

Investing in New Electricity Generation in South Africa: What Short-circuited Decision-making, 1998-2014 ?

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Compulsory Declaration

This work has not been previously submitted in whole, or in part, for the award of any degree. It is my own work. Each significant contribution to, an quotation in, this dissertation from the work, or works, of other people has been attributed, and has been cited and referenced.

Abstract

At the beginning of 2008, South Africa faced its most severe electricity supply crisis to date. The crisis led to a severe contraction of mining industry output and had a knock on effect on the rest of the economy. This dissertation aimed to explore how such a crisis could occur in a South Africa, when in the years leading up to the crisis, the state owned electricity utility, Eskom, had won awards as one of the lowest cost, most efficient and technologically innovative electricity companies internationally. In order to explore this, the method of the analytic narrative was used, this was supported by process tracing that identified the key period of research as the years 1998- 2004. The paper explored themes of administrative complexity, competing stakeholders and multiple objectives. It was found that the crisis could be credibly explained as- having stemmed from the interaction of complex power relations across the public service in a climate of unresolved political conflict and time sensitive decision making.

Thabo Mbeki

"When Eskom said to the government: 'We think we must invest more in terms of electricity generation'... we said not now, later. We were wrong. Eskom was right. We were wrong."

President of South Africa, 1999-2008

Phumzile Mlambo-Ngcuka

"Maybe we were pessimists who did not believe in our economic growth."

Minister of Minerals and Energy 1999-2005

Alec Erwin

"The decision to charge Eskom with the responsibility to embark on a large and urgent build programme in 2004 was in hindsight, late. The president has accepted that this government got its timing wrong."

Minister of the Department of Public Enterprises 2004-2008

(News24, 2008:1)

White Paper on the Energy Policy of the Republic of South Africa (1998)

"Eskom's present generation capacity will be fully utilised by about 2007. Timely steps will have to be taken to ensure that demand does not exceed available supply capacity."

(Department of Minerals and Energy (DME), 1998:53)

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Chapter One

Introduction

In January 2008, South Africa was plunged into its most serious energy crisis to date. By the third week of the month, South Africa's energy generating capacity was operating at less than 80% and by the fourth week it had been reduced to 75%, leading to a stream of rolling blackouts (Centre for Development and Enterprise, 2008:1). After a shutdown of the mining industry on the evening of the 24 January and an announcement by Eskom to its largest customers that it could no longer guarantee the provision of electricity, a national electricity crisis was declared on the 25 January 2008 (Joffe, 2009:9). The crisis had extreme economic effects; a 22.1% decrease in mining sector output for the first quarter of 2008. The Gross Domestic Product fell to a 6 year low and business confidence was at its lowest point in 24 years (Centre for Development and Enterprise, 2008:2).

Many South Africans felt a strong sense of outrage, a feeling that transcended class and colour lines. "The damage done by the rolling blackouts was more than just economic fallout, traffic gridlock and home-life chaos. There was also damage to our sense of normality. To South Africans electricity is a right not a privilege," (Makhanya, 2008:26). Outrage at the crisis manifested itself in attacks against Eskom employees and national advertisement campaigns mocking Eskom for what was perceived as managerial ineptitude (Davids, 2008a: 4 ; Davids, 2008b: 4).

The first outward signs of an impending crisis came in 2005 with power failures in the Western Cape after complications at the Koeberg nuclear power station (Sunday Times, 2006 a:6). These blackouts came as a shock to most South Africans living outside of townships because up until that point many South Africans had grown accustomed to cheap, reliable and readily available power (McDonald, 2011:65). Prior to 2005, Eskom was the only state owned enterprise within a developing country to be ranked as one of the top power companies globally. South Africa had not experienced power shortages and blackouts on the scale of those experienced in developed economies such as the USA and Italy (Khoza & Adam, 2005:4). As recently as 2001, Eskom had won the Financial Times Global Energy Award for Power Company of the Year for its , "success in providing the world's lowest cost energy while at the same time making superior technological innovations, increasing transmission system reliability and developing economical, efficient and safe methods for the combustion of low-grade coal," (Khoza & Adam, 2005:3,4). It was one of the post-apartheid government's top performing SOEs.

Though public awareness of an impending crisis only came to head in 2005, the 1998 White Paper on Energy very clearly put forth the possibility of a crisis stating, "Eskom's present generation capacity will be fully utilised by about 2007. Timely steps will have to be taken to ensure that demand does not exceed available supply capacity," (DME, 1998:53). Thus begins the puzzle that this thesis would like to explore. How was it that a country with one of the top power companies internationally when provided with 10 years of forewarning could allow generation capacity to deteriorate to a crisis-inducing state?

1.2 Methodology

"We seek to account for outcomes by identifying and exploring the mechanisms that generate them....By reading documents, laboring through archives, interviewing, and surveying the secondary literature, we seek to understand the actors' preferences, their perceptions, their evaluation of alternatives, the information they possess, the expectations they form, the strategies they adopt, and the constraints that limit their actions. We seek to cut deeply into the specifics of a time and place, and to locate and trace the processes that generate the outcome of interest." (Bates, Grief, Levi, Rosenthal & Weingast, 1998).

In spite of President Thabo Mbeki's apology which highlighted lack of government foresight as a key cause of the crisis, most of the public discourse blamed Eskom, providing a putative explanation for the crisis as managerial incompetence (Mann, 2008: 11). As such, the initial debate and hypothesis development on the issue was based on that premise. One of the first hypotheses, H1, posited the following:

H1: The lack of investment in new generation capacity and the subsequent energy crisis were the direct result of poor governance structures within Eskom.

In the early stages of research it was, however, found that in 2001, a cabinet decision was taken to disallow Eskom from participating in any new capacity building projects as a means try and attract private sector participation in new generation projects (Public Affairs Research Institute (PARI), 2013:15). This decision was reversed in 2004 with an announcement by the then Minister of Public Enterprises, Alec Erwin, who stated cabinet's decision to re-instate Eskom as the main developer of generation capacity (Newberry & Eberhard, 2008:58). The long lead times in electricity plant development meant that though responsibility for new capacity development had returned to Eskom, there was insufficient time for them to build the necessary capacity by 2007/8. Whilst this did not completely absolve Eskom of its role in creating a climate for crisis, it did mean that the initial hypothesis did not hold and alternative hypotheses would have to be developed in order to provide a credible explanation for how the crisis developed.

A second hypothesis, H2, was developed along with H1 and it stated the following:

H2: The lack of investment in new generation capacity and the subsequent energy crisis were the direct result of having competing stakeholders with multiple objectives and no clear political champion of the highly complex agenda set out in the 1998 White Paper on Energy.

In order to explore this, the research the method of analytic narrative was selected. The analytic narrative is an iterative process whereby one goes through the following process of: *Establishing a Problem, Generating Theory, Disciplining the Narrative and Modifying Theory.*

Establishing a Problem of Interest: gaining basic information about a particular problem of research interest, identifying major events and key stakeholders with a strong impact on the development of the problem.

Generating Theory: using the basic information, an initial theory is developed to explain the problem, along with an incomplete time line that can be used to contextualise the issue.

Disciplining the Narrative: the time line is then used as the basis for the beginnings of in-depth investigation into the problem, looking for key actions by the various stakeholders with the preliminary theory used as a means to discipline the development of an argument.

Modifying Theory: the analytic narrative process differs from other iterative processes in that new information, that does not fit expected outcomes, is used to help redefine the narrative and reformulate the model to fit the given data (Bates *et.al*, 1998).

A key issue that was highlighted in the process was the role of Independent Power Producers (IPPs) in the development of generation capacity. This was very closely linked to the more technical aspects of the Electricity Supply Industry (ESI) and the role of pricing in the attraction of IPP investment. The exact nature of this role was as yet unclear.

Through the process of iteration and re-iteration, the importance of a lack of fit between policy goals and regulatory processes in pricing became more defined and the following additional hypothesis, H3 was developed:

H3: The lack of investment in new generation capacity and the subsequent energy crisis were the direct result of the implementation of policies that lacked internal consistency and whose implementation required technical & administrative capabilities beyond those which were available in practice.

Together these hypotheses provided two equifinal explanations for the crisis and needed more in depth exploration. Where equifinality refers to the process where different modes of operation can provide the same end result. It was decided that process tracing would provide the most supplementary support to the use of analytic narrative. Process tracing, "Attempts to identify the intervening causal process, the causal chain and causal mechanism between an independent variable (or variables) and the outcome of the dependent variable," (George & Bennet, 2005:206). It is a method used to explore theories where there is equifinality and the same occurrence could potentially be explained by a number of different causal interactions," (George & Bennet, 2005:206,207).

Process tracing was used to develop in-depth historical narratives that explored the causal linkages between events leading to the crisis. These accounts were assembled using newspaper articles and academic journals to try and recreate an accurate description of how events unfolded. The research focused on the actions of key stakeholders from period of the influential White Paper in 1998, up until 2004 when the policy was reversed.

A major limitation of this methodology was the absence of in person interviews. The lack of personal contact meant that whilst it was possible to identify certain key stakeholders through their title as Minister or organizational head, it was more difficult to assign personal attribution for less public key acts and to fully explore the way in which individual personalities shaped the development of events

1.3 Key Stakeholders

Initial investigations brought forth a number of key actors with varying levels of involvement in the process of crisis development. These actors all held different roles within the South African ESI and the socio-political climate. This section of the chapter aims to provide an introductory overview to each of the actors, the process tracing methodology followed by these actors and how their actions contributed to crisis development.

The Department of Minerals and Energy (DME)

The Department of Minerals and Energy (DME) was¹ the arm of government with a legal mandate to oversee the governance of the minerals and energy industries (DME, 2005:2). Manpower within the department was not equally divided between the two industries and the department was often described as playing into the minerals energy complex. The department underwent a number of structural changes and its policy making capacity with respect to energy was widely dispersed across branches of the DME (EGI-SA,2010:16). With respect to energy, the department's main function was to provide the policy and legislative framework to ensure a functional industry .

After the 1998 White Paper the department was faced with the complex task of ensuring the transformation of the South African ESI, particularly in the areas of Electrification, Distribution and Generation (DME, 1998:29). The paper prioritised electrification and distribution over generation.

The Department of Public Enterprises(DPE)

The DPE is the arm of government responsible for the successful operation of the country's State Owned Enterprises. As a government organisation, Eskom falls under the legislative mandate of the DPE. Whilst energy policy is created within the DME, the DPE acts as the main shareholder representative for government in Eskom, taking a keen interest in electricity planning (DPE, 2014; EGI-SA, 2010:15).

Over the period 2001-2004, the DPE acted as the main driver for privatisation efforts within Eskom. The department pushed through the Eskom Amendment Act as well as the Eskom Conversion Act that transformed Eskom into a tax paying company (PARI, 2013:8,9).

National Electricity Regulator (NER)

Founded as an independent regulatory authority in 1995, the NER was established to provide a means of external governance and oversight over the electricity industry (Morgan, 2002: 19; 21) The organisation was formed as an extension of the Department of Minerals and Energy to ensure the protection of consumer interests from, "the monopoly power of their suppliers" (DME, 1998b:10; The Presidency, 2006:2). With regards to the IPP process, the NER had three main functions; to determine the price at which electricity would be supplied, to provide licenses and to develop the regulatory framework for IPP participation (Belinska, 2003:18; Morgan, 2002:22, 23).

Eskom

1

In 2009, the Department of Minerals and Energy was split into the Department of Mineral Resources and the Department of Energy (DOE, 2014).

Founded in 1923 as South Africa's national Electricity Supply Commission, Eskom is the key supplier of South Africa's electricity. *(More information on the organisation and its history can be found in Chapter two.)*

Labour

Though not part of the governmental executive structures, Labour represents the relationship between the ANC and unions as they are a part of the tripartite alliance (COSATU, 2014). The unions most prominent throughout the development of the crisis narrative, were the Congress of South African Trade Unions (COSATU) and the National Union of Mineworkers (NUM).

IPPs

IPPs are a key component in the process of achieving more generation capacity. With regards to the actual crisis, they had a very limited role in orchestrating events. As such, they remained minor actors within the crisis development scenario.

Technocratic Visionaries

This grouping cannot be clearly identified as a specific group of people. The development of the crisis points to the influence of a number of highly skilled professionals, who, responsive to some then-prevailing global conceptions of 'best practice', greatly impacted the nature of the ESI policy.

The web in the diagram below provides a diagrammatic expression of the formal and informal relations that existed between various key actors, across the period leading up to the 2007/8 Crisis.

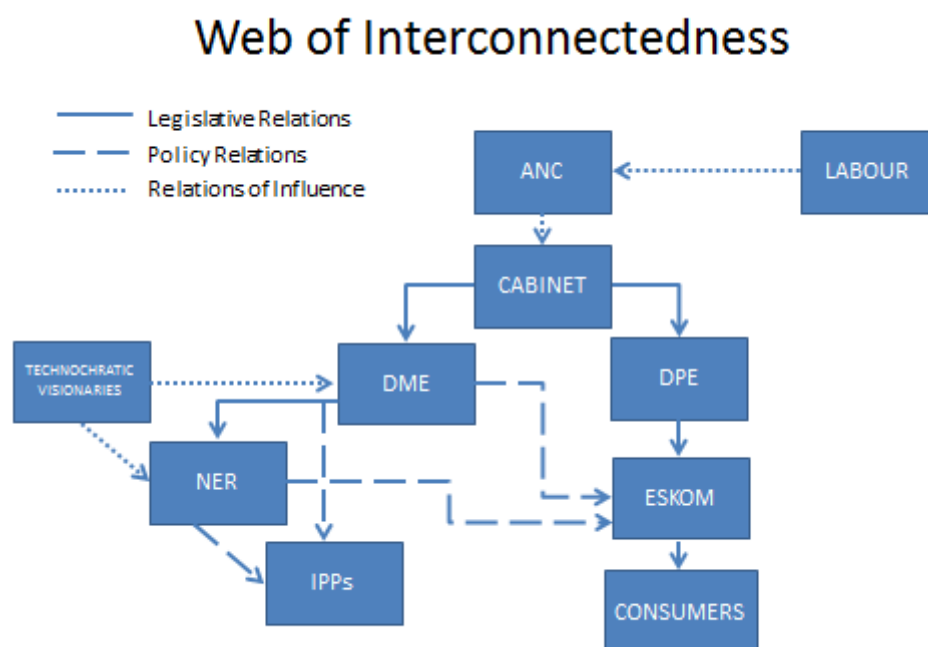


Figure 1

The solid black lines describe legislative relations where a legal mandate provides a clear line of hierarchy between the two actors. The dashed lines represent policy relations, where actors may not have formal jurisdiction over the other actors but maintain a position that allows them to create policy that will affect the actors. The dotted lines represent informal relations of influence, where there is no official legal relationship but where actors exert a certain amount of influence within various organisations.

As the ruling party of South Africa, the African National Congress (ANC) holds a position that allows them to enforce a certain policy direction. The cabinet forms the executive authority within government and a number of high level decisions are made in cabinet and pushed forward by the other branches of government. The Department of Public Enterprises (DPE) and the Department of Minerals and Energy both fall under the jurisdiction of cabinet. Though not a formal government coalition, Labour represents the relationship between the ANC and unions as a part of the tripartite alliance (COSATU, 2014). As an SOE, Eskom reports directly to the DPE as its main shareholder. The DME does not have any formal control over Eskom, however, as the main government body dealing with energy issues, its policy decisions have a large impact on Eskom's organisational goals and mandate. NER/ NERSA acts the independent regulator of the energy sector and its mandate stems from its position as an arm of the DME. IPPs are independent and as such have no official linkages to any government organisation. The legislation that governs the behaviour of IPPs within the South African ESI, however, is governed by both NER and the DME. The technocratic visionaries are an unaligned grouping of individuals who exerted an influence over the creation of policy both in NER and at the DME.

The actions of the various actors were traced over the period 1998 to 2004 and the following chapters describe how their interactions influenced the development of a crisis. Chapter two provides a historical account of the development of the ESI within South Africa, looking at how Eskom came to hold its monopoly position within the sector. The chapter also provides a breakdown of the key issues of the 1998 Energy White Paper that will be dealt with throughout the thesis. Chapter three provides the testing ground for hypothesis three and explores the impact of pricing in policy planning, giving a brief overview of the global experience in ESI sector reform and goes on to explore how policy reform was carried out in South Africa with regards to pricing. Chapter four tests hypothesis two and looks at how various stakeholder interests and incentives culminated in providing a complex arena for policy implementation. Chapter five draws the thesis to a close by providing an overview of the findings of this paper.

Chapter Two

Setting the Stage

2.1. Eskom and South Africa's Electricity Sector: a Short History

The biggest change in South Africa's electricity supply industry landscape was the publication of the 1998 White Paper on Energy. A full 10 years before the 2008 crisis, government officials and analysts were already aware of its impending arrival and asserted the need for drastic action to be taken in order to avoid the crisis (DME,1998 : 53). The steps to be taken, were a redesign of ESI policy through the above mentioned White Paper, South Africa's first cross sectoral energy plan since 1986 (DME,1998:6). This chapter aims to provide a brief historical overview of the South African ESI and of the context in which the White Paper was created, providing a short introduction to some of the policy's key areas of focus with regards to electricity planning.

In 1882 the first electric streetlight was lit in Kimberley, a mining town in the heart of South Africa. This was a momentous occasion as the light was the first of its kind in Africa. This was ahead of the introduction of electric lighting in London, and the occasion set the tone of South Africa's Electricity Supply Industry as that of a thriving, forward thinking sector, closely linked to mineral interests (Steyn:2006:8 ; Eskom Heritage:2009; McDonald, 2012:66).

The sector was serviced by private companies and a public electricity utility was only established in 1923 as the Electricity Supply Commission (Escom). From its inception, Escom was designed to run as a not-for-profit organisation, financially independent from the state, acting semi-autonomously. This system raised tensions when the Electricity Bill was brought before parliament in 1920. The concerns that Eskom was too autonomous were pushed aside and Escom was established as a "public business enterprise" that reported directly to its line minister with no parliamentary accountability (Steyn, 2006:9; Greenpeace, 2012:5).

Escom worked towards sector control from its beginnings as an organisation and established monopoly control of the sector in 1948 with its purchase of the Victoria Falls Transvaal Power Company, leading to the vertically integrated structure present in the South African ESI today (Steyn, 2006:9, 10; Greenpeace, 2012:5). The utility was run with a mission to ensure reliable cost-effective power with the understanding, "that the mining industry was the prime driver behind the establishment of the ESI and it was therefore inconceivable that its development should ever be stunted by shortages or poor quality of supply," (Steyn, 2006:11).

The stability of the mining industry became a key issue during the OPEC crisis of the 1970s. The oil crisis led to a sharp spike in demand as consumers switched from oil-based generators to electricity. This increase in demand gave a strong push for Escom to increase the available electricity capacity in order to avoid shortages as, "It was considered more acceptable to end up having over capacity than not being able to meet demand," (Steyn, 2006:13, 14). The decisions on how best to expand were made in haste and their economic and social consequences carried well into the new millennium.

Despite the plans to increase capacity, the long lead times in plant construction meant that Escom faced supply shortages in the early eighties when political unrest in Mozambique disrupted the

agreed upon flow from the Cahora Bassa hydroelectric scheme (Steyn, 2006:16-18). This destabilisation reinforced senior management's position of "err[ing] on the side of surplus power," in their investment decisions (Steyn, 2006:18).

During the late 70s, Escom's commitment to surplus power led to increased tariffs that incited political protest from white farmers, an important constituency for the South Africa's National Party Government (Steyn, 2006:30). The tariff increases continued into the early eighties. The national government made attempts at negotiating with Escom, however, the organisation did not realise the importance of obtaining political backing for their planned investment projects and subsequent tariff increases, a move that caused the organisation to be viewed as having, "a misplaced arrogance," (Steyn, 2006:30). This arrogance led the National Party to institute the De Villiers Commission in 1983, "A Commission of Inquiry into the Supply of Electricity in the Republic of South Africa," (Steyn, 2006:31).

The Commission undertook an investigation of the South Africa's ESI at the time and more particularly the way Escom ran the system. The commission found Escom's dedication to ensuring supply at any cost and noted how that motivation often led to unsound investments and wasteful spending. The results of the commission were the Electricity Amendment Act of 1985 and The Eskom Act of 1987. The amendment abolished the Electricity Control Board that governed Eskom in favour of an Electricity Council that would be more representative of Escom's consumers and would appoint the Management Board who would govern the day to day running of Escom.

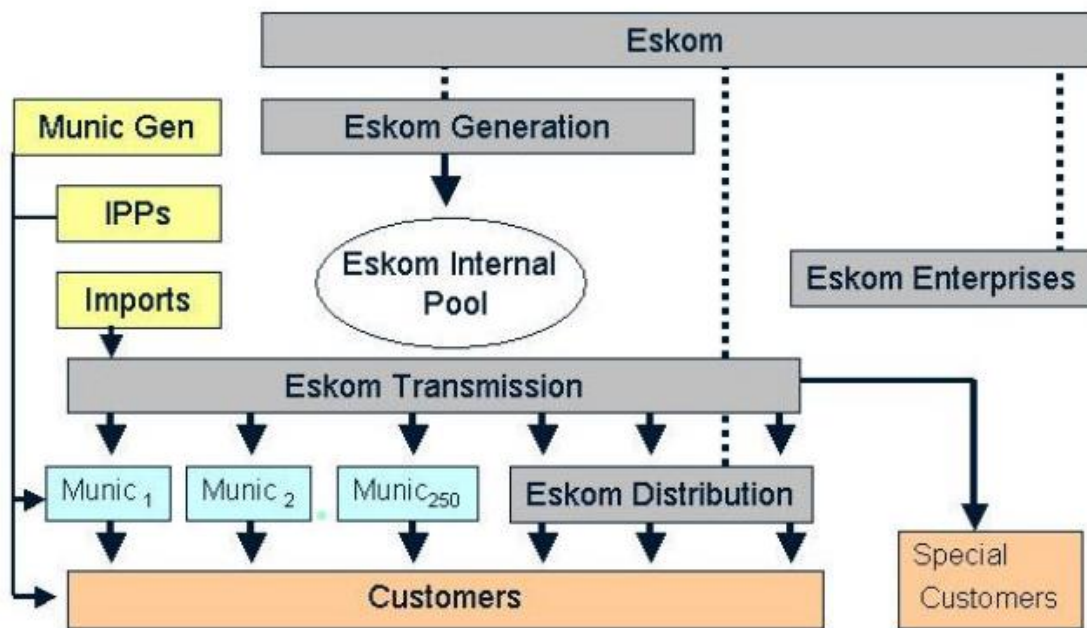
The Eskom Act of 1987 gave the organisation a single name of Eskom as it had previously been known as Escom in English and Evkom in Afrikaans. The Act also removed Eskom's Reserve Fund, Capital Development Fund and Redemption Fund; these funds had previously been used to bolster Escom's financials and increase access to capital for future investments (Steyn, 2006:34). The Commission further recommended that Escom should move away from its non-profit mandate and act more like a private business, a recommendation that paved the way for Eskom's corporatisation in the early 2000s (EGI-SA,2010 :13). Though the commission made an impact on how Eskom related to government, it still allowed for the organization to run with limited external assessment maintaining a strong level of organisational autonomy (Steyn, 2006:34).

The over-investment made during the apartheid era placed Eskom in the position it held in the 1990s as an organization with a history of 20 years of surplus generation capacity (Steyn, 2006:1). By 1998 Eskom supplied 95% of South Africa's electricity requirements, a need that equaled more than half of the electricity generated across the African continent and established Eskom as the natural monopoly of the South African electricity industry.. It controlled all of the transmission grid and supplied almost 60% of the electricity directly to consumers through its distribution networks with the remainder being supplied by municipalities and other minor distributors (Eberhard,2003:7,8; Eskom, 1998).

92% of all power produced at the time was coal based with an additional 7% generated through nuclear power and 1% through hydropower and emergency gas turbines (Eberhard 2001:2). The majority of the coal based power plants are located in the north east of the country, the single nuclear power station located in the Western Cape and the limited hydro capacity was located along the Orange River, utilising pumped across 2 units, one in the Drakensburg and one in the Western Cape (Eberhard, 2001:2).

The national grid was integrated across provinces and comprised of 27000km of lines running predominantly at 400 and 275kV with a few lines running at 765, 220 and 132 kV in addition to 533kV DC (Eberhard,2001: 2).

The diagram below provides an overview of the South African ESI during that period. Eskom held monopoly power over the industry, something that policy attempted to change through the introduction of the 1998 White Paper.



(Eberhard 2001:15).

On an international scale, Eskom was ranked as one of the top 5 utilities world-wide in terms of sales and size and was one of the world's lowest cost electricity suppliers (Eskom, 1998)

At the time of the White Paper on Energy, South Africa was undergoing major reforms in many of its state owned enterprises and a major reform of the ESI fit well into the new government's plans for transformation (Eberhard, 2008:230; Eberhard, 2005:5310). Eskom did not fit the standard profile of a developing economy in reform as it had an excess of capacity and its balance sheet did not reveal the , "poor economic performance" of its investments in the late seventies and early eighties. It did however, fit the pre-reform structure of many industrialised countries (Steyn, 2006:38; Eberhard,2005:5310). It was in this light that the 1998 White Paper on Energy was presented as the solution to countries' excess capacity and under-electrification.

2.2. The Energy White Paper of 1998

This section of the chapter aims to provide an overview of the political context in which the White Paper was created and provide a brief overview of the policy's key areas of focus. The political climate of a newly democratized South Africa, saw movement within government towards the reform and restructure of many state owned enterprises and state dominated industries

including Eskom (Eberhard, 2005:53120). The climate for reform was brought about by a number of issues, namely:

- The political awakening of 1994 drew national attention to the lack of access to electricity for the black South African majority and a fractured electricity distribution industry.
- The new government's economic policy aimed to improve the performance of SOEs through corporatisation, "redefining the relationship of state as shareholder", better definition of tax obligations and the introduction of independent regulatory authorities.
- The nineties were a period of change in the international electricity climate and these new ways of thinking were applied to Eskom's previous policies creating space for further discussion on Eskom's policy future as analysts attempted to avoid Eskom's previous over-investment models.
- During the nineties the government experienced serious pressure to increase black participation in the economy and possible divestment of Eskom's generation assets provided an innovative way to attempt to increase black economic empowerment (Eberhard, 2008:230; Eberhard, 2005:5310).

Within the ESI this led to the creation of the 1998 White Paper on Energy, a revolutionary document that called for far reaching sector reforms. As the first sectoral wide energy policy since 1986, the paper covered a broad spectrum of issues within the energy sector (DME, 1998:6). Its main objectives were the following:

- Increasing Access to Affordable Energy Services;
- Improving Energy Governance;
- Stimulating Economic Development;
- Managing Energy-Related Environmental Impacts;
- Securing Supply through Diversity (DME, 1998:6, 8, 9).

The objective with the greatest impact for the structure of the South African ESI was Objective Five, *Securing Supply through Diversity*. The White Paper aimed to establish major reform in the South African ESI and identified the following points as key issues in need of address:

- The 40% of South Africans who at that stage did not have access to electricity;
- The fragmented and dysfunctional nature of the South African distribution industry;
- The environmental concerns of South Africa's predominantly coal centred supply strategy
- Management of wasteful electricity usage due to low prices;
- Sufficient energy capacity development;
- The need for cost reflective, affordable electricity (DME, 1998:41).

The Paper aimed to reform the South African ESI and bring it into line with international best practice whilst maintaining a system that was tailored to the country's specific needs (DME, 1998:41). The key drivers for this reform were centred on the possible economic efficiency gains driven by the advance of new technology within the sector. The process was also pushed forward by the government's vision to provide, "adequate, reliable, and low cost electricity to serve the people and industries of South Africa," (DME, 1998:41).

The policy objective of *Securing Supply through Diversity* was underwritten by the following policy goals:

- "Giving customers the right to choose their electricity supplier;
- Introducing competition into the industry, especially the generation sector;
- Permitting open, non-discriminatory access to the transmission system; and
- Encouraging private sector participation in the industry." (DME, 1998, 29).

The above mentioned goals meant an essential restructuring of the ESI from a vertically integrated model to more competitive market model. These goals however, were not the product of careful political canvassing or part of a plan to signal a stable market to investors but were rather, "the result of the convictions of a small group of analysts and government officials that were observing international trends in power sector reform, and were beginning to be concerned with the potential problems of monopoly power," (Eberhard, 2005:5314).

The reform of the distribution sector was seen as the primary focus, as the sector displayed the most need for reform within the South African ESI. Changes in transmission and generation sectors were also seen as necessary; yet these were secondary to the urgent changes needed in distribution (DME, 1998:41).

At the time of the policy, the distribution of electricity was highly fragmented with over 400 individual distributors of electricity, a number that allowed for varying levels of service quality and significant price disparities. Distributors experienced high levels of non-payment that led to large arrears and defaults on payments. Municipal electricity departments were also supposed to provide financial contributions to other municipal services, a task made more difficult by the culture of non-payment and the demands of electrification on the municipal budget (DME, 1998:41). Addressing the dysfunction of the distribution industry was one of the key policy focuses of the White Paper. Policy aimed to address this issue through restructuring the distribution industry from a highly fragmented sector into a smaller number of cross-municipal Regional Electricity Distributors (REDs) (DME, 1998: 44).

Towards the end of apartheid, Eskom had begun its own electrification strategy in preparation for the new democratic ordering (Eskom, 1993). This plan was fairly successful and was enhanced by the ANC government's Reconstruction and Development Programme (DME, 1998:7). The 1998 Paper aimed to bolster these efforts by making the provision for a National Electrification Fund to provide subsidies and help increase the rate of electrification from both municipalities and Eskom. The actual policy outlining how the electrification process was to be carried out was left to a separate policy development process (DME, 1998:48, 49).

The White Paper made clear the government's willingness to restructure the ESI and include IPPs into the capacity generation process. Up until that time Eskom had enjoyed the position of, *"supplier of last resort... enjoying a de facto monopoly on the construction of new generation capacity,"* (DME, 1998:53). The White Paper aimed to alter this course of action by encouraging more players in the industry and developing a competitive power market (DME, 1998: 54).

"It is government's intention to ensure greater public participation in future decisions on public expenditures of this magnitude. Government also intends to steadily increase competitive pressures in the generation sector in order to improve efficiencies and reduce electricity prices," (DME: 1998, 53).

This would be done through the use of integrated resource planning (IRP) methodologies in the development of further capacity and the renewed use of previously decommissioned power stations. The IRP methodology aimed to provide a transparent and structured planning process for new capacity development (DME, 1998: 54).

"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. Government will establish the guidelines for the IRP approach through new energy legislation and regulations and will require the National Electricity Regulator to oversee its implementation," (DME, 1998:53, 54).

In order to increase the number of players within the industry, the national transmission system was encouraged to publish, *"National Energy Regulator approved tariffs for the purchase of co-generated and independently generated electricity on the basis of full avoided costs,"* (DME,1998:54). Environmental costs were to be included in the pricing structure in order to prioritise environmentally friendly generation options and research indicated the technical potential for the generation of 6000 MW of non-utility generation (DME, 1998:54). The responsibility of appropriate tariff creation and further market research was left with the NER. The policy aimed to increase the competitive pressures on Eskom but was unclear on the structure and form that increased competition would take leaving detailed plans for further research with the view that, *"Government will initiate a comprehensive study on future market structures for the South African electricity supply industry,"* (DME, 1998: 55). And that *"fundamental market restructuring is likely to be delayed for a number of years while the distribution sector restructuring and the bulk of the electrification programme is undertaken,"* (DME, 1998:55).

The primary responsibility for policy creation and the development of the ESI lay with the DME as can be seen from the following extract:

"The department is accountable to the minister and is responsible for general governance of the energy sector, the formulation of long-term integrated energy policies, communication with stakeholders, the management of investigation and demonstration programmes, the management of regional and international cooperation, and ensuring

that appropriate institutions are established to achieve energy policy objectives,”
(DME,1998:106).

Whilst the paper failed to make any concrete prescriptions of what the South African ESI was to look like. It did begin to explore how South Africa’s major energy utility, Eskom could be transformed into an organisation capable of functioning within a more competitive market environment (DME, 1998: 55). The paper proposed that Eskom be split into separate transmission and generation companies in order to create more investment opportunities for Black Economic Empowerment and other private sector investment. This separation would be coupled by an exploration of how Eskom’s technological capacity could be harnessed by the entire ESI through the separation of the Technology Research and Investigations Division at a future date (DME, 1998:55). The policy proposals did not make any overarching prescriptions against Eskom participating in new generation capacity projects. It did state however, that future capacity investments would have to use IRP methodologies (DME, 1998:53).

Though incomplete, the paper created a road map with which to bypass a possible crisis in 2007 and meet the electrical needs of a developing economy. As hindsight shows this policy was not foolproof and the following sections will show how in spite of the best of intentions the policy failed to succeed in its implementation.

“In its approach to electricity pricing policy the government has to achieve an appropriate balance between meeting equity , economic growth and environmental goals . Pricing policy has to steer a clear course between affordable electricity prices for households, low-cost electricity for industrial consumers , prices which provide efficient market signals by accurately reflecting the cost of supply, and a general price level that ensures the financial stability of electricity utilities, (DME,1998:51).”

Chapter Three

The Role of Pricing Policy in the Development of the Crisis

This chapter aims to explore Hypothesis three: *The lack of investment in new generation capacity and the subsequent energy crisis were the direct result of the implementation of policies that lacked internal consistency and whose implementation required technical and administrative capabilities beyond those that were available in practice.*

This will be done by looking at a particularly technical and contested portion of reform in the electricity arena, that of pricing policy. Examining how a lack of consistency within the policy arena and the sheer difficulty of creating an appropriate policy that captured all interests was fundamental to the failure to develop a key policy action in pricing. Additionally, how this failure led to a broader failure to attract investment in generation capacity as one of the key issues in ESI development remained unresolved.

This will be done by providing a basic overview of how an ESI functions, looking at the trends in ESI policy at the time of policy development and exploring a historical perspective of pricing within the South African ESI. This overview will allow for an in depth analysis of how various stakeholders influenced the development, or lack thereof, of pricing policy in the period between 1998-2004.

3.1.1. Price Setting as a Function of an ESI

In order to understand the role of pricing within the ESI, it is necessary to understand the basic functioning of an ESI. The ESI can be divided into three sub-sectors: generation, transmission and distribution. Generation is the process of creating electrical current, transmission is the process of transporting the power from high voltage power stations to distribution networks and distribution is the process through which electricity reaches the final consumer (Kessides, 2004: 132; Kirschen & Strbac, 2004:1, 3). Electricity is a unique commodity in that unlike other resources, it cannot be easily or efficiently stored. This means that a sophisticated moment to moment balance is required between the amounts produced and those consumed at any given moment. The nature of it requires system-wide cohesion and functionality, as problems in a single generation plant can destabilize the entire system (Kirschen & Strbac, 2004:49, 133).

Pricing within the ESI is a fairly complex issue because the production costs of generating electricity are not necessarily the same as the tariffs charged to consumers. The table below provides a simplified account of the different electricity pricing combinations available:

Competitive Market	Open Competition with pro-poor subsidies.	Open Competition
Take or Pay Contract	Private Company with Long Term Contract with pro-poor subsidies.	Private Company with Long Term Contract.
No Private Participation	Loss Making SOE.	An SOE with breakeven pricing.
	Social Welfare Cost	Replacement Cost

Table1

The table provides a matrix of the various pricing regimes that can be instituted for both consumers and generators. The horizontal axis represents the pricing options for consumers, *Social Welfare Cost* and *Replacement Cost* and the vertical axis represents different electricity market structures and pricing regimes to generators; *Competitive Market*, *Take or Pay Contract*, *No Private Participation*. Theoretically, it is possible for there to be two different pricing structures for consumers and producers, where the government would charge consumers the Social Welfare Cost with generators producing at the Replacement Cost and the fiscus covering the difference in pricing .

The *Social Welfare Cost* is one of the pricing options available to parastatals that focuses on resource allocation and how various cost structures can affect incentives within the rest of society (Turvey & Anderson, 1977:11). Within this model, parastatals consider, the current resource allocation and incentive effects of various cost structures: the equity implications of various prices (in particular how low income households will access electricity), and the way in which price changes can distort previously established equity objectives (Turvey & Anderson, 1977:10). This form of costing means that the SOE will be loss-making, will be dependent on the government to provide financial support and as such be vulnerable to interference in their operating processes (Weaver, 1985:160,161). Alternatively, the *Replacement Cost* focuses on ensuring that the cost charged to consumers is sufficient to cover the costs of production.

In the *Competitive Market Model*, electricity is traded like other commodities with prices set on the basis of supply and demand in both a spot and forward market. This can take the form of either Retail or Wholesale competition. In wholesale competition, various distributors purchase electricity from competitive generators and distribute this through the transmission network to specified service areas or through open access agreements. In retail competition, consumers have direct access to competing generators where transmission and distribution operate according to open access agreements (Kessides, 2004:144, 150).

The *Take or Pay Model* works on the basis of a particular type of power purchase agreement. Power Purchase Agreements are long term contracts (15-20 years) to purchase electricity from a given supplier. The supplier maintains a predetermined amount of electricity generation over the period

and it is the buyer's responsibility to purchase the agreed amount of electricity (Kessides, 2004:144; Thumann & Woodruff, 2009:93). The tendering process to obtain a PPA should ideally occur in a competitive manner and as such provide some of the benefits of competition such as lowered generation costs (Kessides, 2004:149). The model along with other long term contract models represents competition for the market as opposed to competition in the market (Jamsab, 2006:22).

The *Competitive Market Model*, offers competition in the market and a more dynamic market than the Take or Pay Model. However, the model requires strong institutional and regulatory capacity to manage the markets, large enough capacity to warrant sufficient unaffiliated suppliers and a reliable transmission network (Jamsab, 2006:22; Kessides, 2004:150-152). It also does not provide investors with much certainty and as such is difficult to obtain in transitional economies. Take or Pay Models are often preferred for developing and transitional economies as they promote investment, require minimal organisational transformation. Both the competitive market model and the Take or Pay Model can fit into vertically integrated systems using a single buyer model (Jamsab, 2006:22,23).

The single buyer model is where the state maintains a point of market authority by being the sole buyer for generated power within the market. Within this model, the generation sector and the distribution sector could theoretically be privatised whilst the state maintains the transmission line (Kessides, 2004:151,152).

The *No Private Participation* model, follows the traditional structures of the ESI, whereby the entirety of the production process from generation to distribution is housed within a single vertically integrated state owned organisation. This system is based on the assumed natural monopolies within the ESI, the ability to benefit from economies of scale and the necessity of system wide balance for a functional system (Kessides, 2004:133). This was the dominant system of governance internationally for most of the twentieth century. This mode of market organisation became problematic because the capital intensive nature of investment in electricity utilities meant that whilst governments were able to provide electricity at below replacement costs (as the operating costs were only half of the total costs). The level of underpricing meant they were unable to amass the finance necessary for new capital investment when old plants ran down. The context of a government run utility provided few incentives to operate efficiently and maintain a sustainable level of capital investment which often meant that as services degenerated and fell into disrepair and as demand grew, new investments were difficult to finance (Kessides, 2004: 3,137,142).

3.1.2. Pricing and the Attraction of Private Investment

Investing in new generation capacity follows many of the same principles as other large capital investments. In order to invest in new generation capacity, investors need to know the revenues earned from the plant will be greater than the initial investment costs as well as the operating costs of the firm over its lifespan (Kirschen & Strbac, 2004:206). The profits earned from the venture should also be greater than profits that could be earned in any other investment with a similar risk profile (Kirschen & Strbac, 2004:206). Profits are assessed by calculating the Long Run Marginal Costs of the plant, including the expected rate of return and by comparing this cost with the forecasted price at which output from the plant can be sold. A decision to invest in new generation capacity will be dependent on whether the estimated profits are greater than the Long Run Marginal Cost.

The above description provides a simplified example of the decision making process. In reality, the process is far more complex with high levels of uncertainty for both the profit and cost margins. The Long Run Marginal Cost can be altered through changes in fuel prices which affect the running costs or delays in construction that affect the initial investment amounts. Long run prices are even more difficult to determine as they are influenced by a myriad of factors such as national stability, increases in demand, technological advancement and increased competition.

As such, new generation developments are normally supported by upstream and downstream fixed contracts. Upstream contracts fix the price of fuel inputs and downstream contracts set the price at which the energy will be sold. These contracts help to reduce the risks faced by investors by ensuring that the investor only bears the risk of operating the plant. Generation plants generally have a life span of 20 to 40 years and the various profit calculations are made accordingly (Kirschen & Strbac, 2004:206).

The nature of the market structure into which a new investment is made affects the process of development. In a Competitive Market Model, prices are not guaranteed. Both price and investors are exposed to more risk and are more likely to be subjected to the whims of the market. Whilst in the Take or Pay Model, contracts are signed for the life cycle of the plant to help reduce the risk and create a more hospitable environment for investment. Regardless of the mode chosen, new capacity investment remains a very expensive task and the differing market models provide varying levels of risk. Whether a government chooses to pursue social welfare costing or allow for replacement costing, sourcing funds to pay for the new investment in generation capacity remains key.

3.2 Competition and Private Participation: the Global Experience

The OPEC oil crisis of the 1973 brought electricity supply issues to the forefront of policy debate and led to major investments in new generation projects internationally (Czamanski, 1999:11; Kessides, 2004: 135). It was only in the 1980s, that a prominent movement was made to restructuring ESIs from the traditional vertically integrated structure to alternative market models. The first major reformers were Chile in 1982 and the UK in 1989 (Kessides, 2004: 137,172; Czamanski, 1999:40).

The pattern of reform differed for developed and developing nations. In developed countries, reform processes were introduced to improve already efficient systems, whilst for many developing nations reform measures were a movement to address issues of underinvestment and deteriorating public infrastructure (Kessides, 2004:2; Jamsab, 2006:14).

For a number of developing countries the public infrastructure systems failed to provide functional electricity systems necessary to meet the growth challenges of the 20th century. Though initially successful, inflation and political motivations meant that a lot of electricity utilities were unable to charge prices that reflected the cost of electricity production, much less the cost of future investment. “Underpricing for favoured groups became more noticeable politically , yet harder to reverse,” (Kessides, 2004:137). The lack of adequate pricing systems meant that utilities often fell into disrepair and also increased the level of instability in electricity supply (Kessides, 2004:137). This along with the investment needs of developing economies increased pressure to move towards more private participation and more competitive market structures as a means of addressing those shortcomings.

3.2.1 Chile and the Market Model

Latin America was where the first major reforms started and was also the region most impacted by the standard reform model. Chile's initial reforms were followed by similar reforms across the region in Argentina, Peru, Bolivia, Colombia, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Panama, Brazil, Ecuador, Mexico and Venezuela (Kessides, 2004:172).

Chile provided a reform path that was highly influential in shaping the reform policies of other countries in the region. The initial steps in restructuring were to develop regulatory infrastructure, to provide the enterprises that would be privatised with experience of a regulatory framework. This was done concurrently with the reinforcement of property rights as a means to assuage investor fears of expropriation. The process moved slowly and increased confidence in the possibility for reform in the developing world. The program aimed to "achieve vertical and horizontal unbundling,, competition in generation, centralized power pool, open access to the transmission network, yardstick competition in distribution, and for large users freedom to purchase power from any generator or distributor," (Kessides, 2004:172).

In 1986, Chile began the active restructuring of their ESI by dividing Endesa, the vertically integrated, state owned electricity utility into six generation companies, six distribution companies and two smaller companies in southern Chile that were both generation and distribution. By 1991, the numbers had increased to, "11 generation companies, 21 distribution companies and two integrated companies." A 2000 study showed, however, that whilst there was a seemingly competitive market environment, 93% of installed generation capacity and 90% of total generation capacity was controlled by three companies the largest of these, Endesa, with a 58% share in generation power also controlled 40% of distribution and until the early 2000s was the country's main transmission company (Kessides, 2004:173).

3.2.2. East Asia and the Single Buyer Model

Many East Asian countries opted for the single buyer model in the early nineties. Power shortages across the region from the late eighties onwards, accompanied by rapid economic growth prompted movements towards single buyer models where IPPs were invited to compete for long term power purchase agreements with state owned single buyer utilities and government guarantees. Throughout the first part of the nineties the, process was largely successful attracting \$54.6 billion in private investment in electricity, over 40% of the worldwide investment in electricity during the period for developing and transitional economies (Kessides, 2004:177,178).

The East Asian financial crisis of 1997 put the model into serious jeopardy. Many of the power purchase agreements that had been negotiated were in foreign currency and the currency collapse meant that the cost of electricity doubled, an expense that few governments were willing to pass on to consumers (Kessides, 2004:178,179).

The crisis also decreased electricity demand and placed pressures on governments to back out of deals or to attempt to renegotiate PPAs. In countries such as the Philippines, the debt of the national electricity utility amounted to more than 20% of the national debt. The crisis made it, "clear that this form of private investment in power generation is equivalent to expensive foreign debt," (Kessides, 2004:179). By 2006, many of the PPAs that had been made prior to 1997 in the region had failed to materialize (Jamsab, 2006:16). Whilst pre-1997 reform planning focused on obtaining private

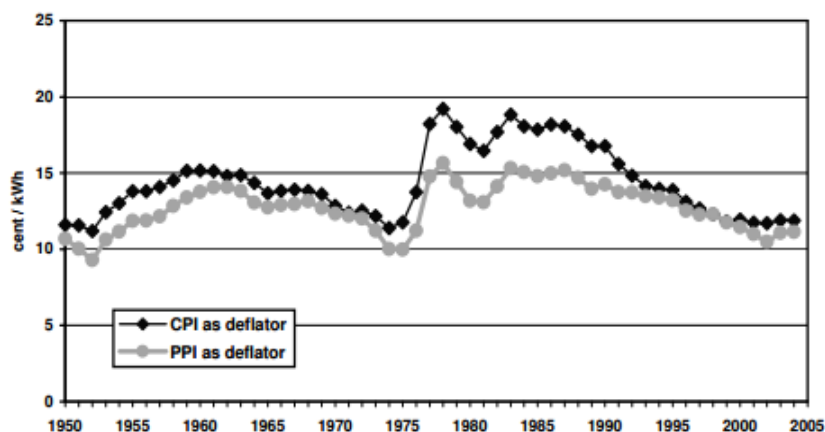
investment, the effects of the 1997 crisis meant a sharp decrease in private investment, the permanence of which has yet to be established (Kessides, 2004:169).

The differences in reform style in Latin America and in East Asia led to different distributions of investment. 80% of industry investments in Latin American and Caribbean countries were in divestiture projects. Whereas 80% of industry investment in East Asian Pacific and South Asian countries were in greenfield investments (Jamsab, 2006:15).

3.3. South African Historical Pricing

South Africa's electricity pricing structure was largely shaped by its investment financing structure. Established as a self-financing organisation, set to operate , "neither at profit nor at loss" Eskom's prices were set according to the estimates of the following year's electricity sales. The revenue generated from sales was to be no more than necessary to, "cover production costs, contributions to the Interest Fund (to cover expected annual interest charges), contributions to the Loan Redemption Fund (to provide for loan amortisation), and small contributions to the Reserve Fund (used to finance the eventual replacement of existing plant)," there was no allowance for the depreciation of assets. New capital had to be financed from debt alone (Steyn, 2006:23, 24). This section aims to broadly trace South Africa's pricing history by looking at the price patterns from 1950 to 2005.

The graph below displays the change in electricity price over the period, 1950-2005, using 1998 prices :



Figures are expressed in year 1998 currency
Source: Eskom private communication.

(Steyn, 2006:28).

Figure 2

In the immediate post Second World War years, Eskom was unable to meet the electricity demand due to a shortage of skilled labour and this led to a rationing of electricity. This rationing was felt quite dearly by the gold mining industry and high level meetings with various stakeholders were held to discuss solutions to the problem (Steyn, 2006:11). During this period, Eskom undertook to connect their infrastructure through means of a national grid, a project that would allow for new modes of plant development and improve access to economies of scale (Steyn, 2006:11). Four new power projects were set into motion between 1964 and 1968 thus, ensuring that South Africa was able to maintain a healthy reserve margin in spite of an economic boom experienced in the sixties.

As the cost of new investment was to be accessed from debt alone, this had a limited impact on the price of electricity .

In the early seventies however, it became apparent that a debt-dominated capital structure could prove problematic in the long run and in 1971, the Electricity Amendment Act was instituted. The Electricity Amendment Act allowed Eskom to accumulate savings for future capital investment in the Capital Development Fund. This act, along with a later amendment that allowed for the consolidation of transmission and generation activities, was said to have, “removed the last theoretical possibility of regulatory involvement in its investment planning,” (Steyn, 2006:25).

After the completion of the national grid in 1973, Eskom developed a plan to steadily increase generation capacity by 3900MW over 10 years. From 1971-1975, however, the demand growth rates far exceeded expectations reaching a peak in 1974 when demand grew by 16.35%, the highest yearly growth rate in a 40 year period (Steyn, 2006:12,13). The situation grew precarious when by 1975, the capacity reserve margin had dropped to 11%, 6% below the 17% reserve margin that was considered acceptable.

At the time Eskom top management was headed by men who had begun their Eskom tenure during the shortages of the 1950s and held a distinct aversion to interrupting economic progress with a lack of power supply. As such, “It was considered more acceptable to end up having over capacity than not being able to meet demand,” and approximately 15562 MW of new generation capacity was ordered between 1974 and 1979, in addition to the construction of the Koeberg Nuclear Power Station that began in 1976 (Steyn, 2006:14,15). Over the period 1975-1985, Eskom’s capital expenditure tripled in real terms and was multiplied eleven-fold in nominal terms (Steyn, 2006:25). The organisation clearly expressed its intent to finance, “50% of capital expenditure from internal resources,” (Steyn, 2006:27). It was across this period that the largest increases in prices were experienced.

By 1985, it became apparent that Eskom’s demand projections for electricity had been over estimated and there began the serious work of dealing with excess capacity and, “finance related problems,” (Steyn, 2006:35). The De Villiers Commission was instituted in 1983 and drew to a close in 1985. The commission identified, “investment incentive problems,” which led to the 1987 Eskom Act that removed the Reserve Fund, the Capital Development Fund and the Redemption Fund,” altering Eskom’s pattern of capital accumulation for investment (Steyn,2006:34).

From 1987 Eskom put forward below inflation price increases however, these did little to reduce debt and there was a move for higher increases. This move was met with opposition from some quarters of government however, these areas of conflict helped to pave the way for the suggestion of a pricing compact. Whereby Eskom undertook to decrease the real price of electricity by 1996 in exchange for increased organisational autonomy (Steyn, 2006:40).

By 1998, South Africa had experienced 13 years of decreasing electricity prices and an excess capacity reserve and it was in this context that the South African White Paper on Energy was developed.

With regards to pricing, the policy made very clear specifications about how international trends in energy policy had a significant impact on national planning development and how there was a strong global push towards more cost reflective market based pricing (DME, 1998:20,21). This movement

was mitigated by the levels of poverty within the South African context and there was a strong drive to move towards a combination of pricing mechanisms that, “moderately subsidised tariffs for poor domestic consumers,” (DME, 1998:51). It was determined that the price at which IPPs could sell power into the national transmission grid would be available through the publication of National Electricity Regulator approved tariffs that were based on full avoided costs encountered in the independent generation of electricity (DME,1998:54). The policy however, failed to put forward any official ideas as to what a revamped market would look like, putting all fundamental market restructuring on hold until the issues of distribution and electrification had been dealt with (DME, 1998:55).

3.4. Process Tracing: the South African Pricing Experience

As of 1998/9, in the immediate aftermath of the White Paper, there were multiple disparate goals and perspectives as to how electricity should be priced in South Africa, pulling policy in opposite directions. These included movements towards:

- The introduction of a moment to moment competitive market model;
- Plans to ensure social welfare pricing with the provision of free basic electricity and poverty tariffs;
- Support for plans to increase electricity prices as a means to attract private investment;
- Opposition to Eskom’s attempts to increase prices;
- Private sector opposition to price increases.

Using the process tracing tool as set out in the Methodology section of the paper, a detailed historical narrative was developed to explore pricing policy debates over the period 1998 to 2004. 2004 was chosen as the end point as it represented the point at which ESI policy saw a major shift and returned its focus to state controlled development of the ESI.

Newspaper articles and academic literature were used as the primary information source to construct the narrative. Newspaper articles were surveyed on the SA Media online database using the key words *electricity* and *pricing*. The results of the search were then examined for topical relevance and the relevant articles were used to create the following narrative of how pricing policy unfolded in South Africa over the period 1998-2004.

The table below provides a preview of the analysis of debates across the period:

Table of Stakeholder Actions and Goals

Stakeholders	Position vis a vis Pricing	Key Actions
Department of Public Enterprises	Was initially supportive of the adoption of a moment to moment pricing model and provided the directional model for Eskom as an organization.	<ul style="list-style-type: none"> • Pushed for a moment to moment model in the separation of Eskom into three separate parts in order to develop a competitive hourly market. • Announced that there were no plans to privatise Eskom nor to move electricity price setting away from the jurisdiction of the NER. • Announced that Eskom would be the champion of South Africa's future electricity capacity development.
Department of Minerals and Energy	The department's goal was to ensure affordable electricity for all South Africans.	<ul style="list-style-type: none"> • Reinstated the poverty tariff. • Announced plans to provide all South African households with 110kw of free electricity. • Denied Eskom's appeal for a tariff increase. • Introduced plan to provide R 300 million worth of free basic electricity.
National Energy Regulator	Had no clear policy development over the period except to ensure that Eskom did not increase prices too drastically.	<ul style="list-style-type: none"> • Pushed for the removal of the poverty tariff. • Limited the price increases requested by Eskom. • Made a presentation on the unsustainability of South African electricity prices. • Refused Eskom's request to increase tariffs due to capacity issues.
Eskom	Tried to increase prices to cost-reflective levels.	<ul style="list-style-type: none"> • Pushed for above inflation tariff increases. • Re-introduced time of use tariffs . • Created an internally competitive dummy power pool. • Attempted to phase out the cross-subsidization of tariffs. • Pushed for above inflation tariff increases. • Proposed gradual price increases over time as opposed to a big bang price increase in the future.
Labour	Was against any price increases.	<ul style="list-style-type: none"> • Protested the removal of the poverty tariff. • Threatened a strike at the Eskom Conversion Bill. • Cosatu accused government of reneging on promises to cross- subsidize tariffs for poorer South Africa. • Objected to proposed tariff increases
IPPs (Energy Based Private Sector)	Were pushing for higher prices.	<ul style="list-style-type: none"> • Produced reports stating the need to increase the prices of electricity in order to attract investments.

Non-Energy Based Private Sector	Were against the increase of prices.	<ul style="list-style-type: none"> • Brought price discrepancies in different municipalities into the public forum • Raised public debate on the use of tariffs for municipal funding • Lodged complaints with the Competition Commission that NER was allowing too high prices.
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Table 2

The Pricing Story

The table below provides a guideline to help locate South Africa's pricing position relative to the possible options within the system. The numbers will be referred to in the following section to help identify changes in policy.

Competitive Market	5.Open Competition with pro-poor subsidies	6.Open Competition
Take or Pay Contract	3.Private Company with Long Term Contract with pro-poor subsidies	4.Private Company with Long Term Contract
No Private Participation	1. Loss Making SOE	2. An SOE with breakeven pricing
	Social Welfare Cost	Replacement Cost

Table 3

At the publication of the White Paper, South Africa's ESI pricing policy lay in section 1. in the lower left hand section in the table above, this meant that there was no private participation in the ESI and the prices charged to consumers were done so at a socially optimum level. In period 1 there was an attempt by some stakeholders to move towards a replacement cost.

3.4.1. Period 1: July 1999- November 2000

In July 1999, during the unfolding of the restructuring process, the NER proposed the scrapping of the poverty tariff. Introduced in 1998, the poverty tariff aimed to provide cheaper electricity for the poorer South Africans at Eskom's cost. In its restructuring discussions, the NER had proposed that the tariff be put on hold. This created a lot of unrest with labour. Steven Nphlapho, spokesman for the National Union of Metalworkers (NUMSA), announced the organisation's dissatisfaction with the movement towards the restructuring of the ESI and in particular the possible scrapping of the 'poverty tariff'. Nphlapho stated that, "Shelving the poverty tariffs, when the Government had displayed its commitment to fast service delivery for the poor and ensuring a better life for all, is unacceptable and will be strongly resisted by the union movement," (Hlangani,1999:6; Chalmers 1999a:16).

In December of 1999, Eskom and the NER reached their first dispute concerning a price increase. Prior to 1999, all of Eskom's price increases had been below inflation as part of Eskom's price compact to reduce the real price of electricity by 15% from 1994 to 2000. Then at the end of 1999 Eskom requested an above inflation increase of 7% (Chalmers, 1999b:1). A compromise was achieved of a 5.5% increase, 1.5 % lower than Eskom's original request (Chalmers, 1999b:1).

In the same month, Minister of Public Enterprises, Jeff Radebe announced that Eskom would be unbundled into three separate businesses: generation, transmission and distribution, – by March 2000. This move was an attempt to draw closer to the goal of an electricity market power pool where, 'Competing generation companies would submit electricity prices to a central transmission authority on an hourly basis. Distributors would then buy the cheapest power to distribute to consumers.' This model would be similar to the moment to moment model held in many industrialised countries (Bailey, 1999:1).

In March 2000, Joe Randall, national sales manager of National Utility Services South Africa brought to light the fact that South African users faced extreme price disparities with a system that had almost 2000 different tariff structures. A more standardized pricing structure was expected to be assumed when the regional electricity distributors were formed in 2001 through the merger of Eskom's and municipal distribution structures. Addressing the price disparities at a distribution level formed one of Eskom's top priorities at the time (Bailey, 2000a:5). There was growing concern that the addition of REDs would lead to increased electricity prices, a sentiment put forth in a Price Waterhouse project that projected that a 50% increase in price was necessary in order to make REDs a viable option. Deputy director general for energy in the Department of Minerals and Energy, Smunda Mokoena dismissed claims stating that the proposals were still under discussion and review (Xundu, 2000:3).

In their 1999/2000 Annual report, NER made the following statement that it, "will not license additional generation capacity that is based on inflexible long-term power purchase agreements. This stance is based on the premise that customers should be protected against being deprived of the benefits of a future competitive electricity market," (PARI, 2013:13).

In 2000, Eskom applied for a 6.2% increase in prices. In November of that year, NER capped the increase at 5.2% with NER chief executive, Xolani Makwanazi stating that, "This is a signal that we want to commit to affordable electricity. If we start showing price spikes we will scare off investors who depend on cheap electricity and that could have a huge impact on the economy." Makwanazi revealed that the most important deciding factor for the price increases was the inflation rate (Bailey, 2000b:1).

Minister of the Department of Minerals and Energy, Pumzile Mlambo-Ngcuka announced government's approval of a "poverty tariff" to help poor households access energy. The shape of the tariff had yet to be defined but was similar to the poverty tariff shelved in 1999 (Chalmers, 2000a:1). Later in the same month, Minister Mlambo-Ngcuka announced that the government had agreed in principle to provide 110kw of free electricity to all South African households from April 2001. The program was aimed at poor households. The logistical difficulties in identifying households meant that all would most likely receive the free power (Zondi, 2000). In response, Eskom announced the re-introduction of time-of-use tariffs as a way to compensate for the low price increases granted by the NER (Chalmers, 2000b:6).

Period 1 saw the initial attempts to provide a congruent pricing policy fail through the removal and reinstatement of the poverty tariff as well as the push and pull of electricity price increases. South Africa remained firmly in cell 1.

3.4.2. Period 2: April 2001- August 2002

In period 2, there was a movement from Eskom to transfer pricing policy from cell 1 to cell 2 in the table above, moving to a system with an internally competitive supply structure and to a more cost reflective pricing. Whilst the attempt at increased prices faced stern opposition, the organisation was able to institute a dummy power pool within the organisation that simulated real market interaction.

By April 2001, South Africa had the cheapest electricity in the world. In a paper presented at the Domestic Use of Energy Conference by Mangaliso Mngomezulu and S.D. Salvodi of Eskom, it was stated that, "If the price of electricity is to be kept down, the expansion of generation capacity will have to be avoided. One of the most effective ways of deferring the expansion of generation capacity is to shift and reschedule the use of electricity from peak periods to lower-cost periods during which electricity usage is lower," (Yutar, 2001:13).

Internally, Eskom had made great strides towards a competitive market by re-shaping its generation sector into five separate competing units. This was an experiment to create a dummy power pool using implements from the UK and Australian models (Chalmers, 2001a:17).

In May, various groups had raised concerns about the possible increase in prices as Eskom moved towards privatisation. Ian Davidson, DA MP expressed the party's concern over what the party saw as, "the inevitable huge increase in the price of electricity which is contemplated by Eskom as a result of the corporatisation of the utility," (The Star, 2001:6). COSATU raised its concern at what they perceived to be a move towards privatisation and they made clear their intention to enact a national strike against the Eskom Conversion Bill. Its general secretary, Zwelinzima Vavi stated that, "Cosatu believes that it is only through public ownership and control that basic services such as electricity can be universally provided on an affordable and sustainable basis to all South Africans" (The Star, 2001:6).

In order to assuage some of the concerns of increased pricing raised by the Eskom Conversion Act, Jeff Radebe, Minister of the Department of Public Enterprises wrote an article in *Business Day*. The article made it clear that whilst the Eskom Conversion Act had transformed Eskom into a limited liability company there was no "Policy to sell Eskom to the private sector and leave the provision of electricity to market forces," and that, "Claims that the bill will lead to price hikes were unfounded. The electricity price is set and regulated by the National Electricity Regulator," (Radebe, 2001:10).

In September 2001, Eskom announced its plans to phase out cross-subsidization between different tariff structures. In November of the same year, Cosatu, "accused the government of reneging on an election pledge to cross-subsidize electricity tariffs to the poor." Cosatu alleged that cabinet had previously announced that the subsidy system would only come under review in 2003 when social impact studies had been undertaken, a statement at odds with Eskom's announcement to remove subsidies (Kindra, 2001:9).

In November 2001, Eskom strove to introduce an in-house designed Wholesale Electricity Pricing System (WEPS). The programme aimed to align tariffs with the actual cost of supply reducing cross-

subsidization in pricing. The tariffs were to be phased in over a five to 10 year period. Its expected outcomes were uncertain but there was concern that it would lead to higher prices for domestic users and smaller bulk buyers, but lower prices for larger bulk buyers as the WEPS system also affected retail tariffs. One of the certainties of the project was that new means of financing indigent customers would need to be found. The NER expressed concern at the abuse of WEPS stating that the challenge was, “to ensure that cost-reflectivity does not mean that utilities can be inefficient in running their business, yet be able to apply for a price rise,” (Singh, 2001:50).

In December 2001, the NER was looking at ways to prepare the South African ESI for a more competitive environment by transforming Eskom’s internal power into a national power pool. The power pool would allow distributors to purchase power either through a market or through a single wholesale operator. The internal power pool had been set up in 1999 and was initially trading at high prices that decreased over time as staff learned how to trade efficiently in the system. Other models under consideration were the Norwegian system of electricity trading with “an independent transmission system, and a power exchange open to all players,” (Chalmers, 2001b:2).

In March 2002, Minister of Public Enterprise, Jeff Radebe, announced in Parliament that, “The government and Eskom are considering ways to make electricity cheaper and more accessible.” One of the major problems faced in restructuring prices was the R2,122 billion of unpaid bills, R277,2 million of which was owed by municipalities (Stuart, 2002:6).

An August 2002 study published by NUS consulting group found that there were extreme differences of up to 75% between prices charged by different municipalities. It was found that most municipalities were using the mark-up in electricity tariffs to finance other council issues (West, 2002:4).

By the end of period two no concrete steps had been taken towards providing a cohesive reformed pricing policy. Eskom remained firmly in cell 1 even though the policy plans created indicated that cell 6 was the ideal endpoint.

3.4.3. Period 3: March 2002-October 2004

In period 3 there was increased awareness of the problematic nature of South Africa’s then pricing structure. This was still subject to the constant push and pull of tariff increases that had occurred from period 1. No clear attempts to move to any point on the table above could be identified.

In March 2003, after paying a dividend of R500 million to the Department of Minerals and Energy, Eskom announced plans to increase its tariffs at a rate above inflation. The increase in tariffs was to fund a capital expenditure project aimed at the mining sector over 5 years. This announcement was met with remonstrations from the National Consumer Union, Sanco and the UDM (Matyu, 2003:7).

In April, deputy minister of the Department of Minerals and Energy, announced the government’s plans to provide R300 million worth of free basic electricity by July 2003 (wa Sekano, 2003:4).

At a meeting of the parliamentary committee on minerals and energy, Dr Wolsely Barnard of the NER announced that South Africa could be facing a major energy crisis in the next four to eight years depending on the levels of demand. In order to combat this, new generation capacity would have to be developed. Unfortunately, at the time, Eskom was generating electricity at a rate of 10c a unit whereas, the, “‘levelised cost’ for a new coal-fired power station was about 25c a unit.” A point at

which Professor Anton Eberhard noted, “That just tells you that the price we have at the moment is economically unsustainable,” (SAPA, 2003:6). In the presentation, representatives from the NER tried to enforce the idea that the increase in prices was due to the need for the new investment and not the possible restructuring of the organisation (Loxton, 2003:9).

Some actors within the private sector, such as Mike Schussler of Tradek, put forth the argument that South African regulators including NER, “were only listening to the parastatals and should have done more research before authorising increases.” The Competition Commission had received several complaints about excessive price increases at Eskom and other parastatals (Wray, 2003:5).

Eskom spokesperson, Fani Zulu, stated that there was ‘upward pressure on the price of electricity’ but he said that “over the years electricity prices had been kept artificially low.” Zulu projected that prices would have to increase in the future and that there was a choice to be made to either accept gradual increases or succumb to a “big bang” in the future. A senior industry source who chose to remain anonymous said that, “Current electricity pricing reflected an inherent contradiction in policy and was tantamount to letting, “politics trump economics.” “They want to restructure the industry and attract investment but they are not willing to allow market forces to set prices.” There was an awareness from some industry insiders that Eskom was charging, “half the economic cost of electricity,” (Wray, 2003:4).

In an aim to meet the policy action put forth in the 1998 Energy White Paper, Eskom proposed the division of its tariffs for large urban users into energy and network charges. These changes would come along with the NER proposed reduction of subsidies on agricultural tariffs (Phasiwe, 2003a:2).

In October 2003, the NER refused to allow Eskom to increase prices in order to pay for new capital expenditure. Eskom stated that it had meant the refurbishment of older power station as opposed to investment in new ones. The NER chief executive, Xolani Mkhwanazi stated that whilst the development of new capacity was a serious issue to be dealt with at a national level, “We do not agree with the principle that says increase electricity prices in order to accumulate massive monies for future investments,” (Nxumalo, 2003:5).

In July, Eskom had applied for an 8.5% increase in prices in order to better facilitate capacity development. In October the NER approved a 2.5% increase, stating, “Eskom has the capacity to build new plants without increasing real prices now,” and expressing the belief that, “There is no guarantee Eskom will be required to build new generation capacity,” (Phasiwe, 2003b:3).

Private sector actors such as, Phillip Lloyd, a consultant at Industrial and Petrochemical Consultants, came out in support of Eskom’s proposals of gradual price increases over a longer period. He also expressed the view that the 2.5% increase granted by the NER could scare off potential investors. “There is no incentive for new independent power producers to enter the market because the prices they get for their product are too low. There is no way in which new generation capacity can be brought into production at much less than twice the present average cost,” (Phasiwe, 2003b:3). In December of 2003, Eskom lodged a formal appeal against the price increase granted by the NER to the Minister of the Department of Minerals and Energy, Phumzile Mlambo-Ngcuka (Phasiwe, 2003c: 2). The NER responded by requesting that Eskom withdraw its appeal or risk losing the 2.5% increase it had been granted (Phasiwe, 2003d:2).

Whilst consumers were happy with the 2.5% price increase granted by the NER in 2004, industry insiders suggested that the minimal increase was the by-product of 2004 being an election year. This stance was further supported by a statement by the department of minerals and energy saying that, "It did not want electricity prices to soar when government was trying to expand the economy," (Singh, 2004:40).

In May, the national government upheld the NER's decision to allow a 2.5% tariff increase, maintaining previous statements that new capacity was to be built by private companies. Industry analysts, however, said that such a low increase could deter private investment (Phasiwe, 2004a:2). At that time South Africa was the lowest cost energy producer internationally, 24% lower than the next cheapest country, Canada (Phasiwe, 2004b:2).

In October, the NER granted a price increase of 6.4% to Eskom, this increase had some analysts worrying about the inflationary pressures of rising electricity prices (Shezi, 2004:1). In that same week, the Minister of Public Enterprises, Alec Erwin announced that Eskom would be the main champion of South African Capacity Development (Chalmers, 2004:13).

As of the end of period 3, factions that favoured a continuation of lower ('social welfare') pricing had seemingly won the day. As events over the following half-dozen years would reveal this was an illusory (Pyrrhic) victory, with all major pricing issues left unresolved. South Africa remained in the pricing position it had held at the beginning of the process.

3.4.4. Concluding Remarks

The 1998 White Paper suggested very clear reform goals to create a pricing model with market based pricing and that accounted for the poor through carefully designed subsidies and pricing options (DME, 1998:55). This policy did not account for the structural and political context in which such a policy would have to be enacted.

In the period following the publication of the policy, various stakeholders attempted to assert their views on key issues in pricing policy without actually creating a clear narrative on what a cohesive pricing policy should look like. The policy pushed in one direction whilst various stakeholders such as Labour and Eskom, pushed in other directions. This created a level of market uncertainty because though initial policy had highlighted the NER as a key participant in regulating the pricing of private participants in a more competitive market model, no actual policy on the exact nature of what that policy would look like was developed (DME, 1998:55).

Global practice showed that regardless of the model chosen, introducing reform into the ESI was a very complex matter that required clear policy direction and measured implementation. The 1998-2004 back and forth movement over pricing, failed entirely to put in place a pricing regime capable of attracting private investment. The initial policy suggested a moment to moment competitive market; yet no concrete measures were taken in that direction, due to a very public resistance to anything that resembled privatisation. The other alternative of take or pay long term contracts were strongly opposed by the regulatory forces responsible for creating regulatory framework.

These debates also seemed to occur with little regard for the time pressures associated in developing new generation capacity as well as the fact that new capacity would have inevitably needed a financier of some sort. The extent to which electricity prices could be used to cover the cost of

generation capacity investment was insufficiently explored. These issues came to the forefront after the decision had been made to re-instate Eskom as the primary developer of new generation capacity.

After the announcement of Eskom's new build programme, cabinet approved a five year investment plan to upgrade the electricity infrastructure covering the three main sectors of generation, transmission and distribution. The initial budget was at R93 billion, R10 billion of which was to be provided by IPPs. By 2006, the budget for this build programme increased to R150 billion, 70% of which as to be allocated to generation projects. The increased investment was not able to prevent a crisis and at the end of 2007, South African began to experience major blackouts across the nation. Post-crisis in 2009, the estimated costs of the development had sky rocketed and this increased approved investment to R395 billion with limited movement towards any fundamental reform of pricing policy (PARI, 2013:17). * See Annex 3 for more post crisis detail.

“The notion that the government or the minister is the principal and that the enterprise is the agent is misleading ... The state is not a person, not even a single organization. It acts through a variety of ministers legislators and civil servants who are themselves agents of the general public. These agents invariably see their mission as different from one another. Their goals are rarely, if ever, stated explicitly and the trade offs among them are not agreed. Thus different agents give the enterprise conflicting parallel commands ...” Yair Ahroni, in (Levy, 1987:77).

Chapter Four

The Role of Stakeholder Interactions in Crisis Development

As is evident from chapter three, South Africa's failure between 1998 and 2004 to adequately address the challenges of electricity pricing was sufficient enough to foreclose the option of attracting private participation into new electricity generation. Even if, in principle, the goal of attracting private participation had been unequivocally embraced. In fact, as this chapter will show, the unresolved policy ambiguities vis-à-vis private participation went way beyond issues of pricing.

Ordinarily, in examining the design and implementation of new policies, the presumption is that the policy design is coherent, set by a single, well-defined principal, and then implemented more or less effectively. This can be greatly misleading. Whilst public organisations may have only one executive in theory, the state, in practice, "they are answerable to several different constituencies with different objectives (Dixit, 1997:378; Levy 2014: 138).

An alternative proposition, laid out conceptually by Mushtaq Khan (2010) and Levy (2014) is that in some circumstances there can be multiple principles, with the eventual policy decisions an outcome of contestation between them. In such instances we see, "Goal formation as the outcome of interaction among a coalition that includes diverse factions of government each with its own distinct purposes and also enterprise managers who are likely to have goals of their own," (Levy, 1987:77).

This chapter thus complements the discussion of pricing in chapter three, by careful process tracing of the electricity policy discourse in additional, complementary areas:

- Whether in principle stakeholders (and overall policy) were supportive of private participation in electricity generation;
- What was the understanding of the specific role of the private sector in electricity generation – privatise some existing capacity? Invest in some or all new capacity? Both? And if so, governed by what institutional arrangements?

As will be seen, notwithstanding a seemingly formal cabinet endorsement of private participation subsequent to the 1998 White Paper, policy on the question remained ambiguous and contested throughout the 1998-2004 period: mirroring a landscape of complex negotiations between competing agents as opposed to a clearly defined set of goals provided by a singular principle to be carried out by a singular agent.

4.1 Table of Stakeholder Actions and Goals

The table below provides an overview of each of the stakeholders and their actions with regards to the issue of obtaining private participation within the South African ESI.

Stakeholders	Position <i>vis-à-vis</i> Private Participation	Key Actions
Cabinet	<i>For, then Against</i> Cabinet provided the two main decisions that determined the period. However whilst the first if these decisions was in favour of private participation the second was a retreat and moved towards a reinstated government control over capacity development.	<ul style="list-style-type: none"> • Approved the two major decisions that affected the South African ESI. • The decision to prevent Eskom from participating in new build projects in 2001. • Decision to transfer capacity development to Eskom in 2004.
Department of Public Enterprises	<i>For</i> The department provided very clear policy to prepare Eskom for a competitive ESI through the Eskom Conversion Act, as well as the plans for the development of separate business units within the organisation.	<ul style="list-style-type: none"> • Provided a plan to split Eskom into separate business units; generation, transmission and distribution. • Presented plan for the corporatization of Eskom. • Provided plan for the sale of 30% of Eskom • In 2002 made statements that Eskom would remain energy supplier of first resort. • Announced Eskom would be champion of new capacity development plans
Department of Minerals and Energy	<i>Mixed</i> The department initially led the call for reform through the White Paper and other public endorsements. However, it failed to provide the legislative environment that would enable private participation until well after the 2007/8 crisis.	<ul style="list-style-type: none"> • Published the White Paper that began the reform process in the ESI. • Focused organisational attention on restructuring the distribution sector before addressing generation capacity issues. • Announced Eskom would face a competitive market by 2010. • Described the multi market model as the ideal goal for the SA ESI and was part of a work group to design said model. • Sent out tender bid for technical advisor to prepare IPP bids. • Stated that government must choose generation security over competition.

National Energy Regulator	<i>For</i> Throughout the period, the organisation strongly pushed for development of a competitive electricity market.	<ul style="list-style-type: none"> • Hired a Norwegian Company to help it develop a regulatory framework for a competitive market place. • The organisation strongly pushed for the development of an industry wide policy to introduce competition to the ESI. • Fought against the privatisation of Eskom until a competitive market had been developed. • Licensed two IPPs. • Proposed a National Power Pool within Eskom prior to the advance of national competition to prepare the sector. • Published the Multi-Market Model for a competitive SA ESI. • Prevented Eskom from obtaining price increases in order to fund capital development.
Eskom	<i>Unclear</i> The organisation complied with efforts to prepare it for a competitive market place. It continually raised doubts as to whether a competitive market was the ideal solution for the SA ESI.	<ul style="list-style-type: none"> • Began to restructure the company in order to meet the goals of the White Paper. • Publically called into question the rationale of reform as Eskom was still the lowest cost electricity producer internationally. • Pushed for high price increases in order to fund capital expansion.
Labour	<i>Against</i> Was strongly against private participation throughout the period.	<ul style="list-style-type: none"> • Officially opposed to the policies proposed by the White Paper. • Broke off the National Framework Agreement because they felt it had been violated. • Cosatu staged protests outside parliament against the Eskom Conversion Bill and the Eskom Amendment Act.
Technocratic Visionaries	<i>For</i> Were a driving force in the development of the White Paper and continued to provide public support for reform measures through the process.	<ul style="list-style-type: none"> • Offered public support for competition measures. • Criticism at the slow pace of reform.
IPPS	<i>For</i> Were willing to be involved in the generation capacity development over the period	<ul style="list-style-type: none"> • Showed Interest in establishing offices in South Africa. • Applied for licenses.

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Table 4

4.2 -Process Tracing: 1998-2001

Using the process tracing methodology outlined in the introductory chapter, this section aims to explore how the interconnectedness of energy relations created a climate for crisis. The narrative is based on newsprint articles available on the SA Media Database that contained the words *electricity* and *crisis*. The results of the search were then examined for topical relevance and the relevant articles were used to create the following narrative of how pricing policy unfolded in South Africa over the period 1998-2004.

4.2.1 Immediate Responses to the White Paper

Eskom officials displayed their support of paper as it provided a framework, “within which it could continue to do business,” (Chalmers, 1998:10). The organisation began to act on the Energy White Paper and prepare for the possibility of a more competitive electricity supply industry (ESI) through the Eskom Enterprises. Officially established in 1999 Eskom Enterprises was the arm of the business designed specifically to focus on Eskom’s non-regulated business nationally and to expand the reach of Eskom to the rest of Africa through work in energy and energy related services (Eskom, 1999).

Minister of the Department of Minerals and Energy, Penuell Maduna stated that whilst the DME was pushing for a reform of the sector into separate generation, distribution and transmission companies, “This does not mean we will break Eskom up... the aim is to allow for broader participation in these sectors.” Short term plans included a restructuring of the distribution sector, the creation of a national electrification fund. The long term goals focused on a reform of the transmission and generation sectors whilst encouraging competition within the industry (Chalmers & Vermuelen, 1998:1).

Technocratic visionaries and analysts fully supported the new policy as they felt that, “The introduction of competition into the electricity supply sector along with restructuring, would help streamline the troubled market and could lead to greater efficiencies and further price reductions,” (Chalmers, 1998:10).

In June 1999, the National Union of Mineworkers (NUM) general secretary, Gwede Mantashe, accused government of pursuing a privatisation agenda through the 1998 White Paper and the Eskom Amendment Act which they felt was pushed through by the Department of Public Enterprise. Mantashe critiqued the White Paper saying its plans for restructuring, “had been reduced to a political football and this needed to be urgently corrected,” and that the steps towards the separation of the distribution, transmission and generation were in preparation for, “the piecemeal privatisation of Eskom.” Something that labour was very opposed to (Chalmers, 1999c:3).

In September 1999, the Director General of the DME, Sandile Nogxina, re-iterated that progress in the implementation of the White Paper would go forth in 1999 in the areas of, “increased access to affordable energy services, improving governance and stimulating economic development by encouraging competition and investor friendly practices.” However, “The most urgent initiative in the power sector is the restructuring of the R25bn distribution sector,” (Chalmers, 1999d:7).

During 1999, Eskom spent much of the year preparing for the onset of increased market competition by dividing its operations into regulated and non-regulated business. The organisation was seemingly in favour of the reform and increased competition in principal. Their chairman, Reuel Khoza stated, "But it must be implemented in a systematic fashion so as not to prejudice the existing strengths of Eskom and the market," (Chalmers, 1999e:5).

With the exception of labour, the immediate responses to the White Paper, seemed to be in support of reform.

4.2.2 The Structure of Change

In late 1999, the private sector began to raise concerns about the lack of legislative structure in the reform and privatisation process. William Mthembu, legal partner at Werksmans Attorneys stated that, "SA did not have legislation to regulate the conditions under which state owned enterprises such as Transnet, Eskom, Telkom and SA Post Office may be restructured and privatised." Public Enterprises Minister, Jeff Radebe had previously announced that the department was working to provide a regulatory framework that would encourage stability and security in the reform processes (Chalmers, 1999f:6).

In order to help it meet the regulatory challenges of reform in the distribution sector, NER signed a three year contract with the Norwegian Water Resources and Energy Directorate to help establish the pricing regulations for the changing electricity market. The group was also to help in, "capacity building, advice and consultation, and a project to examine the economic impact of various electricity market structure options," (Chalmers, 1999g:5).

The NER received many applications from a number of interested IPPs and committed to developing a regulatory framework that would allow IPP participation over the course of 2000 (Chalmers, 1999h:4).

In 1999, the Minister of the Department of Public Enterprises, Jeff Radebe presented new policy initiatives to restructure Eskom into, "three separate businesses - electricity distribution, transmission and generation." The plan to divvy up the generation sector into separate business units with business accounts for each power station was the most controversial (Lunsche, 1999:4).

In January 2000, the NUM announced that the "National Framework agreement was effectively 'dead' because government was consistently failing to engage labour about its privatisation program at Eskom." This was an agreement signed in 1996 between labour and government to facilitate the restructuring of state apparatus, ensuring that labour was always a part of the process. NUM general secretary, Gwede Mantashe stated that, "All signals are there that the programme of privatising Eskom is being accelerated – but government continues to deny it". He called for a meeting of all primary stakeholders to discuss the issue further. There was a lot of unrest by labourers, at what seemed like the privatisation of Eskom. The NUM refused to act as a "buffer" between government and workers (Grawitzky, 2000:3).

At the AIC sub-Saharan power conference in February 2000, the DME Minister, Phumzile Mlamb-Ngcuka reiterated that whilst change was necessary across the generation, transmission and distribution sectors of the South African ESI, "the distribution side of the power sector was most urgently in need of reform. This was contrasted with a statement by the NER CEO, Xolani Mkhwanazi

who said that, “ We need a policy decision on the overall electricity supply industry structure which will fit in with the objectives of the (energy) white paper,” (Chalmers, 2000c:2).

Though the DME, NER and DPE were all interested in providing a structural framework in which the policy could be carried out, there seemed to be a lack of communication in what that structure would be. As a result of this lack of cohesion between the three parties, months passed with no progression towards establishing credible rules for attracting IPPs into electricity generation. Labour was completely against the perceived move towards privatisation and frustrated the process.

4.2.3. Privatisation versus Market Competition

In February 2000, Eskom selected a new CEO, Thulani Gcbashe, former head of Eskom Enterprises, Eskom’s non-regulated business sector. His stance on the reform of the ESI was as follows: “The government’s energy White Paper has cleared the path for the establishment of independent power producers in SA, but competition will not develop as long as the country has surplus capacity,” (Gordon, 2000:5).

Later in the same month, NER chairman Enos Banda made a report to Parliament’s Minerals and Energy Committee in order to dissuade government from selling any stakes in Eskom until the organisation had been restructured, as that would merely entrench the monopoly within the South African ESI. Instead the organisation proposed a model whereby, “a holding company would be created under which would fall four or five subsidiaries housing Eskom’s independent generation entities which could be sold.” Banda put forward the regulators views for a wholesale and retail market for electricity in the future (Ensor, 2000:5).

In April 2000, the World Bank sponsored a seminar in South Africa. The seminar featured international experts with reform experience in their own countries. No single ideology was pursued at the meeting, however, competition was strongly advocated as a way of going forward. The Minister of Minerals and Energy, Pumzile Mlambo-Ncguka expressed the following as the government’s main objectives for reform: “(i) increase economic efficiency and operation costs so that costs and prices are as low as possible; (ii) maximise financial and economic returns to government from ESI ; (iii) increase the opportunity for black economic empowerment ; and (iv) to protect public benefits such as widened access to the poor, energy efficiency ongoing R&D and environmental sustainability,” (Eberhard, 2005:5314,5315). After the workshop senior leaders from the various agencies including Eskom and the NER decided to draft a paper on the restructuring of the ESI. One of the main recommendations that arose from the conference was that Eskom reduce its share of generation capacity to 35% (Eberhard, 2005:5315).

In their 1999/2000 Annual Report, the NER announced that it would not grant licenses with inflexible pricing schedules. The NER was clear that it, “will not license additional generation capacity that is based on inflexible long-term power purchase agreements. This stance is based on the premise that customers should be protected against being deprived of the benefits of a future competitive electricity market,”(NER in PARI, 2013:13).

In September 2000, a bill was put forward for the corporatisation of Eskom by the Department of Public Enterprises with a plan for it to be implemented/become operational by January 2001. Director General of the Department of Public Enterprises, Andile Nkhulu went on to stress that the bill had, “Nothing to do with privatisation,” (Ensor, 2000:4).

In October 2000, Sivi Gounden, Director General of the DPE announced that the government had plans to sell off 30% of Eskom's generation capacity to multinational players, opening up the market for competition and potentially raising more than R30bn to government coffers (IC Publications, 2000).

Surprised by the move in policy away from creating a competitive model to selling assets, COSATU finance and fiscal co-ordinator, Neva Makgetla stated that the new policy, "Could make it difficult to implement the ANC's promise to provide a minimum of free basic services to all households," (Louw, 2000: 6).

During this period, Eskom began to raise its objections to any kind of reform process. Both the DME and the DPE agreed that reform was necessary; however, they disagreed on its implementation. The NER pushed for gradual reform from within the organisation, leading to increased competition. The DPE purported to be against privatisation but created a policy that pushed for increased privatisation. Labour continued to express its dissatisfaction with the trajectory of ESI reform. As a result of this lack of cohesion between the three parties, months passed with no forward movement in establishing credible rules for attracting IPPs into electricity generation.

4.2.4 The IPPS Get Involved

In their 1999/2000 Annual Report, the NER mentioned having entered into talks with various IPPs to discuss future investment options (PARI, 2013:13). It was expected that the first licenses for new IPPs would be granted by 2001. Xolani Mkhwanazi, then CEO of NER said that, "The regulator's vision for the electricity market in the medium term was to establish an internal power pool for electricity trading fed by imported electricity and independent producers,"... "The vision in the longer term was the creation of a power exchange, fed by Eskom's competing generating companies, imports and independent power producers. The state owned transmission company would be independent and feed power through to the regional electricity distributors," (Chalmers, 2000d:4).

In December 2000, the first IPP license was granted to Biomass Energy Ventures to operate a 17.5 MW station outside of Durban by NER. The regulator was also on talks to grant the license for a joint venture between the Johannesburg Metropolitan Council and American Company AES to refurbish the Kelvin power station outside of the city (Marrs, 2000:1).

By April 2001, Eskom had significantly altered its generation division, grouping its power stations into five separate competing entities in order to help better prepare for future market competition. There was some dissent within the organisation as to why competition was being introduced into the South African ESI and Eskom. CEO, Thulani Gcbashe, was noted as saying, " Eskom has the lowest electricity price in the world, and excellent technical performance when benchmarked against the rest of the world. We need clear objectives as to why we are going this route," (Chalmers, 2001c:17).

In 2001 in response to what seemed like a favourable investment climate, many international power producing firms began to set up shop in South Africa. Some of the companies that had created South African offices or set up enquiries to do so were: ; International Power, Cinergy Corp, AES, EDF, Tractebel, Enron and Shell (Chalmers, 2001d:15). The Minerals and Energy Minister, Pumzile Mlambo-Ngcuka announced that Eskom would face a fully competitive market by 2010 and the Minister of Public Enterprise, Jeff Radebe announced that he would shortly be presenting the model for a competitive electricity market (Chalmers, 2001d:15).

In May 2001, the deputy minister for the Department of Minerals and Energy announced at a privatisation conference that the main drivers for reform within the South African ESI were to meet, “social, development and economic objectives.” These objectives would include, black economic empowerment, higher returns for the state, greater economic efficiencies and more private participation. “In light of this, it is clear the introduction independent power producers to the SA market will be facilitated,” stated Shabangu at the conference. The department faced the difficult decision of how to phase in private participation without entrenching the monopoly provided by Eskom, or creating a new market with more asymmetries. As such the official departmental line was the following, “We believe that competition should be introduced systematically, in a phased manner so as not to prejudice the existing strengths of the electricity supply industry,” (Chalmers, 2001e:2).

In spite of a level cohesion between the parties, months passed with no forward movement in establishing credible rules for attracting IPPs into electricity generation. All parties agreed with idea of increased completion, however, all of the parties chose to do so in their own way.

Later in May, cabinet approved a proposal that prevented Eskom from participating in new capacity development, changing the scene of the South African ESI. This came through a policy of “managed liberalisation” of South Africa’s ESI. Some of the main policy elements were as follows:

- “ Eskom retains no more than 70% of existing generation capacity;
- A private sector participation in the electricity generation market of up to 70% of the existing generation capacity;
- Black Economic Empowerment (BEE) of about 10% of the generating capacity to be achieved by no later than 2003;
- In order to ensure meaningful participation of the private sector in the electricity in the medium term, Eskom will not be allowed to invest in new generation capacity in the domestic market,” (Belinska, 2003:89,90).

The proposal also set a clearer definition of the NER as, “the independent regulator of the ESI, development of a new licensing framework, adaptation of price setting arrangements and establishment of performance monitoring to ensure the security of supply,” (Belinska, 2003:90).

4.3 Process Tracing: 2001-2004

4.3.1 The Response after No Build

In June 2001, COSATU, staged a picket outside the parliament buildings in order to protest against the Eskom Conversion Bill that was under debate. The organisation called for a repeal of the Eskom Amendment Act or for the Bill to be delayed so as to further political discussion. The organisation felt that, “The corporatisation of Eskom would undermine its role in providing affordable electrification and would open the way to privatisation,” (Ensor, 2001:2).

In July 2001, Minister of the Department of Minerals and Energy, Pumzila Mlambo-Ngcuka said, that Eskom would “retain its dominant position in power generation. We are not desperate to raise money . Our priority is to look at the role electricity can play in poverty alleviation and ensure that we can contain upward pressure on prices,” (Chalmers, 2001f:1). Private sector participation was to

be limited to 30% and the department's main priority was to promote BEE companies within the market. There were future plans to create suitable IPP regulation and to allow the private sector purchase equity in Eskom. Though there were no finalized plans on what a revamped South African ESI would look like the goal was that, "Over time, a multimarket model (made up of) electricity generators, traders and power purchasers may take place on a variety of platforms including bilateral deals, future markets and day ahead markets," (Chalmers, 2001f:1).

The private sector made it very clear however, that the long lead times for plant development meant that licenses had to be issued within a short time frame as, "Nobody in their right minds is going to invest billions of rands in a power station and then ask if they can have a license to run it. I don't think there has been any change in the government's licensing of IPPs," said Peter Leaver, Cape Power Project Manager (Marrs, 2001:2).

In August 2001, the Eskom Conversion Act transformed Eskom into a company and legal taxpayer, governed under the Public Finance Management Act of 1999 and the Companies Act of 1973 (Eskom, 2001).

In October, Eskom brought together various key stakeholders from the Department of Minerals and Energy, the Department of Public Enterprises, the South African Local Government Association (SALGA) and the NER, at the Farm Inn summits. The purpose of the summit was for Eskom to express its concern at the way in which industry reform was transpiring (Eberhard, 2005:5315; PARI, 2013:12).

By the end of October, the NER had licensed two IPPs, a small 17.5 MW station in Durban and the much larger Kelvin Station in Gauteng (Chalmers, 2001g:3). Government officials also confirmed that 30% of Eskom's equity would be sold to private investors by 2006 (Wray, 2001:2).

In light of the dissatisfaction displayed by labour on the way in which ESI reform was turning out, the DME tried to respond to those needs with the assurances that government remained pro-poor and that privatisation was not the cards. IPPs responded favourably to the change but needed a solid framework in which to understand their role in reform. The NER took the ban seriously and began to expand its licensing. In spite of the predominantly positive response to the change, there was no forward movement in establishing credible rules for attracting IPPs into electricity generation.

4.3.2 The Possible Structure of a Reformed ESI

In October 2001, Eskom aiming to maintain its dominant position in the ESI, proposed a plan to introduce competition without privatisation, by allowing BEE partners to operate some of its mothballed stations, making up 10% of capacity. This would be supplemented by bringing in private actors in the medium term to provide 20% of capacity. Plans to restructure Eskom faced very serious opposition from groups such as Labour who felt that as the lowest cost electricity provider world-wide, Eskom was run in a highly efficient manner (Chalmers, 2001g:3). Economic analysts noted that regardless of the way in which the new ESI was structured, electricity prices were set to dramatically increase as the surplus that had kept prices artificially low would soon run out. It was also expressed that mothballed power stations proved a bad investment choice for BEE firms as they had "substantially higher risks than other generating assets," (Chalmers, 2001h: 4). The absence on clear policy guidelines for the restructuring of ESI meant that policy was very fluid and susceptible for capture by parties with vested interests (Business Day, 2001: 9).

In December 2001, as a means to help increase investor confidence, the NER proposed a national power pool as the first step towards increasing competition in the sector. The NER CEO, Xolani Mkhwanazi stated that, “No (private) equity partner would be keen to bid for equity in the power stations without a level of competition,” (Chalmers, 2001i:2).

In January 2002, the NER pushed for a three phase restructuring policy. This policy would build on the initial step of Eskom being established as an independent company through the Eskom Conversion Act, to the separation of the transmission, distribution and generation sectors. This would culminate in IPPs being allowed into the market by 2004 either through the purchase of some of Eskom’s generation assets or through the development of new capacity build programs (Chalmers, 2002a:1).

In early 2002, the Minister of Public Enterprises, Jeff Radebe announced a plan for Eskom’s reform that mirrored Eskom’s October 2001 proposal of a 10% asset dispersal to BEE partners and the aim of a 20% stake to a foreign equity partner by 2003 (Thompson, 2002:15). He stated, “We are clearly committed to introducing competition into the domestic market.” At the time, no finalized regulation of what a competitive South African market would look like. The NER, however, was in the process of developing a framework to introduce competition (Chalmers, 2002b:21).

The postponement of the licensing deal with a second national phone operator, sent out signals to investors that the introduction of competition into the ESI would not be as smooth a process as initially intended. The Enron scandal in the US also undermined global confidence in investing in utilities. There was in addition the idea from some sectors that, “the government should not try to fix something that is not broken,” (Chalmers, 2002c:11).

The first National Integrated Resource Plan (NIRP 1) was published by NER in March 2002 (PARI, 2013:13,14). In the early 2000s, discussions for Mmamabula Energy Project began between Botswana and South Africa (PARI, 2013:14).

In mid-March 2002, the participants of the Farm Inn Summits reached a broad consensus on the ESI restructuring initiative. An ESI restructuring committee chaired by the DPE would be formed. Eskom would establish internal competition by ring-fencing its stations into clusters/portfolios. Eskom holdings would establish subsidiary companies for Eskom Generation and Transmission (Eskom later contested this claim) (Eberhard, 2005:5315).

On the 1 July 2002, Eskom was officially converted into a tax paying public company. The minister of Public Enterprises said that the conversion was to help Eskom deal with the challenges of being involved in a competitive market place. He also stated the following: “Let me assure you that Eskom despite the conversion into being a public company, will remain the energy supplier of first resort, hence the need to ensure its continued existence,” (Chalmers, 2002c:12).

The Department of Minerals and Energy, along with Department of Public Enterprises and other relevant stakeholders came together to form the Multi-Market Model Workgroup. Formed in November 2002, the group sought to create a, “detailed functional market description, transitional plan and governance arrangements for the proposed multi-market model for electricity supply industry in South Africa,” (du Toit, 2003:44).

Each principal provided their own interpretation of the structure they preferred for a reformed ESI. In some cases, such as with the DPE, there were conflicting goals within the organisation itself. This lack of cohesion between principals meant that there was no advancement in establishing credible rules for attracting IPPs into electricity generation.

4.3.3 The Push for Eskom

In 2003, Eskom's non-regulated wing, Eskom Enterprises was reported as having financial troubles and in need of a substantial cash injection (Ensor,2003:1). In July of 2003, Eskom provided a public warning of the impending electricity crisis and the need to begin building new power stations (Phasiwe, 2003e:2). Major blackouts in the United States added to an atmosphere of urgency and Eskom began to upgrade its transmission grids and look to alternative energy sources such as wind, solar and nuclear (Phasiwe, 2003f:2). This resulted in R50bn investment project in the refurbishment of power stations and the recommissioning of mothballed plants. Later that month, Eskom applied for an 8.5% increase in prices in order to better facilitate capacity development. The NER only approved a 2.5% increase, stating, "Eskom has the capacity to build new plants without increasing real prices now," and expressing the belief that, "There is no guarantee; Eskom will be required to build new generation capacity," (Phasiwe,2003b:3).

Also in July of 2003, the Multi-Market Model Group completed their report and a paper was published in the NER Quarterly Journal of an ideal market structure for the South African ESO (du Toit, 2003:44).

Eskom expressed the need for peaking capacity. Diesel powered open cycle gas turbines (OCGT) were suggested with a plan for four plants, to be built by Eskom and two to be built by IPPs (PARI, 2013:15). The IPP procurement plans for peaking power were received for Cabinet approval in December (PARI, 2013:15).

In January 2004, Eskom lodged an appeal with the Department of Minerals and Energy in order to challenge the 2.5% increase granted by the NER. Eskom appealed about the increase on the basis that it would need to strengthen its capacity. The NER responded that, "Customers should not be made to contribute to the future costs of a future power station," (Phasiwe, 2004:2).

As Eskom's non-regulated interests seemed to suffer, the organisation raised the alarm at the impending crisis. The NER as an organisation very committed to the ideal of a competitive ESI, pushed very hard against the idea that Eskom would be building new capacity. The lack of an official clarity on the desired objective of reform meant that there was no development towards in establishing credible rules for attracting IPPs into electricity generation.

4.3.4 The Final Stretch

In February 2004, the DME issued a request for proposals for a legal and technical adviser to help with the bidding process for IPP tenders (PARI,2013:15). This bid was to find someone to co-ordinate the technical and legal tender documents. It was the department's first definite step towards the development of a competitive market since the publication of the White Paper nearly six years earlier (Phasiwe, 2004:1). Many private investors raised concerns about the tight deadlines given to build new power plants as the final candidate would only be confirmed in July 2005 and capacity was expected to run out by 2007 (Phasiwe, 2004:1).

In April 2004, Eskom Enterprises went on to experience great losses due to the failure of licensing agreement to materialise South Africa's second telecommunications operator and was expected to write off R803 million against its investments in Lesotho and South Africa (Phasiwe, 2004:3).

In the same month, Eskom went against official government policy and began preparing models for new capacity development and the then CEO Thulani Gcabashe, said that they, "would hand over the reins to independent power producers should government say so." It was noted that "Government has said that Eskom as the 'supplier of last resort' could be asked to build new capacity should the need arise," (Phasiwe, 2004:1).

In May, the national government upheld the NER's decision to allow a 2.5% tariff increase, maintaining previous statements that new capacity was to be built by private companies. Industry analysts warned that such a low increase could deter private investment (Phasiwe, 2004:2). Towards the end of the month, President Thabo Mbeki announced that a tender for generation capacity would be launched in December 2004 and that the winning bid would have been announced by the end of the first half of 2005 (Phasiwe, 2004:4).

In the run up to the general election in April 2004, ANC national policy shifted towards, "poverty eradication." Focusing on, "parastatal investment rather than big asset sales," (Chalmers, 2004:13).

By July 2004, plans to sell 30% of Eskom's share had been temporarily shelved. Government had made clear the intention to launch a tender for 600-1000MW. What was unclear at the time was whether or not Eskom would be allowed to participate in the bid process; the Department of Minerals and Energy did little to clarify the situation. During her yearly budget speech, Energy Minister, Phumzile Mlambo-Ncgaka announced that "the state has to put security above all, and above competition especially," (Thompson, 2004: 11).

In August 2004, Eskom CEO, Thulani Gcabashe, asked for clarity on the Department of Minerals and Energy's electricity generation policy. The department had committed to involving IPPs in the capacity development process. It lacked any clear policy on how that would occur and the long lead times in power plant development meant that investment decisions needed to be made in a short time frame if there was to be a chance of avoiding blackouts. Gcabashe stated, "We cannot allow a lack of clarity to impede development so that there is a lack of capacity when we need it...we need to make investment decisions." Government had been planning the development of three power stations by 2010, with foreign direct investment of R15bn. There was no clarity as to who was going to build those stations (Ensor, 2004: 2).

In October 2004, the Minister of Public Enterprises, Alec Erwin announced that as the result of a cabinet decision, Eskom would be the main champion of South African Capacity Development (Chalmers, 2004:13).

Chapter Five

Conclusion

The initial research for the thesis was based on the premise, that during the 2007/8 Electricity Crisis, something had gone wrong in the South African ESI, and Eskom's perceived managerial incompetence was to blame. The first forays into investigation showed that whilst Eskom was heavily involved in the development of the crisis and its resultant aftermath,² the organisation was not involved in the ways that were typically portrayed by the media. This turn of events led to the development and exploration of two equifinal hypotheses, H2 and H3 using the research tools of the analytic narrative and process tracing.

The paper first explored H3: *the lack of investment in new generation capacity and the subsequent energy crisis were the direct result of the implementation of policies that lacked internal consistency and whose implementation required technical & administrative capabilities beyond those which were available in practice*

Hypothesis 3 provided a seemingly more technical explanation for the crisis and placed the situation within the realm of technocratic inefficiency and stalling. This was manifest in the inability to determine a clear pricing policy which led to a crisis. The process tracing identified the lack of internal consistency as well as some of the difficulties faced by those tasked with policy implementation. One of the clearest aspects of the failure to develop the pricing policy necessary for a large scale sector reform, was the failure to develop consensus amongst the key players involved in the ESI. Throughout the period under investigation, there were competing camps with competing ideologies regarding what kind of pricing policy was necessary. Given the time constraints and long lead times in electricity plant development, the lack of consensus in pricing policy proved disastrous and that alone could have accounted for the lack of sufficient investment in generation capacity by 2007/8.

A second hypothesis existed that was equally as probable as H3 though it lay firmly in the realm of political economy and the relations between various stakeholders.

H2: The lack of investment in new generation capacity and the subsequent energy crisis were the direct result of having competing stakeholders with multiple objectives and no clear political champion of the highly complex agenda set out in the 1998 White Paper on Energy.

Through the investigation of H2, it was found that whilst the initial presentation of the 1998 White Paper on Energy proffered little resistance. As time passed many of the stakeholders' own goals and objectives clashed with regards to what the future of the South African ESI should look like. For the most part there was consensus that reform in the South African ESI was necessary. The nature of that reform was a highly contested issue with each faction pushing for their own version to be adopted. This all occurred within a the complex web of interconnectedness where various stakeholders held various levels of control as to how the reform process would be carried out. In the limited time frame provided for change, the lack of a clear political champion meant that none of the reform ideologies came to pass in a cohesive manner.

Independently, each of the two hypotheses could adequately explain the crisis, as two discrete paths leading to the same end point, establishing a firm sense of equifinality. An alternative and more probable outcome lies in the notion that these two hypotheses were mutually reinforcing.

2

See Appendix 1

It is theoretically possible that in the absence of multiple stakeholders with vested interests, a clear pricing policy that established the way for IPPs to credibly invest in new generation capacity would have been developed. This is because, the technocratic weaknesses that allowed for initial policy ambiguity would have been overcome through adaptation over time.

It is also plausible that in the presence of a clearly designed pricing policy, the multiplicity of stakeholders would have had less of an impact in derailing the process of obtaining new investment. As there would have been a clear process to follow that would have allowed for the development of a clear overall IPP policy.

This thesis was begun with the explicit intention of discovering the main cause of the 2007/8 Electricity Crisis in South Africa. The initial scene, looked something akin to a murder mystery with bogeymen hiding in corners and evil intentions abounding. This research has found, that there were no bogeymen in corners and no Machiavellian schemes of destruction. Rather, the cause of the 2007/8 crisis was found to lie in the far more simple and less grand adage that, "Too many cooks spoil the broth."

In 1998, South Africa was a hub of reform, with new policies being developed in a number of sectors to redress some of the challenges caused by the apartheid government. South Africa was in a position where it could afford to consider policy reform as it had excess capacity and a well-functioning ESI. The international ESI had also gone through a period of reform. Whilst no one policy model had gained dominance, it was clear from international trends that reform was a necessary step for any national ESI planning to move into the 21st Century. It was in this light that a highly ambitious White Paper on Energy was presented in 1998.

The paper pushed for significant reforms in the generation sector but failed to outline what exactly those reforms would look like. This left the process of clarification to the factions of government responsible for dealing with the ESI. What the policy failed to take into account, was the sheer number of stakeholders with vested interests in how the ESI should be run and the distinct lack of consensus between those stakeholders. This lack of consensus was aggravated by the time pressured nature of plant development. A ticking time bomb that meant that there was not enough time for an organic consensus to occur.

In 2007/8, South Africa faced its most intensive electricity crisis to date, where total generation was operating at 75% of capacity and the country was plagued by rolling blackouts. It would be convenient if this crisis could be blamed on a single actor who failed to perform in their role in the ESI. Through for example, the failure to deliver coal or, a missing screw in a nuclear power plant. The research showed that the reasons for the crisis were far more complex and that at its heart, the crisis was formed through the complexity of power relations at the interface between politics and administration, where unresolved political conflicts played out within the public service.

As complex power relations are at the heart of many political systems, this reasoning can lead one to despair and conclude that, there is nothing to be done and that a crisis was almost inevitable given the underlying complexities of the South African ESI. However, that is not necessarily the case and a possible alternative scenario could have involved more moderate goals in the espousing of the 1998 White Paper, the initial document pushing for reform of the sector. The 1998 White Paper was a revolutionary document brought to light in a time when there were many sectors in need of reform in South Africa. At the time, Eskom maintained a functional monopoly over the ESI and had found ways to deliver power cheaply. Whilst this did not mean that Eskom was operating at optimal efficiency, it did mean that those with the political clout to push through major reform did not see

the reason to do so until it was too late. A more modest reforming strategy could potentially have allowed the government to make use of the skills and expertise present in Eskom whilst pushing for a gradual more long term reform. However, such proclamations can only be made with the gift of hindsight.

At the time of writing South Africa had yet to complete any of the major power plants proposed to help ease supply constraints and it is hoped that this work will help to contribute to the development of a fully functioning and vibrant ESI.

Appendix 1- Timeline of Events 1994-2011

- 1994 ANC Government comes into power (Eberhard, 2003:12).
- 1995 National Energy Regulator (NER) formed with mostly former Eskom employees (Eberhard, 2003:24, 25).
- 1997 New influx of staff at the NER as many of the original staff had left (Eberhard, 2003:25).
- 1998 The White Paper is published.
- 1999 The NER in talks with various IPPs to discuss future investment options (PARI, 2013:13).
- 2000 In the 1999/2000 NER Annual Report, the organisation announced that they would not grant licenses with inflexible pricing schedules (PARI, 2013:13).
- World Bank Hosts workshop in order to help establish goals for the reform of the SA ESI and it was suggested that Eskom reduce its generation market share to 35% (Eberhard, 2003:37).
- DPE publishes a new policy framework for the restructuring of SOEs including Eskom (PARI, 2013:10).
- 2001 Eskom Conversion Act is Passed and Eskom is converted into a legal company (EGI-SA, 2010; PARI, 2013).
- A new NER Board is established(Eberhard, 2003:25).
- Cabinet announces that Eskom will retain 70% of their current market share with the aim of achieving 10% BEE market share by 2004 (PARI: 2013, 13; Eberhard, 2003:37).
- Cabinet decision prevents Eskom from investing in new generation capacity within South Africa (Newbery & Eberhard, 2008:58; Belinska, 2003:90).
- The first Farm Inn Summits take place (PARI,2013:12).
- Early 2000s: Discussions for Mmamabula begin between South African and Botswana governments (PARI,2013:14).
- 2002 National Integrated Resource Plan 1 (NIRP) is published by NER (PARI, 2013:13,14).
- NER Multi-Market Model Group is formed (du Toit,2003:43,44).
- Signing forms at the Farm Inn summit (PARI,2013:12).
- 2003 Eskom expresses the need for peaking capacity, diesel powered open cycle gas turbines (OCGT) are suggested with a plan for four plants, two built by Eskom and two by IPPs (PARI,2013:15).
- Eskom begins detailed planning of new power stations due to perceived delays (PARI,2013:).
- Multi-Market Model Group complete their report in July and a paper is published in the NER Quarterly Journal (du Toit,2003:44).
- September 2003 Cabinet meeting decides that Eskom should be instructed to ensure security of supply until 2007, including building new power stations. With a caveat that 70% of new capacity post 2008 would be commissioned by Eskom with 30% commissioned from IPPs (Sonjica, 2008:3,4).
- IPP procurement plans for peaking power get Cabinet approval in December (PARI, 2013:15).
- 2004 DME issue a request for proposals for legal and technical advisers to help with the bidding process for IPPs in February (PARI, 2013:15).
- Decision for IPP investment is reversed by Cabinet (EGI-SA, 2010):
- Cabinet approved a five year investment for infrastructure development governing generation, transmission and distribution to the cost of R93 billion with R84 billion allocated to Eskom and the remainder to IPPs (PARI,2013:17).
- A follow up of the Farm Inn Summit (PARI, 2013:12).

- Eskom CEO Thulani Gcibashe announces the possibility of a future crisis as generation capacity approaches its limits in August (PARI,2013:15).
- NIRP 2 Published by NER (PARI,2013:14).
- 2005 RED 1 Formed in the Western Cape
- Intergovernmental Memorandum of Understanding signed for Mmamabula (PARI, 2013:14).
- Five potential OGCT IPPs shortlisted in bidding process (PARI, 2013:15).
- Eskom had already completed environmental assessments for its own OCGT plants (PARI, 2013:15).
- Eskom approves investment decision for Project Alpha (later to be renamed Medupi) (Eskom, 2013).
- Two investors submitted full proposals for the peaking power, AES Consortium and Suez – Inkanyezi (PARI, 2013:14).
- Veld Fires in the Western Cape damage transmission lines along with a breakdown at Koeberg Nuclear station leads to rolling blackouts in the Northern and Western Capes (PARI, 2013:16)
- 2006 Western Cape Electricity Crisis (EGI-SA, 2010).
- Request for Proposals for IPP Peaking power issued by the DME in April (DME, 2008).
- NER is absorbed into the National Energy Regulator of South Africa (NERSA) in July (PARI, 2013:16).
- The Energy Regulation Act is passed establishing NERSA's legal mandate (PARI,2013:16).
- Eskom Annual Report announced board approval for a R150 billion investment up to 2011/12 (PARI, 2013:17).
- 2007 AES selected as the preferred bidder in IPP peaking power process in September (PARI: 2013, 14).
- DME Annual report states that measures are in place for the development of a robust, integrated energy plan (PARI, 2013:16).
- AES received approval from the DME for an extension to complete their project agreements in November (PARI, 2013:14).
- World Bank Report on the South African ESI estimated if the economy grew at a rate of 6% a year it would need \$5billion (estimated at R42 billion) in new infrastructure between 2005 & 2010 (PARI, 2013:17).
- 2008 Major Electricity Crisis.
- AES deal collapses in March (PARI, 2013:15).
- NIRP 3 Published by NER (PARI, 2013:14).
- 2009 CIC a Canadian company operating Mmamabula present a formal bid for the project (PARI, 2013:14).
- Eskom refuses to make a commitment towards Mmamabula in July and there were reports of Eskom shutting down IPP discussions (PARI, 2013:14).
- By the end of 2009 the cost of the capacity build programme had reached R395 billion (PARI, 2013:17).
- 2010 Eskom formally rejects Mmamabula offer (PARI, 2013:14).
- The World Bank announces funding to Eskom for the development of a new coal powered station in April (PARI, 2013:14).
- Integrated Resource Planning reverted to DME and first IRP published (PARI, 2013:14).
- 2011 Electricity Regulation for New Generation Capacity and guidelines for an IPP bid programme gazetted in May (DME, 2011).

Appendix 2 What Happened to the IPPs, 2004-2008?

Post 2004 and the decision to reinstate Eskom's role as the major provider of electricity, there were some significant incidences with various consequences. This appendix will look at the role of IPPs during the period, 2004-2010.

There are two main modes of investment for generation plants, baseload plants and peaking plants. baseload plants are generally operational all year round creating a steady stream of power with minor variations. These plants are powered by different fuels internationally such as nuclear, coal and lignite. Baseload plants have, "the lowest marginal costs of production" and are known as, "high merit," (Harris, 2006:29). Peaking plants serve a different function from baseload plants and are meant to provide capacity to meet spikes in demand, at certain times of the day during certain seasons. They perform a reserve function of energy to be used during exceptional times creating more flexible energy access (Harris, 2006:30). The complexity of electrical systems, the lack of economically efficient storage facilities and the constant need for demand and supply balance means that there needs to be a mix of both Base load and peaking load plants in a system to ensure optimal performance (Harris, 2006:30).

South Africa experienced an interesting history in terms of the way it handled both baseload and peaking IPPs. After the White Paper, the first official attempts at establishing the role of IPPs in the development of new capacity came from a 2001 World Bank sponsored Ministerial Workshop on Electricity Supply Industry Reform and it was proposed that Eskom reduced their generation market share to 35% to help liberalise the ESI (Eberhard, 2005:5315). Through vigorous lobbying from Eskom executives, Cabinet approved a final proposal whereby Eskom would maintain 70% of the existing electricity market selling the remaining 30% to the private sector and a 10% minimum to Black Economic Empowerment beneficiaries (Eberhard, 2005:5315; PARI, 2013:13). This act was reinforced by a cabinet decision to prevent Eskom from entering in new capacity build projects in an attempt to encourage private investment (Newbery & Eberhard, 2008:58).

The mix of private and public investment was theoretically pursued until 2004 when the then Minister of Public Enterprises, Alec Erwin announced Cabinet's authorisation of Eskom to participate in new capacity build projects with the restriction that at least 30% of new capacity created should be handled by the private sector (Newbery & Eberhard, 2008:58). This was reinforced by a 2007 Cabinet decision to move against the 2003 Multi Market Model proposed by the Multi Market Model Group to a single buyer model where Eskom would act as the sole purchaser of power from IPPs, "responsible for ensuring that adequate generation capacity would be made available and that 30% of the new power generation capacity would be derived from IPPs," (DME, 2007: 55). This decision was made as a means to pursue security of supply over reform concerns (DME, 2007:55).

In practice, very little was done to engage IPP investment during the first of wave of investment seeking between 2001 and 2004 when the all new capacity was to be derived from IPPs. Whilst there was greater movement towards IPP investment in the second phase from 2004 onwards when the ideal mix of public to private investment in new capacity was 70% to 30%, the system lacked a coherent narrative on how that would be achieved, and the following examples of interaction for both Baseload and Peaking IPPs will explore that .

Mmamabula – A Baseload IPP

The Mmamabula Energy Project was a Botswana based deal managed by Canadian company, CIC – Energy. The project was based on the development of a 1320 MW coal fired plant to be built in Mmamabula, a large coal field, west of the South African border (Wheeler, 2008: 3; PARI, 2013:14). This project aimed to increase Botswana's level of electrical self-sustainability. The large nature of the plant meant that the project needed a means to economically utilise the excess capacity that would be generated.

By 2005 talks between South Africa had reached a level that the president of Botswana announced the deal to his cabinet and intergovernmental memorandum of understanding had been signed (PARI, 2013: 14). Kumba Coal (Pty) Ltd had been contracted to perform a pre-feasibility study in the development of a Mmamabula Central coal resource in 2006 and talks had been had over the possibility of obtaining World Bank funding for the project by 2008 (Wheeler, 2008:4; Exxaro, 2006). In 2009 CIC submitted formal bids to Eskom to supply power to the South African grid by 2013. Acceptance of the bid was postponed by Eskom on the grounds of a, "lack of clarity on its funding model. " Eskom announced that the price of electricity proposed by CIC was higher than the NER regulated prices. During that time, Eskom suspended discussions with an estimated 30 other IPP bidders until it could establish clarity on the pricing regulations. In 2010 Eskom announced its unwillingness to enter into an agreement with CIC due to the absence of provisions for externally purchased coal power in the 2010 IRP (PARI, 2013:14).

Interestingly enough in 2005, Eskom had already made the decision to begin developing its own level of baseload capacity through a project known as Project Alpha. This project would later be known as Medupi, the coal fired base load capacity that was awarded a \$3 billion loan from the World Bank in 2010 (PARI, 2013; Eskom, 2013:1). The site for Medupi was purchased from Kumba Coal (Pty) Ltd (now Exxaro (Pty) Ltd) and aims to provide a total capacity of 4800MW of electricity. The initial commission date for the plant was mid 2012 but at the time of writing the expected completion of the project was 2015 (Eskom, 2013:1, 2; Eskom, 2013b, 3).

AES – Peaking Power

In 2003, Eskom announced the need for urgent investment in peaking power. The necessary capacity was established at 2000MW and Eskom, after preliminary research had decided that diesel powered Open Cycle Gas Turbine (OCGT) technology was the most appropriate solution (PARI, 2013:15). It was planned that four units would be built to create the capacity and Eskom would build two plants allowing for IPP involvement in the remaining two (PARI, 2013:15). Cabinet approved the process in December 2003 and in 2004 the DME sent out its call for assistance with the bidding process in terms of legal and technical assistance (PARI, 2013:15). The IPP process was to be managed by the DME, however, the low level of skills within the department meant that Eskom was highly involved in the assessment of bids. At the time, no regulations existed as to how the process would be carried out and the official guidelines on the process for IPP procurement were only released in 2011 (PARI, 2013: 15). By 2005, five bidders had been shortlisted as pre-qualified bidders and in April 2006, the DME sent out an official request for proposals (RFP) (PARI, 2013: 15; DME, 2008). Two bidders came through with detailed bid proposals in September 2007, the AES consortium and Suez –Inkanyezi (PARI, 2013: 15; Webb, 2007). AES was selected as the final bidder and entered into contract negotiations. The consortium asked for a three month project extension to complete project

agreements in November 2007 that was granted by the DME. In March 2008, the deal collapsed due to a failure to reconcile commitments made by AES in the RFP stage and the final contract terms declared by the DME with regards to issues of pricing, final timelines for generation to come on stream and commercial terms (PARI, 2013:15 ; DME, 2008). The key issues centred on who would bear the responsibility for fluctuating diesel prices. In May 2008 DME began negotiations with Suez-Inkanyezi and these went through to the final licensing stage in 2011 and it is expected that construction will begin in 2013 (PARI, 2013:15).

The challenges facing traditional energy IPP investment do not seem to haunt the renewable energy market and by 2013, South Africa had the highest growth in clean energy investment worldwide ahead of global giants such as China, Japan and South Korea (Clark & England, 2014). Initial plans for the development of green energy IPPs were based on tariff guarantees. A final decision was made to use a competitive bidding model that has led to impressive results with a decrease in prices at each stage (Clark & England, 2014).

Appendix 3- Pricing

South Africa faced a complex situation with its pricing determination in that, whilst it was originally set to pursue a Multi-Market Model, with prices set through competitive market behaviour, the plan that was implemented was the single buyer model without a credible definition of how prices would be set. This lack of official regulation meant that Eskom was able to initially postpone the Mmamabula bid, because of a lack of clarity on pricing regulations and that the deal with the first choice IPP for peaking power collapsed over pricing issues.

During National Party rule, Eskom had made an arrangement with government to actively lower the real price of electricity by 15% over the years 1994-2000. This system worked fairly well over its period of implementation as Eskom had moved away from investing in generation capacity to address the issues of under-electrification left by the apartheid government (Thopil & Pouris, 2013:1). The pricing mechanism necessitated change after 2004 when Eskom was granted permission to invest in generation capacity.

This change to pricing policy came through the implementation of the multi-year pricing determination (MYPD) carried out by NERSA. The program was designed to ensure, “Eskom’s cost recovery requirements, such that the utility remains functioning and sustains itself economically,” (Thopil & Pouris, 2013:1). The MYPD plan was developed for 2006/7 & 2008/9. In April 200, Eskom requested a revision of the plan based on, “variations in costs, revenues and initial erroneous estimates,” (Thopil & Pouris, 2013:1). This revision was granted and led to an increase of 14.2%.

In March 2008, Eskom again asked for a revision of the MYPD of that year based issues of fuel price volatility, fuel mix uncertainty, energy demand uncertainty and fuel burn rate efficiency uncertainty (Thopil & Pouris, 2013:2). This revision requested a “35% per annum increase over the second MYPD period,” from 2010 -2013. The revision request was brought before intensive public engagement and NERSA decided on 24.8% increase in 2010/11, a 25.8% increase over 2011/12 and a 25.9% increase over 2012/13 (Thopil & Pouris, 2013:2).

The table below is a representation of the South African prices in c/kWh

Average Price of Electricity in c/kWh

	2005	2006	2007	2008	2009	2010	2011	2012
Redistributors	15.19	16.13	16.88	18.03	23.05	30.84	39.53	49.96
Residential	38.70	40.08	41.74	44.12	52.86	63.98	66.45	79.52
Commercial	21.88	22.69	23.50	24.61	31.29	40.97	52.63	51.21
Industrial	13.97	14.75	16.01	17.11	21.46	27.03	34.34	42.13
Mining	15.36	16.19	16.90	17.82	22.87	30.25	39.78	50.11
Rural	30.83	32.86	33.69	35.54	45.29	58.96	72.72	89.22

(Eskom, 2012) *Table 5*

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