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COAL MINING ECOCIDE IN SOUTH AFRICA

A case study of Emalahleni, Mpumalanga

Bulelwa Nkosi

1767252

Submitted in partial fulfilment of the requirements for the degree

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Prepared under the supervision of

Prof Vishwas Satgar

Department of International Relations

Faculty of Humanities

University of the Witwatersrand

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ABSTRACT

This paper examines the relationship between carbon emissions in South Africa and the global climate crisis. South Africa is heavily dependent on coal. Coal generates electricity to households and industries thus it is central to the country's development. South Africa is committed to various climate agreements to reduce its dependence on coal, however, the realities on the ground dictate otherwise through the operation of Kusile and the building of the largest power plant to date, Medupi. There are more coal-fired plants to be built in the next few years for the sake of Eskom's longevity. This is contradictory to the climate agreements since coal is regarded as the largest greenhouse gas emitter in the world. Coal mining has negative externalities on mining communities and the overall climate. Using Marxist ecological theory, this paper will investigate how the extractive industries exploit natural resources due to capital accumulation, which hinders a just transition to a low carbon economy. The climate crisis and lack of policy implementation have led to a grass-roots approach, which aims to challenge the government and transnational fossil fuel corporations led by climate and environmental justice movements across the world including South Africa. This paper will highlight how important these movements are in dealing with the current ecological problem as they advocate for human rights and ultimately, environmental rights.

Keywords: climate change, ecocide, coal, environmental justice, extractivism, minerals-energy complex, neoliberalism.

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ABBREVIATIONS AND ACRONYMS

ANC:	African National Congress
AsgiSA:	Accelerated and Shared Growth Initiative of South Africa
BEE:	Black Economic Empowerment
BRICS:	Brazil, Russia, India, China and South Africa
CER:	Centre for Environmental Rights
CO_2:	Carbon dioxide
COP:	Conference of the Parties
CSIR:	Council for Scientific and Industrial Research
CTO:	Coal to Oil
DIRCO:	Department of International Affairs and Corporation
DEA:	Department of Environmental Affairs
DMR:	Department of Minerals and Resources
DWA:	Department of Water Affairs
EJNF:	Environmental Justice Networking Forum
GDP:	Gross domestic product
GEAR:	Growth, Employment and Redistribution
GHGs:	Green House Gases
HEJN:	Highveld Environmental Justice
ICC:	International Criminal Court
IDP:	Integrated Development Plan
IEA:	International Energy Agency
IPPs:	Independent Power Producers
IPCC:	Intergovernmental Panel on Climate Change
IPE:	International political economy
IPP:	Independent Power Producer
IRP:	Integrated Resource Plan
KW:	Kilowatt (one-thousandth of a megawatt)
KWh:	Kilowatt-hour
LTMS:	Long-Term Mitigation Scenarios paper
MEC:	Minerals-Energy Complex

MES:	Minimum Emission Standards
MACUA:	Mining-Affected Communities United in Action
NDP:	National Development Plan
NEM: AQA	National Environmental Management Air Quality Act
NERSA:	National Energy Regulator South Africa
NGOs:	Nongovernmental organisations
NIRP:	National Integrated Resource Plan
NO_2:	Nitrogen Dioxide
NUM:	National Union of Mineworkers
NUMSA:	National Union of Metal Workers South Africa
RBCT	Richards Bay Coal Terminal
RDP:	Reconstruction and Development Programme
SADC:	Southern African Development Community
SO_2:	Sulphur dioxide
Stats SA:	Statistics South Africa
UNCED:	United Nations Conference on Environmental and Development
UNECA:	United Nations Economic Commission for Africa
UNEP:	United Nations Environment Program
UNFCCC:	United Nations framework on the convention of climate change
UN:	United Nations
U.S.A:	United States of America
WHO:	World Health Organization
WTO:	World Trade Organisation

DECLARATION

To the best of my knowledge, this thesis contains work that has not been published by another scholar except where due acknowledgement has been made. The material Used in this thesis to the best of my knowledge has not been produced or accepted for an award at another university.

Signature: _____

BULELWA NKOSI

Date: _____

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CHAPTER ONE

1. Introduction

South Africa's economic growth is driven by its natural resources through the mining and extractive industries. The mining industry has been the backbone for the South African economy since the 80s with gold leading the ranks until the unfortunate -16% fall in production during the 2008 global economic crisis (Stats SA 2018). Coal became the leading player in the minerals sector since 2013 partly due to countries like China and India's demands for coal. Coal plays a huge role in the South African economy because currently, South Africa has been relying on coal for electricity generation. The country produces 224 million tons of coal per annum and therefore is one of the largest coal exporters in the world, it falls under the top ten countries that produce and export coal worldwide (ESKOM 2016). In Africa, South Africa is the only country that consumes 90% of coal for electricity generation followed by Botswana with 87% and Niger only consuming 53% for electricity generation (Benjamin 2017). Not only does coal power South Africa, but it also employs over 100 000 miners and about 50 000 coal-related jobs through the Electricity Supply Commission (Eskom) and Sasol (South African Coal Roadmap 2011).

Given all the economic benefits coal provides, it also is responsible for the high levels of air pollution in South Africa especially in the Mpumalanga Highveld (Department of Environmental Affairs and Tourism 2005). According to Llyod (2002), South Africa releases over 100 million tons of carbon dioxide (CO_2) and 1 million tons of nitrogen oxide (NO_2) annually. Such high levels of pollution cause health risks to residents in nearby communities and mine workers at large. In most cases, black people in South Africa are located in such communities due to historical geographic and population placements by the apartheid regime where the air quality exceeds recommended World Health Organisation (WHO) limits (Brugge, Durant and Rioux 2007). It has been noted that the needs and health risks of black people have been often disregarded in the pursuit of economic growth of a country. Thus the emergence of environmental and climate justice movement worldwide. Environmental and climate justice movements not only advocate for environmental security but the social inequalities brought by mining and energy corporates.

1.1 Background of the study

The coal mining and energy sector is considered as the most important industry in South Africa. The coal industry has two development contradictions firstly; it provides electricity to households, industries and creates jobs, however, whether these jobs are sustainable or not depends on the industries response to climate change. Secondly, the industry is the largest emitter of common greenhouse gases (GHG) that include carbon dioxide, methane and nitrous oxide among a few, these toxic chemicals are responsible for global warming which result to climate change. We currently live in a dilemma between the usage of fossil fuels (coal, oil, gas and petroleum) and global climate change (Judkins, Fulkerson and Sanghvi 1993). Energy-intensive economies such as South Africa, China and India rely mostly on coal for electricity generation, according to Statistic South Africa (Stats SA) coal mining and Usage will continue for the next 50 years in the South African context (Statistic South Africa 2018). Despite global climate change negotiations, commitments and mitigation measures, coal seems to be in demand internationally. Coal has played a crucial role in driving the industrial revolution hence its dominance in modern industrialisation. The global economy is heavily dependent on coal as it is argued to be the main source of ‘’cheap’’ electricity. According to the International Energy Agency (IEA), coal supplies a third of energy Usage worldwide and makes up 40% of global electricity (International Energy Agency 2017).

1.2 Problem statement and Rationale

South Africa has committed to various climate agreements to reduce its dependence on coal, the realities on the ground dictate otherwise through the expansion of coal-fired power stations such as Kusile and Medupi. Not surprisingly, coal mines are increasingly expanding in Mpumalanga and Limpopo meanwhile South Africa’s electricity provider Eskom has challenges in supplying electricity to the growing population (Earthlife Africa 2009). Eskom calling for the expansion of coal-fired power plants and the World Bank granting finance for the building of Medupi is contradictory to South Africa’s climate commitments. Evidently, South Africa is taking a different approach on the ground but on the global normative level, it has taken green steps to mitigate climate change. This is an interesting conundrum, which poses a very important question, can South Africa detach itself from this reality and how will it do so going forward?

Analysing climate change, environmental justice and human security through the field of international political economy is extremely important in international relations. Climate change is a global problem and solutions should be of national interest for every country in the world. According to (O'Brien and Williams 2016), climate change affects the global political economy, a challenge for the international community as global leaders need to finds systemic solutions for the crisis. There is a great deal of resistance with the Use of coal globally due to the impact it has on the environment at the same time, South Africa has the largest coal reserves in the world and is said to continue using coal as long as coal reserves are available (Stats SA 2018). Therefore, this study is important, with the intention to examine the relationship between carbon emissions in South Africa and the global climate crisis.

There are a number of studies that show the impact climate change will have on developing nations especially South Africa. Climate shocks are already evident throughout the country with the most recent drought that started in 2014 resulting in a water crisis in the city of Cape Town, South Africa and the Western Province at large. As a result, farmers in affected areas struggled to keep businesses afloat, food security became an issue, farmers' retrenching workers was on the rise and food prices increased which negatively affected South Africans who have been struggling to make ends meet with a weak Rand (ZAR) and dire economic conditions (Kubik and May 2018). Studying the climate crisis in South Africa is extremely important.

While South Africa's economy depends on natural resources, the neoliberal economy and its investors argue for the continuation of extractive industries. Authors like Kaplinsky (2012); Johanson and Adams (2004), argue that resources extraction has a positive impact on economic growth as it diversifies the economy and creates employment opportunities. On the other hand, environmentalists oppose the nature in which development is currently taking place. Environmentalists argue that extractive industries have a detrimental impact on air pollution, ecosystems, health and practices that lead to climate change. Economics Professor at the University of Iceland Professor Thorvaldur Gylfason stated that resources extraction has created more challenges for African nations than economic prosperity (Glyfason 2001, 847). Environmental justice movements demand the closure of extractive industries. Socialist movements are against the industries unequal distribution of labour and the exploitation of

workers. Mpumalanga is all too familiar to these problems. Mining corporations and the energy sector negatively affect the quality of air in the province and damage natural water resources, directly affecting the lives of nearby communities. These externalities, hidden by the economic output corporations offer communities through short or long-term employment contracts. It is therefore important to conduct this study.

1.3 Research question

Main research question:

How do coal mining and its externalities contribute to ecocide in Mpumalanga?

Sub-research question:

How is coal extraction contributing to the climate problem?

What forms of resistance and alternatives are emerging to coal mining and to enable the just transition?

Hypothesis

Extractive industries have a negative impact on the economy and overall climate change.

1.4 Research objectives

The paper will analyse the negative impact coal mining has on the environment and local communities. The paper also looks at government policies on climate change and energy security or lack thereof. Additionally, the paper briefly focuses on key players in the South African economy that play a role in further deepening the climate crisis through neoliberal economic strategies. Such an analysis provides a broad overview of climate politics evident in the country, in doing this; the paper will show a portion of the systems and power elements at play, and the pressures or clashes that exist between stakeholders in the economy.

1.5 Structure of the thesis

Chapter 1: Introduction

This chapter introduces the topic, which includes the background of the study, research question and objectives. The chapter provides a broad overview of coal mining worldwide and locates South Africa on the coal mining and usage map.

Chapter 2: Theory and literature review

The second chapter provides an understanding of the ecological Marxist theory together with its key concepts that explain the study. Ecological Marxist theory is utilised in this study. The theory rejects green modernisation theory as it stems from neoliberal economic structures that offer a market-based solution to the climate crisis. The relevant literature examined is broken down into three themes; climate change, ecocide and climate justice movements, this allows one to have a broad view of the current discourses in the politics of climate change and ecocide.

Chapter 3: Methodology

The third chapter explains the research methods utilised for the study. The section shows the conditions for case selections and the ethical considerations needed for the study. Most importantly, this section is considered as a ‘’living’’ section as it reflects the challenges faced when conducting the research. The section hopes to provide the limits and finds the gap in the topic.

Chapter 4: The international climate change regime

The fourth chapter sets the tone for the study. The section examines the different climate agreements and commitments while locating South African local climate policies with international standards. Furthermore, the chapter looks at the climate trends in South Africa.

Chapter 5: The political economy of mining in South Africa

The fifth chapter examines the impact of mining in South Africa and critically examines how the minerals-energy concept (MEC) is central to South Africa's economy and energy sector.

Chapter 6: Case study analysis: Emalahleni

The sixth chapter provides the background of the area, findings and impacts of coal mining in Emalahleni. Furthermore, this chapter locates environmental and climate justice movements in South Africa with the rest of the world as it highlights the impact of coal mining on ecocide. Lastly, it uses community and stakeholder interviews to map out the different responses of ecocide in the community.

Chapter 7: Conclusion

The seventh will provide a general conclusion of the overall topic and the implications of coal mining going forward. The conclusion is extremely important since coal is still a ‘’hot topic’’ on the energy round table with the current South African President, Cyril Ramaphosa and Natural

Resources minister Gwede Mantashe as a ‘’ the sunrise’’ of development, therefore, investing more money in the sector.

CHAPTER TWO

THEORY AND LITERATURE REVIEW

2. Introduction

The paper uses an eco-Marxist approach to highlight the negative consequences of capitalism on the environment. Furthermore, it rejects theories and discourses that provide market-based climate solutions as they are deeply embedded in the capitalist system. A number of climate change solutions such as the introduction of carbon taxes, green policies and greening capital are based on economics and profit accumulation introduced by financial institutions and western elites. Theories such as the ecological modernisation theory argue that using economics, science and technology are sufficient measures able to deal with the climate crisis. The ecological modernisation theory is useful in analysing environmental policies and regulations. However, the theory fails to challenge economic capitalist societies and their overconsumption negative externalities on the environment. A ground-breaking theory that challenges capitalism and its contradictions on the environment, power, inequality and class is the eco-Marxist theory.

2.1 Marxism and the Environment

The climate crisis operated by fossil fuel corporate capitalism is better understood using eco-Marxist theory as it challenges capitalism in all aspects. Other theories such as the ecological modernisation theory developed by Joseph Huber, explore how industrialised societies deal with the environmental crisis. The theory is grounded on how societies continue developing by advancing technologies and making genetically modified food all the in the name of sustainable growth as a result, the theory has limits when dealing with the climate crisis. Ecological modernisation suggests that science and technology are not the problems. They are a solution to environmental problems as they have the potential to prevent and cure environmental challenges (Konak 2008).

Ecological modernisation theory centred on neoliberalism aims to find climate change solutions based on market mechanisms better known as a ‘’green economy’’. The concept of a green economy was introduced in 1989 in a report titled the ‘blueprint for a green economy’ by the United Kingdom government (Neusteurer 2016). However, the green economy gained global awareness during the 2008 economic crisis, with the intention of economic growth at the same

time environmental protection through what the United Nations Environment Program (UNEP) calls the growth stimulus package. The stimulus packages core focus is inclusive and sustainable economic growth. Major attention directed to financial institutions to find a market and economic solutions while still facing the contradictions of neoliberal capitalism (Konak 2008). Green ecology influenced by rich countries in the global North and supported by the World Trade Organisation (WTO) introduced carbon taxes, green economic policies through a business-as-usual approach, resulting in narrow economic solutions for the climate crisis.

The modern ecological crisis led by the global North under neoliberal globalization expands the ecological planets footprint; the global South provides capital accumulation through extractive industries like mining (Hornborg 2012). Expansion of wealth across the globe, especially in China and the USA, involved resource extraction from the global South, leading to environmental distraction occupied by the displacement of individuals due to climate shocks (Jorgenson and Brett 2012). Power is in the hands of those that have financial wealth and institutional support such as China, USA and other European Countries. While poorer countries in the global South are left with cleaning up the environmental baggage of the global North in unequal, international climate change agreements as the Global North blame climate change on overpopulation and underdevelopment (Salleh 2010). The South faces metabolic rifts brought by the Global North.

Ecological modernisation has a number of shortcomings when dealing with the climate crisis. Market solutions create barriers in fighting the ecological crisis as it protects the capitalist system without challenging its roots. The business-as-usual emphasis is a product of a neoliberal approach to the climate crisis. Neoliberalism, as examined by David Harvey (2007), is a global project to restore and expand the conditions for capital accumulation and to restore power to economic elites. Harvey (2007) states that neoliberalism is not to be seen as a solitary nonfigurative set of ideas on what the most efficient way to organize a society; rather Harvey argues that neoliberalism is a powerful political venture, one in which the elite comparatively purposefully pursue in increasing their prosperity and profits, but moreover their political and pecuniary independence and flexibility. The neoliberal approach to the environmental crisis further expands on capitalism, which does not advocate for environmental security rather, it protects the elite and continues ecological rifts through various forms of capitalistic activities, for instance, the extraction and

burning of coal in South Africa. As a result, this study rejects the use of ecological modernisation theory in understanding the climate crisis. Eco-Marxism theory is utilised to challenge the capitalist system and its impacts on environmental degradation.

Eco-Marxist ecology offers a strong theoretical framework for understanding the climate crisis and offers systematic solutions from an anti-capitalist perspective (Kurtz 2017, 18). Eco-Marxism argues that environmental problems stem from capitalist countries. Allan Schimberg a Marxist scholar in his *book The Environment: From Surplus to Scarcity* (1980) describes the 'treadmill of production' which compares capitalist economies with the treadmill of production perspective, essentially which, produce and consume at fast rates, for instance, the USA. A capitalist society's main objective is profit maximization and competition through extractive industries that result in long-term environmental problems (Speth 2008). Consequently, the evident comparison between the treadmill of production and capitalists' societies is a noble example, as this comparison links the ecological crisis with capitalism. Scholars like John Bellamy Foster, Jason Moore, David Harvey, Layfield and O'Connor argues that eco-Marxism demonstrates a relationship between nature and humans, a result, this theory demonstrates to be the only useful theory when investigating ecological problems. There is a relationship between man and nature although man uses power on nature to best suit his needs causing an irreparable rift. For instance, the use of advanced technologies in the agricultural and mining sector for accelerated productivity. These technologies cause a metabolic rift between humans and nature (Foster 2007).

The concept of the metabolic rift is termed by Marx and used to analyse capitalism and its impact on nature. According to John Bellamy Foster, the metabolic rift is a rift between man and nature and how man uses artificial products to accelerate production, which in turn creates an ecological rift between man and nature (Foster 2007). This concept provides an understanding of human and nature relationship in a capitalist system (Foster, Clark and York 2010). On the other hand, capitalism familiarizes with the concept of the ecological rift, focusing on soil degradation, deforestation, air and water pollution and depletion of marine resources (Salleh 2010). Studies have shown that metabolic rift analysis is essential for clarifying the concept of nature separation, social systems but moreover the antagonism constructed by the social-ecological affairs affected by capitalism. Although metabolic rift analysis has been used to critic capitalist societies, this study

takes a step further by using it in the South African coal mining sector and further linking it to ecocide. Marxist scholars use the metabolic rift analysis to explain the separation of nature and social systems and the antagonism constructed by the social-ecological relations caused by capitalism.

The perception formed around the logic of accumulation disunites the basic processes of natural reproduction, essentially which primes to the corrosion of the surroundings and conservation viability and disturbing the minimal operations of nature. Additionally, this concept further captivates on the lack of balance between 'expenditure of income' in the Earth's metabolism under the capitalist system (Marx 1954).

2.2 Literature Review

2.2.1 Climate Change

Climate change is a long-term global phenomenon caused by the burning of fossil fuels, which leads to increased temperatures, mostly referred to as global warming but also includes extreme weather conditions such as floods, droughts and rising sea levels (NASA n.d.). Climate change is one of the most pressing issues of the twentieth century. Climate change affects those living in poverty, unfortunately, the government and leaders in the field of climate change do not include these individuals in the decision-making process (Balasubramanian 2015). As a result, serving an injustice to marginalised individuals that affected by climate shocks.

The current climate crisis according to scientists is the Anthropocene, where human activities lead to irreparable damages on the earth's surface (Angus 2016). In order to understand the earth systems, scientists divide the earth into three intervals; the Pleistocene epoch known as the ice age which started over 2, 58 million years ago, the Holocene epoch indicating increasing temperatures since 11 000 years ago and lastly, the current Anthropocene (Crutzen 2002). Anthropocene, a term formally used in geological studies represents the impact of human activity on the environment (Zalasiewicz and Williams 2008).

Author and chemist Paul Crutzen in his article the *Geology of Mankind* suggested that the Anthropocene might have started in the late eighteenth century, the beginning of the industrial revolution and the burning of fossil fuels (Crutzen 2002). However, literature proves that in 1896,

Svante Arrhenius found extreme temperature escalations on the earth's surface due to the increase of carbon dioxide released in the air (Tiki Toki 2018). Authors such as (Moore 2018), (Zimmer 2018), (Lewis and Maslin 2015), (Crutzen 2002) and (Zalasiewicz, Williams and Steffen, et al. 2010) mention other human activities that result to climate change for instance overpopulation, which results to resource exploitation and overall species extinction. Hence, the fourth International Panel on Climate Change (IPCC) report in 2007 calls it the human-induced climate change (IPCC 2007). Although there are ongoing debates challenging the scientific community that human-induced climate change is a reality, there are observable trends of this reality (Broswimmer 2002), (Kalkandelen and O'Byrne 2017), (Judkins, Fulkerson and Sanghvi 1993) and (Tyler and Winkler 2009). Extreme climate trends are evident worldwide. Japan, the Korean peninsula, China and Europe experienced dramatic heat waves in 2018, deadly floods in Kerala India in August 2018 resulting to 361 deaths and thousands of people homeless (Levitt, et al. 2018). The United States experienced hurricane Florence in September 2018, California experienced deadly fires and lastly, South Africa experienced flash floods and droughts in the Western Cape Province (Rüttinger and Sharma 2016).

Concerned with the global impact of climate change, the international community formed the IPCC in 1988 that led to the UN convention on climate change (UNFCCC) in 1992. There was a shift in the overall narrative on environmental degradation and global climate change hence an international response on climate politics in the early nineties, a period when the discourse on human security emerged. Climate agreements such as Rio +20 in 2012 provided little solutions; Conference of the Parties (COP) was introduced to replace the Kyoto Protocol that also failed to produce adequate climate change solutions (Aufheben 2012). Conflict of interest between the global hegemon United States of America and economic giants in developing countries China, Brazil and India who rely on coal for their development saw an end of Kyoto without concrete solutions. Based on the evidence provided, it has become evident that capitalism is mostly responsible for this dilemma.

Capitalism is a system of profit accumulation without environmental considerations. Capitalist societies advocated for green capitalism through emission trading suggestions, renewable energy and green goods, capitalism here is seen as the cause of the crisis but also a beneficiary of the

climate crisis. Climate agreements steered by global North countries introduce oppressive solutions for global South countries. Developing nations are hosts to natural resources that drive the climate crisis unfortunately however; these resources drive the global North's economies and provide nothing other than pollution and a carbon tax burden for global South countries.

As a result, the global North has a stake in African resources coming in as the ''investor" for economic development (Department of Environmental Affairs and Tourism 2004). This demonstrates the role of power and neo-Malthusian racism in international relations. African nations have no power over their own resources due to financial constraints and unfortunately rely on western investors and financial institutions for developmental loans. Similarly, the climate crisis displays the role of power and class in international debates, poorer nations from Africa are targeted with carbon trading agreements in a crisis that is inherently not caused by Africans; targeted and blamed for the current climate crisis reinforcing white dominance in international relations (Satgar 2018).

2.2.2 Ecocide

Ecocide is the irreversible damage on biotic and abiotic ecosystems, including human beings. The concept of ecocide began in 1970 by Arthur Galston at a Conference on War and National Responsibility in Washington. Ecocide emerged as a possible amendment to the convention on genocide, ecocide was never a separate international crime, and it has always been linked to genocide. Although the term ecocide is not included as international criminal law, there is an on-going debate on establishing an ecocide law by environmental law scholars such as (Higgins 2010, Higgins 2012, Broswimmer 2002 and Svatikova 2012). Ecocide is typically examined through a legal framework to hold corporations accountable, however; this study provides an extended analysis beyond the legal framework, by utilizing the metabolic rift analysis linking it to ecocide. The study places ecocide in a political economy framework to understand carbon capitalism. Ecocide in this study is utilised in two ways; firstly, to illustrate how the South African minerals-energy complex (MEC) produces ecocidal carbon capitalism, secondly, the consequence of the use and mining of coal result to a negative impact on communities through climate shocks and pollution (Schwegler 2017). Therefore, Polly Higgins definition of ecocide is important, according to Higgins ecocide is:

> *'The extensive damage to, destruction or loss of ecosystem of a given territory, whether by human agency or by other causes, to such an extent that peaceful enjoyment by the inhabitants of that territory has been severely diminished'* (Higgins 2010, 23).

This definition places corporates to account, which is best suited for the context of this study as the energy sector and mining companies are central to this paper. Ecocide is the consequence of developing a system that undermines the conditions that sustain life (Satgar 2018); hence, environmental law scholars refer to is as an extension of genocide (Kalkandelen and O'Byrne 2017). Unfortunately, ecocide is yet to be adopted as an international criminal law under the Rome Statute of the International Criminal Court (ICC) due to the lack of a universally accepted definition and declaration of earth rights, whereas genocide is included in article 6 of the statue as a universal declaration of human rights (Schwegler 2017). Environmental law scholars have been fighting for the recognition of ecocide as a crime by mining corporates. Recognising ecocide will play a huge role in decreasing GHG emission and overall pollution from mines and other industries.

Ecocide in this study is illustrated in three categories; the physical environment, through extremely high carbon emissions lastly, struggles and responses from climate justice movements. Extractive industries contaminate soil, water and the air, these impacts saw a rise in environmental and climate justice movements. Dust and chemical particles in the air are inhaled by community members causing health challenges (The Bench Marks Foundation 2017). According to the World Health Organization (WHO), air pollution was the cause of over 1 million deaths globally in 2004 (World Health Organisation 2009). Secondly, coal mining has negative externalities on water resources such as acid mine drainage (AMD) caused by the chemicals used during mining coal. AMD is a crisis in Johannesburg due to the mining of gold, it is also becoming more evident in the Mpumalanga Province (Center for Environmental Rights 2016). Acidic water creates a cleaning challenge once detected and puts water resources and ecosystems at risk (WWF-SA 2016).

Lastly, land pollution is noticeable through the contamination of the soil, which causes a food security threat and could lead to cultural ecocide where multinational corporations in the extractive industries exploit ancestral land, displacing native communities and threatening their entire existence (Higgins, Short and South 2013). For instance, in the Niger Delta region, the Ogoni

people, who make up the major part of the ancestral community living in the Ogoniland, face the serious consequences of extraction activities (Olufemi, Bello and Miji 2018). According to the World Health Organization Environmental Standards, the soil and water in Ogoniland are polluted beyond rehabilitation (UNEP 2011). Such environmental damage introduced a wave of climate justice movements' worldwide and environmentalist that aim to protect the earth from human behaviour influenced by the capitalist system.

2.2.3 Environmental and Climate justice

Environmental justice is as an extension of civil rights (Harvey 1996). Its central theme is on the injustices that stem from politics, economics, social and environmental settings. According to McDonald (2002) systematically placing black people in low-income communities near landfills, this is further supported by scholars such as Roberts (1998), Cock (2004) and (Pellow, Roberts and Mohai 2009) reflects as an environmental injustice.

Black people have been living around polluted areas since the early 1980s, which is a human right violation. The South African Environmental Justice Networking Forum (EJNF) argue that environmental justice aims at making democracy work by challenging leaders to meet civilian basic needs through access to housing, health care, preserving human rights and environmental protection (EJNF 1997). Environmental justice movements worldwide are diverse and multifaceted making them different in their approach. This could be seen as a positive feature, they have an umbrella of different kinds of people, in most cases, marginalised individuals from poor backgrounds exposed to toxic waste (D. A. McDonald 2002).

Environmental Justice is a global movement that aims to challenge elite actors to protect civil rights and environmental rights. The inability to act towards providing basic rights by global elites especially leaders qualifies as a direct human rights violation. Environmental justice goes beyond environmentalism, rather the sentiments are more of 'social justice and institutional discrimination' (Roberts 1998, 32). The first wave of environmental justice movements started in 1982 in the Warren County, North Carolina, where African American people were placed near a landfill; a protest followed which received national attention, as a result, triggered other grievances (Pellow, Roberts and Mohai 2009). In 1983, an investigation was conducted by the USA General Accountability officer appraising on whether this incident was indeed valid the results of this study

found that many African Americans reside near hazardous regions (Pellow, Roberts and Mohai 2009).

Additionally, a climate justice movement called the Cochabamba people's summit in 2010 set the tone for climate justice mass movements after the global economic crisis in 2008. The 'Cochabamba People's Accord' is anti-capitalist and anti-green modernisation solutions brought by neoliberalism. The Cochabamba People's Accord concept disputes that the fundamental appeal of capitalism is more of unending build-up and rivalry. Moreover, a balance amongst nature and human needs to be reputable, where commonly the entire human population is equal and nature is appreciated for the amusement of forthcoming generations. The emergence of climate justice movements grew during UN climate summits, these movements challenge global leaders on policy monitoring and implementation focusing on climate change and environmental degradation.

Not surprisingly, UN climate solutions keep failing. Copenhagen 2009 was unsuccessful, the world's biggest CO_2 emitters like the USA, essentially which are not devoted to decreasing emissions as recommended at COP15. The USA not recognising climate change as a serious challenge in the twentieth century is extremely problematic. A country like the USA should be at the forefront of climate politics because they are the biggest polluters in the world. The shocking yet unfortunate decision by the Barrack Obama administration not to ratify the Kyoto Protocol created a ripple effect of Global North nations shifting their approach on climate change. For instance, Russia and Japan use the USA as an excuse for not complying with climate change regulations (Li Lin 2011). Fundamentally, the accords key objective was to place perimeters on global temperatures at 2°C, however contrary to this objective is the voluntary emission declines. Research has shown that COP15 was unsuccessful in providing tangible configurations on how to handle the emissions, furthermore what principles are in place should it happen that the country is unsuccessful in meeting this pledge (Mueller 2011).

Similarly, COP 17 in Durban failed. Seventeen meetings later and still no change in climate change politics. Climate justice movements predicted the failure of COP 17, arguing that COP 17 like any other UNFCCC conference does not take into account the ''small voices'' from polluted locations seriously, rather, implementing solutions based on profit maximisation. COP 17 decisions favour greed and corruption as a result, climate justice movements aim to promote environmental justice

that not only protects the environment but social justice (Mueller 2011). Environmental justice movements had another network form under its banner; global climate justice networks. These networks conceptualized environmental justice outcries to mass movements such as the *#endcoal, #ClimateJusticeNow!* campaigns. Climate justice movements call for fossil fuels to be left in the ground, an establishment of food sovereignty systems and the ecological debt caused by the North must be recognised by climate politics rather than implementing racist and anti-African climate solutions.

Climate justice movements go beyond traditional environmental solutions such as preservation and conservation (Ziser and Sze 2007). The movement has a variety of members mostly those from non-governmental organisations (NGOs), community groups and members of the working class that put marginalised people's needs first (Cock 2004). These movements are multifaceted, have different strategies and methods of advocacy (Tokar 2013). Such diversity allows climate justice movements to work closely in social and political contexts as climate change impacts differ in scale per region. Thus, the need for innovative strategies for the types of advocacy and response needed. Central to climate justice movements is the decision from Cochabamba that the Global North needs to pay its ecological debt owed to the Global South.

Both environmental and climate justice movements challenge how energy intensive industries operate and how governments respond to the climate crisis globally. In an energy-intensive country like South Africa, Eskom, a stakeholder in the energy industry is a negotiator in climate change policies, this provides fossil fuel corporations with a platform to block or influence policies that are beneficial to their companies. For instance, at the Copenhagen conference in December 2009 and COP 17 hosted by South Africa in Durban in 2011, South Africa agreed on the business-as-usual climate politics, these diplomatic solutions allowed Eskom and mineral industries in the country to continue degrading our land, air and water systems. Not surprisingly, the business-as-usual approach aligned with the expansion of the electricity sector that was on the pipeline with the World Bank and other financial institutions (Dorsey and Bond 2011). Global leaders in climate politics especially the South African government, failed to use an opportunity to set legally binding solutions to the crisis but they instead opted for ambitious deals to cut down on emissions, allowing

fossil fuel corporations like Eskom and Anglo American to continue operating at a business-as-usual further expanding ecocide (Parker 2011).

One of the most crucial but unsuccessful climate campaigns in South Africa was the financing of the Medupi power plant by the World Bank during the global financial crisis in 2008. Civil society movements such as Earthlife, the Centre for Environmental rights and groundWork triggered a global campaign of over 100 organisations across the world against the World Bank loan (groundWork 2009). Locally, activists protested at Eskom's local branches on 16 February 2010, the protest was against the continued use of fossil fuel and the World Bank loan. Additionally, youth awareness of climate change across the country has emerged. Young people in polluted areas like Limpopo and Mpumalanga have been challenging their municipalities on establishing regulatory measures, these are yet to be established or rather, implemented. With Campaigns such as ''life after coal'' led by climate justice organizations in South Africa, there is a shift in hegemony challenging the government's policy implementation or lack thereof and its stance on coal mining and the use of coal. There currently is no urgency from government departments to stop the process of coal mining due to its immediate returns, and ''cheap'' production of electricity. Therefore, one can argue that fossil fuel corporations represent a major obstacle to addressing climate change, from outright denial to less visible obstructions of policy intervention. In order for climate movements to become a politically transformative force, there needs to be a coherent, counter-hegemonic narrative that both challenges and supplants the worldview of corporate capital.

2.3 Conclusion

Climate change, as noted, mostly affects marginalised individuals who have no alternatives to cope with climate shocks. In most cases, women and children are most affected, they do not have basic resources to deal with the insecurity that comes with climate shocks. The shocks are food and water scarcity and homelessness. Women are pushed further into the poverty cycle with no adequate solutions from the government. Adopting carbon intensive policies as an economic development strategy is catastrophic because human behaviour knows no barriers. The study of ecocide is therefore extremely important in the climate change discourse, however; too much emphasis has been on adopting ecocide as legally binding. Rather than how individuals advance

ecocide through excessive consumption and expanding coal mines in water-scarce areas threatening nearby communities. Environmental and climate justice movements play an extremely vital role in the climate change discourse. They create awareness and challenge leaders worldwide to understand the impacts of climate change from a grass root level rather than a top-down approach, which hardly involves members of the community in policy development and implementation. Climate and environmental activists play a governmental role by working hard to charge those accountable for environmental destruction and provide solutions beyond the current sustainable economic development narrative.

CHAPTER THREE
METHODOLOGY

3. Introduction

This research paper makes use of the qualitative research method. According to Christopher Lamont, qualitative research methods are non-numeric data methods; these include interviews and primary and secondary literature analysis (Lamont 2015). Qualitative research methods are utilised to comprehend a phenomenon in international politics. A qualitative approach to this study is appropriate as it allows one to analyse a wide variety of data and outcomes. This study focuses on the overall impact of coal mining on ecocide, which ultimately affects climate change, how communities respond to the crisis and how ecocide is advanced in Emalahleni.

3.1 Research Design

This study is a single case study analysis and uses field research to highlight the impact of coal mining on ecocide, the environment and socio-economic factors in mining communities. A single case study is helpful in analysing a topic more broadly without limits.

3.2 Data Collection

Due to the nature of the study, this paper relied heavily on primary and secondary documents from environmental, climate and energy policies from the Departments of Environmental Affairs, Mineral and Resources, Eskom and Water Affairs was used in order to understand South Africa's stance on climate change. At a broad international level, climate articles from the IPCC were used to understand the climate change discourse and ecocide. The study is multifaceted and has a number of stakeholders' involved, secondary literature assisted in how energy stakeholders influence climate change policy. Additionally, research from environmental and climate justice movements such as Greenpeace Africa, the Bench Marks Foundation, groundWork and Earthlife Africa was used to understand and evaluate how justice movements play a role in challenging the government.

Furthermore, the study used semi-structured interviews for an in-depth analysis of how coal mining ecocide is expanded in the Emalahleni region. Interviews were collected from the two biggest trade unions that work with mineworkers in South Africa, the National Union of Mineworkers (NUM) and the National Union of Metal Workers South Africa (NUMSA) to

understand a trade union stance on the issue of coal and climate change. In order to experience the lived realities of mining communities, justice movements like Earthlife Africa, Greenpeace and a leader from Mining Affected Communities United in Action (MACUA) and a local newspaper journalist were interviewed. Key stakeholders such as Eskom and mining corporations played a role in structuring how the paper would look like, unfortunately, interviews from both stakeholders were never conducted. Conducting an interview with the stakeholders would have assisted in understanding competing agendas within the minerals and energy sector.

While setting up interviews for the study, there were a couple of difficulties encountered firstly, interviewing key government and local municipal departments was extremely challenging, the most common challenge was meeting with municipal personnel, interview schedules were not adhered to. Secondly, interviewing justice movements face to face was a bit challenging as a result, questions where sent by email. Lastly, it would have been beneficial for the sake of this study to visit a coal mine and a power station in Emalahleni, unfortunately, this could not be done due to ‘’protocol’’ issues, resulting in not interviewing a representative from Eskom nonetheless, a mining representative was interviewed in this study. As a result, there is a limitation to the study.

3.3 Conditions for case selection

South Africa differs from its neighbours in several aspects. Firstly, it is the largest emitter of GHGs in Africa. According to the United Nations Economic Commission for Africa (UNECA), South Africa is responsible for 39% of emissions on the continent (U.N.E.C.A 2002). Furthermore, South Africa is one of the greatest sources of pollution on a per capita basis in the developing world (UNDP 2013). Eskom alone generates about 350 million tons of carbon dioxide (CO_2) a year. Mpumalanga as a province host 12 coal-fired power plants and over 200 coal mining companies, the largest coal-fired power plant Kusile is located in Emalahleni previously known as Witbank. The Benchmark foundation conducted a study on mining externalities in 2014 the study concluded that Mpumalanga has 46% of arable land and 26% of that land is threatened by the expansion of coal mining companies in the area (Benchmarks Foundation 2014). As a result, a food security threat is emerging expanding the poverty and hunger cycle in the area and South Africa at large. The above give adequate reasons why South Africa, specifically Emalahleni qualifies as an important case study.

3.4 Ethical considerations

As noted above, this study makes use of interviews, as requested by the university's research standards there was a need for ethical compliance. An ethics application was submitted to the School of Social Sciences ethics unit in July 2018, permission was granted in August 2018. Interviews for this study were conducted at the end of 2018 and the beginning of January 2019 due to ethics clearance issues and the availability of key players in the study. Hence the difficulties in securing stakeholders.

CHAPTER FOUR

THE INTERNATIONAL CLIMATE CHANGE

4. Introduction

Climate change is a long-term global phenomenon that is a result of burning fossil fuel and is considered a threat to all humanity and other species on the universe. A changing climate carries the risks of environmental trends such as droughts, rising sea levels, change in weather conditions, ice melting in the artic and shifts in plant blooming. These environmental trends are a general reflection of global warming. Global warming is the increase in temperatures on the surface of the earth due to the continued use of fossil fuels (NASA, Climate NASA 2018).

Global leaders in climate politics have been creating dialogues to find solutions for the climate crisis, unfortunately; however, commitment to implementing climate change solutions on foreign policy has not been a priority. The international community has had a number of climate change negotiations dating back from 1972 Stockholm conference, UNFCCC signed in 1992 and coming into force in 1994, soon after that, Kyoto protocol established its first commitment negotiations between 1995-1997, Kyoto protocol was signed in 1997 although officially adopted in 2001 in Bonn, Germany (CNN 2018). In the late 2000s during 2007-2012, UNFCCC started the negotiation process for a new global climate action called the Copenhagen accord. These conferences allow the international community to discuss progress on global climate change policies.

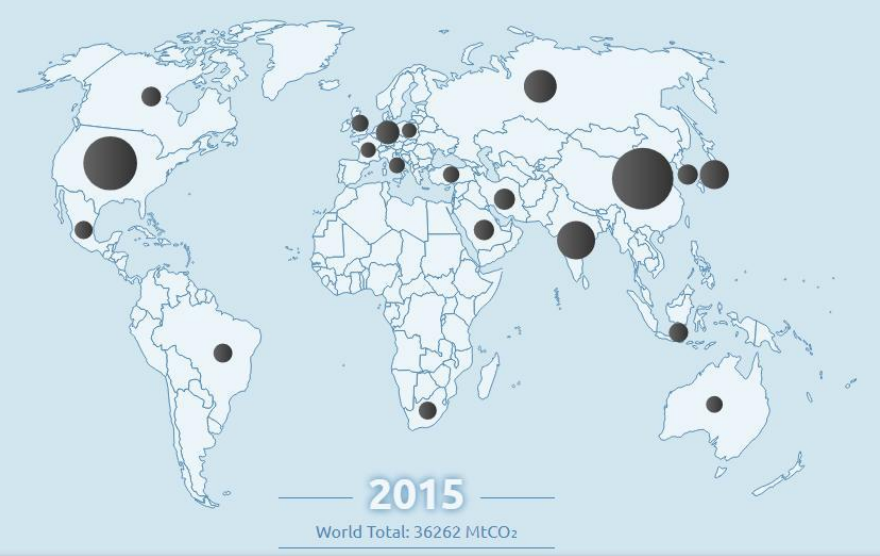
The international community has agreed at the Copenhagen in 2009, that anything above a 2°C temperature is extremely dangerous hence, countries should aim at lowering their emissions to 1.5°C. It is unfortunate that developing nations in Africa and East Asia on their path to ‘’catch up’’ economically with the rest of the world through more industrialisation have potential in experiencing extreme climatic events. The rest of the world that is heavily dependent on resource exploration from the Global South will experience a shortage of resource imports. Furthermore, developing nations like South Africa will experience more difficult climate conditions. The recent drought in South Africa revealed the government’s lack of response or urgency measures to the climate crisis. One might argue that the governments’ priority is not to mitigate the climate crisis.

4.1 The global climate change regime

In 1988, the United Nations (UN) founded the Intergovernmental Panel on Climate Change (IPCC) after the discovery of the ozone layer in 1987 (Aufheben 2012). The IPCC writes and publishes research reports on global climate change trends to provide an analysis for global leaders in the fight to find solutions for climate change. The IPCC opened the path for global interaction on climate change. Climate change issues started making waves in the 1990s when human security matters were recognized as international relation issues. Climate change shocks have the capacity to violate human rights through the displacement of people in which death and food security issues occur as a result. The international community needs to find systemic solutions to prevent climate change.

In 1992, the United Nations Framework for the Convention Climate Change (UNFCCC) treaty was recalled at the United Nations Conference on Environmental and Development (UNCED) popular known as the 'Earth Summit' (Aufheben 2012), coming into force in 1994. Unfortunately, the treaty was not legally binding due to a lack of GHG emission limits set for countries, however, the treaty included protocols that could be amended. The most successful outcome of the UNFCCC is that more than one hundred countries including South Africa signed into the Conference of the Parties (COP) meet annually to assess each nation's progress on dealing with the issue of climate change. Sadly, countries like the USA have not ratified the UNFCCC, which signifies that the USA does not view the climate crisis as a serious issue especially under President Trump's leadership. This is extremely problematic since the USA is hegemonic on the international field; it has an important role to play in climate politics. In addition, it has a greater obligation because it has a large carbon footprint.

As a result, there have been no positive shifts in the decrease of burning and using fossil fuels, which contribute to the overall environmental degradation. Countries like Brazil, India, China, and South Africa also have the largest carbon footprint within developing regions, China leading the list. Figure 1 below illustrates the relative contribution of the top 20 fossil fuel emitters (including South Africa), expressed in $MtCO_2$ (Global Carbon Atlas 2015).



Source: Global Carbon Atlas

Figure 1: The top 20 nations with fossil fuel emissions

The climate change discourse has been widely accepted since the 1990s however, the urgency to change current emission standards by the global community is yet to be realised. Global South countries are expanding their carbon emission through resources being exported to carbon-hungry economies of the global North. Unfortunately, the extent to which climate change will affect both regions is different. The global South is home to the poorest countries in the world. People living in these countries do not have financial means to cope with climate shocks such as displacement, hunger and sickness. Whereas, the North has financial means to deal with climate shocks.

Global climate change dialogues have a number of contradictions especially concerning the Kyoto Protocol. Regarded as a step in the right direction on climate change, environmental justice movements argue that Kyoto failed to provide concrete solutions to the climate crisis. Climate activists and environmentalists argue that global North leaders promote false solutions to the climate crisis. For instance, carbon trading according to Matt Ran was designed to benefit corporations and not the environment (Ran 2009). Carbon trading was launched in the EU in 2005 through the EU's Emissions Trading Scheme (ETS). Carbon trading is a trading system, also known as cap and trade where governments set the price and limit of emission allowed in a certain period (Friends of the Earth 2017). This system is argued to be flawed according to climate justice movements, they claim that large companies have received profits through free emissions permits.

Therefore, carbon trading is not a long-term solution, it is set on a high carbon path with no aim to discontinue the reliance on fossil fuel (Friends of the Earth 2017).

Additionally, Reducing Emissions from Deforestation and Forest Degradation (REDD) is also a false solution to the climate crisis. This solution aims to save forests, measured according to overpopulated nations, mostly in the global South. While countries in global North earn carbon credits, allowing these countries with an exit plan. Climate change solutions from global politics do not have radical solutions that will bring a just transition resulting to climate change matters resolved; instead, solutions continue to safeguard the interest of corporates and rich governments (WoMin African Gender and Extractives Alliance 2019).

South Africa on other the hand, has continuously vowed to decrease its reliance on coal, has ratified the Paris Agreement at COP 21 in 2015. Hosted COP 17 in Durban and is in the process of approving the new Integrated Resource Plan (IRP) policy published in August 2018. One would argue that, on the global normative level, South Africa has made great strides in the climate change discourse, however, the realities on the ground dictate otherwise. Minerals resources Minister Gwade Mantashe called for the expansion of the extractive industries as a solution for the slow growth rate in 2018. The Minister's views reflect the ANC's stance on climate change.

4.2 South Africa response to Climate change

South Africa is one of the many developing nations facing a dilemma between development, poverty reduction and climate change. Its development is centred on the reliance on fossil fuels and extractivism. However, this development is yet to be enjoyed by every citizen in the country, access to basic services such as clean water, electricity, education and adequate health care is a continuous challenge in South Africa (Earthlife Africa 2009). These services are a necessary condition for development and poverty reduction at the same time; they require the use of fossil fuels increasing South Africa’s GHG emissions. The South African government has to respond to development issues, poverty reduction and due to recent droughts, climate change.

The effects of climate change heavily affect those living in extreme poverty; these individuals do not have the means to adapt to climate shocks. Unfortunately, the recent droughts (2015-2017) have shown the gaps in South Africa’s climate change policies. The government is yet to find

concrete measures to mitigate climate change, which then directly threaten the country's development policy. Furthermore, the country's National Development Plan (NDP) is carbon intensive, which has the power to reproduce and extend the poverty cycle in the next decade. The NDP supports fracking, a process of drilling into the earth's surface to release oil or gas inside. The NDP launched an extremely controversial oceans economy project called Operation Phakisa established in 2014. Operation Phakisa according to the NDP will address poverty, unemployment and inequality (NDP 2014). According to the NDP, projects such as fracking and Operation Phakisa that accelerate economic growth are important for development. Growth suggestions in the NDP are based on minerals and mining through increasing exports.

The lack of policy implementation measures threatens development; it also threatens food and water security. Moreover, climate change threatens the entire economic system therefore, it is important for the government to create mitigation and adaption measures. South Africa's response to climate change as published on the National Climate Change Response White Paper in 2011 is to ensure that GHG concentration is stabilised according to the global norm guided by the UNFCCC and the Kyoto Protocol (Department of environmental affairs 2011). However, the path the government has taken is completely different from what has been shared with the global climate change community especially on policy implementation. South Africa has ratified both the UNFCCC Kyoto Protocol and Paris Agreement and continues to participate in bilateral and multilateral negotiations on the climate crisis. Unfortunately, however, there are no clear plans on how the government intends to respond to the climate crisis.

The climate crisis in South Africa is mostly due to the use and expansion of fossil fuels through extractive industries such as coal, gold, platinum and ore just to name a few. South Africa's energy sector alone is the largest CO_2 emitter in Africa. The mining industry has been reliant on the use of fossil fuels for its longevity (Earthlife Africa 2009). The further usage of coal is important for this study as coal is the largest resource in South Africa. According to the StatsSA South African coal reserves are able to produce coal and service the economy and industries for the next fifty years (Stats SA 2018). An important question lies in the current abundance of coal, can South Africa deal with short-term growth and energy supply with long-term human-induced climate change issues?

4.3 Relevant climate change policies in South Africa

The following section briefly provides an overview of South Africa's energy and climate change policies since the end of the apartheid regime (Morris and Martin 2015).

The White Paper on Energy Policy 1998

The *White Paper on the Energy Policy 1998* was the first policy drafted of the National Electrification Program. The policy aimed to provide electricity to South Africans with Eskom's growing demand. The policy was in line with Eskom and its policies after apartheid South Africa. A number of black South Africans were excluded and still are in Eskom's expansion to provide electricity in South Africa, thus the development of this policy in line with the new democratic South Africa (Department of Minerals and Energy 1998).

Renewable Energy Policy White Paper 2003

The *White Paper on Renewable Energy* (REWP) was drafted to set a target 10,000GWh of renewable energy by 2013, which was not met. This policy was a stepping-stone in South African climate change politics by the government although accompanied by a number of contradictions on the NPD 2030 plan.

Integrated Energy Plan 2003

The first Integrated Energy Plan (IEP) published in 2003 by the Department of Minerals and Energy. The IEP provided guidelines for energy policy decision-making, analysing different trajectories of the South African economy up to 2020 while taking into account future generation capacity, reserves, energy consumption, possible energy mixes, and the GHG emissions of those possible energy sources (Tyler and Winkler 2009). The IEP is meant to align with all national development plans and strategies, international commitments, and long-term climate change mitigation strategies.

Long-Term Mitigation Scenarios paper 2007

The Long-Term Mitigation Scenarios paper (LTMS) together with renewables energy plan of 2003 played a huge role in shaping South Africa's policies in renewable energy and overall climate change mitigation. The paper's mandate was to assess GHG emissions and provide solutions. The research paper warned that without constraints from the government, emissions would double in

2020 (Winkler 2007). The drafting of this paper was inclusive as it included the private sector, the government and civil society. Unfortunately, however, the warnings provided on this paper seem to have landed on deaf ears looking at South Africa eleven years later.

National Climate Change Response White Paper 2011

The National Climate Change Response White Paper (NCCR) was published in 2011, prior to South Africa's hosting of COP17 in Durban. The paper gives a broad overview of the country's climate change response framework and sets priorities for adaptation and mitigation strategies. It also expands the emissions caps included in the IRP, (2010) as informed by the peak-plateau-decline scenarios of the LTMS.

Integrated Resource Plan (IRP) 2010, 2013 and 2018

The IRP (2010) was created to provide an energy mix since coal is the dominating power producer of which is unsustainable. IRP (2010) draft policy included plans for renewable energy for the next 20 years, wind energy to 16%, photovoltaic solar to 15% and 2% for concentrated solar power (CSP). The use of coal was mentioned in the IRP suggesting that the mix would include 49% of coal until 2030. The 2010 IRP was revised to the 2013-updated plan the growing demand for the electricity needs a constant change in energy policies. The 2013 IRP introduced nuclear energy to the South African energy mix. This was later followed by controversial Russian contracts tied to Former President Jacob Zuma. The 2013 IRP suggestions were updated in the new IRP (2018) plan. The new IRP was published for comments in August 2018. The policy draft included renewable energy production and expansion, which the country needs given the country's electricity crisis. The policy stresses the need for a just transition although gives Eskom the power to lead this transition. Coal will still play a role in the energy sector, contributing to 65% of energy supply (Omarjee 2018).

Climate change Bill, 2018

The 2018 climate change bill is a key feature in climate politics in South Africa. The bill aims to provide a clear stance on climate change, how to deal with the crisis including a just transition mentioned in the IRP (2018).

The above policies show the government's willingness to deal with climate change however, there seems to be a number of barriers at play in the South African economy. The year 2018 was the most successful year with a number of policies aimed at dealing with climate change, this could be because of the recent drought, the looming electricity crisis facing the country currently and overall temperature increases.

4.4 Climate change trends in South Africa

Climate change is not a new phenomenon in South Africa. The country experienced droughts in 2014, which resulted in a water crisis in the City of Cape Town (2017-2018). Unfortunately, South Africa is a water-stressed country; the drought revealed policy gaps around the climate crisis. The agricultural sector was water stressed, food security issues started surfacing, farmers increased food prices and the economy experienced a technical recession in 2017, the low growth rate also played a negative role in the crisis. Middle and low-income workers were experiencing price hikes in two of the most important sectors in the economy, the energy sector and food sector. There is evidence that shows South Africa will experience more drought trends and extreme weather conditions in the future (Department of environmental affairs 2011). The IPCC warns of increasing temperatures of 7°C by 2100, the literature argues that such conditions are not sustainable for human activity. Should temperatures increase to 7°C ''water wars'', the internal and external conflict will be on the rise (IPCC 2018).

Extremely high temperatures not only overburden water but the agricultural sector that is heavily dependent on water. As mentioned above, the drought caused a food security threat due to the lack of rain. For instance, maize is an important crop for poor rural communities, temperature increases effects the production of maize, consequently, threatening individual security. Therefore, increased temperatures directly threaten malnutrition and overall human security. The UNFCCC warns of food security issues and extreme hunger conditions by 2100, which will negatively affect South Africa's growth rate (IPCC 2007). These conditions will exacerbate the poverty cycle increasing the already high inequality gap. Lack of water could also result in health issues also negatively affecting the country's social and economic wellbeing.

4.5 conclusion

Climate change is a global phenomenon and the current crisis does not respect any nation-state. International agreements should continue to aspire to solve the climate crisis but the first step on trying to solve the crisis requires political will from domestic leaders. The world needs a new era of climate diplomacy, an era that makes climate change a top priority. Diplomacy has the power to play an important role in fighting climate change together with technological advances. If climate issues are placed on the global agenda, not as ‘’small’’ issues in international relations but issues of national and global security the world might stand a chance in solving the current ecological crisis.

The climate crisis is treated as a minor environmental problem that environmental leaders have the mandate of solving the problem. However, this approach is false and requires global leaders especially those with powerful economies in the global North such as the USA and European countries. Current international relations system does not provide systemic solutions for the climate crisis. However, diplomatic tools such as peacebuilding and mediation must be included as part of climate change solutions. For instance, peacebuilding should be implemented in a manner that does not recreate instability, for example, solutions that lead to climate shocks in the future. Diplomacy also has a role in promoting climate change dialogues that need to be institutionalised. In doing so, this provides global leaders with the scope on how to deal with the climate crisis.

Although South Africa has made great strides in climate politics, it still lacks the political will to change its current emission standards. The country faces a huge challenge between development and climatic change. Development policies have a ripple effect on climate change and its shocks as they promote the expansion of mines and a new oceans economy, with the hopes to grow the nation and promote economic participation, unfortunately, these developments only increase the inequality rate between rich and poor individuals. Climate shocks heavily effects the poor especially post-disaster. Underprivileged people often find themselves homeless due to floods and the rebuilding phase becomes an overall burden for them. Such individuals do not have financial backings to deal with the climate crisis therefore, a country like South Africa with high levels of

unemployment, inequality and poverty need to have a clear stance on how it aims at dealing with the current climate crisis at the same time, provide growth opportunities for its people.

CHAPTER FIVE
THE POLITICAL ECONOMY OF COAL MINING IN SOUTH AFRICA

5. Introduction

South Africa's political economy is deeply embedded in capitalism as it has adopted a neoliberal economic system while also heavily experiencing the climate crisis. The economy is driven by extractive industries such as gold, platinum and coal, shaping its socio-political and economic development without considering the environmental trade-offs from the economic and social benefits of these industries (Smit 2013). Over the years, the mining industry has been declining and tertiary sectors such as finance, retail, transportation and government services contributed 69% of the country's gross domestic product (GDP) in 2015 (Roux 2017). The mining industry contributes roughly 9% of the GDP and accounts for huge earnings from foreign exchange. Industries like manufacturing and agriculture, unfortunately, have also declined in profits (Kane-Berman 2018). Coal mining is located inland resulting in the development of rail and port networks crucial for the commodity to be transported locally and abroad. Although this industry still plays a role in the economy, Roux argues that it is unlikely for it to expand in the future (Roux 2017, 42).

Coal has been one of the most important minerals in the South African economy since 2013 ranking first in the overall mining industry. According to Stats SA, coal's contribution to the economy has increased from R37 billion in 1993 to R51 billion in 2013 while other commodities like gold declined from R115 billion to R31 billion (Stats SA 2015). These records show the importance of coal in the South African economy in actual value, coal is also vital for the energy sector. South Africa is described as an energy-intensive country, 90% of its energy comes from coal-fired power stations and unfortunately relies on one power producer; Eskom (Baker, Burton, et al. 2015).

On the one hand, coal mining is the largest employer in the mining industry. It absorbs more than fifty thousand workers into permanent and part-time positions through direct and indirect jobs related to coal such as; Eskom staff, truck drivers, refining coal to oil (CTO) through Sasol or the construction of power plants (Williams 2018). As a result, given the protracted high unemployment

rate, the coal mining industry according to interview participant 1 who is a National Union of Mineworkers (NUM) representative:

‘’*coal mining is extremely important to the South African economy. Our country cannot afford to have job cuts since thousands of households depend on this industry. Eskom's announcement to close down five power plants in March 2019 would serve as an injustice to mineworkers and their families"* (Interview 1, 25 November 2018).

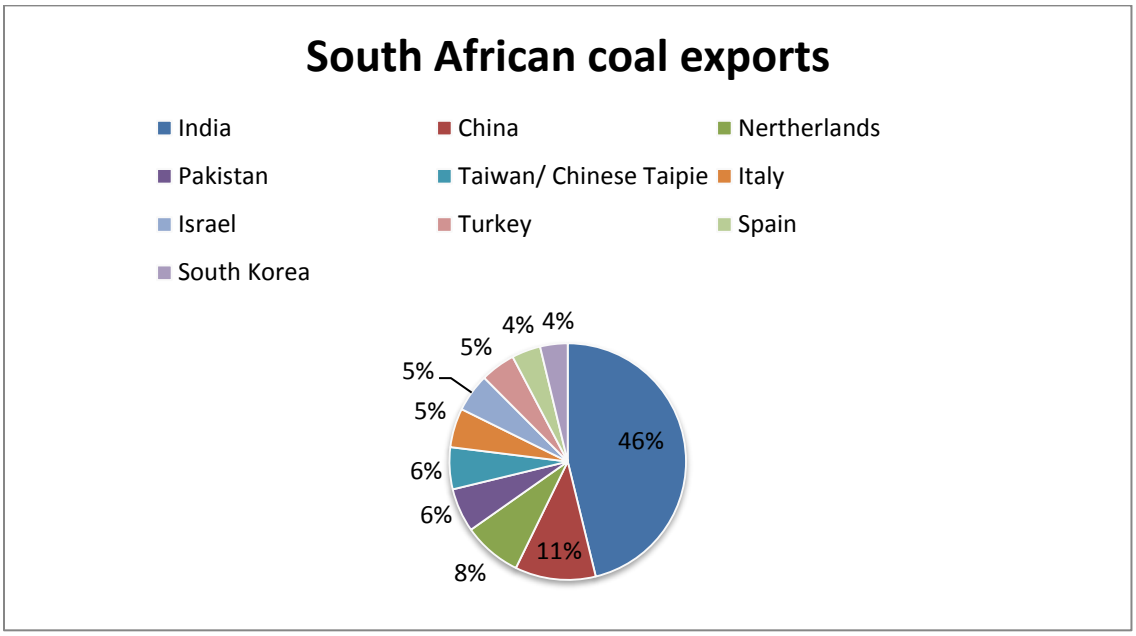
Extractive industries such as coal offer short-term benefits at a long-term environmental and human security cost. The number of workers the coal industries hires is not a valid reason to keep the industry going given its negative externalities that will be a problem for future generations. Based on future environmental sustainability, NUM’s argument is invalid as it has a narrow picture that solely focuses on workers and not the overall issues coal has on the environment and ultimately, the workers.

5.1 Coal mining in South Africa

Coal was first discovered in 1878 at the Vaal River. South African coal reserves have roughly 31 billion tons of coal for usage (GDACE 2008). The coal sector is regarded as extremely vital for the mining industry; the sector helps on the production and refining process of gold, platinum and other minerals. In 2017, coal overpowered gold revenue with 27% sold and gold selling only 15% of its production (Stats SA 2018). There is an international demand for South African coal especially among Asian and BRICS countries (see figure 2). The graph below shows export figures from January 2010 to June 2017; almost half of South Africa’s coal is exported to India at a value of R139, 9 billion since 2010 to 2017 followed by China at 11 % for R33.4 billion.

India and China, considered as developing nations shaping the international economic sphere and their demand for South African coal are said to increase due to the country’s expansion of coal power stations (Statistic South Africa 2018). Five major transnational companies produce 80% of South African coal: Anglo American, BHP Billiton, Sasol, Glencore Xstrata and Exxaro (see table 1) (South African Coal Roadmap 2011, 33). Most of South Africa’s coal is located In the Mpumalanga Province known as Emalahleni. The Mpumalanga Province is home to 205 operating mines listed in the DMR website (Department of Mineral Resources 2017) and 45 of those mines

are located in the Emalahleni region according to interview participant 2 (Interview 2, February 2019).



Source: https://www.southafricanmi.com/blog-24oct2017.html

Figure 2: a pie chart showing the top 10 coal exports in South Africa

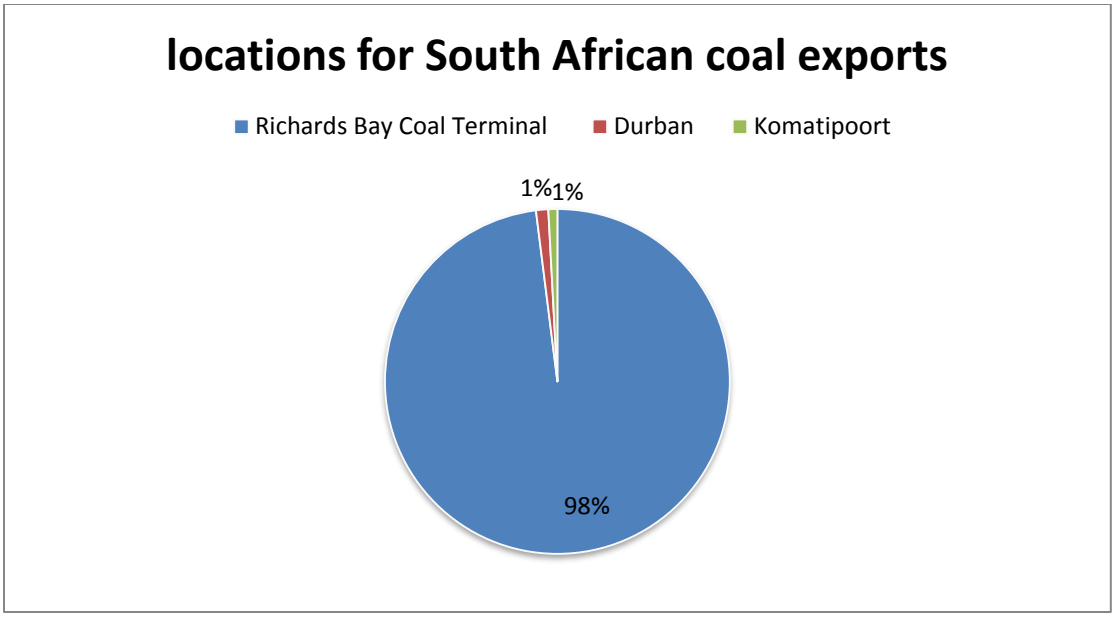
Coal in the province is transported through the largest terminal called the Richards Bay Coal Terminal (RBCT). Roughly, 98% of South Africa's coal is exported through the terminal and the rest through Durban and Komatipoort (see figure 3). According to the South African Road Map, the RBCT has been experiencing transportation constraints that negatively affect coal exports. As a result, the organisation suggested that there be an expansion of the rail capacity (South African Coal Roadmap 2011, 18). An expansion of the RBCT is a call for an expansion of coal mines, deepening the ecological crisis.

Coal companies	**Profits according to 2009**
Anglo Operations Ltd	26%
Sasol Coal	20%
BHP Billiton	14%
Exxaro (Kumba Resources)	10%
Exxaro (Eyesiswe)	9%

Xstrata Coal	9%
Optimum Coal	4%
Umcebo Mining	3%
Siyanda Coal	2%
Kangra	1%
Total Coal SA	1%
Kuyasa	1%
Tweewaters Fuel	0%

Source: **(Chamber of Mines 2010)**

Table 1: Key coal mining companies in South Africa



Source: https://www.southafricanmi.com/blog-24oct2017.html

Figure: 3 a pie chart showing export locations

According to Greenpeace and the United States Environmental Protection Agency, Emalahleni has, the worlds most dirties air contributing to global warming and health risks. Not only does coal mining and burning of fossil fuels lead to air pollution, but it also has negative externalities such as ‘’water and soil contamination, threatening ecosystems’’ (Colvin 2011, 3). Coal mining and

coal power stations place South Africa and its citizens at risk in the era of climate change. There have been a number of debates about the use of coal and development while still mitigating climate shocks in South Africa. The country faces a dilemma on development, energy and climate security while still competing with the rest of the world.

South Africa for instance, has a number of contradictions that stem from capitalism. Firstly, the country currently depends on coal for electricity generation. Secondly, South Africa is vulnerable to the impacts of climate change. Moreover, the country still faces development challenges. At the centre of it all is the State Owned Enterprise (SOE) Eskom, which supplies 90% of electricity to households, industries and the African region at large. However big corporations in the mining industry such as Anglo American and De Beers enjoy cheap electricity from Eskom. Authors Fine and Rustomjee (1996) explored the minerals-energy complex and found that big mining corporations such as Anglo American benefited from a fifty-year coal deal signed at the end of the apartheid regime by Eskom and mining companies (Fine and Rustomjee 1996).

Mining companies received huge returns from Eskom through cheap long-term electricity contracts in 'special purchasing agreements' while South Africans struggled to buy electricity with price hikes (Daily News 2010). Recent research compiled by the Department of Energy (DoE) provides a clear indication that mining and the manufacturing sectors used up to 62% of electricity in 2012. Whereas the iron and steel industry consumed 10%, the metal industry 9% and the chemical industry consumed only 6%. While households consumed 20% and lastly, government services were responsible for 15% of total electricity consumption in 2013 (DoE 2013, 6). Electricity consumption in the mining and manufacturing industry has been increasing. Fine and Rustomjee argue that the mining industry enjoys cheap electricity supply from Eskom (Fine and Rustomjee 1996).

Electricity tariffs continue increasing making it extremely difficult for South Africans to make ends meet. The National Energy Regulator (NERSA) approved tariff increases of 8% annually in 2013 until 2018 following Eskom's request for a 15% increase due to its current debt, electricity prices will amount to 11oc/kWh in 2020 (Creamer Meida 2011). A request for a price hike is an attempt by Eskom to manage its debt due to the mismanagement of resources, while South Africans face high electricity prices and load shedding. Eskom supplying cheap electricity to mining houses

is a form of oppression; South African households struggle to pay the already high electricity prices with negative environmental externalities. Due to the history of unequal resource distribution during the apartheid regime, the competition in the economy has opened a gap in the market for young unemployed South Africans and migrants living in poverty without electricity. Illegal miners referred to as Zama-Zama's enter the market knowing the harsh and unsafe working conditions in the sector.

5.2 Minerals energy complex

South Africa's economy revolves around the mining and energy paradigm called the minerals-energy complex (MEC). Research has shown that South Africa relies heavily on coal and this, therefore, has led the country being formally known as one of the most carbon-intensive countries in the world (Fine and Rustomjee 1996). The country's economic growth has been dependent on resource extraction since the early 1860s through the mining of diamonds in Kimberley and the mining of gold in Johannesburg in the 1880s (Sharife and Bond 2011). The MEC provides a detailed overview of South Africa's economic strategy based on resource accumulation orchestrated by the apartheid government and private stakeholders. Central to the MEC is the energy sector, mining companies unduly benefited from cheap labour and cheap electricity through ''secret deals'' before 1994 (Power, et al. 2016). The apartheid regime produced an energy sector that only benefited the elite, which are predominantly white South Africans in the industrial sector including mines through electricity prices that are below the cost of production. This overview allows one to critically understand the energy sector and the mineral industry in South Africa, an important background when making sense of the World Bank loan to Eskom for its energy expansion in 2010.

The MEC provides an analysis of a developing country experiencing the aftermath of financialisation. South Africa has been deeply entrenched in neoliberal economic policies with strong economic ties in the global North (Karwowski, Fine and Ashman 2018). Mining companies in South Africa during the apartheid regime infiltrated the financial and the manufacturing sector, diversifying themselves in the overall economy. However, there was a shift in global financial investments during the early 1990s at the same time; South Africa was experiencing a period of democratization while the global economy took a shift in economic policies.

Mining companies such as Arcelor Mittal, Anglo American, Xstrata and financial institutions, saw an opportunity to export their profits offshore in the London and Melbourne Stock Exchange while South Africa was negotiating its democratic ideals (Bond 2012). Financial wealth created through labour and resource exploitation, Anglo American, Investec and Old Mutual became global players in the financial sector simultaneously, these corporations were institutionalised under the global North's economic development. Unfortunately, the South African economy continued depending on the mining industry while the financial sector grew to what it currently is (Ashman 2015). However, economic growth has been in the hands of corporations who gained political power over South Africa's development policy. Fine and Rustomjee (1996 & 2008) argue that the MEC is continuously remodelling itself in the South African economy.

Corporates such as Anglo American and De Beers owned by the Oppenheimer family operate quite peacefully in South Africa within the energy, gold, platinum, banking and other industries (Sharife and Bond 2011). Resource extraction through the guise of development has created a metabolic rift between nature and humans while simultaneously introducing the concept of social reproduction in the wake of climate change and ecocide (Salleh 2010). Social reproduction is a feminist Marxist concept that not only explains economic behaviour but also explains ecological disruptions caused by capitalism in extractive industries. For instance, the coal-mining sector in South Africa does not absorb the entire working force into permanent jobs; it disrupts the ecological behaviour of the environment through soil and water contamination threatening food and water systems. The MEC is unsustainable as it reproduces the oppressive nature of the apartheid regime through human right abuses and ecological destruction through the expansion of mining companies and proposals to build new coal power plants.

The MEC has continued to negatively impact South Africa by adapting to its economic climate and shaping its socio-economic policies since the 1980s. For instance, the country's inequality gap, South Africa is one of the most unequal nations in the world (May, Sulla and Zikhali 2016). The MEC through its stake in development policies hinders economic growth and increase the already high unemployment rate, this complex is deeply rooted in corruption from controversial electricity contracts (Bond 2003). According to Freund, the MEC helps in connecting key networks in South Africa's political economy (Freund 2010). He argues that this complex can be an

‘architecture’ that involves powerful sectors in the private, government and financial sector which in most cases includes SOEs (Freund 2010). These powerful sectors shape and sometimes hinder the countries development through overlapping policies coordinated by a select few who hold positions of power or associated with the political elite (Marquard 2006). These networks are difficult to dismantle and cannot be changed overnight (Tyler and Winkler 2009).

The South African economy displays the relationship between capitalism, labour, racial divisions and now ecological destruction. Since 1994, South Africa has shown positive democratic characteristics where a black majority won the elections and elected South Africa's first black President, Nelson Mandela. Although this was a positive shift in political power, the real transfer of power from the white minority was not evident. However, the new black elite was on the rise unfortunately, economic power remained with the Afrikaner minority in sectors dominating the MEC (Marquard 2006). Furthermore, the MEC in this study is expanded in the discourse of climate change; it has played a role in structuring macroeconomic policies to suit its characteristics (Salleh 2010). The MEC is a characteristic of neoliberalism and the South African economy fits well in the origins of the system because macroeconomic policies post-1994 followed a neoliberal path.

Economic policies post-1994 aimed at addressing injustices of the apartheid regime, mostly economic exclusion of black South Africans. Under the leadership of Thabo Mbeki, an academic and economist, South Africa followed a slow growth path with policies such as the Growth, Employment and Redistribution (GEAR) in 1996, the Broad-based Black Economic Empowerment BEE Act of 2003 and the Accelerated and Shared Growth Initiative of South Africa (AsgiSA) launched in 2006 that hoped to develop the country but failed. These policies were important in addressing economic challenges the country faced at the time (Weston 2012). BEE stakeholders are well-connected individuals with political networks, expanding the inequality gap in the economy (Bond 2012). However, a critical question arises, were these policies enough to address economic inequalities exacerbated by the MEC? South African macroeconomic policies are not equipped in providing economic and inclusive solutions for all. The country’s policies are destructive and reproduce the oppressiveness of the apartheid regime, concerned with economic development, other challenges like climate change issues loom in South Africa especially, at a time when electricity demand has reached its peak (Baker, Newell and Phillips 2014).

5.3 The South African electricity sector

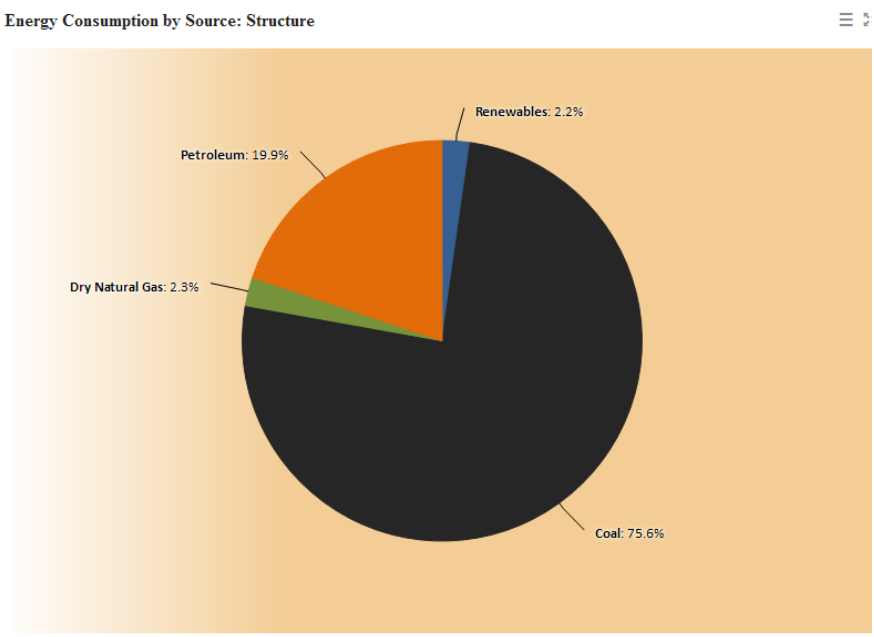
South Africa is the economic hub of Africa. The country has powerful financial and world-class institutions and supplies 45% of electricity to countries of the Southern African Development Community (SADC) through Eskom. Eskom, as mentioned above, is central to the MEC as it operates with a mandate to supply cheap electricity to the mining industry. Eskom has since employed more than 60,000 workers for the last two decades (World Bank 2009). Eskom owns 13 coal-fired power stations including the world's biggest power stations Medupi and Kusile with plans to build more, indicating the lack of effort to mitigate climate change in South Africa. Eskom's energy grid includes mostly reliance on coal, nuclear, and a small percentage of renewable energy. South Africa's role on the African continent in the energy sector demonstrates the country's quest for profit accumulation without considering the negative environmental implications passed on to other African nations. Expanding the climate crisis throughout the African continent with its coal and electricity exporting deals (Weston 2012). The electricity and the coal sector create an ecological and social crisis. These sectors together with the climate crisis highlight the gap between policy implementation and energy security in South Africa.

South African policies on energy security are based on reproducing the MEC through capital accumulation and saving Eskom through the many challenges the entity has on supplying energy. South Africa's energy crisis was formally made public in 2005 where Eskom announced that there would be load shedding, a term that refers to an electricity blackout to save consumption until there are investments in electricity generation (ESKOM 2016). Load shedding exposed the racial divide in South Africa, where the white minority who over the years had access to electricity, experienced life lived by numerous of black people from townships and rural areas, where access to electricity considered as a luxury. The year 2007 and 2008 marked the era of Eskom's demise, extreme power outages became a norm until the World Bank loaned Eskom 5 million dollars, the largest electricity expansion loan, expanding the MEC (Weston 2012). Eskom calling for the expansion to build more coal-fired power plants was approved by the South African government and not surprisingly by the international financial community; the World Bank, a contradictory step to the local and international climate commitments. Therefore, the accumulation of capital seems to be of utmost importance globally.

5.4 Eskom

Eskom, an institution established in 1923 as the Electricity Supply Commission, its goal was to provide cheap and abundant electricity to extractive industries (Eskom 2014). A key player in the MEC, Eskom supplied electricity to Anglo American coal mines during the Second World War at the same time, Anglo American was the biggest gold consumer. According to (groundWork 2018), Anglo started buying metal plants in Mpumalanga positioning itself as a powerful stakeholder in the South African economy. Eskom is the only power producer in South Africa making it a monopoly which can control its own prices without any competition. The organisation owns a nuclear plant in the Western Province called Koeberg additionally, Eskom has 27 power stations and a huge portion of them are located in the Mpumalanga and Limpopo Provinces close to coal mines (Kane-Berman 2018). Eskom's power stations are strategically placed in areas close to coal mines due to cheap access to coal, cheap labour costs due to it being located in mining communities already exposed to the exploitation of migrant workers and lastly, the RBCT was strategically built for the expansion of coal mines (Weston 2012). The National Energy Regulator of South Africa (NERSA) regulates the power utility.

Additionally, the exorbitant electricity prices of 93.79/kWh makes the situation worse, Eskom has suggested a price hike for the 2019 financial year of 4.1% which NERSA has granted and is also considering hiking prices up to 15% due to the financial crisis the organisation is facing (Coetzee 2018). Furthermore, the price the environment pays due to Eskom is extremely expensive, in order for South Africa to deal with the current electricity crisis it needs to systemically reduce the use of coal. Electricity consumption in South Africa continues to increase (see figure 4), although the power utility claims to adhere to its climate change strategy of increasing renewables to 1600 MW in its grid by 2025, these efforts are not being implemented or rather there is a lack of urgency by Eskom and its partners to do so (Eskom 2008).



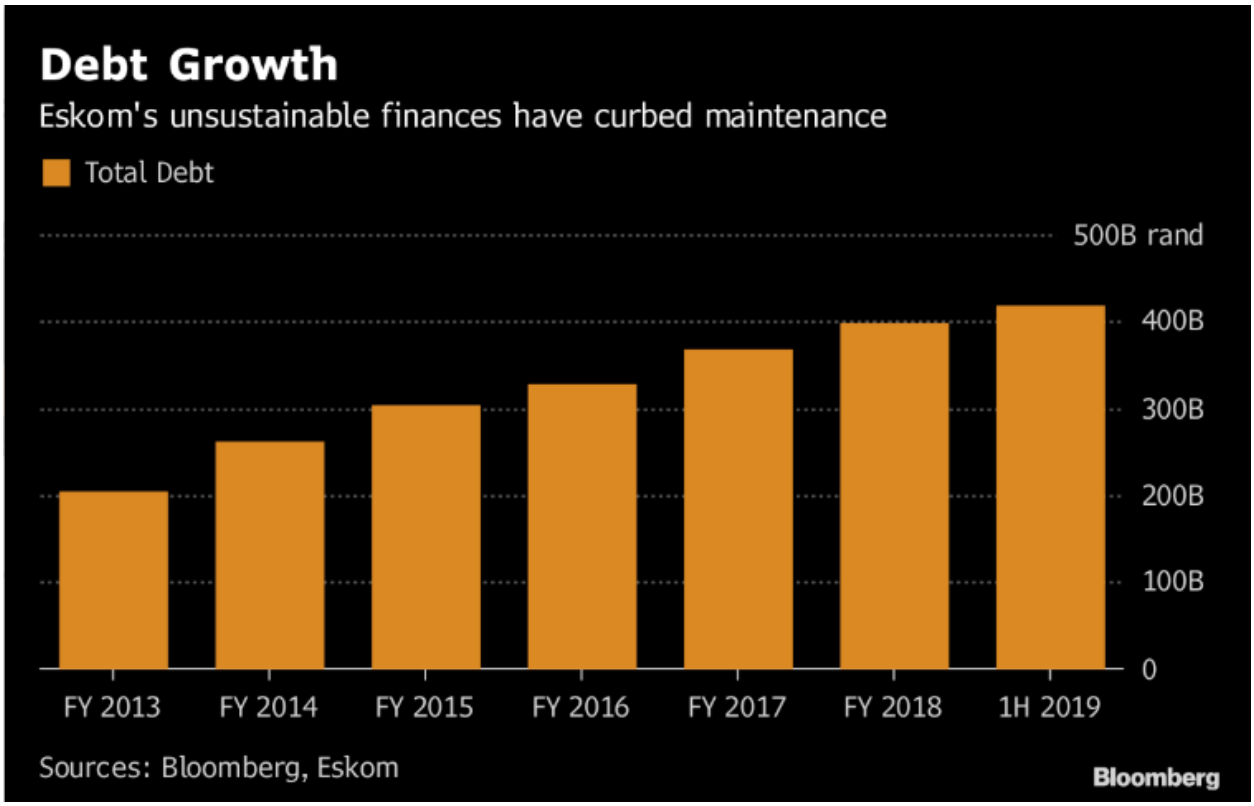
Source: **(International Energy Statistics 2015)**

Figure 4: Energy Consumption in South Africa

Critical to Eskom's climate change policies is the World Bank loan in 2010. Eskom applied for $3, 7 billion funding from the World Bank to build its Medupi power station, which is still under construction to date, Eskom requested an additional $750 million for renewables and low carbon energy equipment (Weston 2012). Financial global institutions like the World Bank play a critical role in changing the global narrative on climate change through rejecting mining expansion loans or development plans that rely on fossil fuels. Unfortunately, the World Bank has been funding coal expansion projects in South Africa. The bank has been backing the energy sector since World War 2 and most recently approved an application for building two of the world's largest coal-fired power plants Medupi and Kusile in South Africa. The World Bank loan placed South Africans in economic and environmental insecurity.

Eskom's aim for the World Bank loan was to expand its electricity distribution due to constraints in supply. However, the power utility has been struggling to provide electricity to most South Africans, due to extremely high electricity prices, poor families cannot afford to have electricity (D. A. McDonald 2009). South Africa has been experiencing an electricity crisis since 2008, economists warned the government about the Eskom crisis as early as 2004. The Eskom crisis is a

result of corruption and the mismanagement of funds currently revealed in the Zondo Commission on the state capture enquiry. The commission found that government officials have misused state resources and mining companies through corrupt tender processes (van Rensburg and Schoeman 2018). These practices together with the loans acquired over the years have set Eskom R400 billion in debt (see figure 5).



Source: **(Burkhardt 2018)**

Figure: 5 Eskom debt since 2013 – 2019

The electricity crisis provides us with a clear example of the MEC practices in modern day South Africa. The corruption by government officials hinders the country's development and growth, further deepening the poverty cycle for the major of South Africans living in poverty. Furthermore, Eskom will find it extremely difficult to provide electricity due to the already low supply of coal and high population growth. Again, South Africans living in extreme poverty will not have access to basic electricity, denying them a human right.

5.5 Conclusion

The chapter highlighted that coal mining plays an important role in South Africa's energy sector and the economy at large. Huge corporations and elite individuals that (Fine and Rustomjee 1996) highlighted as key players in the MEC dominate the political economy of coal mining in South Africa. Wealth obtained through resource exploitation has been listed in the London Stock Market. Unfortunately, leaving South Africa with a resource, financial loss and an ecological burden, resulting in social reproduction issues. Financialisation in the economy and the MEC deepened social issues like poverty, unemployment, inequality, and the climate crisis. Ordinary South Africans still find it difficult, if not worse, participating in the economy. Coal as a natural resource has been at the forefront of South Africa's development however, as a developing country, the government has to find alternative means for future development and growth.

In order for energy security to be a lived reality in South Africa, the government needs to invest more in renewable energy and do away with the use of coal in a just and systematic manner. A just transition allows citizens to participate in the country's decision-making processes, an important feature that is inclusive for all South Africans to participate. Reducing the reliance on coal promotes energy democracy by using alternative energy that is open for all not solely between private-public partnerships for the benefits of large corporations (Williams 2018). Energy democracy challenges techno-fixes promoted by the green economy notion that allows big corporations to profit from the climate crisis. A just transition secures South Africans access to food and water security, it allows citizens through collaborations with climate justice movements and organisations to create grass root solutions for the climate crisis. For instance, the shift to renewable energy in communities through solar and wind power, allowing communities ownership of their own power grid. Renewable energy has the potential for communities to be social owners in a democracy, moving from a MEC led energy sector to a just transition (Williams 2018).

CHAPTER SIX
CASE STUDY ANALYSIS EMALAHLENI

6. Introduction

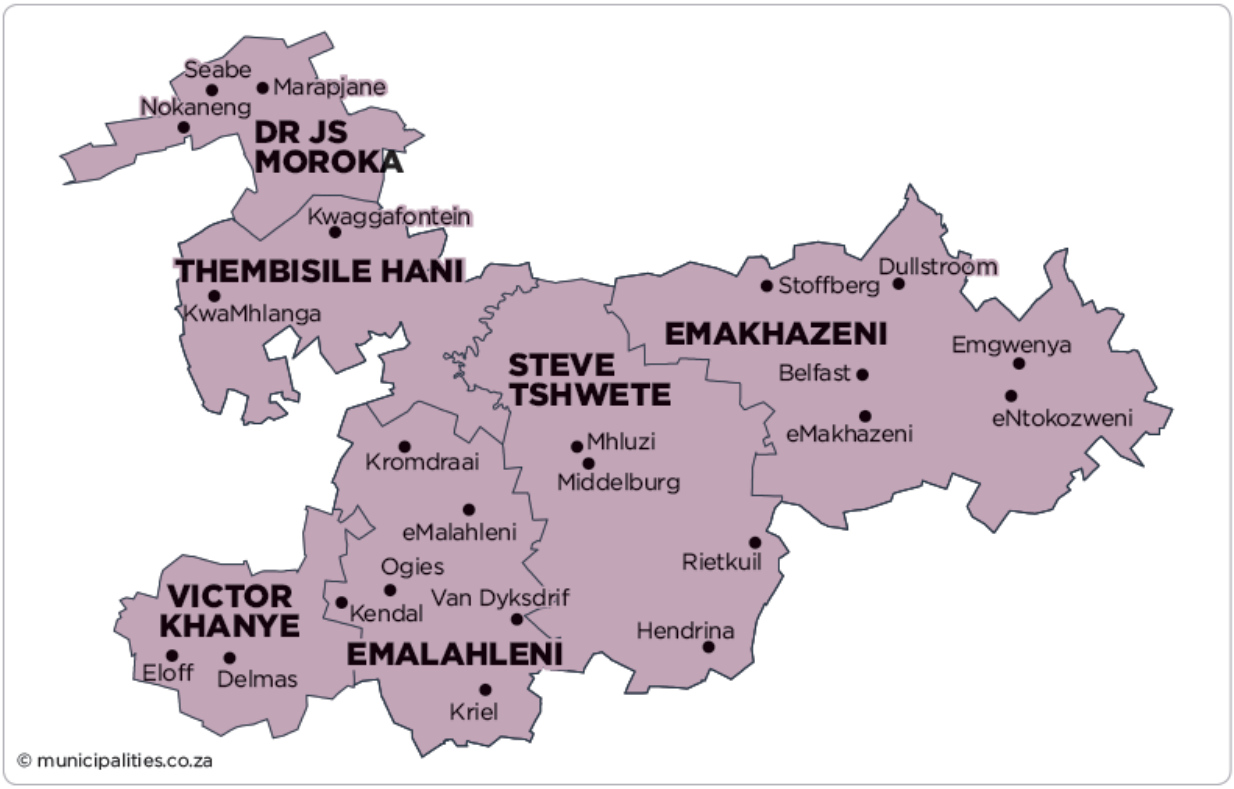
Emalahleni is located in the water-stressed district of Nkangala in the Mpumalanga Province, South Africa. The area has a number of challenges such as a growing population, unemployment, water and food security issues and lastly, environmental degradation. Mpumalanga has been experiencing water shortages due to lack of rainfall, increasing the demand for water in the province. The Province is home to 46% of South Africa's arable land, unfortunately, however, the land is continuously being damaged by coal mining in the area (Davies and GroundUp 2014). Environmental degradation results in severe increases in food prices, and water issues threatening democracy and security in South Africa.

Development in Emalahleni, however, has not been threatened despite environmental problems caused by mining. The city has been on a rapid growth rate attracting migrant workers across neighbouring countries due to the expansion of mining companies and power stations in the region. Population growth and development in the city have led to service delivery issues in the housing and health sector (South African Cities Network 2014). Other issues are a result of mining externalities such as water, land and air pollution resulting in health impacts on communities. The impact of coal mining and coal-fired power plants go far beyond the social and economic costs, coal deepens the ecological crisis resulting in various other challenges where marginalised individuals, especially women and children are left helpless.

6.1 Background of Emalahleni

Witbank, now referred to as Emalahleni since 2006 was discovered in 1903, later declared as a small town in 1910 and declared a city in 1994 (Municipalities of South Africa 2016). The Emalahleni Local Municipality is part of the Nkangala District Municipality (see figure 6). According to the city's population statistics, the latest population since 2016 was 455 228, a 15.11% increase from 395 466 in 2011 (Municipalities of South Africa 2016). Possible reasons for population growth in the area is due to the expansion of mining houses. The industrial sector is accused of not providing employment opportunities for its citizen's, especially young people. Youth unemployment in the area according to (Mpumalanga News 2018) is 41 %, 11% below the

52 % national youth unemployment rate in 2017 (The Citizen 2018). In order to curb unemployment in the area, the Nkangala district and Eskom created a joint employment programme called Siyasebenza Job Creation Initiative that aims to employ 900 people (Emalahleni Local Municipality 2017). However, these jobs are said to be based on short-term contracts where there is no guarantee of permanent employment. In addition to the unemployment problem, the city has service delivery issues such as access to clean water and housing issues. Access to clean water in the Emalahleni local government is one of the pressing issues faced daily; the local government has been failing to provide clean water to its citizens (Global Africa Network 2017).



Source: https://municipalities.co.za/map/1157/emalahleni-local-municipality

Figure 6: Location of Emalahleni

Water issues in Emalahleni is a huge challenge not only for the local government but also, for South Africa at large. Four rivers; the crocodile, Komati, Usutu and the Sabie-Sand river travel across the province creating potential risks as toxic wastes from the Emalahleni industrial and agricultural sector move into the rivers. These rivers have been maintaining the province's water-

hungry mining companies, the agricultural sector and Eskom. According to the Benchmarks Foundation, a water, food and energy nexus is looming in the province (Benchmarks Foundation 2014). While the government continues to promise growth, and development through the industrial sector for the city of Emalahleni, conflict in the redistribution of resources between mining corporates, farmers and community residents continue. Mining externalities negatively affects resources ironically; there is an expansion of mining companies in the area. According to interview participant 7, a Greenpeace representative, approval of mining licenses by the Department of Mineral Resources not only affects the residents of Emalahleni, but it also affects South Africans at large (Interview 7, 14 January 2019). The country has a water and food crisis and the South African government indirectly violates citizens' human rights by granting companies mining rights.

6.2 Ecocide impacts of coal mining in Emalahleni

Mining is a destructive practice that threatens ecosystems in the pursuit of profit maximisation. Coal mining negatively affects soil, water resources, and the air quality through its sub-processes (Centre for Environmental Rights 2016), coal plays as mentioned above, a major role in electricity generation and is considered as ''the backbone'' for other industries in South Africa. Coal mining not only negatively impacts the environment, but it also has a ripple effect on the social and health care of individuals that live in a 1km radius near mine pits, these communities are referred to as mining communities. Mining externalities are not experienced by the companies rather, by the public (Centre for Environmental Rights 2016). According to interview 2 leader of Mining Affected Communities United in Action (MACUA) and Director of the South African Green Revolutionary Council (SAGRC), Emalahleni and Mpumalanga residents at large have been experiencing health care issues most of which are due to mining and power stations active in the area. Residents have been suffering from respiratory and lung infections (Interview 2, 2 February 2019). Mining companies together with Eskom render people from the Local government unemployable due to their deteriorating health status, an externality caused by mining companies and state-owned enterprise Eskom. Interview participant 2 argues:

> ''*Mining companies in Emalahleni have screening tests before they hire employees if an individual fails these tests; he/she will not be employed. They (mining companies) hire people from outside of Emalahleni because they know that person has not been affected by*

dirty air coal mine dust, polluted water and soil. Eskom goes beyond, by building these outside workers flats close to their plants'' (Interview 2, 2 February 2019).

However, trade unions such as NUMSA and NUM claim that these practices are ethically correct. NUMSA went as far as to protecting mining companies, interview participant 5, official NUMSA of representative maintains:

'' *These practices in the mining sector are normal because companies need to hire people that can be productive and as unions, we protect workers not what happens at human resources or hiring level.''* (Interview 5, 5 December 2018).

The above statement shows that trade unions allow mining houses to apply unlawful practices that continue the exploitation of workers and unemployed youth. These employment processes play a role in keeping young people unemployed, which affects the total growth and productivity of the whole country on average. As a result, young people resort to illegal practices in the economy like illegal mining, an industry infiltrated by mostly migrants. Interview participant 2 argues that mining corporations have been exploiting the illegal miners for several years in Emalahleni. In addition to the social reproduction mining has on people, it also creates water and air pollution issues, soil and food security challenges, the human cost impact of these externalities is never calculated (Interview 2, 2 February 2019).

6.2.1 Impacts on water

South Africa is one of the driest countries in the world, the global rainfall average is 1033mm, while South Africa's annual rainfall is 450mm rainfall (Hedden and Cilliers 2014). The Mpumalanga Province is strategically located in the middle of the Enkangala water catchments, with over 4 000 wetland, rivers and dams (Lotter, Cadman and Lechmere-Oertel 2014). On average, the Enkangala region receives up to 800 mm of rain per annum, where the eastern part of the region receives about 1 197 of rain per annum and the western parts around 400 mm of rain annually, thus the importance of water conservation strategies in the Highveld highlighted in the NPD 2030 report (WWF-SA 2011). Coal mining and electricity generation threaten this area through water and soil pollution. According to WWF-SA, on average, Eskom Uses 300 billion litres of water per annum, the SOE needs access to clean water for electricity generation and its subprocess such as cooling coal and cleaning machines (WWF-SA 2011). Water pollution often

comes from the coal cooling process, polluted water flows into the river streams, harming ecosystems. The most common and challenging mining externality is Acid Mine Drainage (AMD).

Sulphide-bearing rocks, exposed to oxygen and water, cause AMD; the liquid flows out of polluted water from mines are the cause of the AMD problem in South Africa (Fig 2011). The pyrite becomes highly acidified producing sulphide acid and iron-based compounds as water increases in acidity, the water aluminium and other heavy metals further contaminate water. AMD is a crisis in South Africa with 6000 abandoned mines in and around the country filling up with high levels of AMD underground (Fig 2011). A number of communities especially those in nearby mining shafts are affected by this phenomenon. Which begs the question, can South Africa truly afford to use coal as an electricity generator with its costs and externalities passed not only to the environment but to its citizens as well? Makoma Lekalaka, director of Earthlife Africa disregards the use and expansion of coal mines arguing that it makes no economic sense for South Africa to include coal in the IRP (Center for Environmental Rights 2017). One cannot deny the looming water crisis facing South Africa, extractive industries not only push the boundaries beyond ecological limits, but they are also creating a security crisis for South Africans (T. S. McCarthy 2011).

According to Professor Anthony Turton in an interview with news broadcasting channel eNCA, South Africa will face water wars due to the quality of water caused by extractive industries and the lack of innovative technology investments in water treatment developments (eNCA 2018). Turton claims that there will be an increase in social unrest in urban areas caused by population growth and access to basic resources such as quality water. The quality of water has worsened because of AMD. A water study by WWF-SA shows that Emalahleni has been experiencing an AMD crisis since the early 1970s in the Olifants River catchment (Centre for Environmental Rights 2016). The Department of Water Affairs (DWA) conducted a study in 2011 and found that coal mining was responsible for the water pollution in the catchment (DWA 2011). Similarly, the CSIR blame coal mining for the rivers irreparable state (CSIR n.d.). The Olifant river catchment is affected by mining-related challenges since 1903, a thousand litres of polluted water is released into the catchment daily by abandoned and active mines (Center for Environmental Rights 2016).

In 2004, pollution in the Olifants River catchment made it to the headlines when a repair and conserve commitment was made by DWA in its second edition water strategy report published in 2013 (DWA 2013).

Water quality in Emalahleni is extremely poor that Eskom and residents of the local government do not use tap water for personal used but rather buy bottled water, an expense poor families cannot afford (T. S. McCarthy 2011). The Emalahleni region identified as an AMD crisis hotspot needs serious attention as ecocide looms. Carolina, a residential area in Emalahleni also has an AMD crisis. In 2012, the situation was bad which led residents participating in a service delivery march. A court order by environmental groups and local residents was filed against the Local and District Local government and the Minister of Water Affairs. Residents went as far as challenging the local government to provide clean water and find innovative solutions for the AMD crisis (Center for Environmental Rights 2016). The Carolina water issue was officially resolved in 2014 when the matter was escalated to DWA, mining companies were not cited in the court order by the environmental movements and residents, the issue was with the municipalities incompetence to provide access to clean quality water and regulate how mining companies act towards pollution.

6.2.2 Impacts on soil and food security

As mentioned above, the use of coal has costly externalities, in most cases the health risk of residents. The impact of what coal has on the soil is similar to the impact it has on water. Soil degradation caused by toxic wastes affects the quality of the soil, which will lead to a food crisis. Mpumalanga is home to 46% of South Africa's arable land, the continuation of mining and usage of coal directly threatens the agricultural sector. A study on the quality of soil in Emalahleni by (Mafuza, et al. 2015) reported a high concentration of heavy metals in the soil damaging the ecosystem. Coal mining according to interview participant 2 has short and long-term problems. Short-term problems are those such as agricultural instability, which sometimes last for up to five years hindering economic growth. Long-term problems are those such as irreparable environmental degradation. Coal mining not only affects the land but the people that work it. Mining externalities show the oppressiveness of the sector through gender links, women mineworkers face discrimination and inequality in the workplace (WoMin 2013). Women are not included in mining operations or the formation of land policies once the mine has been approved

in a specific area. Women in most cases experience the negative impacts of mining more than their male counterparts. According to (WoMin 2013), environmental degradation from mines threatens women's ability to provide food for their families.

6.2.3 Social impacts of mining on agriculture

The agriculture employment rate is decreasing, whereas mining is slowly increasing in the province. Mining companies buy land from farmers in most cases, companies ''buy'' farm workers as well. However, because a number of farmworkers lack a matric certificate and skills, mandatory requirements for working in a mine, these workers lose their jobs in less than a year (Bureau for Food and Agricultural Policy 2016). According to interview participant 2, '' mines buy farms and promise farm workers jobs, but the companies find other suitable employees with a certain skill set. Farmworkers end up unemployed, with their entire families having to leave the farm" (Interview 2, February 2019). Additionally, the conflict between coal mining and agriculture particularly maize have very important implications for food security in South Africa. Food insecurity is already a huge and chronic problem in South Africa. Undermining the ability to produce food, and particularly maize puts an already strained system under stress. According to Oxfam, an international food security organisation, one in four people in South Africa go hungry every day and half of all people in South Africa live on the edge of food insecurity (Oxfam 2014). The Mpumalanga Highveld is one of South Africa's most important maize producing areas, so the scale of the threat to agriculture from mining is a crucial food security question. According to the Centre for Environmental Rights' *Zero Hour* report, 'By 2014, 61,3% of the surface area of Mpumalanga fell under prospecting and mining right applications' and 'if mining continues at its current rate, around 12% of the country's total high potential arable land will be transformed' (Centre for Environmental Rights 2016, 15).

6.2.4 Impacts on the air quality and Health

The Mpumalanga Highveld is an air pollution hotspot according to the National Environmental Management Air Quality Act (NEM: AQA), in 2007, the Minister of Environmental Affairs requested a national response and identified the Highveld as a priority area (Centre for Environmental Rights 2016). The Highveld is an industrial area with an influx of coal mines and 12 power stations resulting to air pollution, the pollution not only affects residents but also

neighbouring countries such as Zimbabwe and Swaziland (IRR 2016). Emalahleni falls under nine of the worst performing areas in South Africa with its air quality standards; the area presents a high risk as it exceeds the World Health Organisation (WHO) and NEM: AQA standards. Unfortunately, the Department of Environmental Affairs (DEA) updated its Air Quality Management Framework to low minimum emission standards (MES) late October 2018. The original framework was set to 500mg/m3 sulphur dioxide (SO_2) to 1000 mg/m3 allowing Eskom to emit 30 % more than Chinese power stations (Greenpeace Africa 2018). At the same time, Eskom applied for a postponement in 2018 to comply with the 2015 MES for existing plants standards for its Tutuka power plant situated in Mpumalanga (Naledzi Environmental Consultants 2018). Eskom's power plants in the Highveld emit 195 million of CO_2 a year, about 1, 2 million of SO_2 and 82 000 tonnes of NO_2 making Eskom the largest toxic emitter in Africa (groundWork 2018).

Inhaling SO_2 causes health risks of getting asthma, lung infections and respiratory infections. Pollution and health expert Dr Mike Holland conducted an air quality report in the Highveld in 2016; he found that coal-related activities were the cause for the deaths of almost 2000 residents (Center for Environmental Rights 2017). Additionally, the environmental justice movement groundWork conducted a study and found that Eskom is the primary driver of deaths in the area (Mail&Gurdian 2014). Eskom also admits that its pollution causes 333 deaths a year costing the Department of Health R17 Billion (Gosling 2018). People who live within a 1km radius to mines or power plants exposed to extreme levels of pollution that in most cases result in a higher rate of respiratory diseases rather than those who do not live nearby (Liu, Lessner and Carpenter 2012). A study conducted by (Olufemi, Mji and Mukhola 2018) assessed the impact of coal mining on scholars who study in schools that are in close proximity to mines. The study found that schoolchildren in Emalahleni are heavily affected by the air pollution caused by coal mines, violating their rights to basic education and clean air. Similarly, a youth environmental justice movement conducted a study and found that young children enrolled in schools near coalmines experience severe illnesses such as bronchitis, asthma and respiratory infections (Environment Youth Activism 2014). Furthermore, interview participant 2 argues that the impact mining has on the community is huge. Due to biased mining employment regulations, schoolchildren might be unfortunately unemployed due to mining impacts on their health (Interview 2, 2 February 2019).

Greenpeace Africa has also asserted that the Highveld has the '' most polluted air in the world'' (Greepeace 2018). Greenpeace analysed Nitrogen Dioxide (NO_2) through satellite data over a three-month period, the study found that Mpumalanga tops ''the charts as the largest NO_2 hotspot in six continents'' (Kahn 2018). Nitrogen Dioxide is the most dangerous form of air pollution; it has detrimental effects on human health like SO_2, causing lung infections and respiratory infections (WHO 2003). Eskom, the Council for Scientific and Industrial Research (CSIR), the Department of Environmental affairs and NUM, has opposed the report from Greenpeace. Eskom has claimed that as an organisation have been monitoring NO_2 and other toxic pollutants in the Mpumalanga Highveld for thirty years with no signs of high levels of NO_2.

The CSIR has yet to find figures of a high level of NO_2 in the Highveld, the council does not deny that Mpumalanga is the most polluted province in South Africa however they argue that Greenpeace's findings lack enough evidence that residents of Emalahleni breath NO_2 (Kahn 2018). According to the CSIR's researcher Rebecca Garland, Nitrogen Dioxide in Mpumalanga is not only from coal-fired power stations but also vehicle emissions and domestic burning of fossil fuels (Kahn 2018). Similarly, the Department of Environmental Affairs argues that Greenpeace's data is incorrect, claiming that NO_2 emissions in Mpumalanga are within South African standards. NUM, on the other hand, rejected the report from Greenpeace, the union argues that Greenpeace is an organisation with white interests. Interview participant 1 argues that environmental activists are against workers and do not care about the poor and low-income workers

''We understand that Greenpeace advocates for environmental security, however, they want South Africa to shut down coal-fired power plants, how will workers survive in such difficult economic times? '' (Interview 1, 25 November 2018).

NUM is also against the ''radical'' call for independent power producers (IPPs) the union claims that IPPs will result in an already high unemployment rate, they are also completely against climate jobs. One could argue that NUM is opposed to IPPs not entirely due to worker interests but their own personal interests, since green and climate jobs will eventually render NUM and other extractive union organisations irrelevant once the government has a clear plan on IPPs and renewable energy.

6.3 Responses from environmental and climate justice movements

Emalahleni residents face a number of social, environmental and economic challenges caused coal mining in the region. Environmental justice movements have programs in Emalahleni challenging the local government, the national government and most importantly, mining corporations to stop mining in the area. The government has the power to respond adequately to mining corporates and their pollution, unfortunately, the South African government does not use its authority to regulate pollution from mines. Lack of policy implementation together with corruption allows the coal mining and energy sector to get away with murder. Which begs the question, what role does the South African government play in protecting the basic human rights of its people? Therefore, community members and climate activists challenge the government. The people of Emalahleni want real sustainable jobs that do not harm the environment, community members want humane living conditions where pollution ceases to exist.

6.3.1 Resistance in Emalahleni

The Emalahleni community says no more coal. Coal in the Emalahleni region has been mined for over fifty years causing irreparable damage to the environment and health of the community. Coal mining causes human right violations in the region as a result, environmental and climate justice movements such as the Highveld Environmental Justice (HEJN) and more communities joining MACUA has been on the rise in Emalahleni. Mpumalanga has 205 mines and about 45 of them located in Emalahleni, these mines together with Eskom's power plants are enough justification for campaigns such as the #endcoal led by climate justice movants such as groundWork, Centre for Environmental Rights, Benchmarks Foundation, Earthlife and Greenpeace. These organisations challenge the government through their vast networks globally. A number of submissions to the human rights commission on the impact of coal mining on communities and human rights were made. Sadly, according to Robby Makgalaka, groundWork's campaign manager, it is difficult to take coal companies to court about the environmental damage they make because there are so many mines in the area. In an interview with city press, Makgalaka alluded, *'' It is hard to point to one company and accuse it of making you sick. The court will need evidence of accusation.''* (Yende 2016).

While it is difficult to identify a company to the damage, communities continue to resist coal mining in Emalahleni. During community mobilisation meetings, one particular song echoes the stance of residents, *‘’asifune agenda ya macapitalist’’* which means, we do not want capitalist agenda’s (Hallowes and Munnik 2016). Mining companies have been accused of ‘’buying out’’ residents from their homes by relocating them to other areas, in most cases, companies offer residents jobs to cancel out the pollution externality. According to interview participant 2, big mining corporates use Zama-Zama's, mostly young people in their quest for coal in areas where mining applications have been rejected or in abandoned shafts (Interview 2, 2 February 2019). He further claims that mines manipulate young people and use the unemployment rate against them. Environmental justice organisation groundWork argues that big corporates that use illegal streams of acquiring profits are a human right violation, mines often prioritise profit maximisation before people (Hallowes and Munnik 2016). In the meantime, corporations enjoy their profits and disadvantaged people lose their lives in illegal mining due to a competitive, socially excluding economy.

Mining companies seem to have collaborated with the local police in Emalahleni as they arrest community activist who challenges the use of coal through resistance campaigns. Fortunately, the climate justice movement allows activists to fight injustices in solidarity abroad. Community journalist interview participant 4 maintains that her articles in the Emalahleni Times are read worldwide giving activists an opportunity to get inside information on what is happening on the ground (Interview 4, 4 December 2018). Additionally, community monitors publish a blog written by young people on the impact of mining on the youth of Emalahleni weekly. As a result, local resident voices are not ignored. In 2016 for instance, a strategic meeting held in Emalahleni on how to deal with how to reduce coal mining in the region. A number of these meetings followed, joining these meetings were mineworkers, local government representatives and members of the local police. Showing the seriousness of the issue, Emalahleni residents do not want coal mining companies operating on their land. In an interview with interview participant 3, a coal mine worker stated that

‘’ *There is nothing clean that comes from coal. We (workers) are told not to share what happens inside our mines and our full disposal methods to the public because the government will come*

and take our licence away. We are directly killing our kids, our environment, our resources and ourselves. What is worse, is that all these coal mines and power plants are in Emalahleni''. Interview participant 3 went far as to ''*If you work in a mine or power station, you only think of money and never the environmental degradation mining causes. Only after a few years when you retire or are retrenched you see the negative impacts of mining''* (Interview 3, 21 January 2019*).*

The above quote by interview participant 3 reflects the same sort of unity between residents. Any resident can participate in coal mining protests, coal workers, unemployed youth, residents and the police stand together against the use of coal in Emalahleni. However, some community members feel discouraged by resisting resulting in a number of challenges. In some cases, mine workers believe that they are trapped between employment which offers them an opportunity to provide for their families and environmental degradation. The former seems to be a better economic option for the short-run however; the latter leaves communities and the land they live in unsustainable. This analysis shows the lack of choices marginalised individuals have, the choice of a better life is restricted due to the lack of financial means. The basic human right to live in a clean society with access to water, clean air and other resources is violated by mining corporates.

6.3.2 Challenges of resistance

A number of community members often feel discouraged from resisting due to a lack of communication from mines and the government. According to interview participant 6, Emalahleni local government official, reasons for discouragement is that mining companies warn residents about blasting's prior, eventually, companies stopped informing residents about the blasts in order to prevent the communities from being able to document the impact (Interview 6, 18 February 2019). Mine blasts cause cracks in residents' homes and the dust particles find their way on food and furniture. Discouraged community members acknowledge activists and the media however; they argue that the local government does not address some of their problems.

Conflict between the local government and mining companies continue in the region, according to interview participant 6, mining companies blame the government for cracks on most houses in the region due to ''poorly built homes'', while the local government blame mining companies due to heavy vibrations during a coal blast (Interview 6, 18 February 2019). The issue went as far as community members fighting among themselves, those in protection for mining companies blame

the government for the crisis in Emalahleni. These individuals claim that they would rather work for mining companies and temporarily enjoy fruits of their labour while mining companies are still operational. As interview participant 3 stated, workers would rather contribute to the environmental damage rather than being unemployed. In this instance, one could argue that mining companies use their power over vulnerable communities by offering them below minimum compensation to cause chaos between those resisting in the region.

There is a serious challenge that stems from achieving economic freedom for individuals, that in most cases due to the poverty experienced in the country, any type of job is sufficient. Although it may lead to environmental degradation deepening social injustices like poverty, unemployment and increasing the inequality gap. Mining companies exploit marginalised individuals like in Emalahleni; they use individuals' current economic status and vulnerability against them to continue extracting coal, deepening ecocide in the region. Unfortunately, the South African government allows such exploitation to continue all in the process of achieving economic growth and development, promised by the National Development Plan and the Mining Charter.

6.4 Conclusion

The chapter revealed the impacts of coal mining on the environment and the communities that surround coal mines. The chapter highlighted the importance of justice movements on the fight against coal. There is no doubt that mining has quick economic returns however, these returns do not outweigh the negative externalities mining has on the environment. Mining communities pay for the ecocide caused by mines with their lives as coal mining affects the soil, water, and air in the Emalahleni. Resulting in inhumane living conditions for the people that live there. It must be noted, these individuals are not afforded the luxury of choosing to move elsewhere. Their economic condition is as dire as the environment they live in. As a result, climate justice movements in Emalahleni drive effective resistance from below, challenging members of the community to consider new means of imagining political power in a world beyond coal and capitalism. This challenge requires community members to find their own grass root solutions that are a means of empowerment. Furthermore, communities in Emalahleni as cited above, experience challenges around resistance due to the ongoing tension between those in support of mining and against. There is a possibility for a reduction of the use and reliance on coal, the resistance against the apartheid regime serves as an example where people led from the bottom-up for the type of

country the wanted. Therefore, it is possible for climate justice movements to win the fight against coal extraction in Emalahleni, but that it lies in the hands of the people.

CHAPTER SEVEN
CONCLUSION

7. Conclusion

The paper and interviews highlighted the lived realities of mining communities. Coal mining cuts through environmental, health and labour challenges. Mineworkers face the risk of losing their jobs as the reliance on coal reduces. Unions also face the risk of their relevance challenged in a future where mining ceases to exist and a just transition leads. The use of fossil fuel results in climate shocks evident in temperature increases, floods and droughts across the world. The future usage of coal is questioned throughout South Africa and the world, international coal markets continue to decrease and will eventually lead to the demise of coal usage and mining in the future. However, the elite occupies the mining industry with political networks striving for economic gains. Energy and mining researchers see a decline in the usage of coal due to its costly externalities on the environment and mining communities whereas South African political and union leaders; President Cyril Ramaphosa, Gwede Mantashe, NUMSA and NUM still see coal as a key player in the economy. On the global normative level, South Africa has made great strides in tackling climate change, however, at the grass root level; the reality is otherwise given that the narrative has not yet changed among key stakeholders.

South Africa has a number of contradictions when it comes to dealing with the climate crisis, firstly, the government prioritises economic development however this strategy comes with a number of challenges. South Africa still faces realities of the past, high unemployment rates, a huge inequality gap and lack of access to basic services like electricity. Unemployment especially youth unemployment is a challenge that the government struggles to find solutions for, young people in South Africa are forced to enter informal markets like Zama-Zama's in the mining industry to provide food for themselves and families. The ever-increasing inequality gap is the reason why South Africa has a failing economic system, power and wealth has never been redistributed among South Africans, the bulk of South Africa's wealth belongs to the those that own the means of production; the white minority (Van der Walt 2015). The electricity issue reveals South Africa's economic policy failures.

Eskom has been struggling to keep the lights on for South Africa, while a number of communities in rural areas are yet to receive basic electricity. Given the country's economic development plans, a huge challenge awaits Eskom. Economists warn that Eskom will not be able to meet the country's demand for electricity going forward. The country has had a slow growth rate since the global economic crisis in 2008, should South Africa exceed its growth plans for 2019, Eskom will hold South Africans and the economy ''hostage'' according to the Democratic Alliance (fin24 2015). The growth plan is depended on investments and extractive industries and not only affords South Africans short-term economic opportunities, but it also comes with economic and ecological debt.

Neoliberal economic policies have been ruthless and exclusive; South Africa's economic policies are deeply embedded in the neoliberal economic system. Economic participation is among a few elite individuals who have in most cases, developed the system especially in the energy sector. For instance, the MEC explains how mining houses have infiltrated the financial sector awarding these individuals and their networks a stake in the South African economy. As a result, the inequality gap continues to increase and the unemployment rate continues to affect young people. Power and wealth in the South African economy continue to shift among mining conglomerates and political elites. An economy that is heavily dependent on extractivism for economic growth according to Ashok Shumshere (2016) tends to fail due to the structure of its economy. Those with economic wealth mostly political leaders and corporate leaders, for example, run South Africa.

Similarly, economic analyst Jac Laubscher warns that South Africa could end up like Zimbabwe and Sierra Leone as a failed state (Laubscher 2016). Zimbabwe and Sierra Leone's economies collapsed due to maladministration and corruption. The South African economy is no different; wealth and power are circulated among the elite with political networks formed in corruption. Elite players in the economy enjoy the country's wealth through oppressive economic policies that mimic apartheid. Unfortunately, workers are not included in the redistribution of wealth however; they equally share the negative externalities that come with extractivism. Moreover, workers and mining communities like Emalahleni are not well equipped with coping mechanisms to help them respond to negative impacts that come with mining. These individuals are trapped in dire economic conditions and experience human right violations from mines. An often occurrence in Emalahleni is that communities are left with dealing with mining externalities by themselves without the help

of mining conglomerates and the government. Women and children are most affected by mining externalities, threatening their ability to provide food for their families. Climate justice movement's core function is to fight for these individuals through social justice campaigns.

Climate justice movements aim to redistribute the country's wealth equally, bring a just transition and implement change solutions that will be both economically and socially viable for the country. Climate activists together with civil society play an important role by holding the government accountable for policy implementation or lack thereof. Most importantly, climate justice movements are inclusive and inform citizens with information regarding government decisions that affect them economically, environmentally and lastly, socially. Therefore, it is important for these movements to continue challenging the government since governments and global leaders, in general, approve policies that do not comply with climate change principles. Interview participant 8, Earthlife Africa Representative argues that not only is it important to challenge global hegemon, it is important to understand that mining causes climate change leading to poverty, food and water security (Interview 8, 21 February 2019). One responsibility for climate activists is to represent affected communities by linking their issues with global mining externalities because mining is destructive globally.

In conclusion, coal extraction contributes to ecocide in Emalahleni in four ways mentioned in the paper. Firstly, coalmines produce carbon emission that deepens the climate crisis through toxic waste in the atmosphere leading to temperature increases, droughts and floods, conditions that are harmful to human survival. Secondly, Toxic waste in the atmosphere, water and soil damages people's health. As seen in chapter six, Emalahleni residents suffer health conditions such as asthma, bronchitis and lung infections due to the quality of the air they breathe and the water they drink. Third, the physical environment, soil and biodiversity in mining regions is irreparable, resulting in food security issues for the whole country. For instance, Emalahleni region is a key area for food security in South Africa, 46% of arable land is located in the region, and should more mining licences be granted, the South African food crisis would worsen. Lastly, mining and electricity generation causes a social reproduction crisis in Emalahleni. Mining is not only harmful to the environment, health and ecosystems; it creates challenges for residents to fully participate in the economy. For instance, mining houses play an active role in increasing the youth

unemployment rate in the country through oppressive recruitment health checks. Mining corporates give South Africans false promises such as economic development and growth; these promises are yet to be fulfilled. Instead, young people are exploited with low wages and in worst case scenarios like Emalahleni, young people are rendered unemployable due to their deteriorating health.

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Interview participants:

Interview 1, Official from NUM, 25 November 2018.

Interview 2, Mining Affected Communities United in Action (MACUA) leader, 2 February 2019.

Interview 3, Coal Mine representative, 21 January 2019.

Interview 4, local newspaper journalist, 4 December 2018.

Interview 5, Official from NUMSA representative, 5 December 2018.

Interview 6, Official from the local government, 18 February 2019.

Interview 7, Greenpeace representative, 14 January 2019.

Interview 8, Earthlife representative, 21 February 2019.

APPENDIX

A ETHICS CERTIFICATE

school of SOCIAL SCIENCES

SOSS Human Research Ethics Committee

Clearance Certificate

Protocol Number:	INTR20180723/01
Project Title:	'Coal mining ecocide in South Africa'
Investigator's Name:	Miss Bulelwa Nkosi 1767252
Department:	International Relations
Date Reviewed:	July 2018
Decision of Committee:	Approved
Expiry Date:	August 2020
Date:	24 August 2018

Head of School 

Professor Mucha Musemwa

CC supervisor: Professor Vishwas Satgar

Declaration of Investigator

To be completed in duplicate and one copy to be returned to Ms. Sarah Mfupa in the School of Social Sciences, Room 152, 1st Floor, Robert Sobukwe Block.

I fully understand the conditions under which I am authorised to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. If any departure from the research procedure as approved, I undertake to resubmit the protocol to the committee.

Bulelwa Nkosi — Student Signature

31/08/2018 — Date

B INTERVIEW PARTICIPATION LETTER

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

LETTER OF INVITATION TO PARTICIPATE IN A RESEARCH PROJECT ON COAL MINING ECOCIDE IN SOUTH AFRICA: A CASE STUDY OF EMALAHLENI MPUMALANGA

30/07/2018

Dear: Sir / Madam

My name is **Bulelwa Nkosi** and I am a graduate student in the Faculty of Social Sciences at the University of the Witwatersrand University, Johannesburg. I am conducting a research on coal mining ecocide in South Africa: a case study of Emalahleni Mpumalanga for the partial fulfillment of the Master of Arts (International Relations) degree and I would like to extend an invitation to you to participate in this research.

The aim of this research project is to find out how coal mining impacts energy security in the wake of climate change in South Africa. As part of this project I would like to invite you to take part in a 45 minute interview which will take place at a place of your convenience. You will be interviewed only by me, Bulelwa Nkosi. With your permission, I would also like to record the interview using a digital device. All the information obtained in the study will be used for academic purposes only and considered confidential.

The interview will be completely confidential and anonymous as I will not be asking for your name or any identifying information, and the information you give to me will be held securely and not disclosed to anyone else. Responses will be completely anonymous; your identity will not be linked to this research in any way. If you experience any distress or discomfort, we will stop the interview or resume another time. The records of this study will be kept strictly confidential, research records will be kept in an on-line data base, and all electronic information will be secured using a password. You will not receive any direct benefits from participating in this study, and there are no disadvantages or penalties for not participating. Participation in this research is completely voluntary and you may choose to withdraw from the research at any time or not answer questions that you do not feel comfortable answering.

If you have any questions afterwards about this research, feel free to contact me on the details listed below. This study will be written up as a research report which will be available online through the Witwatersrand University library website. If you wish to receive a summary of this report, I will be happy to send it to you upon request. If you have any queries, concerns or complaints regarding the ethical procedures of this study, you are welcome to contact the University Human Research Ethics Committee (non-medical), telephone + 27(0)11 717 1408, email hrec-medical.researchoffice@wits.ac.za/ Shaun.Schoeman@wits.ac.za.

Yours sincerely,

Bulelwa Nkosi **Prof Vishwas Satgar**

C INTERVIEW CONSENT FORM

UNIVERSITY OF THE WITWATERSRAND, JOHANNESBURG

CONSENT FORM TO PARTICIPATE IN A RESEARCH PROJECT ON COAL MINING ECOCIDE IN SOUTH AFRICA: A CASE STUDY OF EMALAHLENI MPUMALANGA

Title of study: Coal mining ecocide in South Africa: A case study of Emalahleni Mpumalanga

Name of researcher: Bulelwa Nkosi

Name of Supervisor: Prof Vishwas Satgar

Please read and complete this form carefully. If you are willing to participate in this study, circle the appropriate responses and sign and date the declaration at the end. If you do not understand anything and would like more information, please ask.

I ..... agree to participate in this research project. The research has been explained to me and I understand what my participation will involve.

I agree that my participation will remain anonymous **YES / NO**

I agree that the researcher may use anonymous quotes in his research report **YES / NO**

I agree that the interview may be audio recorded **YES / NO**

I understand that any audiotape material of me will be used solely for research purposes and will be destroyed on completion of my research **YES / NO**

I freely give my consent to participate in this research study and have been given a copy of this form for my own information.

Signature: .....

Name: .....

Date: .....

D INTERVIEW QUESTIONS

Interview protocol for environmental justice movements

Date & Time:

Place:

Interviewer:

Interviewee Pseudonym:

Demographic Information: Male/Female

Job title:

Department:

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1. Does coal have a future in South Africa?
2. What measures are put in place to adapt and mitigate climate change shocks?
3. Are there current plans to transition to renewable energy completely?
4. Do you think that South Africa's industrial development goals hinder climate change adaptions?
5. Who plays a major stakeholder in international climate change agreements and why?
6. Are there any barriers with policy implementation and international climate change agreements that hinder a low carbon economy?
7. Does the government hold transnational fossil fuel corporations accountable for their pollution in Emalahleni Mpumalanga and across South Africa?
8. Given that the government is being challenged by environmental and climate justice movements on the future of coal, how does the government intent to work with such grass root movements to hold fossil fuel corporations accountable should the violate pollution laws?
9. How do we provide economic development, energy security and climate change mitigation in South Africa?

Interview protocol for Emalahleni Municipality

Date & Time:

Place:

Interviewer:

Interviewee Pseudonym:

Demographic Information: Male/Female

Job title:

Department:

1. What measures are put in place in the municipality to adapt and mitigate climate change shocks?
2. How does the municipality hold mining companies accountable for their pollution?
3. How many mining houses hold water licences in the area?
4. In what ways does the municipality and Mpumalanga as a whole intend to deal with food security threats due to coal mining and the advancements of mining in the area?
5. Do you think that South Africa's industrial development goals hinder climate change adaptions?
6. How do we provide economic development, energy security and climate change security in South Africa?

Interview protocol for Coal Mining Company

Date & Time:

Place:

Interviewer:

Interviewee Pseudonym:

Demographic Information: Male/Female

Job title:

Department:

1. What measures does the mine company put in place to adapt and mitigate climate change shocks?
2. In what ways does the company respond to community challenges brought by mining
3. Does your company hold a water and mining licence to mine in the area?
4. Other than short-term employment contracts, what other "benefits" does the company provide Emalahleni residents?
5. Does the company realise that its employment practices for residents of Emalahleni render them unemployable by virtue of them being born in the area?
6. How do we provide economic development, energy security and climate change security in South Africa?

Interview protocol for Trade Unions

Date & Time:

Place:

Interviewer:

Interviewee Pseudonym:

Demographic Information: Male/Female

Job title:

Department:

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1. Does coal have a future in South Africa?
2. What measures are put in place to adapt and mitigate climate change shocks?
3. Are there current plans to transition to renewable energy completely according to your union?
4. Who plays a major stakeholder in international climate change agreements and why?
5. Are there any barriers with policy implementation and international climate change agreements that hinder a low carbon economy?
6. Does the government hold transnational fossil fuel corporations accountable for their pollution in Emalahleni Mpumalanga and across South Africa?
7. How do we provide economic development, energy security and climate change mitigation in South Africa?
8. Is there a future for trade unions in South Africa in the next 20 years especially since the implementation of new technology in the industry, and resource depletion?