principle in the writing thereof. By including the environmental justice framework developed in this study this could be amended, potentially taking South African governance from weak to strong sustainability. It was pointed out here that in light of the fact that South Africa is a developing country, and the fact that this framework seeks to address environmental injustices before they are perpetuated, using this framework as a guide to guide policies that will inform developmental decisions from their inception is a powerful motivation for

its inclusion. Rather than waiting for post-industrialization to promote ecological modernisation to address injustices this will be done during industrialization, while South Africa is still developing. Ecological modernisation with this embedded framework is therefore arguably appropriate for adoption in this context. However, without the environmental justice framework development decisions, as have been evidenced in South Africa, side-line social concerns, and strong sustainability is unobtainable.

5.4. The appropriateness of the developed framework for energy policy and practice in South Africa: A civil society perspective.

So far this analysis has used the views and opinions of civil society to build an environmental justice policy framework for ecological modernisation. Energy policies have been analysed and have shown to be lacking in terms of incorporating these principles of justice. Therefore, it was argued that incorporating such principles would, in theory, take South African energy policies from weak to strong sustainability. Members of civil society who are actively involved in the energy sector were sent the framework and four simple questions were asked to investigate whether the participants feel it would be appropriate to incorporate this framework into energy policy, and whether or not they would amend anything. This was most useful as it gave participants the opportunity to view what other participants had said and make comments on each principle. Their analysis and critique of the framework is presented here.

At the outset one respondent noted that the success of policies or strategies depends entirely on political will to enforce penalties for noncompliance. Therefore, this respondent stressed the need to have policies that are legally binding. It was stated that, “policies exist in vain if not legally enforceable” (Pers.com, 2016a). A further participant felt that the framework would definitely enhance the efficacy of core environmental principles, however political will was once again cited as a concern, and this in conjunction with the funding needed to implement each of these principles. Another participant, along exactly the same line of reasoning, argued that, “you need to have not just policies included, but these must be addressed through the governance instruments that arise out of these policies – the laws and regulations. Without these being clearly set out the system is set to fail for the inevitable reality that power – political and economic – will trump purported policy or promises when push comes to shove. And it usually does come to shove when money is involve” (Pers.com, 2016b). Once again political will is an

essential component for the success or failure of ecological modernisation and environmental justice implementation.

One of the respondents, in analysis of the framework, pointed to a potential issue that could be rooted in a disempowered community. The respondent noted that, often times the community where the development is to take place is characterised by many unemployed people and developers use the promise of jobs to ensure community buy-in. What the participant calls for is "unrealistic expectations regarding employment (recruitment) to be sensitively handled, ensuring the maximum use of local labor and taking cognizance of the fact that many unskilled workers will be expecting to find employment" (pers.com, 2016c). The community consultant here would need to ensure that expectations regarding employment, and any benefits promised are reasonable, and are understood realistically by the host community.

It must be stated here that there was a concern raised by one participant with regards to the community consultant and the EIA practitioner. This respondent acknowledged that an attempt has been made to address the power disparity that exists between the proponent and the EIA practitioner by having government make the appointment. However, the respondent goes on to say that the proponent will still have access to the practitioner, and therefore will still have some influence over the practitioner and the decision making process. Again the respondent acknowledges that an attempt has been made to further address this through the use of a community consultant, however the participant states that there is a concern of which department will appoint the community consultant. A department with a vested interest in mining will not necessarily appoint a community consultant that will do what is in the best interests of the community. Here again political will and the desire to have the communities best interests at heart is a stumbling block to achieving justice. This participant thought that the best way to avoid these power disparities was for the community to appoint their own consultant. Another participant argued that it should be government in collaboration with the community who gets to decide on who the community consultant should be. A collaboration between government and the community is the middle ground between what was originally proposed by the participants and this new proposal, hence the framework was adapted to this.

One participant was adamant that the inherent power disparities between the communities and the proponent need to be addressed further, but did not provide any means to do this. This participant goes further to state that, "only if the community has the power to veto the process

can it be truly independent" (Pers.com, 2016d). This, however, is already a principle enshrined in the framework. In complete contrast to this another respondent was concerned that by giving the community the right to refuse there may just be a situation where companies, through incentives, get a community to refuse another companies project and accept theirs. This is a very valid point, however, if communities are looking out for their best interests this may mean that they are able to use this competition to force companies to adopt just practices in order to be the preferred candidate. Therefore, while it was a concern for one participant, it can actually be used to the benefit of the community.

One of the critiques that led to a revision of the wording in the framework came from one participant who questioned the definition of community. The respondent raised this concern as it was felt that the definition was important as "it determines who represents the community" and who gets included in the process (Pers.com, 2016d). As a result, when considered it was deemed necessary that this framework should take the all interested and affected parties to define the community. This definition was chosen as it is line with the principles of the NEMA, as well as Fraser's call for parity of participation in decision making (Fraser, 2008; Republic of South Africa, 1998).

Another edit that was made to the framework resulted from a response that detailed that the first principle should read "The economy, environment and society are integral and interconnected. This tackles the current narrative that divorces environmental from social issues and punts it as anti-development" (Pers.com, 2016e). Through the addition of this one word value is added to this principle and makes it far more rigorous. Therefore, the amendment was made. This participant was very much in favour of the idea of a consultant for all interested and affected parties.

It seems that much of the concern thus far regards the legalities and the legal enforcement of regulations. One possible way to address this was put forward by one respondent. This respondent would like an environmental court to be added to the list of principles. A court with environmental specific judges who can enforce these regulations and hold non-compliers accountable. The judicial system being independent of government also means that government can be held accountable for its actions, and therefore concern over government being a transgressor and a judge is somewhat addressed. Because this addresses the many concerns raised over the enforcement of regulations and the law it was also added into the framework.

One final comment made by one participant was that a lot of the things argued for here by civil society are already in existence in South Africa and yet we still have environmental injustice. This comment may be true, however, as discussed in the policy analysis there was very little evidence of any of these principles in the policies. Perhaps the problem is exactly that, these principles have not been written into our policies. Lastly, this participant notes that there is something missing, but they do not know what. It is more than likely that this is the case. It is possible that there needs to be far more research done to fine tune what has been worked out here. This framework is therefore open to further critique and adaptation.

Presented here (Table 5.3) is a revised environmental justice policy framework for ecological modernisation that has incorporated the concerns and criticisms highlighted by these six members of civil society. While these members were asked to critique the framework with specific reference to the energy sector, all criticisms gained are applicable across the spectrum of environmental governance, and so the framework is modified in this context.

Table 5.3: A revised environmental justice policy framework for ecological modernisation

Governing development: including environmental justice in ecological modernisation	
The economy, the environment, *and* society are to be viewed as integrated and interconnected spheres, where trade-offs are not ideal.	
Prevention of environmental injustices is far better than remediating injustice.	
Internalise the costs of injustice into the costs of production.	
Development decisions must be made post environmental assessments.	
The polluting party must pay for any social impacts	
There should be the promotion of science and technology in order to achieve justice: technological advancement and absorption should be done in line with public sentiment (public participation)	
Effective and meaningful public participation is essential	
A guide to public participation: criteria to be included	
Involvement of all interested and affected parties from inception. These interactions, and all decisions made, should be public.	• This participation should not be coerced or intimidated • All interested and affected parties should be allowed time to speak • The input of all interested and affected parties should be weighted in decision making

	• The interested and affected party holds the right of refusal
Make the engagement accessible	• The engagements should be held at various times of the day • These engagements should take place in an accessible location or transportation should be provided the cost of the proponent • Adequate advertising in places that interested and affected parties may gather (will require a case by case analysis)
The process should be so well Informed	• Society should be given access to accurate information • Full transparency is required from the proponent • All information provided to the community should be digestible and in an appropriate language • Society should be given access to information prior to the meeting

Government to regulate the EIA process from start to finish	• The state is to capacitate upskilling in governmental departments to achieve adequate regulation
	• Government to elect environmental impact practitioners at the cost of the proponent
	• There must be a consultant or mediator appointed for the interested and affected parties. This consultant should be appointed by government in collaboration with the interested and affected parties. The consultant should be paid for by the proponent.
	  ○ The concerns of interested and affected parties must be dealt with by the consultant to the satisfaction of these parties.
	• Adequate time must be allocated for the process
	  ○ The amount of time needed is to be negotiated by the consultant for the interested and affected parties, the EIA practitioner, and the regulator
	• Peer appraisal for environmental impact assessments is a mandatory requirement

The role of government in governing all three spheres of sustainable development
Government is to write regulations and laws into policy and ensure enforcement (enforce the internalisation of costs both environmental and social)
There must be an environmental court established to ensure enforcement of these laws and to hold non compliers accountable.
Independent interdepartmental regulation is necessary (equal weighting of departmental power)
Government is to ensure compulsive proactive disclosure by industry on pollution and the impacts thereof
Government is to house an environmental complaints commission

(Source: based on analysis of fieldwork material, 2015**)**

5.5. Sustainable development through ecological modernisation and environmental justice: bridging the divide

The first objective of this research study was to attempt to address environmental justice concerns as they relate to ecological modernisation and sustainable development in a bid to make inroads into achieving social justice, and ultimately, hopefully, strong sustainable development. Mol et al. (2014) argue that the failing of ecological modernisation, as a means to sustainable development, is in its failure to incorporate such understandings, and therefore theorists should start engaging with issues of justice, power and globalisation. This section of the discussion seeks to address the third objective posed in this thesis, which is whether or not including an environmental justice element into ecological modernisation would help to incorporate the social sphere of sustainable development into ecological modernisation, thereby making ecological modernisation a stronger pathway to sustainability.

Gouldson and Murphy (1997) have rightfully pointed out that the interests of government and industry are too similar to allow for any meaningful policy restructuring to effect change. It has been found here that these similar interests have played a fundamental role in limiting the inclusion of societies needs and concerns into the mix of development concerns. While the framework above is designed to do just this with regards to achieving environmental justice it would be severely limited if government is not willing to properly and effectively govern capital in the best interests of the society it is mandated to protect. Political will is therefore a huge component of achieving environmental justice and such a will cannot be enforced through any

policy or Act. As is the case with South Africa pollution laws which are often exceeded through a lack of political will to enforce them.

Addressing this lack of political will is a conundrum in the South African context. Civil disobedience is one of the ways in which South African society have expressed their disdain at the lack of political will and proper governance (Allsobrook, 2015) . This fits in well with ecological modernisation theory. At present the state of the South African environment is in decline and increase in civil disobedience on this, a potentially unifying concern, could potentially see government forced to reconsider its political will in order to maintain power (Allsobrook, 2015).

Hajer (2009) has argued that in terms of cultural politics, as they relate to ecological modernisation, that social scientists need to look into ways that behavioural patterns can be modified in order to address the 'anti-ecological' cultural patterns in society today. However, it seems that what this research has brought to the fore is the fact that it is not society that is necessarily anti-ecological, but rather the governing authorities and proponents of development and industry. It is important therefore, that the culture of capital and government be studied and an understanding gained on how to address the anti-ecological culture that exists amongst these two powerful stakeholders. Therefore, this framework aids to bring environmental justice into the mix by essentially empowering society in decision making processes that govern development, but all this would be rendered toothless if the culture of government and the proponents of development and industry is not addressed as well.

In the existent literature on ecological modernisation, Huber (2009) remarks that concerns over social justice will motivate industry to modernise in order to maintain their image. In countries where the culture of government and the proponents of development and industry does not promote this, this statement falls short, and thus stricter means of guiding the relationship of the three stakeholders in development is needed. In addition Huber (2009) fails to acknowledge that there may be justice claims that are the very result of ecological modernisation, claims along the line of Ulrich Beck (1997) who notes that there is a concern over the safety of technologies used to promote modernisation. As such implementing this framework would help immensely in doing so, thus achieving strong ecological modernisation. Strong ecological modernisation being defined as critical and reflexive towards the use of technology and acknowledging not only the environment, but human rights as well (Christoff, 2009).

Ecological modernisation theorists are critiqued for their lack of consideration for the procedural and distributional injustices that occur through this growth centred approach to the environment and the economy (Bailey et al., 2011; Langhelle, 2000). While this is true, this framework would seek to address both of these at the outset, rather than post-industrialisation as is done in the North. It would seem that this framework would be most effective if used pre-development, but may be found to be limited in addressing distributional injustices that are already in existence in the country. This, therefore, limits the potential gains that can be made for strong sustainability. The true impact of introducing these policy principals can only really be understood post its implementation. It is acknowledged here that this framework may not be all-encompassing, and therefore limited in addressing the many environmental justice claims, but it is a base from which to start understanding how to incorporate elements of justice into ecological modernisation thinking. It is thought that through the addition of this environmental justice policy framework that the issues raised by these critiques of ecological modernisation can start to be addressed. The means by which such issues are addressed through this framework will now be discussed.

At the very crux of sustainable development thinking is the notion that the economy the environment and society be seen as integrated spheres of governance. As noted earlier, Agyeman and Evans (2004), see policy as a means to practice environmental justice by guiding decision makers. Policy therefore is an important tool for just governance. Likewise, ecological modernisation uses policy as a means to guide decision makers and implement the process of ecological modernisation. A policy framework that can be used to achieve both of these would therefore be ideal. Given that ecological modernisation favours the integration of the economy and the environment in policy, the addition of the social sphere for the attainment of justice would be advantageous.

As can be seen in the empirical evidence, mixed opinions exist amongst civil society as to the degree to which social concerns are integrated into environmental policy and decision making. For majority of the respondents however, the integration is inadequate, and at times the two agendas are seen to be at odds with each other. In some instances social concerns will outweigh concern over the environment. In terms of ecological modernisation and sustainable development, South African policies and Acts, as they currently are, must be seen as weak and limited.

The policy framework above addresses this concern by forcing government to acknowledge that within governance strategies it is important to place equal emphasis on the social sphere of governance. It does this by proposing that at all times the environment, the economy and society be seen as integrated spheres in governance and one agenda may not be pushed at the expense of any of these. As such this approach will ensure that governance strategies based on ecological modernisation, at their very core, are stronger in approach to sustainable development.

For ecological modernisation and environmental justice to be successful it is essential that government regulate industry for the betterment of the environment (Jänicke, 2008). This study would add for the justice of society as well. Government has a responsibility to do this as it is their mandate; they are elected to serve on behalf of the people. Civil society identify this, as noted by one participant, as a necessary component, as industry does not act in the best interests of society and the environment, but rather in the best interest of capital accumulation, and as such self-regulation, bringing about environmental justice, is not just unlikely but improbable as well. Government collusion with corporates has made this a challenging endeavor, where exceeding pollution limits continue to go unchallenged, exemptions to pollution taxes are given, and industries are held to no standard enforced by government. These main concerns brought up by civil society are not new. This challenge is not new to the literature either as Deutz, (2014) has already identified this as an area of concern, noting that governments who are aligned strongly with capital will very seldom intervene on behalf of labour. In South Africa this extends to the environment and host societies. As such regulation is weak at best and hinders the ultimate goal of justice and strong sustainable development.

At present it is not hard to see that South Africa has embraced ecological modernisation, and the environmental justice implications thereof are rife. Whilst government continues to collude with the proponents of development and industry for the development it so desperately desires, it is an ineffective regulator unwilling to intervene on behalf of the society it has been elected to protect. The challenging endeavour for economic growth in a developing country is acknowledged, but it is necessary that the thinking be shifted to include the environmental sphere of sustainable development, and that significant efforts be made to include the social and environmental justice sphere far more vigorously. The argument could be made that in pushing for development, that could potentially drive job creation, government is looking to

include the economic needs of society within its agenda, however a job for a person too ill to work would be of no use.

Making development decisions post environmental assessments being done means that the social and environmental spheres of the sustainability equation have a far greater chance of being effectively considered in the development agenda which will ultimately promote strong sustainability. In conjunction with this, to further strengthen ecological modernisation, it is imperative that social costs, like environmental costs, be included in the costs of production so as to dissuade industry from polluting and ensure that industry seeks alternative cheaper more efficient means of production.

Even though ecological modernisation is optimistic about the role state regulation can play, it is mute on the potential injustices that could occur when the state is so vested in development itself. Government is often times the transgressor and the judge in cases of environmental injustice. It has been noted by civil society that industry is incapable of self-regulation, but so is the government. When the government owns a corporate entity that infringes on regulations there is no recourse. As such regulating the government, or regulation within government, becomes necessary for achieving justice.

In a bid to address this critique the policy framework above (Figure 5.3) not only calls for greater regulation in numerous forms, but also calls for action to be taken in regulation. Including interdepartmental regulation is one way to ensure that environmental justice is attained by ensuring that no one department has the monopoly over decision-making that will be detrimental to any sphere of sustainable development. For example the Department of Minerals and Energy granting mining licenses for economic gain without the approval of the Department of Environmental Affairs. Maintaining interdepartmental regulation will ensure that all spheres of sustainable development are given due consideration in development.

In terms of increasing governments regulatory role in order to act as a buffer and maintain the balance of corporate and social power in environmental decision making, government is also to regulate and enforce the full compulsive proactive disclosure of information by industry. It is through this that society can make well informed and empowered decisions. It is, however, not enough that policies allude to regulations, they must incorporate the actual regulations and strategies themselves. Therefore, by balancing out the power disparity that exists in decision

making, there is the potential for more just decisions to be made, and therefore this framework can aid in moving ecological modernisation from a weaker approach to sustainable development to a stronger one. In addition to this, by housing an environmental complaints commission government can monitor and regulate industry far more effectively, and can in fact act on behalf of the society it is meant to govern. This is a further method by which concern for the social sphere of governance can be incorporated into ecological modernisation potentially making it stronger in approach to sustainability.

A further form of regulation that is required by government is in the realm of public participation. Hajer (1995) has called for public participation as a means to promote ecological modernisation and this can also be used to promote environmental justice as argued by civil society. As a precondition and policy necessity for Hajer (1995) public participation is an essential component in environmental decision making. Therefore, the current system of public participation in South Africa was investigated as it relates to ecological modernisation and environmental justice. Public participation is, for all intents and purposes, a shadow of what it is meant to be, there are numerous problems as highlighted by civil society that render the process toothless. Once again it is issues of procedure that hinder justice in South Africa. The policy analyses conducted do show evidence that government is committed to public participation in the sphere of decision making, however there is very little prescriptive detailing how this should occur, and this has lead to the many criticisms raised by civil society with regards to environmental justice as it relates to public participation in South Africa.

Power disparities that exist between the proponent of a development and the scientists they chose to employ relative to the host community is just one example of how procedure can hinder the attainment of justice by crippling informed decision making. This issue of power once again fits in squarely within the work of Young (2011) on social justice. Issues of power need to be addressed if social and environmental justice is ever to be attained. There are further issues that highlight the importance of proper regulation over corporates by governments. Issues such as the times of meetings, the venue and the advertisement of said meetings bring to the fore the fact that industry cannot self-regulate, but rather needs a body to regulate it in the best interests of society.

Much of the policy framework above (Figure 5.3) is aimed at addressing power disparities at play in the public consultation process. Through prescriptive nuts and bolts written into policy

and put into practice social concerns and concerns over environmental justice have a far greater chance of being taken into consideration. In doing so, such a meaningful public participation process may in fact aid in the attainment of justice, and therefore including these measures in this framework will allow for ecological modernisation to once again be stronger in approach to sustainable development.

As it stands there are some concerns with regards to the environmental justice implications of technological advancement, and how this may negatively impact both the environment and society. Technological advancement is, however, one of the fundamental guiding principles of ecological modernisation. Therefore, in a bid to address this concern the framework above has called for all technological advancement to be done in line with public sentiment. Thus the potential for dangerous technologies to be put to use is lessened and stronger sustainability is closer at hand. Once again through effective public participation this can be put into practice.

In light of the discussion above it must be concluded that the framework developed through the analysis of empirical evidence gained in this study can in fact be used to strengthen the sustainability approach taken by ecological modernisation. By including the voices of society in the conversation, increased environmental sustainability will also be a positive gain, as societies interests in attaining environmental justice often lie in the maintenance of a pristine environment. Therefore, it is highly recommended that this framework be used in guiding policies and governing strategies based on ecological modernisation.

In a completely different line of argument, the introduction of this framework could prove useless in affecting any change in bringing about environmental justice in ecological modernisation. Blowers (1997) asserts that the distributional inequalities that are the result of class divisions in society, an implicit consequence of a capitalist system of governance, will not necessarily be abated, but only steeped. Some of the civil society respondents who formed part of the research group here are of the same opinion and posit that the only acceptable way to achieve social and environmental justice is through a social revolution. This in fact would mean a denial of the very assumptions that underpin ecological modernisation, and would therefore lead to its dismissal as a guide to sustainable development. In view of this argument, it must be accepted that no nuanced approach to ecological modernisation would ever be useful in meeting the ideal of social justice in sustainable development.

5.6. Looking at the wider implications

Thus far it has been well established that the context of this research study, and the arguments made there from, are made within the developing world. However, the fourth research question posed by this thesis sought to identify some of the wider implications of the findings. The developing world is not entirely unique in its desire for increased economic growth. This in conjunction with the growing global desire to see sustainability realised for the purposes of mitigating vast impacts such as climate change, makes this research and the results gained here ever more pertinent.

Ecological modernisation allows for economic growth to occur and therefore is able to meet the development desire within the developing world. The results found here could therefore help many developing nations attain strong sustainable development by following the pathway set out by ecological modernisation and achieve this in a just manner if combined with an environmental justice framework. With increasing pressure to remain competitive this may also be true in the developed countries of the North. However, concerns over environmental justice are not limited only to the developing world and therefore implementing a policy framework that curtails injustice and brings about strong sustainable development is essential in the broader global context as well. However, it is highly recommended that research be conducted into the specific environmental justice concerns faced by developed nations using ecological modernisation. By doing this the underlying causes thereof can be identified in order to develop a framework best suited to the context. The overall gains of including environmental justice in both the developed and developing world, whilst still allowing for development, are immense in terms of meeting social development needs and maintaining environmental standards. A strong approach to sustainability worldwide could potentially have substantial knock-on effects in terms of mitigating climate change.

5.7. Summary

The first objective of this study was to build an environmental justice policy framework for ecological modernisation. This objective was achieved through analysis of the empirical evidence gained through interviews that yielded insights from civil society. In addition to this, a

wealth of understanding was generated through several policy analyses conducted on documents that government has chosen to use in energy governance. In doing so ecological modernisation has arguably been taken from an approach that can be labelled as weak in terms of sustainable development, given its lack of social incorporation, to one that is strong by including the social sphere in environmental governance. Therefore, the potential exists to amend the disjuncture between the three spheres of sustainable governance as they are embedded in ecological modernisation.

The second objective of this study was to identify if South African energy production can attain to the goals of all three aspects of sustainable development, namely environmental, economic and social sustainability through using ecological modernisation with an embedded environmental justice framework. At present South Africa's energy policy has a great deal of ecological modernisation principles guiding the governance of the sector however there is very little emphasis, if any, placed on the attainment of environmental justice. Arguably including the elements of environmental justice, as developed here, would aid in meeting environmental justice and ultimately the social sphere of sustainable development to a certain degree. With the aid of this environmental justice framework some of the shortfalls of energy policy can be addressed and the policy as a whole can potentially be stronger in its approach to justice. Given that the framework seeks to address the disparity that exists between the power corporates and government have on the one hand and the disempowered society on the other, incorporating the framework can aid in balancing out this power disparity. However, this can only be achieved to a certain degree given that a large portion of attaining environmental justice rests on the need for a willing government to implement and regulate the practice of its policies. The culmination of this analysis is the realisation that this study has therefore, contributed to the body of knowledge on sustainable development, ecological modernisation and environmental justice, the fourth and final objective of the study.

CHAPTER SIX

Conclusions and Recommendations

6.1. Introduction

This, the sixth and final chapter of this research study, will aim to conclude the project as a whole. Firstly, this chapter will revisit the rationale for conducting this research study. Once key findings have been discussed this chapter will then be concluded by looking at some of the critical reflections of the process as a whole and providing some recommendations and suggestions for further research.

It has been shown in the literature that South Africa, a developing country, has adopted ecological modernisation as its preferred framework for governance. This has not gone unscathed as issues of injustice plague the country, and proponents of ecological modernisation have borne the brunt of these critiques being cited as unaware or unconcerned for these injustices (Bailey et al., 2011; Langhelle, 2000). Therefore, the key rationale behind conducting this research study was to understand if in fact South Africa has fully embraced ecological modernisation, and what the environmental justice implications of this adoption are. Through conducting several policy analyses on South African energy policies and Acts this was deemed to be true. The country's energy policies and Acts have a great deal of Hajer's (1995) policy principles written into them, but have very little evidence of any concerns given to principles of justice. As such South African policies were concluded as being weak in terms of sustainable development. This weakness has perpetuated itself in issues of environmental injustices that plague the country. Civil society respondents were able to identify many injustices present in South Africa, and all but one participant, who did not voice her opinion in a group interview, deemed South Africa a country plagued by injustice.

South Africa, being a developing country that has embraced ecological modernisation also provided a unique context in which to study the practical implications of this embracement. Ecological modernisation having been designed for post-industrial economies of the North has been relatively understudied in economies of the south that are still developing. Therefore, it was deemed necessary to study the implications of this adoption in country's of the south that

are still developing. If ecological modernisation is to be adopted in such contexts it is important that it be assessed for appropriateness in this context.

6.2. Key findings

One of the main objectives of this research project was to develop an environmental justice policy framework that can assist in the writing of policy and make the implementation of ecological modernisation principles socially just. The key objective in relation to this was to amend the disjuncture between environmental justice and ecological modernisation in a bid to make ecological modernisation potentially stronger in approach to sustainability. In going about this, it was imperative that an understanding be gained as to whether or not South Africa has used ecological modernisation to frame its policies. As such numerous energy policies and Acts were analysed using Hajer's (1995) ecological modernisation policy framework. It was found that South Africa has indeed used many of the ecological modernisation principles as set forth by Hajer (1995). Even though not all principles were evident in all policies analysed, when examined as a suite of documents all principles were present. Therefore, it is now understood that South Africa's present state of governance is eco-modernist.

In understanding that South Africa has in fact framed its policies using ecological modernisation it was then possible to assess the environmental justice implications thereof. Justice scholars have argued that ecological modernisation scholars are unaware or unconcerned of the environmental justice implications of embracing ecological modernisation principles (Bailey et al., 2011; Langhelle, 2000). Therefore, the desire here was gain an understanding of this. Civil society, as stakeholders in the environmental governance arena, were the ideal candidates to investigate such instances of injustice. Empirical evidence gained through interviews conducted with these members of civil society found that environmental injustices being perpetuated in South Africa are numerous. In identifying the key causes of injustice civil society were also asked to pose solutions to these causes of injustice. The key finding here was that majority of injustices in South Africa stem from a power alliance between the state and proponents who wish to promote development without due consideration for environmental justice. As such social concerns are excluded from the decision making process. It was deemed necessary that this power disparity between government and proponents, on the one hand, and society on the other be addressed. Numerous methods were proposed to do this. Two of the key means by

which to do this was to include a consultant for the community, who are understood to be all interested and affected parties, who is skilled enough to be able to help the community voice their concerns in the EIA process. A further principle needed to address injustice is to mandate government into a regulatory capacity to ensure that capitalists do not exceeded acceptable pollution limits. By doing this, and by enforcing that the polluter pays for the social impacts in a full cost accounting model, the owners of industries and development will likely reform. Blowers (1997) argued that by making pollution expensive, ecological modernisation views the economy as the most effective way of reconciling economic and environmental objectives. Here the same is true, by making social injustices far too expensive the market economy is the best way to achieve justice objectives. The sum of this investigation was a list of criteria that need to be present in an environmental justice framework for ecological modernisation.

With framework in hand it was then deemed necessary to understand whether its implementation would aid the theory of ecological modernisation in meeting the social justice criterion crucial to sustainable development. Here further analysis was conducted from the empirical evidence gained from civil society. The key finding here was that all of these principles, if written into polices, would amount to nothing without the political will from government to implement these principles. In theory, therefore, it is possible to embed social concerns within the theory of ecological modernisation, and thereby theoretically ensuring that ecological modernisation becomes socially just. However, political will cannot be written into policies or principles for policies, and therefore this is one of the major limiting factors for ecological modernisation as a whole, not just for justice, but for environmental preservation as well.

The second objective of this research study was to identify if South African energy production can attain to the goals of all three aspects of sustainable development, namely environmental, economic and social sustainability through using ecological modernisation with an embedded environmental justice framework. South Africa's energy policies and Acts were once again analysed for evidence of any of the principles of environmental justice as developed in the policy framework. It has been found that principles of justice are not a key focus for government in policy, and therefore this can defiantly be amended through the addition of this framework.

In addition to this, civil society were sent a copy of the developed framework and their analysis of the framework as it relates to energy production was rather useful and resulted in a few

amendments being made to the framework. For the most part the framework was deemed useful, but concern was once again raised as to whether it would be enough to address the power disparity that exists in environmental decision making. This was addressed by including the possibility of an environmental court as a governing mechanism. The judicial system being independent of the government of a state may be the best way to address this. Of concern, once again, was a lack of political will being a major stumbling block for the implementation of such principles. Therefore, it can be concluded that, in theory, this framework potentially able to amend the disjuncture between the economy, the environment and society in a bid to bring about strong sustainability. It is therefore in theory an appropriate approach to environmental governance in the developing world.

This research having been conducted in a developing world context, in a country unique in its history, has provided a useful basis from which discussions over the possibility to amend the disjuncture between the environment, the economy and society using ecological modernisation can start to be had. In the wider context this thesis has added a wealth of considerations previously undocumented amongst ecological modernisation scholars and the literature. It may aid to allow for justice to become a possibility in developing countries as they continue along the pathway of development rather than only considering reform once they are post-industrial nations. This would ultimately allow for strong sustainable development to be a possibility in these nations.

6.3. Recommendations and further research

From the results found though this research study both practical and theoretical recommendations can be made. Theoretically, this framework and the results gathered here are only an introduction of justice principles into the theorising of ecological modernisation. It is therefore recommended that they be considered as a possible means by which to address the disjuncture between the economy, the environment and society. However, it is acknowledged that this framework is only in its infancy stages, and more research needs to be conducted into the possibility of amending this disjuncture. Additionally, more research is required in order to understand whether this framework is generic, as is Hajer's (1995) ecological modernisation framework, or whether it is context specific. If context specific then it is argued here that more theorising needs to be done in the developed world context.

In terms of the practicality of the findings of this research, this framework was designed to be used in the practical implementation of ecological modernisation. It is hoped that through practically embedding these principles in policies, South Africa can potentially begin to move towards strong ecological modernisation and sustainability. However, a very real limitation to the usefulness of this framework in its practical implementation is a lack of political will. Amending the disjuncture between the economy, the environment and society in policies will be of no use if government is not willing to implement these principles in practice. For further research it is recommended here that research be conducted into understanding how, if possible, political will can be encouraged in a country such as South Africa, that is in need of development, but also justice.

6.4. Conclusion

By engaging with the discourses of both ecological modernisation and environmental justice an approach of critical rationality was taken. Critical rationality posits that when you have a thesis such as ecological modernisation and an antithesis such as environmental justice the synthesis of the two will be the most rational way forward (Benton and Craib, 2001). This research has sought to apply this to the very real context of environmental injustice in South Africa, that has been perpetuated in a country that has, by and large, framed its policies on principles of ecological modernisation. As such a framework of environmental justice principles has been developed. These principles are to be used in conjunction with Hajer's (1995) framework of ecological modernisation policy principles. The synthesis of these two will mean that ecological modernisation in practice will hopefully be stronger in its approach to sustainability.

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Appendices

Appendix 1: Information letter provided to participants

School of Geography, Archaeology and Environmental Studies

Private Bag 3, Wits 2050, South Africa Enquiries: **GEOGRAPHY:** TEL: +27 11 717-6503 •
ARCHAEOLOGY: TEL: +27 11 717-6045 •
http://www.wits.ac.za/geography/

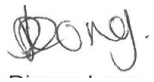
Dear Sir/Madam,

By way of introduction, my name is Dianne Long, and I am a doctoral student at the University of the Witwatersrand currently undertaking a research project which is aimed at investigating the extent to which environmental issues are incorporated in the development and policy planning arena in South Africa. The study is particularly, interested in investigating the opportunities and challenges that may exist in the development of an environmental policy that may facilitate the attainment of sustainable environmental management and development in South Africa. This letter, therefore, serves to request your participation in the research process. Participation will require you to partake in an interview which will take between 30 to 45 minutes. The interviews will be conducted by me either on a face to face basis or telephonically depending on your location at the time of the interview. Should your organisation be involved in energy governance related processes/issues, I may request a second interview in order to aid me have a clear understanding on factors affecting energy governance in South Africa and how this affects the energy policy.

Please note that there is no remuneration for your participation in the research process. Participation is voluntary and if at any time you wish to withdraw or stop the interview you may do so. Additionally, if you wish to not answer a question for any reason you are welcome to decline to answer it. Your anonymity in this process can be guaranteed as your name or any other details that can be attributed to you will not be written down or mentioned. During the interview, I may require the use of a digital recorder to capture the information correctly and for referral purposes only. But its use will be subject to your permission. The information that you will provide will be used for academic purposes only. The information will be securely stored in a protected password computer and all hard copies will be stored in a lockable cabinet and only I and my academic supervisor Dr. Danny Simatele will have access. Should you wish to have a

summary of the final thesis, you may request a copy and it will be sent to you via an appropriate mode of postage. Should you have any queries about the research you are welcome to contact me on 072 606 32 55 or (011) 717-6502 or at 0613222j@students.wits.ac.za. Alternatively you may also contact my research supervisor Dr. Danny Simatele on (011) 717-6515 or Danny.Simatele@wits.ac.za.

Yours sincerely,



Dianne Long

Appendix 2: First round interview questions

Phase 1: Interview questions

Introductory questions: probing the state and potential of eco-modernist governance theory for civil society

1) What types of environmental concerns does your organisation deal with?

2) How much do you feel you contribute to the governance of the environment?

None		Little		Fair amount		A lot

3) In what ways do you feel, you as a civil society organisation, contribute to the process of governance?

4) How could you be further involved in governance?

5) In what ways have social concerns (example: providing adequate housing and sanitation among others) been given attention in environmental governance?

    a. Would you consider this to be adequate?
    If no then ask:
        i. How would you like to see social problems incorporated into environmental policy?

6) Would you be in a position to comment on how South Africa's decision to follow a capitalist market economy has influenced environmental justice concerns?

7) How do you feel the problem of pollution should be dealt with from a governance/policy perspective?

Looking into environmental justice concerns

8) In terms of environmental justice would you consider South Africa an equal society?

9) If no then ask:
    a. Could you please elaborate on some of the areas in which you think we are an unequal society?

10) Would you be able to elaborate on what you feel the most prominent environmental justice concerns are for South Africa?
    a. What is the cause of each of these concerns?
    b. What do you think could be done to avoid or alleviate each of these problems?

    (If any of the questions below are brought up in answer to question 11 they will be left out).

11) Could you comment on how you, as a member of civil society, feel about an increased reliance on science and technology, to both prove environmental degradation and invent solutions?

    If negative in response then ask:

    a. Could you elaborate on the reasons for your position?
    b. What do you feel could be an alternative to the use of science and technology?

12) In your opinion what would an ideal public participation process consist of?

13) How would you describe the process of public participation in South Africa?

    If negative in response then ask:

    a. What do you feel could be done to make this process effective?

14) In your opinion can adequate public participation solve environmental justice concerns?

15) What else can be done?

16) Do you think it is important for government to act as a regulator in environmental governance?

Appendix 3: Follow up questions

Dear Participant,

Below is a table of environmental governing principles that have been developed with the aid of numerous members of the civil society. These principles have been developed as a guide for policy writing. It is hoped that each of these principles will be written into policy, ultimately to guide the governing of the environment by the state. Below the table are four short questions. Your thoughts on each of these will be much appreciated.

Governing development: including environmental justice in ecological modernisation	
The economy, the environment *and* society are to be viewed as integrated spheres where trade-off are not ideal	
Prevention of environmental injustices is far better than remediating injustice	
Internalise the costs of injustice into the costs of production	
Development decisions made post environmental assessments	
The polluting party pays for any social impacts	
There should be the promotion of science and technology to achieve justice: technological advancement and absorption should be done in line with public sentiment (public participation)	
Effective and meaningful public participation is essential	
A guide to public participation: criteria to be included	
Involvement of all interested and affected parties from inception. These interactions, and all decisions made, should be public.	• This participation should not be coerced or intimidated • The community should be allowed time to speak • Community input should be weighted in decision making • Community holds the right of refusal
Make the engagement accessible	• The engagements should be held at various times of the day • These engagements should take place in an accessible location or transportation should be provided at the cost of the proponent • Adequate advertising in places that the

	community actually gather (will require a case by case analysis)
The process should be so well Informed	• Society should be given access to accurate information • Full transparency is required from the proponent • All information provided to the community should be digestible and in an appropriate language • Society should be given access to information prior to the meeting

Government to regulate the EIA process from start to finish	• The state is to capacitate upskilling in governmental departments to achieve adequate regulation
	• Government to elect environmental impact practitioners at the cost of the proponent
	• Community consultant or mediator appointed by government and paid for by the proponent
	  o The communities concerns must be dealt with by the consultant to the satisfaction of the community consultant
	• Adequate time must be allocated for the process
	  o To be negotiated by the community consultant, the EIA practitioner and the regulator
	• Peer appraisal for environmental impact assessments

The role of government in governing all three spheres of sustainable development
Government is to write regulations and laws into policy and ensure enforcement (enforce the internalisation of costs both environmental and social)
Independent interdepartmental regulation is necessary (equal weighting of departmental power)
Government to ensure compulsive proactive disclosure by industry on pollution and the impacts thereof
Government is to house an environmental complaints commission

1) What do you think the implications of using these principles to guide energy policy writing, and ultimately governance, in South Africa would be?

2) Is there anything you would like to have removed from this list?

3) Is there anything you would like to have added to this list?

4) Any other comments?

Appendix 4: Certificate of ethical clearance obtained from the University of the Witwatersrand

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Long

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H15/02/11**
PROJECT TITLE	Reaching for sustainability: Ecological modernisation and environmental justice in SA energy policy and practice
INVESTIGATOR(S)	Ms DP Long
HOOL/DEPARTMENT	GAES/
DATE CONSIDERED	20 February 2015
DECISION OF THE COMMITTEE	Approved unconditionally
EXPIRY DATE	8 March 2017
DATE 9 March 2015	**CHAIRPERSON** (Professor T Milani)

cc Supervisor : Dr D Simate

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

Signature

10 / 03 / 2015
Date

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES