Legal considerations in developing and implementing the 2018 Draft Integrated Resource Plan (IRP): A case study of the nuclear sector

Written by:

Fadeelah Kenny

Supervisor:

Professor Jan Glazewski

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Department of Electrical Engineering

University of Cape Town

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ABSTRACT

The 2018 Draft Integrated Resource Plan (IRP) published by the Department of Energy (DoE) of South Africa informs the government's electricity demand projections until 2050. They are published under the authority of the Electricity Regulation Act (ERA) of 2006. The Electricity Regulations on New Generation Capacity of 2009 stems from the ERA.

The draft IRP must, however, be seen in the context of previous IRPs, and policy considerations outlined in Chapter 2. The draft IRP 2018 sets out to estimate the generating capacity requirements and allocates how much of each energy technology will be commissioned during the projection window. The rollout of the nuclear component of the IRP has had many challenges since the original IRP was published in 2010. Apart from varied policy jockeying regarding the various energy sectors in South Africa (SA), court cases and other factors, allegations of corruption and maladministration have caused major delays in the envisaged nuclear rollout.

This dissertation identifies the legal measures that Eskom as the licence holder and various government entities need to comply with to successfully roll out the nuclear component of the draft IRP 2018. It will describe the applicable legislation, processes and illustrative court cases. In so doing the work will provide guidance on the steps to follow to ensure that the nuclear rollout complies with the legal and policy framework of SA and gets delivered successfully and efficiently.

The latest draft IRP 2018 which was published for public comments in the *Government Gazette* dramatically revises the forecast for SA's energy demand downwards from a projection of 525 Terawatt hours (TWh) of power in 2050 to 430 TWh for the most optimistic 'high' scenario. This revision is the main reason the new IRP no longer calls for massive new coal plants and has relegated nuclear to specific scenarios instead of the 'base case'.

The carbon budget (IRP6) and carbon budget plus market-linked gas price (IRP7) scenarios commission nuclear capacity of 4200 megawatts (MW) and 5600 MW respectively for the period 2031-2040. IRP 6 and 7 have 6 per cent (6.3GW) and 7 per

cent (7.35 GW) nuclear of 105 Gigawatt (GW) of installed capacity respectively, up from the 3 per cent (1830 MW) of Koeberg Nuclear Power Plant (Koeberg NPP). For the period 2041 – 2050, IRPs 6 and 7 have 6 per cent (7.56 GW) and 8 per cent (10.08 GW) nuclear of 126 GW of installed capacity respectively.

The dissertation identifies the legal requirements and issues and makes recommendations on the steps to be followed to enable a legally sound nuclear rollout for SA.

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ABBREVIATIONS

BAR	Basic Assessment Report
CCGT	Combined Cycle Gas Turbine
CSP	Concentrated Solar Power
CSIR	Council for Scientific and Industrial Research
COUE	Cost of unserved energy
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism
DoE	Department of Energy
DG	Director-General
ERA	Electricity Regulation Act
ESCS	Energy Security Cabinet Subcommittee
EA	Environmental Assessment
ECA	Environment Conservation Act
EIA	Environmental Impact Assessment
EIR	Environmental Impact Report
EMP	Environmental Management Programme
GW	Gigawatt
GHG	greenhouse gas
GDP	Gross Domestic Product
IAP	Interested and affected party
IPP	Independent Power Producer
IEP	Integrated Energy Plan
IEPR	Integrated Energy Planning Report
IRP	Integrated Resource Plan
IGA	Intergovernmental Agreement
LCOE	Levelised Cost of Energy
LTMS	Long-Term Mitigation Strategy
MW	Megawatt
MISS	Minimum Information Security Standard
NCRWM	National Committee on Radioactive Waste Management
NDP	National Development Plan

NEDLAC	National Economic Development and Labour Council
NERA	National Energy Regulator Act
NERSA	National Energy Regulator of South Africa
NEMA	National Environmental Management Act
NNEECC	National Nuclear Energy Executive Coordination Committee
NNR	National Nuclear Regulator
NRWMA	National Radioactive Waste Management Agency
NGO	Non-Governmental Organisation
Koeberg NPP	Koeberg Nuclear Power Plant
NPP	Nuclear Procurement Programme
OCGT	Open Cycle Gas Turbine
PBMR	pebble bed modular reactor
PV	Photovoltaic
PAIA	Promotion of Access to Information Act
PAJA	Promotion of Administrative Justice Act
REIPPP	Renewable Energy Independent Power Producer Procurement
RBS	Revised Balanced Scenario
RFP	Requests for proposals
S&EIR	Scoping and Environmental Impact Reporting
SA	South Africa
SOE	State-owned enterprise
NECSA	South African Nuclear Energy Corporation
TWh	Terawatt hours

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Chapter 1: Introduction

1.1. Statement of the problem

South Africa has experienced acute energy challenges in recent years, including high energy and carbon dependency resulting from extensive use of coal, lack of access to electricity for a high portion of the population (energy poverty) and supply constraints that have led to persistent loadshedding from 2007 to the present.

Due to its reliance on coal as its primary energy supply, SA's economy has a relatively high carbon intensity, ranking as the 14th largest carbon dioxide emitter in the world and the biggest emitter in Africa.[1]

Since supply constraints experienced in 2007, security of energy supply has become a concern. This led to Eskom resorting to loadshedding as a system load management tool which negatively affected economic growth, Gross Domestic Product (GDP), unemployment and poverty levels. The cost of loadshedding at stage 2, where 2000 megawatts is shed, is estimated to cost the South African economy R2 billion per day.[2]

Nuclear power forms part of the ideal energy mix for SA, along with coal and renewable energy sources such as wind, solar, and gas. The latest Integrated Resource Plan (IRP), the draft 2018 IRP, requires between 13.9 – 17.4 GW[3] more nuclear power stations to be commissioned by 2050. In this regard, the Nuclear Procurement Programme (NPP) provides a solution to the carbon intensity and emissions problem and it provides high volumes of power to alleviate the supply challenges. The NPP has, however, been fraught with delays, maladministration, litigation, public outcry from environmental advocacy groups and allegations of corruption.

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[1] Energy Information Administration 'International Energy Statistics' available at http://www.eia.doe.gov/emeu/international/contents.html (accessed on 8 March 2018).

[2] B Sokutu 'Return of Stage 2 load-shedding costs SA economy R2 bn a day' *The Citizen* 11 February 2019 available at https://citizen.co.za/business/2080553/return-of-stage-2-load-shedding-costs-sa-economy-r2bn-a-day/ (accessed on 1 April 2019).

[3] Draft IRP 2018: Period 2031–2040
The carbon budget (IRP6) and carbon budget plus market-linked gas price (IRP7) scenarios commission an additional nuclear capacity of about 4200 MW and 5600 MW, respectively for the period 2031-2040. IRP6 and 7 have 6% (6.3GW) and 7% (7.35 GW) nuclear of 105GW of installed capacity respectively, up from the 3% (1.8 GW) of the Koeberg NPP. For the period 2041–2050, IRPs 6 and 7 have 6% (7.56 GW) and 8% (10.08 GW) nuclear of 126 GW of installed capacity respectively.

This dissertation identifies legal measures that Eskom as the most probable licence holder and various government entities need to comply with to successfully rollout the envisaged nuclear component of the IRP. It will provide guidance on the steps to follow to ensure that the rollout complies with the legal and policy framework of SA.

1.2. The relevance of the study

This study is particularly relevant in SA as Eskom's current and future ability to meet the country's electricity demand is questionable. Eskom's generating fleet is ageing with generating capacity expected to decline dramatically from now until 2050. Almost all existing generation capacity in SA will be decommissioned by 2050 as shown in Figure 1 below. South Africa currently has just less than 50 GW of installed generation capacity. The Eskom coal fleet starts to decommission from the mid-2020s onwards with 9.6 GW decommissioning between 2020-2030, 14.8 GW between 2030-2040 and 7 GW between 2040-2050. By 2050, only Medupi, Kusile, and one unit at Majuba are still in operation. Most existing peaking capacity decommissions just before 2040 while the only existing nuclear capacity (Koeberg) decommissions in the mid-2040s. The capacity that comes online as part of the REIPPP starts to decommission in the mid-2030s until the late 2040s while the 2.2 GW hydro and 2.9 GW pumped storage capacity is still in operation by 2050.[4] Eskom's ageing fleet needs to be replaced with large-scale generation capacity.

[4] JG Wright, J Calitz, T Bischof-Niemz & C Mushwana 'The long-term viability of coal for power generation in South Africa' available at https://www.researchgate.net/profile/Jarrad_Wright2/publication/324409134_The_long-term_viability_of_coal_for_power_generation_in_South_Africa/links/5accbab0aca272abdc656d6a/The-long-term-viability-of-coal-for-power-generation-in-South-Africa.pdf (accessed on 24 August 2019).

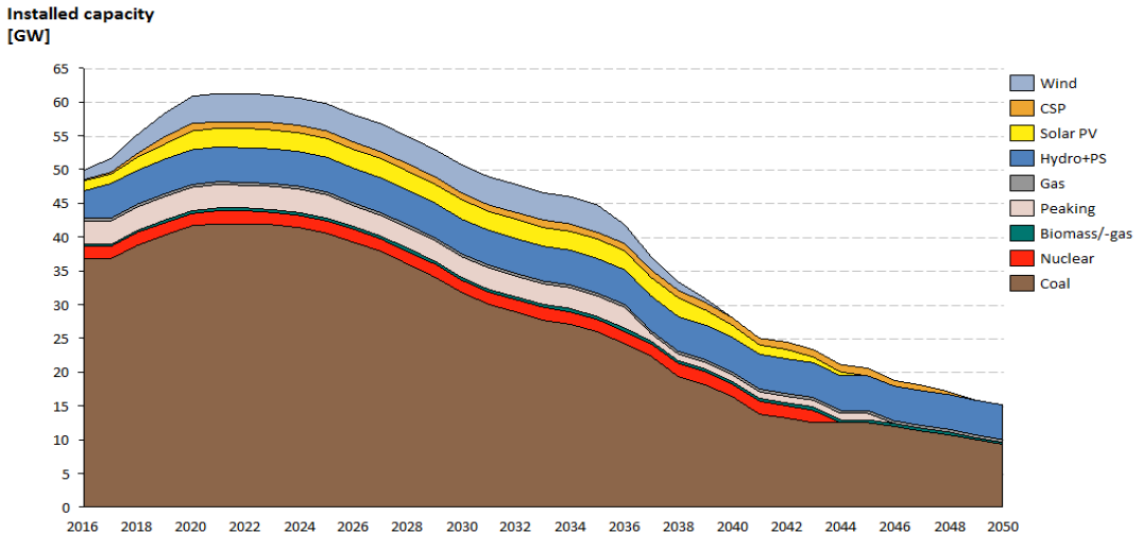


Figure 1: South African generating capacity decommissioning schedule. source: CSIR[5]

The inability of Eskom to meet the current power demands of the country reliably has become evident during numerous periods of loadshedding from 2007 to present. This was brought about by various factors leading to a lack of sufficient available generating capacity during peak periods of demand. This continued unreliability of the national grid has thrown our deep reliance on electricity on demand into stark evidence, and the losses suffered by business and industry is a cause of national and international concern.

This decline in generating capacity along with the inability of Eskom to meet the power demands of the country means that large-scale new generating capacity is required to support electricity demand and economic growth.

Eskom as the most likely licence holders and Government will receive guidance as a result of an examination of the applicable legislation and processes that they need to navigate in order to successfully and efficiently deliver the proposed nuclear build. Added advantages include the minimising of wasted funds by following the correct process the first time.

[5] Wright et al (n 4).

These largely technical issues must, however, be seen in the context of the Rule of Law, good governance and relevant legislation which is the focus of this dissertation.

1.3. Nuclear power to meet South Africa's energy needs

In line with its pro-nuclear stance, the SA government entered into framework intergovernmental agreements with Russia, China, France and South Korea in 2014. As elaborated on later in Chapter 5, the Western Cape High Court set aside the intergovernmental agreement with Russia, thereby putting at least a temporary hold to the nuclear build initiative.

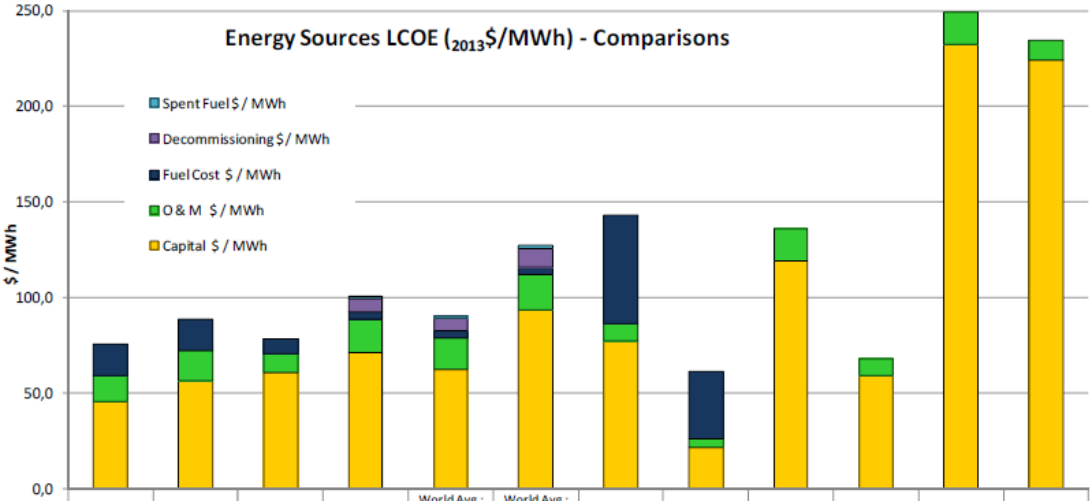
The cost of nuclear may be prohibitive, and the funding source for the nuclear build which has a substantial initial capital outlay is still unknown as no requests for proposals (RFPs) were yet issued. The use of different funding models has a significant effect on the levelised cost of energy (LCOE) realised per project. The LCOE is the net present value of the unit cost of electrical energy over the lifetime of a generating asset. It allows an economic comparison of different methods of electricity generation on a consistent basis.

The DoE instructed engineering consulting company Ingerop to produce a report on the cost of nuclear power in 2013.[6] The capital cost of nuclear according to the Ingerop report is ~5000$/KWe (kilowatt-electric) with an (LCOE) of 80$/MWh or R1.12 per kWh, using the exchange rate at 12 July 2019 = R13.99 per USD. The cost of 10 GW of capacity as envisaged in the IRP 2010 would be R700 billion.[7] Figure 2 below shows how the life cycle cost of nuclear power compares with other energy technologies such as coal, gas, wind and solar power in LCOE.

The LCOE of nuclear compares favourably with solar power and average wind power. The optimal wind option is impractical and can be discarded as a viable option. Combined Cycle Gas Turbines (CCGT/s) without Carbon Capture remains a cheaper option than nuclear, but gas availability and the required support infrastructure remains a problem in SA. Coal appears to be a cheaper option than nuclear power when the

[6] Department of Energy *Ingerop South Africa: Study of the Cost of Nuclear Power* (2013).
[7] Department of Energy (n 6) 11.

decommissioning cost of nuclear is taken into account. A very conservative approach to the decommissioning costs was taken by Ingerop in order not to underestimate this cost, so this cost may well be less than reported. [8]



	2x750 MW With FGD Coal	Two 2x2x1 Shell IGCC Coal	EPRI 2012 South Africa Nuclear	World Avg : 1200 Mwe Gen III Nuclear	World Avg : 1200 Mwe Gen III NOAK Nuclear	World Avg : 1200 Mwe Gen III FOAK Nuclear	OCGT Gas	CCGT Without CCS Gas	100 x 2 MW (Average) Wind	100 x 2 MW (Optimal Wind 8m/s) Wind	Parabolic Optimal (9hrs Storage) Solar	Solar Thin film Ground Solar
Spent Fuel $ / MWh	0,0	0,0	0,0	1,3	1,2	1,7	0,0	0,0	0,0	0,0	0,0	0,0
Decommissioning $ / MWh	0,0	0,0	0,0	7,1	6,2	9,4	0,0	0,0	0,0	0,0	0,0	0,0
Fuel Cost $ / MWh	16,6	16,5	7,6	3,9	3,9	3,9	56,5	35,5	0,0	0,0	0,0	0,0
O & M $ / MWh	13,9	15,5	10,1	17,2	16,6	18,5	9,2	4,0	17,0	8,7	17,3	10,1
Capital $ / MWh	45,4	56,7	60,6	71,3	62,3	93,7	77,2	21,9	119,2	59,2	232,2	224,5

Figure 2: results from the Ingerop report, showing LCOE comparisons across technologies (2013 $/MWh)[9]

Nuclear experts have called the high cost of nuclear from the Ingerop report into question. For example, calculations done by nuclear expert Dr Jan Cilliers applied to the UAE/Korea Barakah-1 nuclear power plant currently under construction using a private/public funding agreement shows an LCOE of R0.75 per kWh. Using a vendor state/private ratio of 85 per cent/15 per cent for the same project, we obtain an LCOE of R0.21 per kWh for the 60 years expected life cycle of the plant.[10]

In this writer's view, the proposed nuclear build is an important component of the energy mix as it provides a large contribution of the baseload required to ensure continued stability and reliability of the power grid. It has environmental advantages

[8] Department of Energy (n 6) 6.
[9] Department of Energy (n 6) 163
[10] A Cilliers 'Nuclear power – unaffordable, or lowest cost energy available?' available at https://www.fin24.com/Opinion/nuclear-power-unaffordable-or-lowest-cost-energy-available-20171108 (accessed on 10 July 2019).

over coal which is a growing consideration due to the concerns of emissions and its effects on air quality and climate change. However, the nuclear build has been opposed by many, including environmental Non-Governmental Organisations (NGOs). Their arguments against the nuclear build are based on economic concerns of affordability, concerns about electricity demand not justifying the build at the intended scale, concerns about the lack of transparency in the process and the potential for corruption, environmental and human safety concerns. [11]

The two most serious nuclear accidents in history are the Chernobyl accident in 1986, and the more recent Fukushima disaster in 2011.

The Chernobyl disaster was the result of a flawed reactor design that was operated with inadequately trained personnel. A lack of any safety culture and serious mistakes made by the plant operators resulted in two deaths on the night of the accident and a further 28 deaths within weeks as a result of acute radiation poisoning. [12]

The Fukushima disaster was caused by a tsunami, flooding the lower levels of the plant which resulted in a loss of coolant accident and nuclear meltdowns in three of the units. No deaths were reported as a result of the accident and the clean-up operation is ongoing. The release of contaminated water into the ocean remains a concern. [13] The small casualty rate of the two worst nuclear accidents in history attest to the generally outstanding record of nuclear safety all over the world. [14]

Environmentally nuclear boasts a clear advantage over ash and CO2 producing fossil fuels such as coal. One of the advantages of nuclear power over renewable sources such as wind, solar and hydro is its ability to be run as a clean baseload. A baseload power station is one that runs 24 hours a day, 7 days a week and is only shut down

[11] N Prins & E Davies *South Africa's nuclear new-build programme: Who are the players and what are the potential strategies for pushing the nuclear new-build programme*? (2018).
[12] World Nuclear Association 'Chernobyl Accident 1986' available at http://www.world-nuclear.org/info/Safety-and-Security/Safety-of-Plants/Chernobyl-Accident/ (accessed on 23 December 2019).
[13] Fukushima Daiichi nuclear disaster available at https://en.wikipedia.org/wiki/Fukushima_Daiichi_nuclear_disaster (accessed on 23 December 2019)
[14] 'Top 5 reasons why intelligent liberals don't like nuclear energy' available at https://blogs.scientificamerican.com/the-curious-wavefunction/top-5-reasons-why-intelligent-liberals-dont-like-nuclear-energy/ (accessed on 23 December 2019)

during maintenance. A coal-fired power station is a good example of such a baseload station. It takes four to eight hours to ramp up to full output from cold start-up and for this reason, the power station is not shut down daily unless required. [15] In order to meet the daily morning and evening peaks in the load profile, peaking stations that can ramp up quickly are dispatched. In comparison to coal, a peaking station such as the Palmiet and Drakensberg Pumped Storage schemes ramps up from no load to generating power in less than three minutes. [16] Such peak generating stations can be brought on stream in less than three minutes, whereas baseload coal-fired stations require a minimum of eight hours to start generating power from cold start-up. Nuclear power reactors take days to shut down and start up safely and are therefore always run as baseload.

Sources can also be classified as either intermittent or dispatchable. An intermittent source such as wind and solar only produces power while the wind is blowing within the optimal speed range, or the sun is shining, respectively. Hydropower is only available when excess water is available. South Africa is a water-scarce country and water restrictions are commonplace, making hydropower produced here an impractical option.[17] Battery storage capabilities can be added to the system to increase availability, at great cost.[18] Dispatchable sources include coal, nuclear, hydro and pumped storage that can be dispatched as the system demand dictates. An implication of this is that 10 GW of nuclear capacity needs to be replaced with 38 GW of wind or 19 GW of solar to provide the same level of reliability. [19]

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[15] J Kemp 'To survive, coal power plants must become more flexible: Kemp' available at https://www.reuters.com/article/coal-power-generation/column-to-survive-coal-power-plants-must-become-more-flexible-kemp-idUSL5N0J42YG20131119 (accessed on 20 February 2018).

[16] Eskom 'Fact sheet: Palmiet – A Forerunner in Environmental Engineering' available at http://www.eskom.co.za/AboutElectricity/FactsFigures/Documents/HY0002PalmietTechBrochureRev8.pdf (accessed on 22 February 2018).

[17] M Gosling 'Water restrictions: Govt to announce water allocation before month end' available at https://www.news24.com/SouthAfrica/News/water-restrictions-govt-to-announce-water-allocation-before-month-end-20181106 (accessed 9 July 2019).

[18] In a market assessment conducted by the US Trade and Development Agency, the average cost of battery energy storage systems ranged from 2 000 – 4 million USD/MWh. M Schloesser, J Niemann, C Fussenecker, G Aschmann, RAM Pais, S Pietrangeli & J Hauser Analysing the current energy storage development in South Africa (2019) Table 2-1, 32.

[19] Department of Energy *Integrated Resource Plan for Electricity 2010 Revision 2 Report DRAFT* (2010) 21.

Wakeford[20] cites three motivators for shale gas exploitation, all three of which also motivates towards nuclear power proliferation in SA. The first is to boost the security of energy supply by reducing reliance on energy imports and offsetting the depletion of SA's existing coal, oil, and gas reserves. The second is to diversify the energy mix away from coal and reduce carbon and GHG gas emissions. The third is to expand the provision of affordable energy to underpin industrial development and alleviate energy poverty.

Nuclear power serves as clean, reliable, dispatchable baseload.

> in sustainable energy planning, three key criteria to be met are: Energy Security (supply meets demand) – Energy Equity (access to affordable energy by all) and Environmental Sustainability (pollution and climate change mitigation). Based on empirical evidence around the world, nuclear energy delivers to all three criteria at an unprecedented level making it a sensible decision.' Des Muller, Director, NuEnergy Developments, South Africa.[21]

While the intention is not to argue the merits of nuclear power above all other sources, the advantages provide by nuclear power provides a solid argument to include it as an integral portion of the ideal energy mix for South Africa.

There are valid concerns about the lack of transparency in the process and the potential for corruption. This dissertation will provide direction on what is required to pursue the nuclear rollout in a way that is fair, transparent and free of corruption.

1.4. Key research questions

Considering the above, the questions that will be answered include:

- Identify applicable legislation and case law that are relevant to the NPP.
- What are the legal statutory requirements including the public participation process that the licence holder needs to comply with in order to rollout the envisaged nuclear component of the IRP?
- Where does the public participation process fit in the rollout process?

[20] J Wakeford 'The South African Energy Context' in J Glazewski & S Esterhuyse (eds) *Hydraulic Fracturing in the Karoo: Critical Legal and Environmental Perspectives* (2016).
[21] ESI Africa Africa's Power Journal 'Exclusive interview with Des Muller, NuEnergy Developments' available at https://www.esi-africa.com/des-muller-explores-nuclears-future/ (accessed on 21 February 2018).

- Identify where the legislation does not speak to each other and are open to ambiguity.

1.5. Theoretical underpinning underlying the thesis

The legal foundation of the South African energy policies and particularly those relating to nuclear power will form the theoretical underpinning of this dissertation. Against the backdrop of the Constitution, the dissertation will largely examine administrative law and statutory requirements including the public participation process that the licence holder needs to comply with in order to rollout the envisaged nuclear component of the IRP. This will be done by outlining applicable legislation and describing relevant case law.

The key legislation and regulations that will be dealt with and elaborated upon:

- Constitution of the Republic of South Africa, 1996 (Constitution)
- The National Energy Act 34 of 2008, particularly section 6
- National Environmental Management 107 of 1998 (NEMA)
- Nuclear Energy Act 46 of 1999
- National Nuclear Regulator Act 47 of 1999
- National Energy Regulator Act 40 of 2004
- Electricity Regulation Act 4 of 2006
- Promotion of Access to Information Act 2 of 2000 (PAIA)
- Promotion of Administrative Justice Act 3 of 2000 (PAJA)

1.6. Structure of the dissertation

Chapter 1 – Introduction
Introduction and background to the study.
Chapter 2 – Policy Development
Overview of the South African Energy landscape, the development of an energy plan for SA, including the evolution of the IRP from 2010 to present.

Chapter 3 – Energy-Related Legislation Overview
Outline of the legislation applicable to the IRP, the Energy Act, PAJA and other legislation relevant to the NPP.

Chapter 4 – Public participation as a requirement for environmental authorisation will be analysed, with reference to key cases. NEMA will furthermore be considered insofar as it illustrates public participation as a legal requirement, looking at case law, for example, the *Thabametsi* case where public participation processes were challenged.

Chapter 5 - Administrative law aspects
This chapter considers the requirement for administrative action that is lawful and procedurally fair when conducting processes that affect the energy industry and the public. It then examines a key court case where the errors of correct administrative law by government officials led to delays in the nuclear rollout envisaged by the draft 2018 IRP.

Chapter 6 – The final chapter concludes and offers some recommendations.

Chapter 2: Policy Development

2.1. Introduction to the South African energy landscape

This chapter reviews the policy documents relevant to the energy sector, focusing in particular on the role of the IRP as outlined in section 2.4 below.

Electricity produced by coal-fired power stations run by Eskom, the State-owned power utility, dominates the South African energy landscape. South Africa's coal reserves are estimated to be between 15 – 30.2 Gt, the upper estimate being sufficient to last 100 years. The annual rate of production, a more important figure than the size of remaining reserves, is expected to peak in 2020.[22] Therefore besides the environmental objections due to coal emissions and its effects on climate change, there are concerns about the ability of coal to affordably sustain SA's energy demand.

Eskom produces 95 per cent of power used in SA and 45 per cent used in Africa.[23] Seventy two per cent of Eskom's generating capacity is coal-fired.[24] Most South Africans have access to electricity, with 90 per cent of South African households electrified as of September 2018. [25]

Eskom has a nominal installed capacity of 44.13 gigawatts (GW). Ninety per cent of this is baseload capacity of 14 coal-fired power stations and Koeberg (1.86 GW), the only nuclear power plant. Peak demand is met by four Open Cycle Gas Turbines (OCGTs) (2.4 GW) and some hydroelectric (2.4 GW) and pumped storage schemes (2 GW). The Sere wind farm provides 100 MW of wind power capacity. The Renewable Energy Independent Power Producer Procurement Programme (REIPPP) has procured 6 400 MW from 102 Independent Power producers (IPPs) from Bid Windows 1 to 4, 2.8 GW of which was operational by October 2016. In April 2018 a further 2

[22] Wakeford (n 20).
[23] Eskom 'Company Information Overview' available at http://www.eskom.co.za/OurCompany/CompanyInformation/Pages/Company_Information.aspx (accessed on 2 July 2019).
[24] Eskom 'Fact Sheet: Coal in South Africa' available at http://www.eskom.co.za/AboutElectricity/FactsFigures/Documents/CO0007CoalSARev14.pdf (accessed on 2 July 2019).
[25] IOL News 'Eskom expresses pride on improved access to electricity' available at https://www.iol.co.za/news/south-africa/eskom-expresses-pride-on-improved-access-to-electricity-17259230 (accessed on 1 July 2019).

300 MW was signed off by the Minister of Energy, bringing the total commitment to 8 700 MW of power from IPPs.

Energy sources can be categorised using various characteristics, such as environmental impact, renewability (renewables versus non-renewable fossil fuels), emissions, dispatchability (peaking versus baseload), availability of resources, cost and political factors. These often-conflicting factors make the development of an ideal energy resource plan a difficult, if not impossible task. One output of such a plan is the selection of an energy mix that ensures security of supply, minimises the cost of electricity and minimises negative environmental impact (emissions) and water usage.

Those sources under consideration in the draft IRP 2018 as part of the new build are coal, gas, (either CCGT or OCGT), imported hydro, wind, solar photovoltaic (PV) and Concentrated Solar Power (CSP), landfill, biomass and nuclear.[26] This dissertation is concerned with the legal requirements to roll out the nuclear aspect of the draft IRP 2018.

2.2. Evolution of the Energy Policy over the past two decades

The Department of Mineral Resources and Energy is the lead agent for the administration of electricity generation in SA. The Constitution demarcates specific powers and functions to the various spheres of government. Electricity generation is not mentioned in Schedule 4: Functional Areas of Concurrent National and Provincial Legislative Competence, nor in Schedule 5: Functional Areas of Exclusive Provincial Legislative Competence and is therefore purely a national function.

The energy portfolio within the government of SA has undergone naming and structural changes over the past few decades. In 1980 the name of the portfolio was changed from Mining, Environmental Planning and Energy, to Mineral and Energy Affairs. [27] During 1997, the name was changed to the Department of Minerals and

[26] Department of Energy *Request for Comments: Draft Integrated Resource Plan 2018* available at http://www.energy.gov.za/IRP/irp-update-draft-report2018/IRP-Update-2018-Draft-for-Comments.pdf (accessed on 1 July 2019).

[27] Department of Mineral Resources 'Our Vision and Mission' available at https://www.dmr.gov.za/about-dmr/overview (accessed 16 June 2019).

Energy. On 10 May 2009, President Jacob Zuma (as he then was) announced the creation of two new ministries to replace the Department of Minerals and Energy. The two ministries were named Ministry of Energy, and the Ministry of Mineral Resources, respectively. On 29 May 2019 President Cyril Ramaphosa decreased his Cabinet by eight Ministers, from 36 to 28. Mr Gwede Mantashe is currently serving as Minister for both the Ministry of Energy and the Ministry of Mineral Resources, jointly called the department of Mineral Resources and Energy.

This chapter will further elaborate on the energy policies of SA in general and those that are relevant to the nuclear power industry in particular.

2.3. National Development Plan

The National Development Plan (NDP) is SA's overarching policy which was published by the National Planning Commission in 2012. It is a long-term strategic plan with a 17-year timeline. Amongst others, it sets out energy development for the next 20 years. The South African economy is energy, resource and carbon intensive. The NDP (Chapter 5: Environmental Sustainability) therefore calls for policies to diversify the energy mix away from fossil fuels and mitigate against climate change. [28] The objective of the NDP is to provide a decent standard of living to all South Africans by 2030 by eliminating poverty and reducing inequality.[29]

SA has transitioned peacefully from Apartheid to democracy in 1994, but the deep-seated legacy of Apartheid still impacts the population negatively. Society remains spatially and economically affected, with a GINI index of 63, making it one of the most unequal countries in terms of income inequality. [30]

[28] National Planning Commission *National Development Plan 2030: Our Future – Make it Work* (2012) 210.
[29] National Planning Commission (n 28).
[30] Data Bank: World Bank Indicators 'Preview' available at https://databank.worldbank.org/data/reports.aspx?source=2&series=SI.POV.GINI&country=ZAF# (accessed on 5 May 2019).

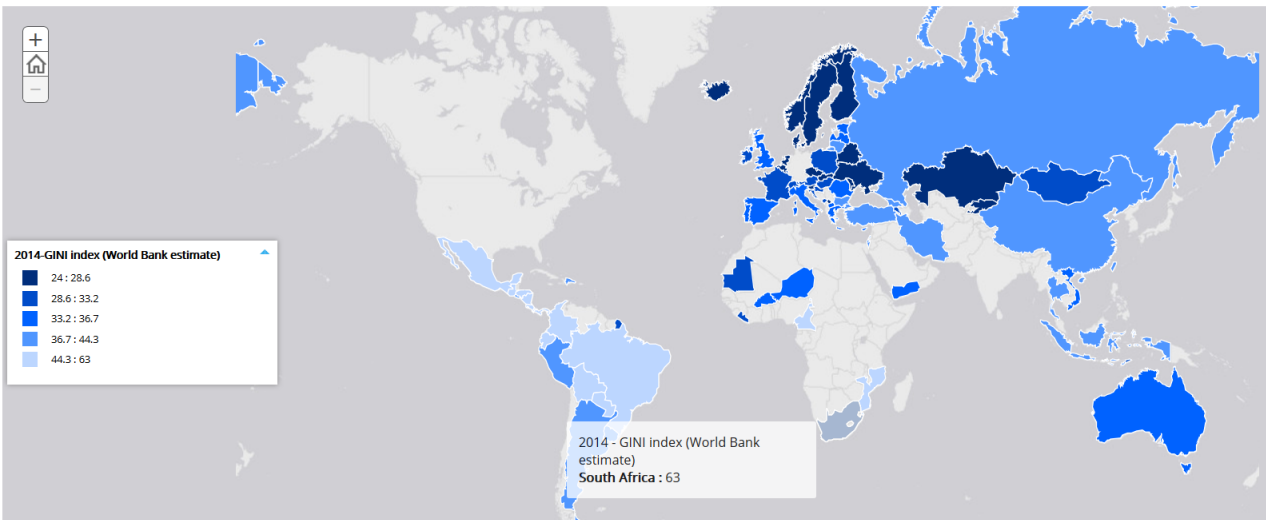

Figure 3: South Africa has a GINI Index of 63, amongst the highest in the world[31]

Besides income, additional elements of a decent standard of living are identified. The two relevant for this discussion are electricity and a clean environment.

Chapter 3 of the NDP: Economy and Development lists the development of proposals for an acceptable minimum standard of living and proposals on how to achieve them under its actions.

Chapter 4: Economic Infrastructure lists as objectives and actions:

- To increase access to the electricity grid to 90 per cent by 2030, with non-grid options available to the rest.
- The additional capacity of 29 000MW of electricity, implying 40 000MW of newly build capacity.
- Move to less carbon-intensive electricity production.

Chapter 5: Environmental Sustainability and Resilience lists as objectives and actions:

- Achieve the peak, plateau and decline trajectory for greenhouse gas (GHG) emissions, with the peak being reached around 2025.
- The entrenchment of an economy-wide carbon price by 2030.

[31] Data Bank: World Bank Indicators (n 30).

2.3.1. Nuclear in the NDP

The NDP makes mention of nuclear and the concerns raised by civil society against the nuclear build.

> Civil society has protested against exploring shale gas in the Karoo and the envisaged nuclear-build programme, arguing that the government was focusing too much on infrastructure and too little on protecting South Africa's scarce resources, especially water. [32]

It goes on to identify the timing and/or desirability of nuclear power to be considered as a key policy issue and planning priority.

At the time of publishing the NDP, South Africa needed 29 000 MW of new power capacity between 2012 and 2013. 10 900 MW of the existing power fleet would be retired, resulting in 40 000 MW of new power capacity that needed to be built. The existing Eskom expansion programme allows for 10 000 MW, resulting in a significant gap between power requirements and committed infrastructure plans. Half of SA's GHG emissions come from power generation. In order to achieve the proposed carbon emissions scenario of peak, plateau and decline the required shortfall of generation capacity needs to come from low carbon sources such as gas, wind, solar, imported hydroelectricity and nuclear power. The nuclear programme was estimated to start in 2023.

According to the IRP 2010, more nuclear energy plants will need to be commissioned from 2023/24. Although nuclear power does provide a low-carbon baseload alternative, SA needs a thorough investigation on the implications of nuclear energy, including its costs, financing options, institutional arrangements, safety, environmental costs and benefits, localisation and employment opportunities, and uranium enrichment and fuel-fabrication possibilities. While some of these issues were investigated in the IRP, a potential nuclear fleet will involve a level of investment unprecedented in SA. An in-depth investigation into the financial viability of nuclear energy is thus vital.

[32] NDP introduction

The National Nuclear Energy Executive Coordination Committee (NNEECC) established in 2011 was tasked to make a final 'stop-go' decision on SA's nuclear future, especially after actual costs and financing options are revealed. [33] The NNEECC was however converted into the Energy Security Cabinet Subcommittee (ESCS) responsible for oversight, coordination and direction for the activities for the entire energy sector in June 2014.[34] This committee reports to Cabinet and its proceedings and documents are classified under the Minimum Information Security Standard Act (MISS Act) as TOP SECRET.

2.3.2. Implementation of the NDP

The NDP breaks down the plan into three broad phases:

2013: critical steps to unlock implementation, including dialogue and preparation of the Medium-Term Strategic Framework (MTSF) 2014-2019
2014-2019: the first 5-year planning cycle
2019-2024: this phase will be used to initiate the remaining initiatives [35]

One of the steps to achieving the vision of the NDP is to enhance governance systems and capacity. In relation to the energy sector, this involves strengthening and reforming regulation, in particular: Ensuring the nuclear regulator has sufficient capacity for proper regulation of the industry, commensurate with the risks involved.

Implementation of the NDP is broken down into outputs and activities in the 2014-2019 MTSF to be implemented by departments or groups of departments.

2.4. Integrated Energy Planning Report

The development of a National Integrated Energy Plan (IEP) was envisaged in the White Paper on the Energy Policy of the Republic of South Africa of 1998 and, in terms

[33] National Planning Commission (n 28).
[34] President Jacob Zuma: Reply to parliamentary questions available at https://www.gov.za/speeches/president-jacob-zuma-reply-parliamentary-questions-written-reply-27-mar-2015-0000 (accessed on 31 August 2019).
[35] Corporate Governance Traditional Affairs, *The National Development Plan Unpacked* available at http://www.cogta.gov.za/?p=2744 (accessed on 11 May 2019).

of the National Energy Act the Minister of Energy is mandated to develop and, on an annual basis, review and publish the IEP in the *Government Gazette*.[36] In 2016 the DoE published the Integrated Energy Planning Report (IEPR) to fulfil this requirement of the National Energy Act of 2008 and the Energy Policy White Paper.[37]

The IEP aims to meet the energy service needs in the context of socio-economic requirements for job creation and affordability as well as minimising harmful environmental impacts. The object of the Energy Plan is 'to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development.' [38]

It models a Base Case scenario for business as usual, and three scenarios namely the Environmental Awareness Scenario is characterised by more stringent emission limits and a more environmentally aware society, the Resource-Constrained Scenario where global energy commodity prices (i.e. coal, crude oil and natural gas) are high due to limited supply, and the Green Shoots Scenario describes an economy in which the targets for high economic growth and structural changes to the economy, as set out in the NDP, are met.[39]

While the IEP is concerned broadly with the regulation of energy and the energy sector, the Integrated Resource Plan (IRP) is concerned specifically with electricity. [40]

2.5. Integrated Resource Plan of 2010

The IRP for Electricity deals only with the electricity industry, specifically the electricity supply industry, and does not integrate extensively with other energy industries or markets. It is not an IEP but deals specifically with the integration of resources for electricity production and consumption. It is a subset of the overall Energy Plan and is

[36] Integrated Energy Planning Report (2016) available at www.energy.gov.za/files/IEP/2016/Integrated-Energy-Plan-Report.pdf (accessed on 11 May 2019).
[37] National Planning Commission (n 28).
[38] L du Toit & J Glazewski 'Energy law and the environment' in L du Toit & J Glazewski (eds) *Environmental Law in South Africa* (2018) 20.
[39] Integrated Energy Planning Report (n 36) 12.
[40] Du Toit & Glazewski (n 38) 20.

a key component of the IEP produced by the DoE. [41] The objective of the IRP is 'to determine the long-term electricity demand and detail how this demand will be serviced in terms of generating capacity, type, timing and cost.'

The Integrated Resource Plan for Electricity 2010-2030, the IRP 2010 revision 2, was promulgated by the DoE in March 2011 after two rounds of consultations and revision. The first IRP, IRP 2010-2030 draft revision 1, was published in January 2010. A round of public participation during June 2010 resulted in the IRP 2010 Draft Revision 2 which was published in October 2010 for a second round of public participation and comments. Public participation hearings were done in Cape Town, Durban and Johannesburg during November and December 2010. In March of the next year, it was promulgated as the IRP for Electricity 2010-2030 Revision 2 Final Report.[42]

During the first round of the public participation process, 5 090 comments from 479 submissions were received. Opposition to nuclear generation was raised, suggesting that renewable generation could replace nuclear generation in the plan. Additional research was then conducted and included in the modelling along with modified assumptions on nuclear capital costs and biomass modelling, taking technology learning rates and the cost evolution of solar PV technology into account.[43]

The IRP makes use of scenario planning to explore the effects of various parameters. The balanced scenario is formulated using all other scenarios used to find a balance between desired future outcomes and the realities of known constraints. The balanced scenario is the basis for the ultimate government-approved risk / policy adjusted plan. Some of the risks and constraints considered are affordability, reducing carbon emissions, new technology uncertainties, water usage, job creation and security of supply. It was due to be revised every two years, resulting in a revision in 2012.[44]

[41] Department of Energy 'Integrated Resource Plan for Electricity 2010-2030 Revision 2 Final Report' available at http://www.energy.gov.za/IRP/irp%20files/IRP2010_2030_Final_Report_20110325.pdf 2 (accessed on 11 May 2019).
[42] Department of Energy (n 41) 6.
[43] Department of Energy (n 41) 10.
[44] Department of Energy (n 41) 7.

2.5.1. Method

The IRP 2010 uses a growth trajectory of 4.5 per cent for SA, requiring 41 346 MW of new generation capacity up to 2030. This excludes the replacement of decommissioned plant for the period and 3 420 MW savings from demand-side management achieved when existing customers become more energy efficient. The assumed cost of unserved energy (COUE) was set at R75/kWh. The reserve margin is then optimised based on the COUE and supply-side costs and then used to determine the plant mix.

The Department of Environmental Affairs' (DEA) 'Long Term Mitigation Strategy' (LTMS) provides guidance on the extent to which GHG should be restricted over time. The GHG emissions from each scenario are quantified for comparison. [45]

2.5.2. Results

The IRP 2010 planned to double the generation capacity to over 80 Gigawatts. In addition to all existing and committed power plants (including 10 GW committed coal), the plan includes 9,6 GW of nuclear; 6,3 GW of coal; 17,8 GW of renewables; and 8,9 GW of other generation sources.[46]

The RBS (Revised Balanced Scenario) trades off cost versus climate change mitigation. This would reduce the contribution of actual electricity generation from coal from 90 to 65 per cent and increase renewables to 9 per cent. The actual contribution for renewables is much lower than the generation capacity due to the intermittent nature of solar and wind power.

It also includes Medupi (4332 MW of coal), Kusile (4 338 MW of coal), Ingula (1332 MW pumped hydro), all of which have since been commissioned except Kusile which is in progress, REIPP Phase 1 (1 025 MW) from renewables, additional wind capacity commencing in 2014 of 3.8 GW, additional solar commencing in 2016 of minimum 400 MW, a renewable programme commencing 2020 of 7.2 GW and additional coal from

[45] Department of Energy (n 41) 14.
[46] Department of Energy (n 41) 6.

2027 to 2030 of up to 5 GW.[47] One of the risks the IRP 2010 identified was the realisation of the expected demand forecast. The concern was that if the industrial policy was successful in promoting the regeneration of the industrial base then demand would increase past the forecast. A related concern was that the lack of investment in reticulation infrastructure in the past had suppressed consumption. Therefore, the planned network expansion could release suppressed demand with the same effect. [48]

The practicality of the nuclear fleet build programme and its funding concerns was identified as one of the risks of the IRP 2010. [49] The nuclear would be rolled out in units of 1 600 MW every 18 months, with the first unit commissioned in 2023.[50] The estimated lead time for the rollout of a nuclear unit is 10 years. In order to meet the timeline for the nuclear rollout set out in the IRP 2010 a decision on the implementation of the nuclear fleet needed to be made by 2011 in order to ensure the supporting infrastructure, financial and commercial mechanisms are in place in time to support the fleet deployment.

The Minister can make an immediate determination for nuclear as the existing regulations do not require an allocation.[51] The Minister made this determination in 2013 and then again in 2016 in terms of section 34 of the ERA, but it was set aside by a decision of the High Court which found the determination irrational and unconstitutional.[52] This case will be expounded upon in a later chapter. The DEA however granted Eskom an environmental authorisation for the construction and operation of a nuclear power station and associated infrastructure at Duynefontein, next to Koeberg NPP in October 2017.[53]

[47] Integrated Resource Plan for Electricity (n 19) 25.
[48] Integrated Resource Plan for Electricity (n 19) 21.
[49] Integrated Resource Plan for Electricity (n 19) 21.
[50] Integrated Resource Plan for Electricity (n 19) ix.
[51] Integrated Resource Plan for Electricity (n 19) 23.
[52] *Earthlife Africa Johannesburg v Minister of Energy and Others* [2017] 3 All SA 187 (WCC).
[53] The DEA grants Environmental Authorisation for the proposed construction and operation of the Eskom Nuclear Power station at Duynefontein in Western Cape, Department of Environmental Affairs: Republic of South Africa, available at https://www.environment.gov.za/mediarelease/deagrantsenvironmentalauthorisationtoeskom (accessed on 20 July 2019).

2.5.3. Criticism for the IRP 2010

- Not enough time was allowed for public comment.
- Two different sets of assumptions were used for the EPRI Executive summary report and the full IRP 2010 report.
- Other assumptions that were not stated are the demand forecast, key technology assumptions such as the build rates, multi-criteria decision analysis assumptions and the economic modelling assumptions that were used.
- No sensitivity analysis was done to take different demand growth possibilities and levels of energy efficiency into account. The size of the energy efficiency programme should be an output of the IRP, not an input.
- No technology sheets for coal and renewable technologies with in-depth assessments are included.
- No assessment of the impact of the plan on the poor and the mitigation of negative effects was done. [54]
- Opposition to nuclear generation was raised, suggesting that renewable generation could replace nuclear generation in the plan.[55]

Demand forecast was grossly overestimated, given the economic growth figures both nationally and globally. In retrospect, the demand grew a lot less than forecasted, with real growth as a percentage of GDP in the economy averaging 1.35 per cent between 2013 and 2018. [56] The GDP growth over the period 2011 – 2016 was much lower than the projected 4.5 per cent, with a peak value of 3.5 per cent in one quarter of 2011, reaching negative figures of -0.6 in the second quarter of 2016.[57]

[54] A Hughes 'IRP 2010 Assumptions, Energy Research Centre, University of Cape Town' available at http://www.energy.gov.za/irp/irp%20files/ENERGY_RESEARCH_CENTRE.pdf (accessed on 16 July 2019).
[55] Integrated Resource Plan for Electricity (n 41) 10.
[56] Statistics South Africa 'Statistical Release PO441, Gross Domestic Product First Quarter 2019' available at http://www.statssa.gov.za/publications/P0441/P04411stQuarter2019.pdf#targetText=Real%20gross%20domestic%20product%20(measured,the%20fourth%20quarter%20of%202018.&targetText=The%20three%20largest%20negative%20contributors,trade%2C%20catering%20and%20accommodation%20industries (accessed on 16 July 2019).
[57] Trading Economics 'South Africa GDP Annual Growth Rate' available at https://tradingeconomics.com/south-africa/gdp-growth-annual (accessed on 23 February 2018).

2.6. Integrated Resource Plan 2016 update

An updated draft IRP, the Integrated Resource Plan Update: Assumptions, Base Case Results and Observations Revision 1, was published for comment in November 2016 with a comments window that ended on 31 March 2017. [58] The report considered a study window from 2016 to 2050. Cabinet did not approve the 2016 update and it was never finalised and promulgated. The 2016 draft updated assumptions made about technology costs, electricity demand projection (decreased substantially), fuel costs (increased) and Eskom existing fleet performance (70 per cent down from expected 86 per cent) that had changed since the IRP 2010 was published. A hybrid cost for nuclear was used, based on the Ingerop report discussed earlier in this chapter.

The 2016 draft revision accounted for slower than projected economic growth. A determination for 9.6 GW of nuclear power was made since the promulgation of the IRP 2010, but the 2016 update recommends that the decision for new nuclear power stations should be delayed by a few years as they may not be required. [59] This determination was later challenged in court and was set aside.[60]

[58] Department of Energy 'Integrated Resource Plan: Introduction' available at http://www.energy.gov.za/files/irp_frame.html (accessed on 22 February 2018).
[59] Department of Energy 'Integrated Resource Plan Update: Assumptions, Base Case Results and Observations revision 1' available at http://www.energy.gov.za/IRP/2016/Draft-IRP-2016-Assumptions-Base-Case-and-Observations-Revision1.pdf (accessed on 16 July 2019).
[60] *Earthlife Africa Johannesburg v Minister of Energy and Others* [2017] 3 All SA 187 (WCC) para 139.

	PV	Wind	LandfillGas	DR	Nuclear	OCGT	CCGT	Coal PF w FGD	Inga	CO2 Emissions	Peak Demand (MW)	Firm Reserve Margins (%)
2016												
2017												
2018												
2019												
2020										253	44916	24
2021	160									264	46130	28
2022	160									268	47336	23
2023	370	200								272	48547	20
2024	440	500		1000		396				279	49656	18
2025	650	1000	15	1000		2376	732			278	51015	19
2026	580	1000	5	1000		264	1464			278	52307	19
2027	580	1000	230	1000		264	2196			276	53561	19
2028	580	1000		500		396	1464	1500		277	54567	20
2029	580	1100		1000			1464	1500		273	56009	18
2030	580	1200		1000		1716		2250	1000	274	57274	20
2031	580	1200		1000		1584		750		274	58630	20
2032	580	1000		500			732	1500	1000	278	59878	22
2033	580	1200					1464	750	500	276	61388	23
2034	580	1600		1000		1452				278	62799	22
2035	580	1600		500			1464	1500		278	64169	23
2036	580	1600		1000				1500		278	65419	21
2037	580	1400		500	1359		732	2250		277	66993	22
2038	580	1600				1848	1464	750		273	68375	22
2039	650	1500			1359		2928			267	69584	22
2040	650	1600		1000		1056	732			261	70777	20
2041	650	1600		1000	4077	792		750		236	72343	21
2042	650	1600		500			2196			233	73800	21
2043	650	1600		500						232	75245	21
2044	650	1800		500	1359					228	76565	21
2045	770	1600			2718		2196			230	78263	23
2046	790	1600		500	1359	924				225	79716	20
2047	720	1800		1000	1359		732			219	81177	19
2048	720	1600		500	2718	264				211	82509	20
2049	660	1500		500	1359					206	84213	20
2050	720	1400		500	2718					196	85804	20
Total (MW	17600	37400	250	500	20385	13332	21960	15000	2500			

Figure 4: Timing and capacity mix for the 2016 IRP Base Case[61]

Results from the IRP base case above shows the IRP 2016 draft delays the first rollout of nuclear from 2023 (IRP 2016) to 2037, rolling out only 2 718 MW before 2040, thereafter adding another 17.7 GW during the next decade up to 2050. [62]

2.6.1. Criticism for the IRP 2016

In comments based on the draft IRP 2016, Professor Trevor Gaunt argues that the load forecasts in the IRP 2016 are unrealistically and excessively high and are inappropriate as scenarios for planning future electricity generating capacity. [63] The moderate CSIR forecast used indicates that the energy supply will increase by 7

[61] Department of Energy (n 59) 26.
[62] Department of Energy (n 59) 8.
[63] CT Gaunt in his individual capacity submitted comments on IRP Update Assumptions, Base Case Results and Observations based on the Draft IRP 2016 issued in November 2016, March 2017

TWh/yr in 2020/2021, rising to 9TWh/yr by 2030, which is substantially higher than the historical increase in consumption for SA. After analysis, Gaunt counter proposes two scenarios of equal probability: a slightly optimistic forecast of consumption increase of 6TWh/yr from 2019, and a slightly pessimistic forecast of consumption increase of 4 TWh/yr from 2019.[64]

Another criticism is the treatment of the intermittent character of the wind and solar resources in the report. To compensate for the rapid output changes from solar generation, one requires mid-merit and peaking generation sources. This leads to more expensive power being used more often, affecting LCOE and the tariffs. Intermittent renewable energy such as wind and solar displaces nominally less costly dispatchable mid-merit generation on an irregular basis. It increases the unit cost from such generation. The IRP does not add this cost to the renewable resource. [65]

In order to prevent supply interruptions, the capacity of the intermittent energy resources (wind and solar) should not exceed the capacity of the fast response mid-merit balancing energy resource, typically contributed by gas turbines. It does not appear that the energy mix in the IRP 2016 is consistent with this limitation. [66]

Other notable comments on the Draft IRP 2016 came from the CSIR. The study and report concluded that the least cost for new investment in the energy sector to be solar PV, wind or flexible power, example gas, CSP, hydro and biogas, with the exclusion of nuclear power entirely. There is no technical limitation set to solar PV and wind penetration, and a >70% renewable energy share by 2050 is stated as cost optimal, replacing all plants that decommission over time and meeting new demand with the selected optimal mix. [67] These findings failed to deal with the intermittent nature of wind and solar as described above, which are exacerbated by such a high penetration of wind and solar PV. A penetration of 70% wind and solar as envisaged in the

[64] Gaunt (n 63).
[65] Gaunt (n 63) 10.
[66] Gaunt (n 63) 10.
[67] Wright, Jarrad G., Tobias Bischof-Niemz, Joanne Calitz, Crescent Mushwana, Robbie van Heerden, and Mamahloko Senatla. "Formal comments on the Integrated Resource Plan (IRP) update assumptions, Base Case and observations 2016." Pretoria, South Africa (2017).

proposed Least Cost Scenario does not meet the reliability requirement of the intermittent sources capacity not exceeding that of the mid merit stations.

2.7. Draft Integrated Resource Plan 2018

Two years after the IRP 2016 update, a further update was published, the draft IRP 2018 for public comments in the *Government Gazette*.[68] It was open for public comment until 26 October 2018. The draft 2018 IRP was submitted to the National Economic Development and Labour Council (Nedlac) for discussion with the social partners as part of the public participation process on 6 March 2019.[69] At the time of writing this draft is due to go before Cabinet for approval in September 2019.

Whereas the IRP 2010–2030 covers a study period up to 2030, the IRP 2018 study period was extended to the year 2050. Seven scenarios IRP 1–IRP 7 were formulated using a low, median, and high demand forecast. The reference case and the scenarios were analysed in three periods, namely 2017–2030, 2031–2040 and 2041–2050. [70]

[68] GN 897 in *GG* 41865 of 27 August 2018.
[69] GO Legal 'Integrated Resource Plan (IRP) on track' available at https://www.golegal.co.za/integrated-resource-plan-irp/ (accessed on 22 July 2019).
[70] Department of Energy 'Integrated Resource Plan 2018, Final Draft for public comment' available at www.energy.gov.za/IRP/irp...report2018/IRP-Update-2018-Draft-for-Comments.pdf (accessed on 21 July 2019).

Test Case	IRP 3	IRP 4	IRP 2	IRP 1	IRP 6	IRP 5	IRP 7
Key Input Change	Demand Forecast	Demand Forecast	Demand Forecast	No Renewables Annual Build Limit	Carbon Budget	Market Linked Gas Price	Carbon Budget And Market Linked Gas Price
Demand Forecast	Median	Lower	Hi	Median	Median	Median	Median
CO_2 Mitigation	Peak Plateau Decline	Peak Plateau Decline	Peak Plateau Decline	Peak Plateau Decline	Carbon Budget	Peak Plateau Decline	Peak Plateau Decline
Renewable Annual Build Limit	Yes	Yes	Yes	No	Yes	Yes	Yes
Fuel Prices	Constant	Constant	Constant	Constant	Constant	Market Linked Gas	Constant
Transmission Grid Collector Stations Costs	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Figure 5: Key Scenarios used in the IRP 2018[71]

Key assumptions used in the IRP 2010 that has changed in the IRP 2018 include electricity demand projection that did not increase as envisaged, existing Eskom plant performance that is way below the 80 per cent availability factor, additional capacity committed to and commissioned, as well as technology costs that have declined significantly.[72] It dramatically revises the forecast for SA's energy demand downwards from a projection of 525 TWh of power in 2050 to 430 TWh for the most optimistic 'high' scenario.

The actual net electricity energy sent-out for the country declined at an average compound rate of -0,6 per cent over the past years. That was in stark contrast with the expectation of an average growth rate of 3,0 per cent in the promulgated IRP 2010–2030. The result was that the actual net sent-out in 2016 was at 244TWh in comparison with the expected 296TWh (18 per cent difference).[73]

[71] Department of Energy (n 70) 31.
[72] Department of Energy (n 70).
[73] Department of Energy (n 70) 18.

The nuclear technology costs used were based on the DoE-commissioned study (the Ingerop report[74]) aimed at updating the cost of nuclear power based on available public and private information.

The IRP found that the installed capacity and energy mix for scenarios tested for the period post-2030 differ significantly for all scenarios and are highly impacted/influenced by the assumptions used. An acknowledged risk is that the slight change concerning the assumptions can, therefore, change the path chosen. In-depth analysis of the assumptions and the economic implications of the electricity infrastructure development path chosen post-2030 will contribute to the mitigation of this risk. [75]

The period 2018 – 2030 contains no new nuclear being rolled out in addition to the current contribution from the Koeberg NPP.

The carbon budget (IRP6) and carbon budget plus market-linked gas price (IRP7) scenarios commission additional nuclear capacity of about 4200 MW and 5600 MW, respectively for the period 2031-2040. IRP 6 and 7 have 6 per cent (6.3GW) and 7 per cent (7.35 GW) nuclear of 105GW of installed capacity respectively, up from the current, up from the 3 per cent (108 MW) of Koeberg NPP.

For the period 2041 – 2050, IRPs 6 and 7 have 6 per cent (7.56 GW) and 8 per cent (10.08 GW) nuclear of 126 GW of installed capacity respectively.

Recommendations from the draft IRP 2018: Due to the sensitivity of the results on the assumptions made post-2030, it is recommended that detailed sensitivity studies be undertaken to inform the future update of the IRP. These include looking into gas options and the appropriate penetration levels of renewable energy required to ensure security of supply. The cost of clean energy technologies such as nuclear also requires detailed studies along with their economic benefits. [76]

[74] Department of Energy (n 6).
[75] Department of Energy (n 70).
[76] Department of Energy (n 70) 38.

This is in line with the NDP Update which further acknowledges the role of nuclear in the energy mix and calls for a thorough investigation of the implications of nuclear energy, including its costs; financing options; institutional arrangements; safety; environmental costs and benefits; localisation and employment opportunities; and uranium-enrichment and fuel-fabrication possibilities. [77]

Criticism of the IRP 2018 include:

- The demand forecast in the 2018 draft IRP still appears to be significantly too high.[78]
- There is no statement or explanation of assumptions used.[79]
- There are accusations of political policy interference and appeasement of stakeholder interests by DoE officials.[80]

Throughout the history of the IRP since its first draft in 2010, through to its current draft in 2019, there have been starkly contrasting criticism from stakeholders, the public and opposition parties. Nuclear protagonists, environmentalists, the CSIR, the renewables industry and political parties have all added their voices to the debate for or against certain aspects of the plan. Chapters four and five will focus on relevant cases, for example where the government of SA was challenged in court against their pursuance of the nuclear build.

2.8. Climate Change requirements and its effect on policy

The *National Climate Change Response White Paper* seeks to guide the country's carbon trajectory. It documents the government's commitment to the 'peak, plateau and decline' pathway, which envisages a peak in GHG emissions being reached around 2020 – 2025 then an absolute decline after 2035. This implies a commitment to finding less carbon-intensive alternatives to coal.[81]

[77] National Planning Commission (n 28) 172.
[78] C Yelland 'IRP 2019 shows signs of political interventions and appeasement' available at https://www.dailymaverick.co.za/article/2019-03-12-irp-2019-shows-signs-of-political-interventions-and-appeasement/ (accessed on 22 July 2019).
[79] Yelland (n 78).
[80] Yelland (n 78).
[81] Department of Environmental Affairs *National climate change response white paper* (2011).

The Strategic Plan 2015 – 2020 envisions 30 per cent clean energy by 2025 and reiterates the commitment to nuclear power. [82]

The increasing effects of climate change has led to a greater focus in the IRP on selecting low emission base-load alternatives to coal, such as nuclear power, as well as the development of a renewable strategy to support a significant rollout of renewable technologies such as wind and solar. [83]

Wakeford identifies one of the problems facing government as fragmentation and inconsistency between government departments: '…although there have been significant steps taken by the government in recent years towards IEP, there remain problems of fragmentation and inconsistency. This is partly because energy policy straddles several different sections of government which are responsible for various aspects of energy policy and planning, including the National Planning Commission (overarching socio-economic planning), the DoE (energy policy and regulation), Mineral Resources (coal, oil and gas exploration and development), Public Enterprises (managing Eskom) and Environmental Affairs (climate change and pollution). [84]

Government's climate change goals to find less carbon-intensive baseload substitutes to coal are a driving factor in favour of nuclear power. The *National Climate Change Response White Paper* outlines the government's commitment to the peak, plateau and decline pathway which envisages a peak in GHG emissions being reached between 2020 and 2025, declining after 2035.

South Africa has brought phase 1 of the carbon tax into effect on 1 June 2019, with a tax rate of R120/t of carbon dioxide equivalent emissions. Phase 2 of implementation will begin in January 2023. Eskom is exempt from paying carbon taxes in the first phase. The rate has been set low compared to global benchmarks but is a symbolic start which will increase in future. [85]

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[82] Department of Energy 'Strategic Plan 2015-2020' available at http://www.energy.gov.za/files/aboutus/DoE-Strategic-Plan-2015-2020.pdf (accessed on 11 February 2018).
[83] Integrated Resource Plan for Electricity (n 19) viii.
[84] Wakeford (n 20) 153.
[85] T Creamer 'Taxing Issue: 'Weak' carbon tax to be significantly strengthened from 2023' (2019) 25 *Creamers Mining Weekly* 16–25.

Despite all the steps taken by government towards energy planning, there remains fragmentation and inconsistency in integration. A coherent, rational and sustainable national energy policy is still lacking. The responsibility for energy policy straddles various sections of government, including the National Planning Commission (overarching socio-economic planning), the Departments of Energy (energy policy and regulation), Mineral Resources (coal and uranium), Public Enterprises (managing Eskom), and Environmental Affairs (climate change and pollution). [86]

2.9. White Paper on the Energy Policy of the Republic of South Africa

The former Department of Minerals and Energy published the White Paper on the Energy Policy of the Republic of South Africa in 1998. [87] Although now dated it is an overarching, comprehensive policy that sets out the government's policy on the supply and consumption of energy for the next decade at the time. It foretold that in future, government will expect greater public participation in decisions on large public sector electricity investments and will require evaluations using IRP methodologies.

An overview of the nuclear industry in SA and internationally is given and nuclear energy governance is described. An intention is made to undertake a review of the nuclear bodies, the nuclear fuel cycle, and whether to separate nuclear energy governance from issues around nuclear fuel. At the time SA was heavily dependent on imported nuclear fuel and coal, which was not in line with probable future climate change response measures.

Some of the objectives of the *Energy Policy White Paper* include:

- increasing access to affordable energy services;
- improving energy governance;
- stimulating economic growth through exports and investments (which were previously impossible due to Apartheid);

[86] Wakeford (n 20).
[87] Department of Energy 'White Paper on the Energy Policy of the Republic of South Africa' available at http://www.energy.gov.za/files/policies/whitepaper_energypolicy_1998.pdf (accessed on 16 May 2019).

- managing energy-related environmental and health risks; and
- securing energy supply through the diversity of the energy supply and energy carriers.

The fifth objective of the Energy Policy White Paper, that is, securing energy supply through diversifying the energy supply and energy carriers is one of its main objectives. Previously the energy policy (during Apartheid) was governed by the need for energy security through self-sufficiency. This led to large investments in synthetic fuels and the nuclear sector. South Africa failed to become fully self-sufficient in petroleum or nuclear fuels, and the opportunity cost of investment in social infrastructure was great. At the advent of democracy, the shifts in the domestic and global situation meant that energy security through self-sufficiency was no longer viable or necessary. Government decided to pursue energy security by encouraging a diversity of supply sources and energy carriers.

Global competition led to the need to move toward abundant, easily sourced, competitively priced energy sources and away from protecting national, uneconomic industries. This changed the role of government in the energy sector and made necessary more sophisticated regulatory regimes in order to maximise national energy policy objectives.

2.9.1. Integrated Resource Planning in the Energy White Paper

> Government will require the use of integrated resource planning methodologies in evaluating further electricity supply investments and the decommissioning of older power stations.

The IRP, an aspect of which is the subject of this dissertation, was put forward as a methodology for energy planning in 1998 and was reiterated in the NDP of 2012.

IRP is a decision-making process concerned with the acquisition of least-cost energy resources, which takes into account the need to maintain adequate, reliable, safe, and environmentally sound energy for all. The IRP approach includes:

- the evaluation of all candidate energy supply and demand resources in an unbiased manner;
- the systematic consideration of a full range of economic, environmental, social, and technological factors;
- the consideration of risks and uncertainties posed by different resource portfolios and external factors, such as fluctuations in fuel prices and economic conditions; and
- the facilitation of public consultation in the utility planning process.

The compulsory use of IRP methodologies will ensure that utilities avoid or delay electricity supply investments, or delay decommissioning decisions when it is economical to do so, by optimising the utilisation of existing capacity and increasing the efficiency of energy supply and consumption. The use of IRP will also contribute to meeting the electricity supply industry's environmental performance and allows for public participation to have an influence on the outcomes.

2.9.2. Nuclear Energy in the Energy Policy White Paper

In 1998, nuclear energy was a minor component of the South African energy sector, contributing about 3 per cent during 1997 of the national primary energy supply and about 5 per cent of the country's electricity. Despite its small contribution, the nuclear industry had been the recipient of a major portion of the Department of Minerals and Energy's budget.

Scenarios developed by the International Atomic Energy Agency suggested that the share of nuclear power in electricity generation worldwide would either decrease from the present 17 per cent to 12 per cent or be maintained at its present level in the coming two decades. Updated statistics show that nuclear currently stands at 11 per cent of the world's electricity generation capacity. [88]

[88] World Nuclear Association 'Nuclear Power in the world today' available at http://www.world-nuclear.org/information-library/current-and-future-generation/nuclear-power-in-the-world-today.aspx (accessed on 19 June 2019).

The energy policy on the future of nuclear in South Africa:

> Based on projections of power demand, and taking Eskom's current surplus capacity into account, it is not expected that more generation capacity will be required in South Africa before the year 2007 at the earliest. Whether new nuclear capacity will be an option at that point or beyond will depend largely on the environmental and economic merits of other energy sources relative to nuclear and its political and public acceptability, construction lead-times and load characteristics.

It did not foresee nuclear being rolled out further in the near future but left the possibility for nuclear to be a viable option for the future, to be assessed in current prevailing conditions at the time.

Some of the challenges facing the nuclear industry were that a national radioactive waste management policy had not yet been established, the suitability of Vaalputs for long-term disposal of spent fuel from Koeberg NPP had not been investigated and that the nuclear programme utilised two-thirds of the then Department of Minerals and Energy's budget. These were identified as policy matters to be addressed in the near future.

The energy policy stated that while it is unlikely that additional nuclear power would be required in the near future, it would not be prudent to exclude nuclear power as a supply option. The decision about the role of nuclear would form part of the IRP process with due consideration to all relevant legislation and the process of public participation and consultation with all stakeholders. Many developments in the nuclear industry have since taken place, which will be discussed further on.

2.9.3. Renewable Energy Sources in the Energy Policy White Paper

The *White Paper on Energy Policy*'s position with respect to renewable energy is based on the integrated resource planning criterion of:

> Ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options.

The development of government's renewable energy policy is guided by a rationale that SA disposes of very attractive renewable resources, particularly solar and wind and that renewable applications are in fact the least-cost energy service in many cases, especially when social and environmental costs are taken into account.

Government policy on renewable energy is thus concerned with meeting the following challenges: Ensuring that economically viable technologies are implemented, ensuring that an equitable level of national resources is invested in renewable technologies, given their potential and compared to investments in other energy supply options, and addressing constraints on the development of the renewables industry. This led to the publishing of the White Paper on the Renewable Energy Policy of the Republic of South Africa, which will be discussed next.

2.10. Renewable Energy Policy of South Africa White Paper

The *White Paper on the Renewable Energy Policy of the Republic of South Africa* was gazetted by the deputy Minister of the Department of Minerals and Energy in November 2003.[89] It supplements the Energy Policy White Paper that recognises the significant medium and long-term potential of renewable energy technologies. The effects of climate change and the trend to move towards environmentally sustainable energy utilisation together with the market incentives to promote renewable energy technologies are drivers towards optimising the abundance of renewable resources available to SA and the African continent. The main aim of this White Paper is to create the conditions for the development and commercial implementation of renewable technologies. It sets out government's vision, policy principles, strategic goals and objectives for promoting and implementing renewable energy in SA. It also sets out roles and responsibilities of organs of state to achieve its objectives of:

> An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation.[90]

[89] Government of the Republic of South Africa 'Renewable Energy Policy of South Africa White Paper' available at https://www.gov.za/documents/renewable-energy-policy-south-africa-white-paper (accessed on 17 May 2019).
[90] Government of the Republic of South Africa (n 89) cl 1.1

South Africa was (and still is) heavily reliant on coal as a source of fuel for power generation as it is readily available and cheap. However, concerns about climate change exacerbated by GHG emissions from fossil fuels such as coal led SA to make commitments to contribute to the global effort against climate change. At the Johannesburg World Summit on Sustainable Development in 2002, the Government committed to developing the framework within which the renewable energy industry can grow and operate.

Government's long-term goal is the establishment of a renewable energy industry producing modern energy carriers that will offer in future years a sustainable, fully non-subsidised alternative to fossil fuels. A medium-term goal towards this is:

10 000 GWh (0.8 Mtoe) renewable energy contribution to final energy consumption by 2013, to be produced mainly from biomass, wind, solar and small-scale hydro. The renewable energy is to be utilised for power generation and non-electric technologies such as solar water heating and biofuels. This is approximately 4 per cent (1667 MW) of the projected electricity demand for 2013 (41539 MW).

The DoE introduced relatively large-scale renewable tendering programme to achieve this target in a sustainable manner, using a phased approach that would attract investors. The policy commits government to introduce greater levels of competition in the electricity sector and to create an enabling environment to facilitate the introduction of IPPs that generate and sell electricity from renewable sources.

The essential elements of approaches to renewable energy implementation that were addressed are: Sustainable development, an enabling environment, institutional arrangements and information and technology.

A strategy on renewable energy was to have been developed to provide a practical plan for achieving the policy goals and objectives, but this has not been prepared. Mid-term, i.e. after five years the implementation of the policy would be evaluated for

progress and to check whether they are still appropriate. This was due to happen in 2009 but never did. [91]

2.11. Nuclear Energy Policy of 2008

The Nuclear Energy Policy was published by the former Department of Minerals and Energy in June 2008.[92] It is guided by the White Paper on Energy Policy of 1998 which retains nuclear power as one of the policy options for electricity generation. The Nuclear Policy outlines the vision of the Energy Policy White Paper for nuclear power to be investigated as a long-term contributor to the energy economy, how it can provide a way of energy diversification while reducing GHG emissions, and how the existing nuclear infrastructure can be optimised. Its purpose is to present a policy framework within which prospecting, mining, milling and use of nuclear materials, as well as the development and utilisation of nuclear energy for peaceful purposes by SA, shall take place. [93]

An extract about nuclear power from the Energy Policy White Paper of 1998:

> Based on projections of power demand, and taking Eskom's current surplus capacity into account, it is not expected that more generation capacity will be required in South Africa before the year 2007 at the earliest. Whether new nuclear capacity will be an option at that point or beyond will depend largely on the environmental and economic merits of other energy sources relative to nuclear and its political and public acceptability, construction lead-times and load characteristics.[94]

The Nuclear Energy Policy provides a policy framework for the development and utilisation of nuclear energy for peaceful purposes in SA. It sets out that nuclear energy shall form part of SA's primary energy sources to ensure the security of electricity supply. The long-term goal is to become self-sufficient in all aspects of the nuclear fuel cycle.

Some objectives government aims to fulfil through the Nuclear Policy:

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[91] Wakeford (n 20) 153.
[92] Department of Energy 'National Energy Policy of 2008' available at http://www.energy.gov.za/files/policies/policy_nuclear_energy_2008.pdf (accessed on 22 April 2019).
[93] Wakeford (n 20) 89.
[94] Department of Energy (n 92).

- Promotion of nuclear energy through the establishment of national industrial capability for design, manufacture and construction of nuclear systems.
- Establishment of government structures and review of bodies associated with the nuclear energy programme to ensure effectiveness and adequacy of regulatory oversight.
- Establishment of mechanisms to ensure availability of land for future nuclear power generation sites. The policy provides a mechanism for Eskom to strategically reserve suitable sites to be licenced for possible future nuclear power plants to prevent safety and emergency planning difficulties.
- Promotion of energy security.
- The reduction of GHGs.
- Skills development related to nuclear energy.

Some of the policy objectives related to decisions regarding possible new nuclear power stations, the management of radioactive waste, safety monitoring of the nuclear industry, effectiveness and adequacy of regulatory oversight, and a review of bodies associated with the nuclear industry.

The Policy sets out 16 policy principles for Nuclear Energy use in SA which guides the Government's vision. These are closely linked to the objectives and will not be reproduced here.

It assigns specific responsibilities to government, regulatory bodies, operators and investors. The National Nuclear Regulator (NNR) is mandated to be the nuclear regulator, providing protection to people and the environment against nuclear damage. Eskom is mandated as the owner and operator of nuclear power plants in SA and the South African Nuclear Energy Corporation (NECSA) as the coordinator of nuclear energy research, development, and innovation.

It sets out that the framework for international cooperation of nuclear activities shall be the Treaty on the Non-Proliferation of Nuclear Weapons and other international obligations and commitments. It also sets out the conditions for bilateral, multilateral

levels and African regional cooperation. It identifies institutional arrangements required for the implementation of the policy and sets out the steps needed in order to implement and obtain interests in the complete nuclear fuel cycle in SA.

2.12. Radioactive Waste Management Policy and Strategy

The development of a lasting solution to radioactive waste management is one of the critical but unresolved issues for the future of nuclear applications in SA. The Department of Minerals and Energy published the Radioactive Waste Management Policy and Strategy for the Republic of South Africa in 2005 to ensure the establishment of a comprehensive radioactive waste governance framework by formulating, additional to nuclear and other applicable legislation, a policy and implementation strategy in consultation with all stakeholders.[95] It lays down options to be considered for managing used fuel and high-level waste.

It sets out responsibilities of government, regulatory bodies and generators and operators in the disposal of nuclear waste and the applicable principles. It instructs government to establish a National Committee on Radioactive Waste Management (NCRWM) to oversee the implementation of the strategy[96] and a National Radioactive Waste Management Agency (NWRMA) in order to manage the disposal of radioactive waste on a national basis.[97]

In carrying out its regulatory mandate, the NNR ensures that policy guidelines and principles relating to radioactive waste management are supported for purposes of ensuring safety. The requirements relating to the management of radioactive waste are assessed and compliance of NNR authorisation holders is monitored.[98]

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[95] Department of Minerals and Energy 'Radioactive Waste Management Policy and Strategy for the republic of South Africa' available at https://www.nrwdi.org.za/file/Radwaste%20Policy%20and%20Strategy%20Sep%202009.pdf (accessed on 17 May 2019).
[96] Department of Minerals and Energy (n 95) cl 8.1.1.
[97] Department of Minerals and Energy (n 95) cl 8.2.
[98] National Nuclear Regulator 'Policy & Legislation' available at http://www.nnr.co.za/policy-legislation/ (accessed on 27 August 2019).

2.13. Future policy development

The Department of Mineral Resources and Energy has identified the need to develop a Nuclear Research, Development and Innovation Policy and Strategy in order to resolve fragmentation challenges in this area, ensure better coordination, planning, prioritisation and alignment with national objectives and ensure funding is directed to priority projects and activities. They announced the establishment of a National Committee that has embarked on work to develop this strategy on the occasion of the DoE Budget Vote on 11 July 2019.[99]

[99] Address by the Deputy Minister of Mineral Resources and Energy, Bavelile Hlongwa on the occasion of the Department of Energy Budget Vote 11 July 2019, Cape Town available at https://www.dmr.gov.za/news-room/post/1808/address-by-the-deputy-minister-of-mineral-resources-and-energy-bavelile-hlongwa-on-the-occasion-of-the-department-of-energy-budget-vote-11-july-2019-cape-town (accessed on 27 August 2019).

Chapter 3: Energy-related legislation: An overview

3.1 Introduction

This chapter provides an overview of relevant legislation relating to the energy sector in general and the nuclear industry as well as nuclear power generation in particular. Although the Minister of Minerals and Energy is responsible for the governance of the nuclear industry, there are various interrelated fields which are administered by different departments, laws and policies.[100] This chapter will also outline which State department administers which legislation and policies. The following two chapters illustrate how these laws have been applied in practice using relevant recent cases.

3.2 Constitution of the Republic of South Africa,1996

According to an official interpretation, the Constitution provides that 'the state must establish a national energy policy which will ensure that the national energy resources shall be adequately tapped and developed to cater for the needs of the nation. Energy should, therefore, be available to all citizens at an affordable cost. Energy production and distribution should not only be sustainable but should also lead to improvement of the standard of living for all of the country's citizens.'[101]

The Constitution provides a legal framework that has created new organs of government and demarcated specific powers and functions to the various spheres of government. Schedule 4 of the Constitution: Functional Areas of Concurrent National and Provincial Legislative Competence provides municipalities with the executive authority in respect of, and the right to administer, gas and electricity reticulation subject to provincial and national legislation. Energy is not mentioned in either Schedule 4 or Schedule 5: Functional Areas of Exclusive Provincial Legislative Competence and is thus an exclusively national matter. The Department of Minerals and Energy is the agent for administration and regulation of all forms of electricity generation in SA. [102]

[100] Department of Energy (n 92).
[101] Department of Energy (n 92) 3.
[102] Du Toit & Glazewski (n 38).

The following sections outline the legislation under the following categories:

- legislation that is of application to energy generally;
- environmental legislation, in particular, NEMA and the Environmental Impact Assessment Regulations (EIA regulations)[103];
- dedicated nuclear legislation;
- administrative legislation in particular PAJA and PAIA; and
- finance-related legislation.

3.3 National Energy Act

The National Energy Act was promulgated in November 2008. It was administered by the former Department of Minerals and Energy, and now the DoE.

The Act only makes mention of nuclear energy in Chapter 4, clause 7(2)*(b)* to exclude it from the South African National Energy Development Institute's energy research and development.[104]

Some of the objects of the Act relevant to this discussion are to:[105]

- ensure uninterrupted supply of energy to the Republic;
- promote diversity of supply of energy and its sources;
- facilitate effective management of energy demand and its conservation;
- ensure collection of data and information relating to energy supply, transportation and demand;
- provide for optimal supply, transformation, transportation, storage and demand of energy that are planned, organised and implemented in accordance with a balanced consideration of security of supply, economics, consumer protection and sustainable development;
- ensure effective planning for energy supply, transportation and consumption; and
- contribute to the sustainable development of SA's economy.

[103] *Environmental Impact Assessment Regulations* GN R982 in *GG* 38282 of 4 December 2014.
[104] Section 10 of the National Energy Act.
[105] Section 6 of the National Energy Act.

The objectives making explicit provision for energy-efficient measures and the development of renewable energy, which were tabled in the National Energy Bill for comment in 2004, are conspicuously absent in the Act. [106] It appears not to give full effect to the Energy White Paper or the Renewable Energy White Paper, which both recognise the need for the promotion of renewable energy and energy efficiency. [107]

Under the Act, the Minister of Energy needs to ensure access to data and information required for energy planning in accordance with PAIA, within a reasonable time, where it is not already made publicly available.

The Act stipulates the requirement for the annual review and publishing of an IEP in the following terms:[108]

Integrated energy planning

> 6(1) The Minister must develop and, on an annual basis, review and publish the Integrated Energy Plan in the Gazette.
>
> (2) The Integrated Energy Plan must deal with issues relating to the supply, transformation, transport, storage of and demand for energy in a way that accounts for—
> *(a)* security of supply;
> *(b)* economically available energy resources;
> *(c)* affordability;
> *(d)* universal accessibility and free basic electricity; …

In addition,

> (3) The Integrated Energy Plan must—
> *(a)* take account of plans relating to transport, electricity, petroleum, water, trade, macro-economy energy infrastructure development…
> (*b*) inform and be informed by plans from all supply, production and demand sectors whose plans impact on or are impacted by the Integrated Energy Plan; and
> *(c)* be based on the results of the energy analysis envisaged in sections 3(4)*(a)* and 3(5).

[106] National Energy Bill GN R2151 in *GG* 26848 of 8 October 2004.
[107] Du Toit & Glazewski (n 38) 23
[108] Section 6 of the National Energy Act.

Moreover, the next sub-section provides that,

> (4) The development of the Integrated Energy Plan must take into account—
> *(a)* sustainable development;
> *(b)* optimal use of indigenous and regional energy resources;
> *(c)* balance between supply and demand;
> *(d)* economic viability;
> *(e)* environmental, health, safety and socio-economic impacts; and
> …
> (5) The Integrated Energy Plan must have a planning horizon of no less than 20 years.
>
> (6) The Integrated Energy Plan must—
> *(a)* serve as a guide for energy infrastructure investments;
> *(b)* take into account all viable energy supply options; and
> *(c)* guide the selection of the appropriate technology to meet energy demand.

Particularly relevant to public participation is this sub-section which provides:

> (7) Before finalising the Integrated Energy Plan, the Minister must—
> *(a)* invite public comments; and
> *(b)* duly consider such comments.

The Minister needs to publish this plan in the Gazette. It serves as a guide for energy infrastructure investments and guides the selection of the appropriate technology to meet energy demand. It does this through reviewing energy demand and supply for the previous year, forecasting energy supply and demand for at least 20 years, and presenting plausible scenarios based on various supply and demand assumptions. Before finalising the Plan, the Minister needs to go through a public participation process by inviting comments and duly considering these comments.

To comply with this requirement the DoE published the Draft 2012 IEPR in 2013.[109] The final IEP was expected to be published by the end of the 2014/2015 financial year but this never happened.

The general provisions[110] of the Act give the Minister the power to pass regulations by giving notice in the Gazette of any matter that may, or has to be prescribed, determined or provided for by regulation in terms of the Act. In order to promulgate regulations,

[109] Integrated Energy Planning Report (n 36).
[110] Section 6 of the National Energy Act.

the Minister needs to invite public comments and duly consider these comments. The Minister has done so for the draft IRP 2018 in *Government Gazette* 41865, volume 638, 27 August 2018.[111] This forms the legal basis for the publishing of the IRP which is the topic of discussion of this dissertation.

3.4 National Environmental Management Act

The National Environmental Management Act (NEMA) was promulgated in 1998 and is the primary environmental management and implementation framework act in SA. Chapter 5 of NEMA replaced the environmental assessment provisions in the Environment Conservation Act (ECA) of 1989 and lays down the legislative basis for environmental assessment in SA.[112] Chapter 5 of NEMA lays out the objectives to achieve integrated environmental management.[113]

The September 1997 regulations were replaced by a new and more complex set of regulations during 2006.[114] They were in turn replaced by the June 2010 regulations,[115] and subsequently by the current set of Environmental Impact Assessment regulations dated 4 December 2014 (as amended).[116] The latest version of the list of activities, the Listing Notices, is contained in the *Government Gazette* GNR 324–327 of 7 April 2017[117] and is referred to as the December 2014 regulations as amended.[118]

NEMA fleshes out the constitutional right of everyone to have an environment that is not harmful to his or her wellbeing while allowing for sustainable development. Sustainable development is defined in the Act as 'the integration of social, economic and environmental factors into planning, implementation, and decision-making so as to ensure that development serves present and future generations' [119]

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[111] GN 897 in *GG* 41865 of 27 August 2018.
[112] 'Environmental Assessment' in J Glazewski & S Brownlie (eds) *Environmental Law in South Africa* (2018) para 10.3.1
[113] 'Environmental Assessment' in Glazewski & Brownlie (n 112) 18.
[114] GN 385–GN 387 in *GG*28753 of 21 April 2006.
[115] GN R 543–GN R546 in *GG* 33306 of 18 June 2010.
[116] 'Environmental Assessment' in Glazewski & Brownlie (n 112).
[117] In terms of GN 326, GN 327, GN 325 and GN 324 (respectively) in *GG* 40772 on 7 April 2017.
[118] 'Environmental Assessment' in Glazewski & Brownlie (n 112).
[119] Section 1 of NEMA.

This Act empowers the Minister of Mineral Resources to issue environmental authorisations, while the Minister of Environmental Affairs will be the appeal authority.

Section 24 of NEMA provides that the Minister of Environmental Affairs must list those activities for which an environmental authorisation is required. Further, '[t]he potential consequences for or impacts on the environment of listed activities or specified activities must be considered, investigated assessed and reported on to the competent authority or the Minister responsible for mineral resources … to obtain an environmental authorisation in terms of this Act.'

Depending on the impact of an activity it will require a Basic Assessment or a full Environmental Impact Assessment (EIA). Nuclear installations require a full EIA before they can proceed. Thus, NEMA is of particular relevance to the nuclear industry.

While NEMA[120] limits investigation of mitigation measures to the need to 'keep adverse consequences or impacts to a minimum' the need to go beyond minimising impacts to 'remedy' them is absent. The 2014 EIA regulations as amended go one step further, by defining mitigation as to '. . . anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible'. [121]

The principles of NEMA state that environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably. Environmental management should pursue the selection of the best practicable environmental option.[122] A further principle is that 'pollution and degradation of the environment are avoided, or, where they cannot altogether be avoided, are minimised and remedied.'[123]

[120] Sections 23 and 24(4) of NEMA.
[121] EIA Regulations (n 103) as amended by GN 326 in *GG* 40772 of 7 April 2017.
[122] EIA Regulations (n 103) 11.
[123] Section 2(4)*(a)*(ii) of NEMA.

It lists the regulations of environmental assessments, the EIA Regulations and sets out the process to be followed in applying for an environmental authorisation and the consequences of unlawful commencement of an activity.
In the EIA Regulations Listing Notice 2 of 2014, nuclear is identified as a listed activity- Listed Activity 3 of LN2:

> The development and related operation of facilities or infrastructure for nuclear reaction including energy generation, the production, enrichment, processing, reprocessing, storage or disposal of nuclear fuels, radioactive products, nuclear waste or radioactive waste.[124]

The EIA process includes:

1. Scoping Report;
2. Public Participation;
3. Draft EIA including specialist studies;
4. Public Participation, including hearings, detailed commentary and submissions;
5. Final EIA and public comments submitted;
6. The decision on application and issue or refusal of application;
7. Environmental Authorisation issued, with conditions;

and may include:

8. Appeal to the Minister; and
9. Judicial review.

Public participation is an important part of the EIA process that is dealt with in Chapter 6 of NEMA. Any change or amendment to the submission triggers the need to go through the public participation process again. Public participation has

[124] EIA Regulations (n 103) 7.

notoriously been a stumbling block for the administration and two cases in point will be discussed in the next chapter.[125] [126]

3.5 Nuclear Energy Act

This Act establishes South African Nuclear Energy Corporation Ltd (NECSA) as a wholly state-owned company. The Act further defines its powers, functions, provides governance and its management by a board of directors and a Chief Executive Officer.

It sets responsibilities for the application and implementation of the Safeguards Agreement and any other agreements entered into by SA in support of the Nuclear Non-Proliferation Treaty acceded to by SA.

It regulates the possession, acquisition, import and export of nuclear fuel, nuclear and related material and equipment.[127] Chapter 4 sets out the Minister's responsibilities regarding source material, special nuclear material, restricted material, radioactive waste and irradiated fuel.[128]

3.6 National Nuclear Regulator Act

The NNR Act was assented to in December 1999. It provides for the establishment of a NNR in order to regulate nuclear activities and sets out how it will be managed.

The function of the Regulator is to exercise regulatory control by granting and amending nuclear authorisations. It should also provide for the protection of persons, property and the environment against nuclear damage through the establishment of safety standards and regulatory practices.[129]

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[125] *Earthlife Africa Johannesburg v Minister of Environmental Affairs and Others* [2017] 2 All SA 519 (GP).
[126] *Earthlife Africa Johannesburg and Another v Minister of Energy and Others* case no 19529/2015 available at http://www.saflii.org/za/cases/ZAWCHC/2017/50.pdf.
[127] Section 36 of the Nuclear Energy Act.
[128] Section 54 of the Nuclear Energy Act.
[129] Section 5 of the NNR Act.

3.7 National Energy Regulator Act

The National Energy Regulator Act (NERA) was promulgated to establish the Energy Regulator, a single body to regulate gas, electricity and petroleum, which led to the establishment of NERSA. It set out the duties, role and responsibility of the energy regulator as well as how the regulator makes decisions. NERA was administered by the DoE and was later amended by the ERA.

The duties of the Regulator are set out in section 9: Duties of members of Energy Regulator must

> act in a justifiable and transparent manner whenever the exercise of their discretion is required;
>
> …
>
> act independently of any undue influence or instruction;
>
> …
>
> act in the public interest.[130]

Section 10 of NERA states that every decision made by the Regulator (NERSA) must be taken with a procedurally fair process in which affected persons have the opportunity to submit their views and present relevant facts and evidence to the Energy Regulator.

The NERA had relevance in the case of *Earthlife Africa Johannesburg* and *South African Faith Communities' Environment Institute vs Minister of Energy and Others* where the decision that NERSA made in the determination by the Minister that 9.6 GW of nuclear power was required by SA was brought into question. It was argued that the concurrence by NERSA in the decision of the Minister was unlawful, unreasonable and procedurally unfair.[131] This will be discussed in more detail in Chapter 5.

3.8 The Electricity Regulation Act

This act was promulgated in 2006 to establish a national regulatory framework for the electricity supply industry and to make the National Energy Regulator (NER SA) the

[130] Section 9 of NERA.
[131] [2017] 3 All SA 187 (WCC) para 14.

enforcer and custodian of this framework. It amends the NERA of 2004. It was amended in 2006 by the Electricity Regulation Amendment Act 28 of 2007.

It sets out the powers and duties of the regulator, the provisions for new generation capacity and remedies against decisions by the regulator.

One of the objects of the Act is to ensure that the interests and needs of present and future electricity customers and end-users are safeguarded and met, having regard to the governance, efficiency, effectiveness and long-term sustainability of the electricity supply industry within the broader context of economic energy regulation in the Republic. [132]

The Act allows the Minister of Energy, in consultation with NERSA, to make Ministerial determinations for new generation capacity if (s)he believes that it is required to secure the continued uninterrupted supply of electricity.[133] The Ministerial determinations may also outline the type of energy sources from which electricity must be generated.[134]

To make a determination for new generation capacity:[135]

> (1) The Minister may, in consultation with the Regulator-
> *(a)* determine that new generation capacity is needed to ensure the continued uninterrupted supply of electricity;
> *(b)* determine the types of energy sources from which electricity must be generated, and the percentages of electricity that must be generated from such sources;

In 2013 and 2016 the Minister of Energy made two determinations in terms of section 34 of ERA that SA required 9.6 GW of nuclear power, to be procured by the DoE, and Eskom respectively. In the case of *Earthlife Africa Johannesburg and South African Faith Communities' Environment Institute vs Minister of Energy and others*,[136] these

[132] Section 2(*b*) of ERA.
[133] Section 34(1)*(a)* of ERA.
[134] J Govender 'New Ministerial Determinations issued by South Africa's Minister of Energy' available at https://www.cliffedekkerhofmeyr.com/en/news/publications/2015/projects/projects-and-infrastructure-alert-31-august-new-ministerial-determinations-issued-by-south-africas-minister-of-energy.html (accessed on 8 August 2019).
[135] Section 34(1) of the Electricity Amendment Act 28 of 2007.
[136] [2017] 3 All SA 187 (WCC).

two determinations were challenged and found to be unlawful and unconstitutional and were set aside. [137] This case will be discussed in more detail in Chapter 5.

3.9 National Treasury Regulations (TR)

Treasury Regulations states that a supply chain management official or another role player must treat all suppliers and potential suppliers equitably.[138] During the nuclear procurement programme, no pre-qualification and pre-engagement of possible vendors are allowed in the name of transparency and competitiveness. Vendor parades are also in contravention of this as it is held individually behind closed doors, excluding other competitors, and interested and affected parties.[139]

Treasury Regulations 'Compliance with ethical standards' states that 'all officials and other role players in a supply chain management system must comply with the highest ethical standards' and must adhere to the National Treasury's Code of Conduct for Supply Chain Management Practitioners.[140] This means that any DoE official involved in the vendor parades can be held personally liable for contraventions.

3.10 Promotion of Access to Information Act

PAIA is the national legislation that enacts section 32 of the Constitution. The latter section reads as follows:

> Access to information
> 32.(1) Everyone has the right of access to—
> *(a)* any information held by the state; and
> *(b)* any information that is held by another person and that is required for the exercise or protection of any rights.
> (2) National legislation must be enacted to give effect to this right, and may provide for reasonable measures to alleviate the administrative and financial burden on the state.

The purpose of PAIA is 'to give effect give effect to the constitutional right of access to any information held by the state and any information that is held by another person

[137] [2017] 3 All SA 187 (WCC) para 139.
[138] National Treasury Regulations, 16A8.3(*b*).
[139] N Prins *South Africa's nuclear new-build programme: The domestic requirements for nuclear energy procurement and public finance implications*, WWF South Africa, Cape Town
[140] National Treasury Regulations, 16A8.

and that is required for the exercise or protection of any rights'. PAIA makes no distinction between environmental and other information, as is the case in some other jurisdictions.[141]

PAIA gives effect to the constitutional right of access to information held by the State or another person, subject to justifiable limitations, in a manner that balances that right with other rights, including the rights in the Bill of Rights.[142] It specifies the manner of requesting access, grounds for refusal, third party notification and appeals process.

The right of refusal may be trumped in cases where the disclosure of the record would reveal evidence of three public interest aspects: breach of the law, risk to public safety or environmental risk. [143] A balancing act must take place and the benefit to public interest must clearly outweigh any harm of disclosure. This section sets a very high trumping threshold and this override clause is infrequently used.[144]

In the case of *Earthlife Africa (Cape Town) v Director-General: Department of Environmental Affairs and Tourism and Eskom Holdings*,[145] the applicant was not granted the access to the information that was sought despite showing that the requested information was necessary to exercise or protect the constitutional environmental right.[146]

The applicants launched an urgent court case to gain access to information that was placed before the DG in support of its application and a reasonable opportunity to make representation to the DG before the decision was made, but this case was struck off the roll. The respondent successfully established that various grounds of refusal

[141] 'The bill of rights and environmental law' in Du Toit & Glazewski (n 38).
[142] Section 11 of PAIA.
[143] Section 46 of PAJA:
(i) a substantial contravention of, or failure to comply with, the law; or
(ii) an imminent and serious public safety or environmental risk; and
(b) the public interest in the disclosure of the record clearly outweighs the harm contemplated in the provision in question.
[144] 'The bill of rights and environmental law' in Du Toit & Glazewski (n 38) para 5.5.2.3.
[145] 2005 (3) SA 156 (C).
[146] 2005 (3) SA 156 (C) para 47.

listed in PAIA were present and the authorisation was granted for Eskom to proceed.[147]

3.11 Promotion of Administrative Justice Act

PAJA was assented to in 2000 and gazetted in 2009 but was only promulgated in 2016. The delay was because extensive training needed to be undertaken by judicial officers and court officials before the new procedure was brought into the court space. [148]

The Bill of Rights section on Just Administrative Action requires national legislation to be enacted[149] to give effect to the rights to:

a) provide for the review of administrative action by a court, or where appropriate, an independent and impartial tribunal;
b) impose a duty on the state to give effect to the rights stated in 33(1) the right to administrative action that is lawful, reasonable and procedurally fair and 33(2) the right to be given reasons when your rights have been adversely affected by administrative action; and
c) promote an efficient administration. [150]

PAJA gives effect to these rights to administrative action that is lawful, reasonable and procedurally fair and to the right to written reasons for administrative action as contemplated in section 33 of the Bill of Rights in the Constitution of South Africa.

PAIA and PAJA are similar, in that they both codify common-law administrative law principles, with the basic difference between the two being that PAJA deals with judicial review of decisions that had been taken by institutions, whereas PAIA deals

[147] 2005 (3) SA 156 (C) paras 79–80.
[148] Promotion of Access to Information and Promotion of Administrative Justice Rules: Deliberations, https://pmg.org.za/committee-meeting/23162/, accessed 24 July 2019
[149] Bill of Rights that deals with just administrative action states: National legislation must be enacted to give effect to these rights.
[150] Section 33 of the Constitution.

with an individual going to access information from institutions, in arriving at their particular decisions.[151]

PAJA gives requirements for procedurally fair administrative action affecting any person or the public. It directs how reasons for administrative action needs to be provided. It stipulates when a judicial review of an administrative action may be done, the procedures of such review, and how these proceedings may, during the judicial review, remedy the administrative action taken.

PAJA allows for judicial review of administrative action by a court or tribunal if –[152]

(b) a mandatory and material procedure or condition prescribed by an empowering provision was not complied with;

(d) the action was materially influenced by an error of law;

(e) the action was taken-

(iii) because irrelevant considerations were taken into account or relevant considerations were not considered;

(f) (ii) the action itself is not rationally connected to-

aa) the purpose for which it was taken;

bb) the purpose of the empowering provision;

cc) the information before the administrator; or

dd) the reasons given for it by the administrator;

…

(h) the exercise of the power or the performance of the function authorised by the empowering provision, in pursuance of which the administrative action was purportedly taken, is so unreasonable that no reasonable person could have so exercised the power or performed the function.

Both PAIA and PAJA were used to challenge the nuclear determination by the Minister of Energy and the intergovernmental agreements with China, Russia and Korea in *Earthlife Africa* and *South African Faith Communities' Environment Institute v Minister of Energy and Others*.[153]

[151] PAIA Rules (n 148).
[152] Section 6(2) of PAJA.
[153] [2017] 3 All SA 187 (WCC).

PAJA was also used to challenge the environmental authorisation granted to Thabametsi Power Company in *Earthlife Africa Johannesburg v Minister of Environmental Affairs and four others* ('Thabametsi case')[154] to build their 1200 MW coal-fired plant.

In *Earthlife Africa (Cape Town) v Director-General: Department of Environmental Affairs and Tourism and Eskom Holdings*,[155] the applicant took the decision of the Director-General on review, invoking provisions in the ECA and PAJA.[156] The Court dismissed the respondent's argument that since Eskom could only commence with construction after obtaining further authorisations, there was no need to launch review proceedings at the first stage of public participation. The Court held that just because this was the first stage in the process 'does not mean that the *audi* rule is inapplicable, nor does it mean that an aggrieved party must await 'the final step' before it can seek to review the decision'.[157] It thus found that procedural fairness required that the *audi* rule also be applied at the second stage.[158]

These cases will be discussed further in the next chapters.

[154] [2017] 2 All SA 519 (GP).
[155] 2005 (3) SA 156 (C).
[156] 'The bill of rights and environmental law' in Du Toit & Glazewski (n 38).
[157] 2005 (3) SA 156 (C) para 34.
[158] 2005 (3) SA 156 (C) para 58.

Chapter 4: Public participation as a requirement of environmental authorisation, with reference to key cases

4.1. Introduction

This chapter examines NEMA with focus on the environmental assessment (EA) process which includes the public participation requirements of environmental authorisations that may be affected by the nuclear industry developments. It does so in the context of two pertinent court cases where the environmental authorisation, public participation process and administrative justice provisions formed the basis of the challenge against decisions made by Ministers within government.

An environmental authorisation is a mandatory requirement before commencing with any listed activity.[159] This involves going through an EA process, which includes a public participation process. Once an environmental authorisation application is made, an EIA report must be undertaken to provide authorities with all relevant information on the environmental impacts of the proposed activity.[160]

An initial and fundamental step in the EA process is the screening process. This entails determining whether the proposal follows the basic assessment, EIA, or no formal assessment route.[161] The 2014 EIA regulations as amended set out first the EA process followed by three further Listing Notices.[162] These are referred to as 'the December 2014 regulations as amended.'[163]

If the proposed activity falls under Listing Notice 1 of the EA Regulations, a Basic Assessment where a Basic Assessment Report (BAR) is produced is required. If it falls within the ambit of Listing Notice 2, a more elaborate Scoping and Environmental Impact Reporting (S&EIR) is required.[164] If a BAR is required, regulations 19 and 20 of GNR 326 apply. If an S&EIR is required, regulations 21 to 24 apply. The development and related operation of nuclear power is identified as a listed activity in

[159] Section 24 of NEMA; GN R982–GN R985 in *GG* 38382 of 4 December 2014 as amended by GN 324–GN 327 in *GG* 40772 of 7 April 2017.
[160] 'Environmental Assessment' in Glazewski & Brownlie (n 112) para 10.1.1.
[161] 'Environmental Assessment' in Glazewski & Brownlie (n 112) para 10.3.3.2.
[162] In terms of GN 326, GN 327, GN 325 and GN 324 (respectively) in *GG* 40772 of 7 April 2017.
[163] 'Environmental Assessment' in Glazewski & Brownlie (n 112).
[164] GNR 326, regs 19–24.

Listing Notice 1 of NEMA.[165] The construction of a coal-fired power station is also a listed activity. If the screening determines that a BAR or S&EIR is required the applicant needs to appoint an EA practitioner.

Time frames for the BAR process is that the applicant needs to within 90 days of receipt of the application by the competent authority, submit to the competent authority, the BAR, specialist reports, EMPr, and if applicable, closure plan, all of which must have been subjected to a public participation process of at least 30 days and reflect comments received, including from the competent authority. This can be extended to 140 days on notification if, on receipt of the application, significant changes have been made or new information has been added. If this includes new information in the documents made available during the initial public participation process then another public participation process of at least 30 days must be undertaken.[166],[167]

During scoping potentially significant issues and concerns and possible alternatives are identified. During the scoping stage, the applicant must within 44 days of receipt of the application by the competent authority, submit to the competent authority a scoping report including comments received during the public participation process. The appropriate scope of an EA varies considerably depending on the complexity, public sensitivity and the potential for significant impacts. This scope was of significance in the Thabametsi case where the significant effects of climate change were overlooked in the initial scoping report. [168]

The competent authority considers the scoping report and advises the applicant whether to proceed with the EIA or refuses the application within 43 days of receipt thereof. [169] The applicant then submits an EIA report within 106 days of acceptance of the scoping report.[170] If significant changes have been made or significant changes have been made a notification may be given that an environmental impact report, all

[165] *National Environmental Management Act, 1998: Listing Notice 1: List of Activities and Competent Authorities Identified in Terms of Sections 24(2) and 24D* in *GG* 38282 of 4 December 2014.
[166] 'Environmental Assessment' in Glazewski & Brownlie (n 112) para 10.3.3.2.
[167] GNR 326, reg 3.
[168] [2017] 2 All SA 519 (GP).
[169] GN 326, reg 22.
[170] GN 326, reg 23.

specialist reports, and an Environmental Management Programme Report (EMPr) will be submitted within 156 days of acceptance of the scoping report.[171] In this case, another public participation process of at least 30 days must be undertaken.[172]

Chapter 6 of NEMA and the 2014 Regulations as amended deals with the public participation process required within the environmental authorisation process.[173] The public participation process must give all potential or registered interested and affected parties, including the competent authority, a period of at least 30 days to submit comments on each of the BAR, EMPr, scoping report and EIA report, and where applicable the closure plan, as well as the environmental authorisation amendment report contemplated in regulation 32,[174] if such reports or plans are submitted at different times.[175]

An implication of this is that the Minister of Energy needs to go through a public participation process by inviting comments and duly considering these comments before finalising the IRP.

Two landmark cases, already referred to in the previous chapter illustrate how and where the public participation process, environmental authorisation and administrative law aspects was used to challenge administrative actions are *Earthlife Africa Cape Town v Director-General: Department of Environmental Affairs and Tourism and Eskom Holdings*[176] *and Earthlife Africa Johannesburg v Minister of Environmental Affairs and Others*,[177] (referred to as 'the Thabamatsi case') which will now be discussed.

[171] GN 326, reg 23(1)(b).
[172] 'Environmental Assessment' in Glazewski & Brownlie (n 112) para 10.3.3.2.
[173] GN 326, regs 39–44.
[174] Section 32 of NEMA.
[175] Section 40 of NEMA
[176] 2005 (3) SA 156 (C)
[177] [2017] 2 All SA 519 (GP).

4.2. *Earthlife Africa (Cape Town) v Director-General: Department of Environmental Affairs and Tourism and Eskom Holdings*

In the *Earthlife Africa (Cape Town) v Director-General: Department of Environmental Affairs and Tourism and Eskom Holdings*,[178] Earthlife Africa challenged the authorisation by the Department of Environmental Affairs and Tourism (DEAT) (the DG)[179] for Eskom to build a demonstration 110 MW pebble bed modular reactor (PBMR) at Koeberg Nuclear Power Station.

Eskom appointed an independent consultant [180] and undertook an EIA process accompanied by extensive public participation.[181] A draft EIR was submitted to the department and to interested parties for comment.

Earthlife Africa submitted detailed written submissions on the draft EIR. The final EIR was then published and distributed to interested parties. The applicant tried to no avail to make representation to the DG on the final EIR before the authorisation was made. The applicants launched an urgent court case to gain access to information that was placed before the DG in support of its application and a reasonable opportunity to make representation to the DG before the decision was made, but this case was struck off the roll. The authorisation was granted for Eskom to proceed.

The applicant NGO lodged this challenge based on the claim that their rights to fair administrative action had been infringed not only in the common law but also specifically under the ECA[182] and PAJA.[183] They were not afforded the opportunity to make comment on the final EIR, only on the draft EIR, and they did not receive an opportunity to make representation to the DG, the decision-maker.

The Judge held that there is nothing in the ECA that expressly excludes public participation or application of the common-law *audi alteram partem* rule[184] during the

[178] 2005 (3) SA 156(C).
[179] In terms of section 22(3) of the Environment Conservation Act 73 of 1989 (ECA).
[180] In line with EA reg 3(1)*(a)*.
[181] 2005 (3) SA 156(C) para 11.
[182] Section 36 of the ECA.
[183] Section 6 of PAJA.
[184] Let the other side be heard. The principle that no person should be judged without a fair hearing in which each party is given the opportunity to respond to the evidence against them.

adjudicative stage of the process. The *audi* principle is applicable not only at the first stage of public participation but also to further drafts which may be submitted for consideration.[185]

The court found the approach of the respondents, to only allow public participation up to the submission of the draft EIR and then thereafter to the limited extent of a right to appeal the decision of the Minister once the decision is made, to be fundamentally unsound. The draft and final EIRs were found to be substantially different. Therefore, interested parties were entitled to a further 30 days for the public participation process to comment on the new matter contained in the final submission as a requisite for procedural fairness.[186] The DG's decision to grant environmental authorisation was found to be flawed and set aside.

This case has illustrated that all interested and affected parties need to be empowered to participate in the environmental management and decision-making process, including vulnerable groups such as women and children. Interested and affected parties may also include organs of state that may have jurisdiction over an aspect of an activity. This includes environmental education to raise awareness of environmental issues, knowledge sharing and other appropriate means. All interests should be considered, including recognising cultural information and heritage.

4.3. *Earthlife Africa Johannesburg v Minister of Environmental Affairs and Others* ('the *Thabametsi* case')

In SA's first climate change-related judicial decision, *Earthlife Africa Johannesburg v The Minister of Environmental Affairs and Others*, the court considered the quality and form of climate change impact assessment required when a competent authority assesses an application for environmental authorisation in SA.[187] A 1 200 MW coal-fired power station was sought to be built by the Thabametsi Power Company in the Limpopo Province, a water-scarce area. The construction of a coal-fired power station is a listed activity that requires a full EA process in order to be granted the required

[185] 'Environmental Assessment' in Glazewski & Brownlie (n 112) para 10.3.3.2.
[186] GN 326, reg 19(1)(b).
[187] [2017] 2 All SA 519 (GP).

environmental authorisation. The DoE views the Thabametsi Project as a critical project in order to meet the supply demands envisaged by the IRP.[188] Thabametsi has also been appointed as a preferred bidder in the first Coal IPP Procurement Programme and required an environmental authorisation in order to bid.[189]

Earthlife Africa appealed this decision to the Minister ('the Minister') of Environmental Affairs in their capacity as an IAP (Interested and Affected party),[190] in its own interest, in the public interest and in the interest of protecting the environment.[191] The grounds of appeal was that the Chief Director had failed to consider the climate change impacts of the project.[192] The decision was upheld by the Minister, who despite the fact that she concurred that the climate change impacts were not comprehensively assessed and/or considered, she chose to uphold but amend the authorisation by the addition of an additional condition to undertake a climate change impact assessment before the commencement of the project.[193]

Earthlife successfully argued that the climate change impacts of the proposed power station are *relevant* factors and therefore the Chief Director of the DEA was in material non-compliance of NEMA when she did not consider them in any detail before issuing the environmental authorisation.[194] They argued for the environmental authorisation to be set aside. [195]

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[188] [2017] 2 All SA 519 (GP) para 36.

[189] SourceWatch 'Thabametsi power station' available at https://www.sourcewatch.org/index.php/Thabametsi_power_station (accessed on 2 August 2019).

[190] Section 24(4)*(a)*(v) of NEMA.

[191] Sections 32(1), 73 of NEMA.

[192] [2017] 2 All SA 519 (GP) para 53.

[193] [2017] 2 All SA 519 (GP) para 4:
'The holder of this authorisation must undertake a climate change impact assessment prior to the commencement of the project, which is to commence no later than six months from the date of signature of the Appeal Decision. The climate change impact assessment must thereafter be lodged with the Department for review and the recommendations contained therein must be considered by the Department.'

[194] Section 24O of NEMA: Criteria to be taken into account by competent authorities when considering applications
(1) If the Minister, the Minister of Minerals and Energy, an MEC or identified competent authority considers an application for an environmental authorisation, the Minister, Minister of Minerals and Energy, MEC or competent authority must –
(a) comply with this Act;
(b) take into account all *relevant* factors, which may include-
(i) any pollution, environmental impacts or environmental degradation likely to be caused if the application is approved or refused;

[195] Section 8(1)(c) (i) of PAJA: Remedies in proceedings for judicial review

The Judge held that:

> once the Minister made the decision to uphold the environmental authorisation, despite the absence of a climate change impact assessment, her decision was final[196] and vested significant rights in Thabametsi'… If the climate change report demonstrates that the power station will cause irremediable harm to the extent that the authorisation ought to not have been given them NEMA cannot be lawfully relied upon to revoke the authorisation.[197]

The Chief Director and the Minister would have no power to withdraw the authorisation.

On review to the High Court, the respondents argued that there was no provision in our domestic legislation, regulations or policies that expressly stipulate that a climate change assessment must be done before granting of an environmental authorisation.[198] Section 24O(1)*(b)* of NEMA expressly requires decision-makers to consider all *relevant* factors when making decisions.[199] Notwithstanding the lack of an express legal obligation to conduct a focused climate change impact assessment, the court ruled that climate change is a *relevant* consideration when granting an environmental authorisation. [200]

The court held that the DEA is obliged to fully assess the climate change impacts before the environmental authorisation was granted. The Minister's decision to uphold the authorisation was set aside. The Minister was directed to consider a climate change impact assessment report, a paleontological impact report, comments from IAPs and any additional information that the Minister may require to reach a decision. [201]

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(1) The court or tribunal, in proceedings for judicial review in terms of section 6(1), may grant any order that is just and equitable, including orders –
(c) setting aside the administrative action and
(i) remitting the matter for reconsideration by the administrator, with or without directions.

[196] The *functus officio* principle dictates that a person who is vested with adjudicative or decision-making powers may, as a general rule, exercise those powers only once in relation to the same matter.
[197] [2017] 2 All SA 519 (GP) para 114.
[198] [2017] 2 All SA 519 (GP) paras 16 and 21.
[199] NEMA section 24O
[200] [2017] 2 All SA 519 (GP) para 91.
[201] [2017] 2 All SA 519 (GP) para 126.

The significance of this case is that it underlines the importance of taking relevant considerations, in this case, climate change effects into consideration and the legal implications of not following due process to do this. It also highlights the importance of EAs and underlines the right to correct administrative action including the requirement of the delegated authority, in this case the Chief Director of the DEA to apply their minds to the full scope when making decisions with long-lasting effects. This decision has significant implications not only for proposed projects in the energy sector but also as regards development projects generally.

As pointed by a leading scholar Tracy Lynn Humby 'The *Thabametsi* bench has made a meaningful contribution to climate change litigation, particularly through the manner in which the court addressed equality before the law and the rule of law.'[202]

Having outlined the role of environmental assessment, the next chapter describes some general and pertinent administrative law requirements.

[202] TL Humby 'The Thabametsi Case: Case No 65662/16 Earthlife Africa Johannesburg v Minister of Environmental Affairs' (2018) 30 *Journal of Environmental Law* 145–155.

Chapter 5: Administrative law aspects

5.1 Introduction

This chapter considers the requirement for administrative action to be lawful and procedurally fair while carrying out processes that affect the energy industry and the public. It then examines a key court case where the incorrect application of administrative law principles by government officials led to delays in the nuclear rollout envisaged by the draft 2018 IRP.

A vast and complex body of common-law administrative law principles has been built up over decades in SA, and these have been codified by the Just Administrative Action clause of the Bill of Rights,[203] read with PAJA. This has resulted in a fundamental change in the administrative law landscape.

The constitutional right of access to information and administrative justice has been touched on in Chapter 3 paragraphs 3.10 and 3.11. PAIA and PAJA enact the requirements as set out in the Bill of Rights for correct administrative action and access to information that is required for the exercise or protection of any rights.

Correct administrative action includes procedural fairness. Inherent in procedural fairness is the common-law *audi alteram partem* rule (let the other side be heard). This has now been developed into the statutory requirement of public participation. Procedural fairness is not limited to the rights of persons but also applies to situations where there may be 'legitimate expectations'.[204] The right to reasons[205] for an administrative action, and the ground of reasonableness for review also constitute aspects of correct administrative action which are given effect in PAJA. [206]

Environmental law can be described as administrative law in action, as environmental conflicts frequently turn on the exercise of administrative decision-making powers. [207] The application of the administrative law principles including the right to administrative

[203] Section 33 of the Bill of Rights.
[204] 'The bill of rights and environmental law' in Du Toit & Glazewski (n 38) para 5.4.4.
[205] Section 5 of PAJA.
[206] 'The bill of rights and environmental law' in Du Toit & Glazewski (n 38) para 5.4.6.
[207] 'The bill of rights and environmental law' in Du Toit & Glazewski (n 38) para 5.4.1.

justice and PAJA in the environmental context is well illustrated by the 'nuclear' case now turned to.

5.2 *Earthlife Africa and South African Faith Communities' Environment Institute v Minister of Energy and Others*

A case where the Constitution played a pivotal role in regulating environmental concerns is the case of *Earthlife Africa and South African Faith Communities' Environment Institute v Minister of Energy and Others*.[208] They challenged the state on two main areas it took in furtherance of its nuclear power procurement programme.

The first challenge was against the two determinations made by the Minister of Energy in terms of the Electricity Regulation Act (ERA) in 2013 and 2016 that SA required 9.6 GW of nuclear power, to be procured by the DoE and by Eskom respectively.[209]

There was no public participation or consultation done on them neither by the Minister nor by NERSA.[210] NERSA has a critical role to play in the making of Ministerial Determinations.[211] NERSA must 'act in a justifiable and transparent manner whenever the exercise of their discretion is required, act independently of any undue influence or instruction, and act in the public interest'.[212]

The court found that the determinations made by the Minister in terms of section 34 of ERA, and its concurrence by NERSA constituted administrative action, and that NERSA's decision to concur in the Minister's proposed 2013 determination without a public participation process renders it procedurally unfair and therefore in violation of the provisions of NERA,[213] PAJA[214] and the Constitution.[215] Therefore, the court found that the chain of the section 34 determination is broken by NERSA's behaviour which was fatally flawed from an administrative point of view.

[208] [2017] 3 All SA 187 (WCC).
[209] [2017] 3 All SA 187 (WCC) para 4.
[210] [2017] 3 All SA 187 (WCC) para 14.
[211] In terms of section 34 of ERA.
[212] Section 9 of NERA.
[213] Section 10(1)(*d*) of NERA.
[214] Section 4 of PAJA.
[215] Section 33 of the Constitution.

Because the 2013 determination only came into effect on publication in 2015 and the Minister failed to consult NERSA anew at the time, it did not conform with section 34 of ERA, a mandatory empowering section. The court declared the 2013 section 34 determination unlawful and unconstitutional by virtue of the breach of the principle of legality based on procedural fairness and its delayed publication and it was reviewed and set aside. [216]

The 2016 section 34 determination failed to withdraw or even mention the 2013 determination. This led to the gazetting of two mutually inconsistent determinations. Given the finding that the 2013 determination was invalid and unconstitutional the 2016 determination was also found to be invalid as 'an impermissible attempt to amend a nullity' and was also reviewed and set aside. [217]

The second challenge was against the constitutionality of the tabling by the Minister before Parliament of three intergovernmental agreements (IGAs) in 2015.[218] The agreements were between the Governments of South Africa and the United States of America (1995), the Republic of Korea (2010) and the Russian Federation (2014), all with regard to cooperation in the field of nuclear energy.[219]

The challenge to the IGAs was based on the different procedures set out in section 231(2) and section 231(3) of the Constitution dealing with international agreements:[220]

The court held that the tabling of the US and Korean IGAs was not of a 'technical, administrative or executive nature' so was not in compliance with section 231(3) of the Constitution. As such, Parliament should have ratified the agreements. The Minister's decision to table the IGAs under section 231(3) was reviewed and set aside.

The applicants sought to have declared unlawful and unconstitutional the Minister's decision to sign the Russian IGA, the President's decision to authorise the Minister's signature thereof and the Minister's decision to table it before Parliament under section

[216] [2017] 3 All SA 187 (WCC) para 139.
[217] [2017] 3 All SA 187 (WCC) para 139.
[218] [2017] 3 All SA 187 (WCC) para 1.
[219] [2017] 3 All SA 187 (WCC) para 5.
[220] [2017] 3 All SA 187 (WCC) para 11.

231(3) of the Constitution instead of under section 231(2).[221] They argued that it was not an IGA as envisaged in section 231(3) and should have been tabled before the houses of the National Assembly and the National Council of Provinces in terms of section 231(2) for approval before it could become binding. [222]

The Russian IGA contains binding commitments in relation to nuclear procurement, including providing the Russian Federation with an indemnification, which takes the IGA well outside the category of those of a broad nuclear cooperation agreement of a 'technical or administrative or executive nature' which could be tabled in terms of section 231(3). The Russian IGA should have been tabled under section 231(2) of the Constitution, thereby requiring Parliamentary approval.[223]

The Minister's decision to table the Russian IGA before Parliament in terms of section 231(3) of the Constitution was declared unlawful and unconstitutional and reviewed and set aside. The court practiced judicial constraint on the rest of the relief sought, whether to declare the Russian IGA in its present form as unconstitutional, and whether the Minister's decision to sign the agreement and the President's decision to authorise the Minister's signature was unconstitutional, was refused due to the separation of powers.[224]

5.3 Conclusion

Not only does this case vividly illustrate the importance of adhering to fundamental administrative law principles but also public participation requirements. More specifically as regards the nuclear industry the applicants delayed the rollout of the

[221] Section 231 of the Constitution states as follows in respect of international agreements:
(1) The negotiating and signing of all international agreements is the responsibility of the national executive.
(2) An international agreement binds the Republic only after it has been approved by resolution in both the National Assembly and the National Council of Provinces, unless it is an agreement referred to in subsection (3).
(3) An international agreement of a technical, administrative or executive nature, or an agreement which does not require either ratification or accession, entered into by the national executive, binds the Republic without approval by the National Assembly and the National Council of Provinces, but must be tabled in the Assembly and the Council within a reasonable time.

[222] *Earthlife Africa Johannesburg and South African Faith Communities' Environment Institute vs Minister of Energy and Others* [2017] All SA 187 (WCC) para 135.

[223] [2017] 3 All SA 187 (WCC) para 106.

[224] [2017] 3 All SA 187 (WCC) para 119.

nuclear rollout programme by arguing the procedural errors such as lack of adequate public participation, the failure by the Minister to Gazette or publicise the 2013 section 34 determination for Parliamentary approval and delayed tabling and publishing of the IGAs. These actions violated the requirements of open, transparent and accountable government. The court found that the decisions made by the Minister and concurred by NERSA had a negative effect on the rights of other power producers other than nuclear. The lack of public participation in such a case was a fatal procedural flaw. If the nuclear rollout as envisaged by the draft IRP 2018 is to be realised the lessons learnt here need to be taken cognisance of and these errors in judgement avoided.

These and other issues are summarised in the concluding chapter now turned to.

Chapter 6: Conclusions and recommendations

6.1. Introduction

The administrative law principles and the three cases discussed in Chapters 4 and 5 illustrate the importance of complying with the general principles of administrative law as well as specific requirements of NEMA relating to public participation as well as environmental impact assessments. These principles are relevant to the energy sector generally and thus the roll out of the IRP including the nuclear sector. This is because they operate within the confines of the common law as well as administrative law principles governing nuclear power and environmental law in SA.

They shed light on the checks and balances built into the legal framework of SA and its Constitution with all its supporting laws. The rights enshrined in the Constitution, the right to just administrative law, the requirement for public participation and the laws governing international law all came into play to challenge the environmental authorisation, the determinations and the IGA's, resulting in major setbacks to the government's proposed nuclear procurement programme.

Most importantly, the need for public participation cannot be avoided. Citizens are demanding greater involvement in decisions on large projects that affect them and their environment.

6.2. Steps to roll out the nuclear component of the 2018 draft IRP

In order to effect this roll out, the following question will be considered: What needs to happen in order to successfully implement the 13.8 – 17.4 GW[225] nuclear rollout as envisaged in the 2018 draft IRP?

[225] Period 2031–2040. The carbon budget (IRP6) and carbon budget plus market-linked gas price (IRP7) scenarios commission additional nuclear capacity of about 4200 MW and 5600 MW, respectively for the period 2031-2040. IRP 6 and 7 have 6% (6.3GW) and 7% (7.35 GW) nuclear of 105GW of installed capacity respectively, up from the 3% (1.8 GW) of Koeberg NPP. For the period 2041 – 2050, IRPs 6 and 7 have 6% (7.56 GW) and 8% (10.08 GW) nuclear of 126 GW of installed capacity respectively.

6.2.1. Stop-go decision

South Africa needs a thorough investigation on the implications of nuclear energy, including its costs, financing options, institutional arrangements, safety, environmental costs and benefits, localisation and employment opportunities, and uranium enrichment and fuel-fabrication possibilities. While some of these issues were investigated in the IRP, a potential nuclear fleet will involve a level of investment unprecedented in SA. An in-depth investigation into the financial viability of nuclear energy is thus vital. The NNEECC was established in 2011 to make a final 'stop-go' decision on SA's nuclear future, especially after actual costs and financing options are revealed. [226] The NNEECC was however converted into the Energy Security ESCS responsible for oversight, coordination and direction for the activities for the entire energy sector in June 2014.[227] This committee reports to Cabinet and its proceedings and documents are classified under the MISS Act as TOP SECRET. In the absence of a determination by the Minister of Mineral Resources and Energy, it is unclear whether the South African government intends to proceed with the proposed nuclear build programme.

6.2.2. Finalise the IRP 2018 and revise the IEPR

The IEPR is due to be published by *Government Gazette* on an annual basis.[228] 'to provide a roadmap of the future energy landscape for South Africa which guides future energy infrastructure investments and policy development.'[229] In 2016, the DoE published the 2016 IEPR to fulfil this requirement of the National Energy Act of 2008 and the Energy Policy White Paper. [230] To date the IEP report has not been revised.

South Africa's approved energy plan is published in the form of the IRP. The latest published version is the draft 2018 IRP which was submitted to the Nedlac for

[226] National Planning Commission (n 28).
[227] President Jacob Zuma: Reply to parliamentary questions available at https://www.gov.za/speeches/president-jacob-zuma-reply-parliamentary-questions-written-reply-27-mar-2015-0000 (accessed on 31 August 2019).
[228] The development of an IEP was envisaged in the *White Paper on the Energy Policy of the Republic of South Africa* outlined in section 2.9 above. In terms of the National Energy Act, the Minister of Energy is mandated to develop and, on an annual basis, review and publish the IEP in the *Government Gazette*.
[229] Du Toit & Glazewski (n 38) 20.
[230] National Planning Commission (n 28).

discussion with the social partners as part of the public participation process on 6 March 2019.[231] At the time of writing this draft is due to go before Cabinet for approval in September 2019. The IRP needs to be finalised to provide clarity on the way forward for the energy sector and potential investors in the industry and in SA.

The failure to publish an annual revision of the latest IEP (IEP 2016) and IRP (IRP 2010) leads to planning uncertainty in the energy sector. Therefore, the amount of nuclear to be rolled out is unclear.

Once a determination for new nuclear generation capacity is put forward by the Minister to NERSA, the regulator needs to subject the decision to a public participation process. Once all interested and affected parties have been given the opportunity to submit their views and input, NERSA needs to apply their mind and either concur or reject the proposal. Once this has been concluded in terms of section 34(1) of ERA the determination must be tabled in Parliament within a reasonable time.

6.2.3. Nuclear Research, Development and Innovation Policy and Strategy

Despite all the steps taken by government towards energy planning, there remains fragmentation and inconsistency in integration. There is a lack of integration between different planning and policy processes in the electricity sector such as the Renewable Energy White Paper review, Renewable Energy White Paper review, IEP, climate change policy process, and the nuclear energy policy.[232]

A coherent, rational and sustainable national energy policy is still lacking. The responsibility for energy policy straddles various sections of government, including the National Planning Commission (overarching socio-economic planning), the Departments of Energy (energy policy and regulation), Mineral Resources (coal and uranium), Public Enterprises (managing Eskom), and Environmental Affairs (climate change and pollution).[233]

[231] GO Legal (n lxvi).
[232] Hughes (n 54).
[233] Wakeford (n 20).

Once the IRP is finalised an action plan needs to be set out by the Department of Minerals and Energy on how to implement the nuclear roll out, taking all the lessons learnt into account.

The Department of Mineral Resources and Energy has identified the need to develop a Nuclear Research, Development and Innovation Policy and Strategy in order to resolve fragmentation challenges in this area, ensure better coordination, planning, prioritisation and alignment with national objectives and ensure funding is directed to priority projects and activities. They announced the establishment of a National Committee that has embarked on work to develop this strategy on the occasion of the DoE Budget Vote on 11 July 2019.[234]

A procurement strategy that is open, transparent and fair must form part of this. South Africa should issue an RFP to give all capable entities the opportunity to showcase their offerings. This is fairer than signing binding IGAs with certain nuclear countries as was the case in the Korean, US and Russian IGAs that were challenged in the *Earthlife Africa and South African Faith Communities' Environment Institute v Minister of Energy and Others* case.[235]

The appropriate funding model should be decided upon. As a state-owned enterprise (SOE), Eskom has historically been the sole operator and licence holder for large-scale new build projects, but the advent of the REIPPP programme opens up the option of an IPP building a nuclear power station/(s), or of a private/public funding agreement that is working well in the UAE to build the 5.6GW Barakah plant. [236]

[234] Address by the Deputy Minister of Mineral Resources and Energy, Bavelile Hlongwa on the occasion of the Department of Energy Budget Vote 11 July 2019, Cape Town available at https://www.dmr.gov.za/news-room/post/1808/address-by-the-deputy-minister-of-mineral-resources-and-energy-bavelile-hlongwa-on-the-occasion-of-the-department-of-energy-budget-vote-11-july-2019-cape-town (accessed on 27 August 2019).
[235] [2017] 3 All SA 187 (WCC).
[236] A Cilliers 'Nuclear power – unaffordable, or lowest cost energy available?' available at https://www.fin24.com/Opinion/nuclear-power-unaffordable-or-lowest-cost-energy-available-20171108 (accessed on 10 July 2019).

6.2.4. Integrated Environmental Management

Coordinate the activities of government entities and assist them through providing training, publishing guidelines and co-ordinating procedures to give effect to the objectives of NEMA and the ideals of integrated environmental management. [237]

The Thabametsi[238] and PBMR[239] cases underlined the importance of taking relevant considerations into consideration and the legal implications of not following due process to do this when dealing with development projects in general and energy projects in particular. Decision-makers need to follow correct administrative action as required by PAJA and the delegated authority must apply their minds to the full scope when making decisions with long-lasting effects.

6.2.5. Public Participation

Chapter 6 of NEMA and the 2014 Regulations as amended requires a public participation process as part of the environmental authorisation process.[240] The public participation process must give all potential or registered interested and affected parties, including the competent authority, a period of at least 30 days to submit comments on each of the BAR, Environmental Management Programme (EMPr), scoping report and EIA report, and where applicable the closure plan, as well as the environmental authorisation amendment report contemplated in regulation 32,[241] if such reports or plans are submitted at different times.[242] The Minister of Energy needs to go through a public participation process for all authorisation documents such as environmental authorisations and the IRP by inviting comments and duly considering these comments with every revision before finalising it.

All interested and affected parties need to be empowered to participate in the environmental management and decision-making process, including vulnerable groups such as women and children. Interested and affected parties may also include

[237] 'Environmental Assessment' in Glazewski & Brownlie (n 112) para 10.3.2.2.
[238] [2017] 2 All SA 519 (GP).
[239] 2005 (3) SA 156(C).
[240] GN 326, regs 39-44.
[241] Section 32 of NEMA.
[242] Section 40 of the NEMA.

organs of state that may have jurisdiction over an aspect of an activity. This includes environmental education to raise awareness of environmental issues, knowledge sharing and other appropriate means. All interests should be considered, including recognising cultural information and heritage.

6.2.6. Fair Procurement

The Public Finance Management Act 1 of 1999 and Treasury regulations are applicable to the nuclear procurement process. Fair procurement practices and good governance rules should be upheld throughout in order to prevent falling prey to perceptions of corruption or unfair practice.

Any large-scale procurement process initiated by the state or its agencies must comply with section 217 of the Constitution and other relevant legislative enactments and must be specified before any procurement process commences.[243]

Treasury Regulation states that a supply chain management official or another role player must treat all suppliers and potential suppliers equitably.[244] During the nuclear procurement programme no pre-qualification and pre-engagement of possible vendors are allowed in the name of transparency and competitiveness. Vendor parades are also in contravention of this as it is held individually behind closed doors, excluding other competitors and interested and affected parties. [245]

Treasury Regulation 'Compliance with ethical standards' states that 'all officials and other role players in a supply chain management system must comply with the highest ethical standards' and must adhere to the National Treasury's Code of Conduct for Supply Chain Management Practitioners. [246] This means that any DoE official involved in the vendor parades can be held personally liable for contraventions.

[243] [2017] 3 All SA 187 (WCC) para 142.
[244] National Treasury Regulation 16A8.3(*b*)
[245] Prins (n 139).
[246] National Treasury Regulation 16A8.

6.2.7. The Role of the regulator

NERSA has a critical role to play in the making of Ministerial Determinations and other regulatory decisions in the electricity, gas and petrol industries.[247]

The duties of the Regulator: Duties of members of Energy Regulator must:

> act in a justifiable and transparent manner whenever the exercise of their discretion is required;
>
> …
>
> act independently of any undue influence or instruction;
>
> …
>
> act in the public interest.[248]

Every decision made by the Regulator (NERSA) must be taken with a procedurally fair process in which affected persons have the opportunity to submit their views and present relevant facts and evidence to the Energy Regulator. [249] NERSA also needs to apply their minds to critically review all proposals made by roleplayers in the industry, including the Minister. An example where NERSA failed in its duty to do this was in the *Earthlife Africa and South African Faith Communities' Environment Institute v Minister of Energy and Others* case[250] where NERSA believed that it would be *'mala fide for it not to concur in the Minister's proposed determination'.*[251]

All of these principles, actions and checks should be followed in order to successfully rollout the nuclear component as envisaged in the 2018 draft IRP.

6.3. Concluding remark

These conclusions have attempted to chart the way forward should SA continue to follow a nuclear path. It has also illustrated that the roll out of the IRP, if and when it becomes final, will have to adhere to administrative and environmental law requirements.

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[247] In terms of section 34 of ERA,
[248] Section 9 of NERA.
[249] Section 10 of NERA.
[250] [2017] 3 All SA 187 (WCC).
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