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Political Economy of Climate-relevant Policies: the Case of Renewable Energy in South Africa

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POLITICAL ECONOMY OF CLIMATE-RELEVANT POLICIES: THE CASE OF RENEWABLE ENERGY IN SOUTH AFRICA

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Contents

Figures

Tables

Boxes

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Abbreviations

ANC	African National Congress
BEE	black economic empowerment
BRICS	Brazil, Russia, India, China, South Africa
COP	Conference of the Parties under the UN Convention for Climate Change
COSATU	Congress of South African Trade Unions
CPI	consumer price index
CSP	concentrated solar power
DAFF	Department of Agriculture, Forestry, and Fisheries
DBSA	Development Bank of Southern Africa
DEA	Department of Environmental Affairs
DME	Department of Minerals and Energy
DoE	Department of Energy
DPE	Department of Public Enterprises
DTI	Department of Trade and Industry
DWA	Department of Water Affairs
EAT	equivalent annual tariff
EIA	environmental impact assessment
EIUG	Energy Intensive Users Group
ERA	Electricity Regulation Act
ERC	Energy Research Centre
ESKOM	Electricity Supply Commission
FDI	foreign direct investment
GHG	greenhouse gas
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
IEP	Integrated Energy Plan
IPP	independent power producer
IRP	Integrated Resource Plan
ISMO	Independent System and Market Operator
LCR	local content requirements
LTMS	Long-Term Mitigation Scenarios
MEC	minerals-energy complex
MT	metric tonnes
MYPD	multi-year price determination
NCCR	National Climate Change Response
NER	National Energy Regulator
NERSA	National Energy Regulator of South Africa
NGO	non-governmental organisation
NT	National Treasury
NUMSA	National Union of Metalworkers of South Africa
PCE	Portfolio Committee on Energy
PEACH	Political Economy Analysis of Climate Change Policies
PPA	power purchase agreement
PPP	public–private partnership
PPPFA	Preferential Procurement Policy Framework Act
PV	photovoltaic
REFIT	Renewable Energy Feed-in Tariff
RE IPPPP	Renewable Energy Independent Power Producer Procurement Programme
REWP	Renewable Energy Policy White Paper
SAWEA	South African Wind Energy Association
SBO	Single Buyer Office
SOE	state-owned enterprise

Executive summary

Integrated energy (electricity generation) policy is by no means a settled issue in the post-apartheid era in South Africa. The policy framework is predicated on the need for new and additional energy generation capacity. It assumes that coal will continue to remain the dominant source for electricity generation, but accepts that future energy generation will require an energy mix rather than primarily depending on a single form of electricity generation. In the past decade, however, the policy space has become increasingly fluid and contested by a variety of vested interests, as renewable energy (wind and solar power) has gained a serious foothold and has been championed by a variety of private and public sector actors. However, what is not clear, and is often muddled in the discourse, despite seeming clarity within official policy frameworks, is what the investment strategy should be, where this additional electricity energy generation should be sourced from, what the precise elements of the 'mix' should be, and which path to achieve it should be followed.

The central aim of this study is to investigate the power dimensions and struggles between these various interests and illustrate how they have manifested in terms of the different outcomes. The report therefore provides insight into how the political economy environment has impacted the unfolding of South Africa's climate change policy, with a specific focus on the deployment of private sector-driven renewable energies – through the stillborn Renewable Energy Feed-in Tariff (REFIT) programme, followed by South Africa's first successful Renewable Energy Independent Power Producer Procurement Programme (RE IPPPP).

The report identifies the complex array of actors and institutions determining climate change policy in renewables. The differing aims, priorities and objectives of the key stakeholders are set out. These stakeholders are subject to a set of direct and indirect factors that influence their decision-making processes. A detailed analysis of the evolution of these motivating drivers is necessary to answer the central political economy questions underlying an analysis of the South African case: to what extent are the stakeholders and policies driven by climate change considerations? Or have the discussion, policy formulation, and implementation dynamics of electricity generation been driven by issues of energy security and cost? How has the discussion opened up the policy space for advocates of renewable energy to drive their particular agenda? What are the co-benefits that have driven such sustainability policies? And finally, how have the political economy coalitions of stakeholders, both supporting and opposing sustainable energy policies, emerged to push their own agendas?

This report is based on a desktop review of existing literature and interviews with a number of key informants comprising specialist experts or stakeholder representatives. On this basis we have set out a review of the existing state of the literature, and identified spaces for adding knowledge. Much of the existing political economy literature utilises the concept of the minerals-energy complex (MEC) as a point of departure for analysis of South Africa's current renewable energy policy landscape. We regard this as a limiting and inappropriate analytic foundation for understanding South Africa's political economy and its historical process of economic accumulation. The MEC confuses interlinkages with expressions of political power, and we do not regard it as a useful conceptual framework to develop a clear understanding of the political economy dynamics that drive the energy inter-relationships. For this reason we have adopted a different conceptual framework and methodology.

This study analyses the events that have transpired over the past two decades utilising the PEACH methodology, orchestrated by the Institute of Development Studies (Schmitz 2012). The PEACH methodology is concerned with answering the central question of the project:

who drives/obstructs climate change policies? It provides a method of mapping stakeholders and their respective objectives with regard to periods of transformative change. It is based on identifying the various stakeholders involved, including their diverse priorities, and mapping them in a power priority matrix according to their direct and indirect influence on policymaking and implementation.

We have added several components to the PEACH methodology to enhance our analysis. The first is the customisation of the PEACH matrix to account for the unique dynamics of South Africa's energy sector. Second, we have incorporated value chain dynamics into the framework so as to establish the drivers of the chain, the constraints operating at different links, and the struggles between different actors within the chain. This allows the analysis to unpack how the state-owned electricity enterprise (ESKOM) is present at all value chain levels and acts as a key driver, facilitating and/or constraining policy formulation and implementation. Third, we have represented these various struggles within a structural periodisation so as to introduce historical dynamism into the analysis. The political economy dynamics and struggles between the various stakeholders (actors, interest groups, and institutions) have shifted and changed during different periods. Much of this is attributable to different stakeholders expressing their vested interests or through mobilising coalitions of power. Finally, the political economy analysis also has to take into account unintended consequences. These, albeit driven by other motives and actions, open up alternative spaces and create opportunities which different stakeholders are able to take advantage of and so change what previously appeared to be fixed trajectories of development.

The report starts with a chronological policy inventory providing a progression of climate change-related policymaking in South Africa. These policies are dealt with in more detail in dynamic form exploring the complex dynamics behind policymaking and policy implementation in the political economy analysis that follows in later sections. Hence the policy overview is followed by an outline of the relevant stakeholders involved in South Africa's climate change policies, focusing particularly on the creation and implementation of South Africa's current Renewable Energy Independent Power Producer Procurement Programme (RE IPPPP). The stakeholder inventory identifies the key actors and institutions exercising power and influencing policy providing a static picture of how they fit into the overall political economy mosaic. This static representation of power and influence relates these stakeholders to their various priority objectives, mapping those that are directly concerned with climate change mitigation and those that have other more indirect priority aims.

The key lessons from these inventories are the following. Climate change mitigation is not a major motivating priority of the key stakeholders, especially those with high levels of influence. The primary driving force of government and business is to ensure reliable energy supply. This is a function of the crisis in electricity supply that has plagued the economy since the turn of the millennium.

ESKOM, South Africa's vertically integrated state-owned energy utility, holds monopoly power over the electricity value chain linkages of generation, transmission, and distribution of electricity. It is essentially three businesses located within one entity. The emphasis on generation turnover within ESKOM has translated to an asymmetrical internal power structure within the utility. Coal-based generation priorities are elevated above the needs of the transmission and distribution sectors, and are the driving force behind ESKOM's actions. Attempts to introduce independent power producers (whether renewable or coal-based power stations) into the value chain are viewed as threatening to ESKOM's majority market share, and met with suspicion.

The electricity crisis maintains ESKOM's position of relative influence, since no actor/institution is going to rock the boat and threaten energy security. Although the price of

electricity for final consumers is a major issue, the institutional level of influence consumers have is limited. However, the need to ameliorate the escalating cost of electricity for businesses and households also opens some relative space for those pushing for renewable energy as additional sources of electricity supply to clip ESKOM's wings. Given the need to maintain energy security, there is an intricate balancing act taking place between the major stakeholders over shoring up ESKOM and developing independent power producers (IPPs) as an additional form of renewable energy supply.

The three-fold periodisation of the analytic narrative provides a dynamic element to the political economy analysis of power and influence. It situates the various stakeholders in the shifting flux of policy change during the past 20 years and provides a historical contextualisation to the current situation.

Building a policy framework and ESKOM's role in flux: 1998–2005

In 1998, international pressure to privatise and diversify, coupled with support from the private sector and residential consumers, allowed a policy framework to be put in place that sanctioned the restructuring of ESKOM and the entry of IPPs. However, no regulatory framework for IPP procurement was established, rendering implementation of the new policies impossible.

Furthermore, electricity prices in South Africa during this period were among the lowest in the world, which ultimately deterred private sector actors from entering the market, especially those in renewable energy. Faced with a looming energy crisis, government gave way to pressure from industry, unions, and voters to maintain the energy supply at low prices and abandoned its plans for restructuring ESKOM.

Any attempt within government to build a coalition of influence in favour of renewable energy supply melted away when faced with the energy security crisis and the power of the ESKOM/Department of Public Enterprises (DPE) lobby. At the end of the period, ESKOM remained a vertically integrated monopoly power maintaining control over the value chain – the incumbent regime was preserved.

As Eberhard sums up, 'Policy developments ran ahead of the political process… There was thus never any strong political leadership to implement the proposed reforms' (Eberhard 2005: 5316). In short, policy formation was influenced and driven by private energy analysts and international consultants providing backing to government officials, but it lacked the political backing necessary for implementation.

Conflicting energy policies and political gridlock: 2005–2009

ESKOM was able to use the energy security crisis to exercise influence and mount a pressure campaign to maintain itself as the monopoly player in energy generation, and so retain control over the value chain. At the same time, the very means of doing this, through increasing prices, coalesced stakeholders into the beginnings of a counter campaign.

In 2005, ESKOM began its generation expansion programme with plans to build two very large 'clean coal' power plants, Medupi and Kusile. However, the decision to invest in new capacity building was made too late. In 2007/08, South Africa faced rolling blackouts as a result of a decade of rapid electrification programmes and industrial growth, with no additional generation capacity to account for the substantial increases in demand.

In 2006, the National Energy Regulator of South Africa (NERSA), in response to pressure from ESKOM, began enacting sharp increases in electricity tariffs to fund the generation

expansion programme. The impact of these increases on industries, municipalities, and everyday consumers resulted in mounting pressure from these stakeholder groups to restrict tariff increases in the future. As the regulator, NERSA was caught in between two opposing forces **–** the pressure from ESKOM to increase revenue in order to secure energy supply in the future and the pressure from industry (including the highly influential Energy Intensive Users Group (EIUG) to keep prices low in order to maintain South Africa's historical global competitive advantage.

At the same time as the energy crisis, NERSA began developing REFIT, which garnered intense interest from international private sector actors seeking new investment opportunities in response to the global economic downturn and oversaturation of renewable energy markets in Europe. The planning of the REFIT was plagued with policy incoherency, uncertainty, and confusion – the result of continued resistance from an incumbent regime battling to maintain control over energy generation.

From Copenhagen to REFIT to RE IPPPP: 2010–2014

The energy security crisis and the loss of confidence in ESKOM's ability to adequately address the crisis catalysed the Treasury to explore renewable energy alternatives by allowing a small unit skilled in creating public–private partnerships to have its head in investigating setting up IPPs. This unit occupied space adjacent to the Department of Energy (DoE) building, operating and giving credit as if it was institutionally located there, coalesced a coalition of public and private sector support around its activities, and produced a competitive bidding implementation platform, the Renewable Energy Independent Power Producer Procurement Programme (RE IPPPP), which allowed IPP investment to take off and drive tariff prices down in the process.

This coalition allowed the DoE to intervene decisively in the policy space, passing new legislation, confining NERSA's activities to regulation only and removing its IPP selection role, and effectively clipping some of ESKOM's power to control purchasing from IPPs. The IPP Unit was able effectively to isolate ESKOM and its government backer, the DPE, from the renewable energy bidding process. The institutional nature of the IPP Unit was crucial. It comprised a small group of individuals that did not bureaucratically fall under the watch of any single department. This contributed to its success in building a coalition of influence within government. Essentially operating as a proxy for the DoE but, with the tacit backing of the Treasury, not having to work within the DoE's internal procedures, it was able to operate unknown to any other stakeholders long enough to gain the momentum necessary to ensure that the process would not be stopped. This unit managed to create the joined-up government that was necessary to move beyond the normal state silos that act to constipate and stifle innovation.

ESKOM never publicly blocked any progress towards an IPP renewable energy programme, but rather employed a strategy of using its control over the value chain to delay the process until the proposed programme eventually met its demise. It was a tactic described by one interviewee as 'malicious compliance **–** they always project that they are on board, they will never say that they disagree with a government policy, but they will do what they can to stop it'. The strategy had worked before with REFIT, which had been overwhelmed by policy incoherency, regulatory confusion, missed deadlines and, most crucially, the lack of strong stakeholder influence within government driving it. ESKOM did not believe that RE IPPPP would work. It thought it would follow the same trajectory as REFIT.

RE IPPPP pulled in substantial vested interest from the private sector and increased its zone of influence. The nature of the process involved large foreign firms investing in renewable energy generation. The competitive bidding process gave the banks a pre-eminent status

since they carried most of the risk. The entry of such major players in the private sector effectively acted to change the nature of the game.

There are a number of serious challenges facing the renewable energy sector which may well destabilise the coalition, and produce a variety of differing outcomes. The demand for the institutionalisation of the IPP Unit, and the fact that its strength is derived from floating between departments, is also its potential Achilles heel. Structural shifts in investment away from bank-backed, project-funded bids towards international corporate-guaranteed investment can play a role in decreasing competition, local investment and local content. The economic development requirements are in danger of not delivering local economic activity and meeting social development needs. In the absence of a tightly controlled monitoring and evaluation process they are also a recipe for facilitating corruption. Finally, ESKOM's continued monopoly control over the value chain constrains the growth of the IPPs and their ability to connect to the transmission grid.

In conclusion, the driving force pushing South Africa into renewable energy policies and modalities of implementation was not a result of a major commitment to addressing the issues of climate change. The change in the renewable energy policy debate and policy implementation was triggered by a crisis in the supply of electricity. This crisis has its roots in the governance of the electricity value chain, which took the form of a vertically integrated set of linkages (covering generation, transmission and distribution) internalised within the public sector-owned company, ESKOM.

The result shifted the balance of forces in the energy political economy space away from ESKOM's paralysing grip over the value chain. This has resulted in the current structural break with the previous period, manifested in policy shifts and operational changes, reflecting the power of a new coalition of influence in the political economy of renewables. In the public sector its core is comprised of the Treasury, DoE, the Department of Environmental Affairs (DEA) and NERSA, with conditional support from the Department of Trade and Industry (DTI). Private sector core support is principally derived from the foreign-owned IPP companies and other ancillary business professionals/owners tied to, or benefiting from, their operations. Whether this leads to the required corporate unbundling of ESKOM and an electricity value chain operating without its stultifying monopoly control is the political economy challenge facing a new coalition for change.

The key stakeholders arraigned against change are ESKOM and DPE. They form a powerful and substantial bloc whose strength is not to be underestimated. They are simply keeping their powder dry since fundamentally at core their interests and control over the electricity value chain are not threatened. ESKOM's occupation of the coal-generation capacity space going forward is still overwhelmingly substantial, and its grasp over the IPP agenda has simply been loosened. Existing discussion taking place in government of expanding the IPP terrain to include private sector coal-fuelled power plants is a threat to ESKOM's monopoly control over the coal-based energy generation link. Moreover, although there is not yet a serious attempt to unbundle the vertically integrated value chain of generation, transmission and distribution under its public sector governance, this might be viewed as the thin edge of the wedge. On the renewable energy front ESKOM is simply lying dormant, albeit grumpily and in bad faith. If the break-up of the integrated value chain is put on a serious policy agenda then ESKOM is most likely to strike back with some considerable exercise of power. In addition, if the unbundling process were to happen, and if it were viewed by ESKOM as directly linked to the renewable energy policy direction or as a process of privatisation, then the unions are likely to swing substantially against a green-growth energy trajectory.

In summary then, the structural shift creating a formal platform for a renewable energy path was heavily dependent on building a supportive coalition of stakeholders across a diverse base. The formal programme has been created. The rules of engagement by IPPs have

been accepted. A dynamic with significant momentum in this direction has been unleashed. Large amounts of foreign direct investment (FDI) have been invested. The balance of forces driving electricity generation has significantly shifted over the past few years. In short, the political economy terrain has altered significantly. However, the future trajectory of sustainable energy is by no means assured.

1 Introduction

> This situation calls for a radical transformation of the energy sector, to develop a sustainable energy mix that comprises coal, solar, wind, hydro, gas and nuclear energy.
> (President Jacob Zuma, State of the Nation address 2014)

Integrated energy (electricity generation) policy is by no means a settled issue in the post-apartheid era in South Africa. The policy framework is predicated on the need for new and additional energy generation capacity. It assumes that coal will continue to remain the dominant source for electricity generation, but accepts that future energy generation will require an energy mix rather than primarily depending on a single form of electricity generation. However, what is not clear, and is often muddled in the discussion, despite seeming clarity within official policy frameworks, is what the investment strategy should be, where this additional electricity energy generation should be sourced from, what the precise elements of the 'mix' should be, and which path to achieve it should be followed.

In recent years, renewable energy, the Cinderella which until recently has been covered in dirty coal dust, suddenly appeared in policy frameworks and practical implementation activities as a viable alternative to decades of total reliance on coal-fired power stations and attracted large amounts of international investment from the private sector. However, this mix of sustainable policy options is by no means settled, stable and secure. The political agenda of various actors in government, including the President, reflects a variety of different positions that pop up at unexpected times to muddy the waters. Nuclear energy, which appeared to have been put on the back burner, has suddenly reared its head as President Zuma's preferred option, despite not making financial sense in the current stringent times the economy is facing. This contributes to the confusion and various interpretations of zigzagging in policy discussion, fuelled by the recent hurried signing of confidential 'framework agreements' to explore the building of eight nuclear reactors – first with Russia, and then France and South Korea – and rumours of secret promises and backhander payments to prominent members of the ruling party.[1]

The formulation of energy policy (electricity) and its implementation have been a contested terrain. Coal-based power, supplemented by a single nuclear power station, has dominated the institutional and economic environment. In the past decade, however, the policy space has become increasingly fluid and contested by a variety of vested interests, as renewable energy (wind and solar power) has gained a serious foothold and has been championed by a variety of private and public sector actors.

The central aim of this study is to investigate the power dimensions and struggles between these various interests and illustrate how they have manifested in terms of the different outcomes. The report therefore provides insight into how the political economy environment has impacted the unfolding of South Africa's climate change policy, with a specific focus on the deployment of private sector-driven renewable energies – through the stillborn Renewable Energy Feed-in Tariff (REFIT) programme, followed by South Africa's first successful Renewable Energy Independent Power Producer Procurement Programme (RE IPPPP). These renewable energy policies and programmes have attracted increasing

[1] There have been a raft of reports in the newspapers on these issues. *The Witness* (24 October 2014) reported on a secret conference in the Drakensberg between South African government representatives and officials from Russia's state atomic energy company Rosatom where the details of the deal were discussed. Details of secret meetings and agreements between Presidents Zuma and Putin were revealed by the *Mail & Guardian* (17 October 2014), as well as the opposition of the National Treasury to the proposal. The leader of the opposition, Helen Zille, publicly said 'someone is up to no good' and accused Zuma of acting as if the 'fiscus is his to plunder' (Fin24 29 September 2014).

international and domestic attention because they are central to mitigating climate change. Understanding who drives or blocks these climate-relevant policies is the central concern of the PEACH project orchestrated by the Institute of Development Studies (www.ids.ac.uk/project/who-drives-climate-policies-in-the-rising-powers).

The report follows the structure and methodology suggested by the PEACH project (Schmitz 2012). It identifies the complex array of actors and institutions determining climate change policy in renewables. The differing aims, priorities and objectives of the key stakeholders are set out. These stakeholders are subject to a set of direct and indirect factors that influence their decision-making processes. A detailed analysis of the evolution of these motivating drivers is necessary to answer the central political economy questions underlying an analysis of the South African case: to what extent are the stakeholders and policies driven by climate change considerations? Or have the discussion, policy formulation, and implementation dynamics of electricity generation been driven by issues of energy security and cost? How has this discussion opened up the policy space for advocates of renewable energy to drive their own agenda? What are the co-benefits that have driven such sustainability policies? And finally, how have the political economy coalitions of stakeholders, both supporting and opposing sustainable energy policies, emerged to push their respective agendas?

In order to grasp the dynamics of direct and indirect drivers impacting on the process of shifting priorities between climate change, security and cost to secure electricity generation, we have modified the original PEACH structural framework. Fundamentally, the PEACH structure makes it difficult to take account of the dynamic nature of power relations within the South African political economy landscape in the post-apartheid era. Between roughly 1994 and 2014 it is possible to discern a distinct number of periods. Some of the key actors and institutions affecting the issue remain the same, but crucially for the analysis of the political economy drivers, some get marginalised, others emerge as more important players both in influencing changed policy and ensuring its implementation, and new coalitions bolstering the emergence of a renewable energy platform are formed. This has two consequences for this report's analytic and presentation structure.

Firstly, the 'narrative section' performs a crucial analytic function, allowing these shifting dynamics to be presented in the different periods identified as being structurally important. In this section, even where we agree on matters of descriptive narrative, we have differentiated our analysis from other discussions in the literature, not only in terms of content but also in terms of the utilisation of analytic variables. Previous analyses of the dynamics of the South African electricity/renewable energy, which we rest on in many respects, have not utilised three crucial analytic variables: the importance of periodisation, the manner in which value chains exercise power, and the role of coalitions in bringing about change.

Secondly, in terms of presentation we have found it difficult to transform such shifting relationships of priority, power, and influence into the PEACH methodology's stylised diagrammatic representations for the entire post-apartheid era. Hence we have created diagrammatic representations only for the latest period when renewable energy sources have realistically appeared as viable options with their own sustainable dynamic.

The structure of the report is as follows:

Methodological issues are dealt with in Section 2. Section 3 lays out a concise inventory of the policy frameworks that relate to the renewable energy sector and issues of climate change mitigation. (These policies are dealt with in more detail in dynamic form in the political economy analysis that follows in later sections.) Section 4 outlines an inventory of stakeholders, identifying the key actors and institutions exercising power and influencing policy. The stakeholder inventory also contains explanatory information on each of the various actors and institutions providing a static picture of how they fit into the overall political

economy mosaic. We relate these stakeholders to their various priority objectives, mapping those that are directly concerned with climate change mitigation and those that have other more indirect priority aims. The sections identifying stakeholders and their priorities are static representations of power and influence. Hence the importance of Section 5, which focuses on periodising the analytic narrative and so provides a dynamic element to the analysis. We situate the various stakeholders in the shifting flux of policy change during the past 20 years and provide a historical contextualisation to the current situation. Section 6 discusses four key challenges which have the potential to destabilise the current renewable energy initiative and produce a variety of differing outcomes. Finally, Section 7 deals with coalitions of change, specifically in the current period, and also acts as a conclusion. It identifies which stakeholders, actors and institutions have managed to come together in a coalition driving renewable energy, the basis for the major shift in policy, and examines the strength of its influence. Section 7 therefore pulls together the analysis and provides the answer to the central question posed, as well as assessing the potential obstacles and constraints that threaten this dynamic.

2 Existing and new conceptual frameworks

This report is based on a desktop review of existing literature and on interviews with a number of key informants comprising specialist experts or stakeholder representatives.[2] On this basis we have set out a review of the existing state of the literature, identified spaces for adding knowledge, and then developed a new methodology to enhance and augment the state of our knowledge. The first subsection describes the existing literature that has contributed to our understanding of the key issues surrounding renewable energy policy in South Africa – in other words, what is known. This followed by an identification of the gaps and opportunities for additional research. Finally, the last two subsections set out methodological and conceptual innovations to analyse the political economy of the renewable energy dynamics at play. The PEACH methodology applied on other studies is first set out, followed by a discussion that develops and augments its explanatory power.

2.1 What is known

There is an extensive literature concerned with South Africa's energy and renewable energy sectors. There is significant controversy surrounding the topic – the newspaper headlines, the secrecy, the intrinsically political nature of energy production and consumption – but we have focused here on ideas existing in the public, published arena. Hence we have drawn from existing literature that can be clustered into three general areas of analysis:

1. Technical, descriptive analysis of the energy and renewable energy sectors, providing insight into the current state of South Africa's energy mix, the sector's associated stakeholders and policies, as well as the evolution of the energy landscape over the past two decades.
2. Political economy analysis of South Africa's renewable energy programmes and stakeholders, from which we draw key insights to build upon in our own analysis. A fuller introduction of these policies and players is given in Section 4.
3. Focused political economy analysis, specifically surrounding the local content requirements of the current renewable energy programme (RE IPPPP), which we draw upon to gain insight into the role that municipalities and local communities play both as electricity consumers and recipients of the programme's potential economic benefits.

2.1.1 Technical literature

Our analysis required a foundation built upon technical and descriptive literature surrounding South Africa's past, current, and future energy mix; the relevant policies that have shaped that energy mix; the roles and responsibilities of different actors within the system; and details of the design and implementation of the renewable energy policies (first REFIT and then RE IPPPP). To build a solid foundation, we drew from the plethora of descriptive literature, primarily emanating from the Energy Research Centre (ERC) domiciled in the University of Cape Town. The ERC and associated staff members are a key resource, producing reliable information surrounding South Africa's energy sector, while linking energy policies and implementation to related themes, including economic and development issues, the environment and climate change. In this study, we draw primarily from Winkler (2005, 2006, 2009); Winkler and Marquard (2007, 2009); Winkler *et al*. (2011); Marquard (2006); Trollip and Marquard (2010); Tyler and Winkler (2009); and Edkins, Marquard and Winkler (2010), as well as various official ERC commentaries on draft energy and climate change policies, including the Integrated Resource Plan (IRP) and the Carbon Tax Policy. We also

[2] A list of those interviewed is contained in Annex 1.

utilise the comprehensive GIZ[3] report, *Renewable Energy Policy Mapping Study of the Republic of South Africa*, published in 2013, for the descriptive elements of this study regarding relevant policies and stakeholders (detailed in Sections 3 and 4). Moreover, Anton Eberhard's work (2005, 2007, 2011; Eberhard *et al.* 2014), by far the most advanced analysis, has been an invaluable resource, providing information regarding the design of the REFIT and RE IPPPP policies, as well as the latter's subsequent implementation, often bridging the gap between technical analysis and political economy implications.

2.1.2 Political economy literature

There are several recent studies that explore the political economy surrounding South African renewable energy policymaking and implementation. Pegels (2014), Eberhard, Kolker and Leighland (2014), Eberhard (2005, 2007, 2011), Idasa (2010), Baker (2011), Baker, Newell and Phillips (2014), Kiratu (2010), Never (2012), Buscher (2009) and Burton (2011) are notable examples. In Section 5 (Periodisation of the analytic narrative), we draw extensively from their work. However, our own analysis starts from a different political economy foundation, covers a more up-to-date period, and is based on information gained from our key stakeholder interviews. Hence in subsequent sections we note points at which our analysis either affirms or disputes elements of their argument.

These authors share a perception that using a political economy approach is useful in analysing the outcomes of energy policy in South Africa for its explicit focus on the power dynamics between various stakeholders. Baker (2011) suggests that a political economy approach is necessary in formulating an understanding of the future of the energy and climate change sector in South Africa. As such, a political economy approach that recognises what Buscher (2009) calls the 'axes of the energy debate' (energy inequality and energy sustainability) is essential. Power dynamics, vested interests and beneficiaries of governance mechanisms have played a large role in shaping the structural status quo (Baker 2011). However, these authors recognise that a series of converging forces are shifting these power dynamics, the result of which will dictate the future success or failure of climate change policies in the South African context (Baker *et al.* 2014).

Much of the existing political economy literature grounds its analysis in Fine and Rustomjee's (1996) notion of the minerals-energy complex (MEC) as a lens through which to view and analyse the recent formation of South Africa's renewable energy policies. Fine and Rustomjee argue that the MEC sectors of mining (including coal, gold and other minerals, both ferrous and non-ferrous), as well as electricity generation, petrochemicals, and petrol, are at the heart of the South African economy, both historically and currently and, through a complex network of 'productive linkages', maintain and continue to reinforce one another (Fine and Rustomjee 1996). Electricity generation is dominated by coal, the extraction of which requires large amounts of cheap electricity, as does the production of non-ferrous metals through smelting or refining (Burton 2011). In this way, extractive industries require large inflows of low-cost energy, while energy production requires large quantities of extracted resources, thus forming a close and interdependent relationship between these sectors (Burton 2011; Baker 2011). This complex has resulted in a historical legacy of dependence on ESKOM, the state-owned energy utility (Pegels 2014). While such a deep dependence on the utility to provide low-cost energy was feasible in the 1980s due to an energy surplus (Eberhard *et al*. 2014), massive growth in electricity demand has seen a number of structural shifts in the way the utility operates. Baker (2011) suggests that this will challenge energy policy in the future and forge a more viable space for renewable energy. Burton (2011) argues that the reliance on coal to provide relatively cheap electricity is central to the South African economy and will continue to have significantly negative effects on climate change mitigation policies. While industrial policy has supported MEC-dominance

[3] GIZ: Deutsche Gesellschaft für Internationale Zusammenarbeit – German development agency.

pre- and post-apartheid, this does not necessarily mean that industrial policy is unchangeable (Burton 2011).

A number of forces are now in the process of converging with large positive effects on climate change policies (Baker *et al.* 2014). This process has not been orderly, with a number of unexpected changes along the way (Baker 2011). For much of this period, in which renewable energy feed-in tariffs seemed to be the future of the sector, independent power producers were frustrated by the absence of clear selection criteria in the face of large capital expenditure required to partake in the process (Baker 2011). At the time of writing, Kiratu (2010) saw the introduction of the Independent Power Purchaser Regulations by the Department of Energy (DoE) as contradictory to the REFIT system, indicating the confusion present at the time. While the process seemed to be stalling and extremely unclear towards the end of the late 2000s (Burton 2011), there has now been a strong movement towards the inclusion of the private sector in renewable energy generation (Never 2012). A number of authors have investigated how this change has come about given the historical dominance of stakeholders such as ESKOM who stalled such developments in the past (Burton 2011).

Never (2012) suggests that 'communities of practice' have been an important feature of the success of climate change policies in South Africa, noting that these informal networks are bound by the exchange of information as well as a sense of commonality. Such networks have been important in changing the dominant political mindset of others in the energy policy space and their collective learning has been an essential feature of the success of the climate change policy in recent years (*ibid.*). Communities of practice that were pro-renewables were established in the Department of Environmental Affairs (DEA), while communities of practice which opposed such developments were driven by the two largest greenhouse gas-emitting state-owned companies: the monopolistic electricity corporation, ESKOM, and the synthetic fuel-from-coal corporation, SASOL (Never 2012). While Never suggests that the relations within the DEA are 'very personal, friendly or close', suggesting a strong community of practice, the DEA is acknowledged as only having limited power as compared to other ministries (*ibid.*).

Pegels (2014) mirrors the suggestion that groups of individuals have been key features of the success of shaping renewable energy in South Africa. Groups have formed in the central government, industry as well as in non-governmental, civil society. In central government, the DoE, the national electricity regulatory body (NERSA) as well as National Treasury and the Department of Trade and Industry (DTI) have been strong institutional groups in the energy sector, while the Energy Intensive Users Group (EIUG) as well as ESKOM have been key industry players. Both these industry players have had significant vested interests in maintaining the status quo (coal-based energy) and have strong links to policy. Non-governmental organisations and civil society have only an indirect influence on energy policy (*ibid.*).

While ESKOM faces the dilemma of needing to augment the already stretched energy supply in South Africa, Pegels (2014) suggests that ESKOM is apprehensive of the increased competition that this will bring to their energy generation. Key in quieting such concerns is the fact that energy planning has explicitly noted the dominance of coal for many years to come. This has been sufficient to assure ESKOM of their dominance as the main electricity supplier in the economy, and has opened a space for other groups to push the renewables agenda forward (*ibid.*).

The most recent comprehensive political economy analysis is that of Anton Eberhard, which has been published concurrent with our own study. He stresses that RE IPPPP was different to REFIT in that the DoE took control of the programme rather than ESKOM or NERSA (Eberhard *et al.* 2014). The National Treasury has been central to this process through the formation of the Public–Private Partnership (PPP) Unit which has managed the process and

has acted as a facilitator for the RE IPPPP process (*op.cit.*). This was possible because of the split in the Department of Minerals and Energy (DME) into separate departments for energy and minerals. Before this split, and the subsequent ownership of policy on behalf of the DoE, it was not always clear where policy was made, even within government departments (Idasa 2010). The PPP unit, comprised of a small number of highly qualified individuals with senior experience working with both government and the private sector, was able to function effectively and with relative independence from government forces, which may have had an interest in preventing the development of renewable energy in South Africa (Eberhard *et al.* 2014). Being well capacitated also played a role in the unit's success, since it was able to rely on a variety of private advisory assistance as well as a diversity of funds. Lastly, Eberhard *et al.* suggest that local content requirements were an important tool for the unit to utilise in gaining the support of labour organisations (*ibid.*).

2.1.3 Focused political economy literature – local economic development

Following the successful implementation of several bidding winners under RE IPPPP, new literature has emerged focusing particularly on the political economy implications of RE IPPPP's local economic development objectives. Notable examples include Rennkamp and Westin (2013); Kaggwa *et al.* (2013); WTI Advisors (2013) and Wlokas, Boyd and Andolfi (2012). We draw on these studies in Section 6 (Challenges facing RE IPPPP and climate change policy) in order to acknowledge emerging areas of political economy research that will deserve further analysis as the local implications of South Africa's growing renewable energy sector become more apparent with time. The following provides a brief summary of the key insights that stem from this line of research.

Local content requirements (LCR) establish the way in which foreign investors allocate their resources. LCR have been used in South Africa to ensure a minimum level of local involvement in a project (Rennkamp and Westin 2013). While LCR encourage local economic development, Rennkamp and Westin (2013) describe them as a 'balancing act' due to the fact that setting requirements too high may deter investors through unnecessary price increases. In the recent RE IPPPP programme, LCR are as high as 45 per cent in some circumstances (*ibid.*). The authors suggest that LCR have not yet achieved their expected boost in a local production, especially in the high technology components of renewable energy production (*ibid.*). They attribute this to the fact that many uncertainties remain over LCR, with a lack of clear financial support for local manufacturing. Wlokas *et al.* (2012) suggest that it may be too soon to predict how the renewable energy market will actually affect socioeconomic development once projects are implemented and operational. The bidding process has also limited the entry of new, local firms into the renewables market through a minimum generation capacity requirement of 5MW (Rennkamp and Westin 2013).

2.2 Opportunities for new analytic approaches

The literature summarised in the previous pages provides opportunities for additional research and analysis. In this study, we therefore seek to add value to existing literature by taking advantage of the following opportunities.

Research for the majority of the existing political economy studies cited in the previous section was conducted prior to the successful implementation of RE IPPPP. With the exception of Pegels (2014) and Eberhard *et al.* (2014), analysis of the process of RE IPPPP formulation was written during a time of immense confusion regarding the transition from REFIT to RE IPPPP, which negatively impacted the overall assessment of South Africa's renewable energy prospects. Viewed from this context, the process of getting RE IPPPP off the ground appeared to be an incoherent and inefficient mess, offering little hope for success. Our research has taken place within a very different context – a true testament to the rapid pace of change occurring in South Africa's renewable energy sector. The passing

of time has presented an opportunity to view the process of policymaking and implementation from a position of greater understanding and clarity.

Moreover, the political economy literature with a focus on RE IPPPP's local economic development implications has only recently produced key research findings. Although it is beyond the scope of this study to undertake an in-depth analysis of the local actors involved in RE IPPPP's on-the-ground implementation, there is an opportunity to situate existing research within a larger political economy analysis, emphasising the role that local actors and municipalities currently play in the renewable energy sector and its associated policies. The progression of IPP project construction and operation in the near future will provide more information for further areas of research. In this study, we hope to highlight the significance of local stakeholders, the potential challenges and benefits that may arise from RE IPPPP's local economic development component, and underscore the importance of expanding political economy analysis of this topic in the near future.

Finally, much of the existing political economy literature utilises the concept of the minerals-energy complex (MEC) as a departure point for analysis of South Africa's current renewable energy policy landscape. We regard this as a limiting and inappropriate analytic foundation for understanding South Africa's political economy and its historical process of economic accumulation.

Whatever the historical judgment on the MEC may be in respect of the apartheid era, it does not adequately describe the relations of power operative in the contemporary post-apartheid phase. Unlike other African commodity producers, South Africa has singularly failed to take advantage of the post-millennium commodity boom. It is striking that phases of economic growth and slowdown in the post-apartheid era have been driven by processes not easily attributable to the MEC.

Moreover, economic and industrial policy have been located in other political economy mechanisms than those specified as operative in the MEC conception. There is little evidence that the post-apartheid South African state is, or has been, driven by large mineral exporters. The mining companies have been in constant conflict with government over a variety of bills and charters, to the extent that further investment in this sector is severely constrained. In terms of industrial policy, economic diversification, through taxation of minerals, has been at the forefront of industrial policy initiatives to move away from a dependence on minerals towards manufacturing.

Finally, in practical terms, rather than being able to exercise power to benefit themselves in a situation of electricity crisis, the large mineral and energy-intensive corporations which make up the Energy Intensive Users Group (EIUG) have been the most supply-constrained in the electricity crisis. The electricity crunch hit has been focused on cutting back on electricity supply and directed mostly against the members of the EIUG.

In essence, there is no evidence for this privileging of the MEC. If there is an integrated complex as described by the MEC, it does not appear to have anything like the power ascribed to it. This is not to say that the mining sector is without significant political influence, or that it does not attempt to influence energy policy, but the sector is not at the centre of political and economic power driving economic growth and class relations in South Africa and operating as a centralised and integrated MEC force. In summary, the MEC confuses interlinkages with expressions of political power and, as is apparent in our later analysis, we therefore do not regard it as a useful conceptual framework within which to understand the political economy dynamics driving the energy inter-relationships. For this reason we have adopted a different conceptual framework and methodology.

This study therefore analyses the events that have transpired over the past two decades utilising a new and innovative framework. The PEACH methodology, outlined in the following section, provides a unique method of mapping stakeholders and their respective objectives with regard to periods of transformative change. Moreover, we have chosen to add several components to the methodology to enhance our analysis, namely the customisation of the PEACH matrix to account for the unique dynamics of South Africa's energy sector, the incorporation of a value chain framework, and the expansion and periodisation of the analytic narrative component of the PEACH methodology. These modifications and additions are described in detail in Section 2.3.

2.3 PEACH methodology

We have used the PEACH methodology (Schmitz 2012) but modified it in important ways as explained below. The PEACH methodology is concerned with answering the central question of the project: who drives/obstructs climate change policies? It invites complexity (of actors, institutions and motivations) and is based on identifying the various stakeholders involved, including their diverse priorities. It requires mapping these stakeholders in a power priority matrix according to their direct and indirect influence on policymaking and implementation, and analysing their competing narratives. The purpose of this distinction between different forms of influence is to identify stakeholders who exercise direct power to influence climate change through mitigation, as well as those actors who are highly relevant but whose involvement in the process is driven by other concerns – e.g. energy security, employment creation, poverty reduction, raising competitiveness. The PEACH methodology also emphasises the need to identify the level of influence that various stakeholders have in agenda setting and shifting implementation priorities in a variety of arenas.

2.4 PEACH plus

Although the PEACH methodology accepts that the 'policy process has different stages' (Schmitz 2012) it is silent on how to capture this without an extended analytic narrative encompassing these various stages, or periods as we prefer to call them. It is not clear how to marry 'dynamic process' with 'static characterisation'. Hence we have followed this methodology to analyse influence and power but have not been able to do justice to the shifting complexity of these relations in a stylised diagram of influence and power as we move from one period to another. The flux and flow of influence, power and coalitions are hence dealt with in detail in what we have termed an analytic narrative periodising the political economy dynamics within the different stages identified.

The PEACH methodology matrix has therefore been modified in three ways:

First, the methodological matrix has been customised in order to take account of the specificity of South Africa's energy political economy dimensions (Table 2.1 below). In South Africa (as in most of the rest of Africa) conventional energy supply is highly centralised and regulated. ESKOM is a publicly owned enterprise (parastatal) responsible for generation and transmission (and a fair amount of distribution) of electricity. Its pricing structure and general operations are regulated by a government-appointed but independently operated agency, the National Energy Regulator of South Africa (NERSA), subject to immense pressure from government ministries and ESKOM. Hence they have their own columns. Local government primarily refers to municipal/metropolitan government, rather than provincial government. Local government is structurally caught in a contradictory position. It is tasked with implementing government energy policy through its distribution agencies, but its primary concern is using electricity distribution to consumers and business as an important and major means of generating revenue to fund its overall budgetary requirements.

Second, this modified PEACH matrix has been inserted within the South African electricity value chain comprising the main linkages of raw material inputs, generation, transmission, distribution and consumption (Figure 2.1 below). The utilisation of a value chain methodology enables the political economy analysis to establish the drivers of the chain, the constraints operating at different links, and the struggles between different actors within the chain. What is clear from this diagrammatic representation is that the state-owned enterprise (ESKOM) is present at all value chain levels and acts as a key driver, facilitating and/or constraining policy formulation and implementation. Furthermore, there are a number of government departments and agencies involved in the value chain that are either working in accord or in conflict at any particular period.

Third, we have represented these various struggles within a structural periodisation so as to introduce historical dynamism into the analysis. The political economy dynamics and struggles between the various stakeholders (actors, interest groups and institutions) have shifted and changed during different periods. Much of this is attributable to different stakeholders expressing their vested interests or through mobilising coalitions of power. However, history is not the simple playing out of predetermined relations of power. Political economy analysis also has to take into account unintended consequences which surprise all and sundry, and create the necessary contingency to understand the dynamic flux of historical change. These unintended consequences, albeit driven by other motives and actions, open up alternative spaces and create opportunities which different stakeholders are able to take advantage of and change what previously appeared to be fixed trajectories of development. Since they are driven by other factors, interests and processes, they can also have the unintended consequence of closing down space and constraining the dynamic of existing trajectories. In the analysis that follows we identify at least three such moments of unintended consequence that have had a critical and positive impact in changing the purpose and outcome of the renewable energy trajectory in different periods. Hence, methodologically speaking, the periodisation of this story is essential in order to illustrate the fluctuations in power dynamics that give rise to shifts in decision-making and, ultimately, policy formation. In policy terms, what appeared to be constraints have become challenges, and what emerged as new opportunities have become threats from one period to the next.

Table 2.1 Political economy dimensions

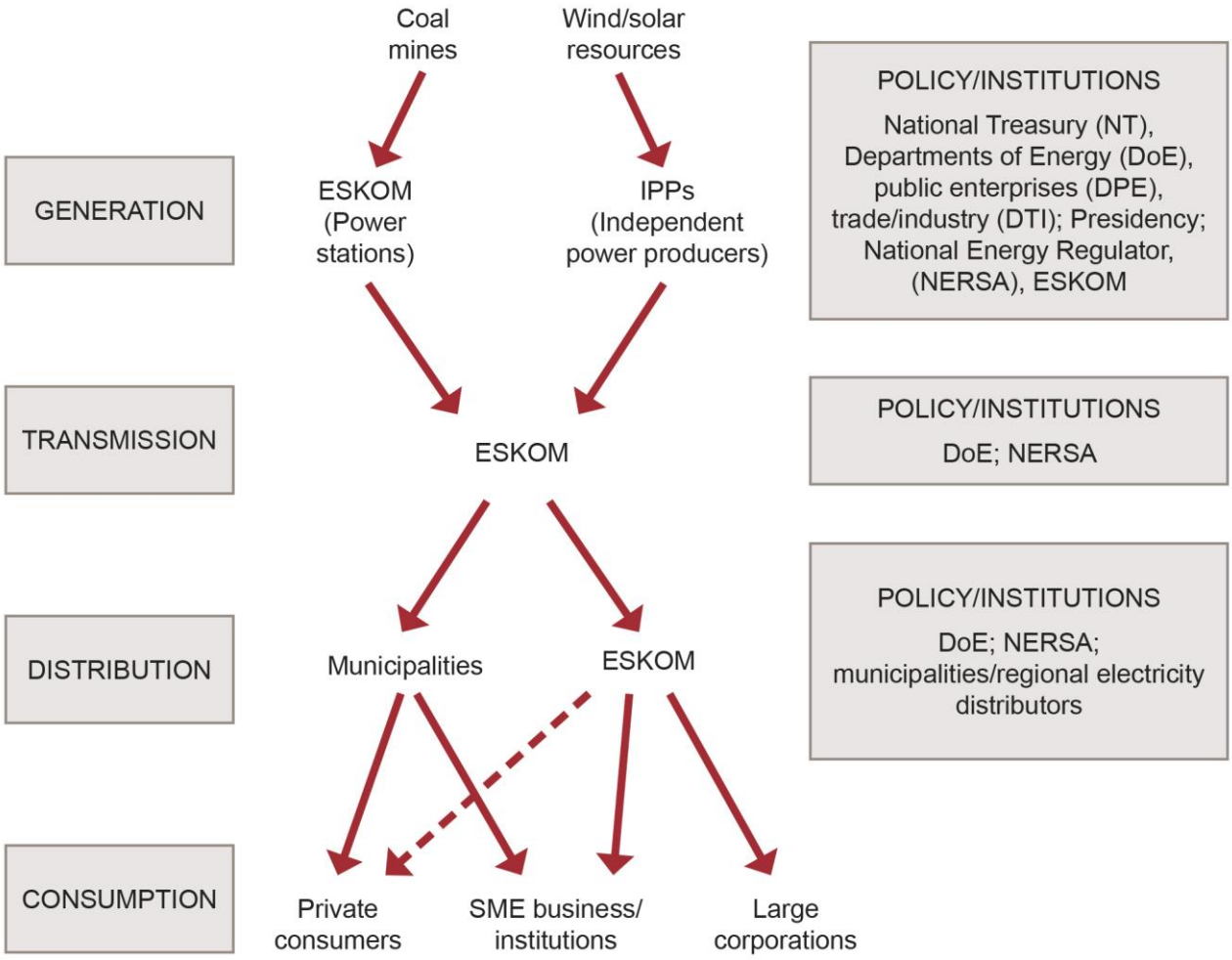
Main stakeholders	National government departments; presidency	Regulatory agencies[1]	Parastatals[2]	Local government[3]	Business groups	Civil society organisations[4]
Policy arenas	Global and national	National	National	Local[5]	National	Subnational
Priorities	Various: energy security; cost; generation; jobs; economic growth	Regulation	Reliable supply; market control	Revenue generation	Increase competitiveness	Low-cost domestic electricity; climate change; reliable supply
Stages of the policy process	Formulation	Regulation	Formulation, lobbying, implementation	Adoption, implementation[6]	Formulation, lobbying and implementation[7]	Monitoring and policy influence

Notes:

[1] Regulatory agencies – NERSA.
[2] Public/state-owned enterprises – ESKOM.
[3] Local government includes municipalities, metropolitan councils, and provincial government.
[4] This covers non-governmental organisations (NGOs) (such as Earthlife Africa focused on monitoring, WWF on policy influence), labour unions, domestic household groupings concerned with the price of electricity, university research units and academics, and private consulting companies (such as OneWorld focused on policy evidence and influence).
[5] We prefer to use 'local' rather than 'regional' since in sub-Saharan Africa regional means a sub-region of countries.
[6] Provincial and metropolitan local governments try to operate at a policy level but they are constrained by policy centralisation.
[7] Big business involved in lobbying for reliable and cheaper energy; Independent Power Producers (IPPs) for implementation of renewable energy.

Source: Authors' own.

Figure 2.1 South Africa's electricity value chain



3 Inventory of South Africa's relevant climate change policies

The following section briefly describes relevant South African climate change and energy policies, an overview intended to give the reader a general understanding of the progression of climate change change-related policymaking in South Africa. The policies are listed in chronological order of their publication. It is important to note that these are just policies. Actual implementation – as can be witnessed below in the lack of progress made by the Carbon Tax and Independent System and Market Operator (ISMO) Bill – is not a given, but is determined by the dynamic interactions and negotiations that take place between a multitude of actors, each with their respective objectives, levels of power, and vulnerabilities to external and internal influence. Furthermore, these complex relationships exist within particular historical contexts: timing is a key element in the South African story of climate change policy implementation. With the limitations of this inventory in mind, the periodised analytic narrative in Section 6 intends to provide context and nuance to this inventory, exploring the complex dynamics behind policymaking and policy implementation, and the relationship between these two processes.

3.1 The White Paper on Energy Policy 1998

The *White Paper on the Energy Policy of the Republic of South Africa*, published in December 1998, was drafted during the first phase of the National Electrification Programme, an accelerated rolling out of electricity to black South Africans in underdeveloped urban and rural areas implemented between 1994 and 1999. The document set out to define energy objectives in post-apartheid South Africa, primarily focused on universal access to electricity, improvement in energy governance structures, the introduction of competition into the energy market, and diversification of energy supply sources (DME 1998).

The main outcome of the document was a political mandate for the unbundling of electricity generation, transmission, and distribution. The focus of the paper was introducing competition into the energy sector, particularly through the involvement of the private sector, with emphasis on the importance of allowing energy consumers the right to choose their electricity provider (DME 1998). To accomplish this goal, the document authorised up to 30 per cent of South Africa's generation to be sourced from independent power producers (IPPs). Significantly, specific technologies for the entrance of IPPs into the energy market were not defined. However, at the time of its publication – a period during which it was clear that new capacity was required immediately – the intention was that these IPPs would be utilised for building and connecting new coal-fired power stations to the grid, with little intention for renewable energy generation.[4]

3.2 Renewable Energy Policy White Paper 2003

The *White Paper on Energy Policy* spurred a debate surrounding ESKOM's restructuring and the future role of the private sector in contributing and diversifying South Africa's energy generation (detailed in Section 6.2). Within the midst of this debate, government began developing its renewable energy policy. In 2003, the *White Paper on Renewable Energy* (REWP) was published, setting a target of 10,000GWh of renewable energy by 2013 and committing the government to develop a strategic framework and mechanisms to achieve that goal.

[4] Interview, Hilton Trollip (independent expert).

At the time, REWP generated a great deal of confusion surrounding what the 10,000GWh actually meant. REWP failed to specify whether it was a cumulative or annual target and whether the target was limited to electricity or would include other renewable energy services. The DoE later clarified that the 10,000GWh target would be met by bagasse (59 per cent), landfill gas (6 per cent), small scale hydro (10 per cent), solar water heaters (13 per cent), biomass (1 per cent), and wind (1 per cent); curiously no photovoltaic (PV) or concentrated solar power (CSP) was included in the target (Eberhard *et al.* 2014). Due to delays in the actual implementation of the policy (discussed at length in Section 6), the target of 10,000GWh was not met by 2013.

3.3 Integrated Energy Plan 2003

The first Integrated Energy Plan (IEP) was published in 2003 by the Department of Minerals and Energy. The IEP provided guidelines for energy policy decision making, analysing different trajectories of the South African economy up to 2020 while taking into account future generation capacity, reserves, energy consumption, possible energy mixes, and the greenhouse gas (GHG) emissions of those possible energy sources (Winkler 2006). The IEP is meant to align with all national development plans and strategies, international commitments, and long-term climate change mitigation strategies.

Policy later dictated by the National Energy Act of 2008 requires that an IEP be formulated on an annual basis and report on all energy consumption and energy generation for the next 20-year period. In reality, this has not been the case. The second IEP report was drafted in 2012 by the DoE, became open for public comment in 2013, and scheduled for submission to the Cabinet by the end of 2014. The finalisation of the IEP is significant, not only in charting the future trajectory of South Africa's energy mix, but in laying the technical foundation for the official revision of the Integrated Resource Plan (IRP).

3.4 Electricity Regulation Act 2006

Developed by the Department of Minerals and Energy (DME), the Electricity Regulation Act (ERA) established a framework for electricity regulation in South Africa. The key outcome of the act was the establishment of NERSA, replacing the National Energy Regulator (NER) as the regulatory body mandated with the protection and enforcement of the national electricity policy framework. It stipulates that NERSA must act within the guidelines of the IRP. The regulator is the ultimate entity that determines electricity tariffs; grants licences for the generation, distribution and transmission of electricity; and controls the import and export of electricity. The ERA also clarified NERSA's relationship with ESKOM, stipulating that ESKOM is the sole purchaser of generated electricity in South Africa.

The ERA had major implications for future IPP programmes and the subsequent development of the Renewable Energy Feed-in Tariff (REFIT) and RE IPPPP. Through establishing clear, separate mandates for both NERSA and ESKOM and defining their relationship with each other, the ERA provided the regulator with some independence from ESKOM, but essentially created a policy implementation gridlock. The DME (later Department of Energy) remained charged with setting energy policy, NERSA was charged with licensing power for new generation activities, and ESKOM was charged with the purchasing of any new generation. In effect, this arrangement meant that all three bodies had to align in agreement with the allocation of new generation capacity in order for IPPs to be connected to the national grid. Consequently, it allowed ESKOM, as sole purchaser, to delay the process of bringing private sector generation on board (as is further discussed in Section 6.3).

3.5 Long-Term Mitigation Scenarios paper 2007

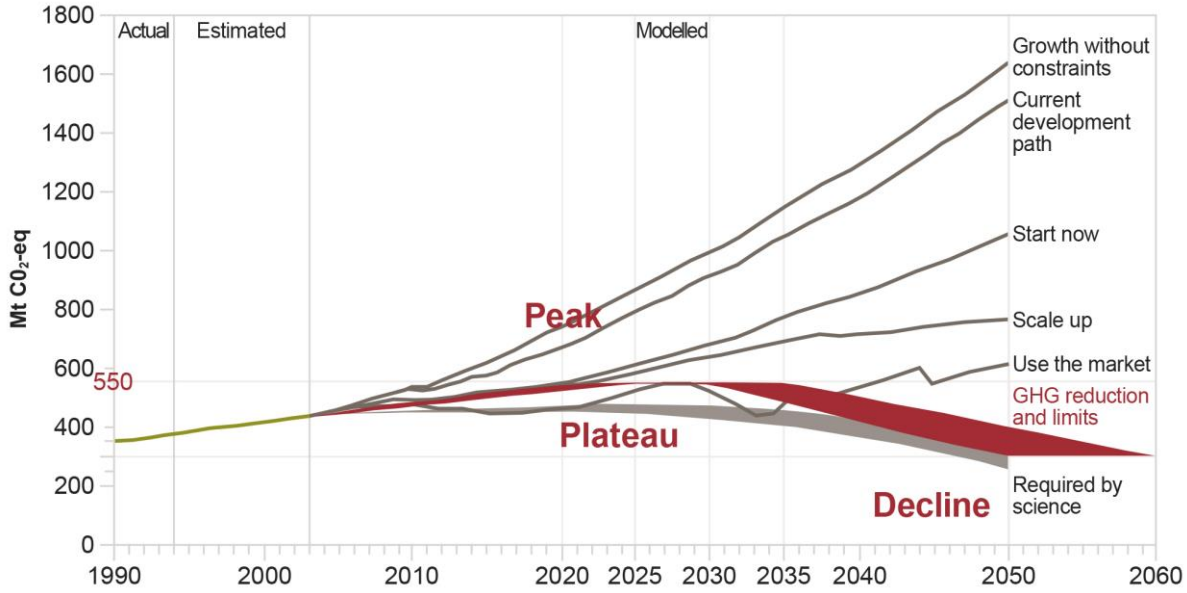
The Long-Term Mitigation Scenarios paper (LTMS) signifies a significant step in South Africa's climate change policymaking and played a surprisingly large role in advancing the country's renewable energy programme. The paper was commissioned by the DEA for the purpose of assessing South Africa's GHG emissions mitigation scenarios. The research-based scenario-mapping process was conducted by a multi-stakeholder team, which included representatives from government, the private sector and civil society.

The scenario mapping resulted in a peak-plateau-decline emissions strategy for South Africa (Figure 3.1). The strategy proposed the following trajectory (DEA 2007):

- The start of the plateau: GHG emissions stop growing at 550MT CO_2 by 2020–25
- The end of the plateau: GHG emissions begin declining in 2030–35
- The resulting base level: GHG emissions reduce to levels required by international standards by 2050–60.

Additionally, LTMS strategies have been developed or are in the process of being developed for the following sectors: energy, industry, waste management, agriculture, construction, and mining (GIZ 2013).

Figure 3.1 South Africa's greenhouse gas emission reductions and limits



Source: Adapted from DEA (2009).

The LTMS has had a significant effect in shaping energy policy in South Africa. Firstly, the DEA's publication of the LTMS informed President Zuma's pledge at the Copenhagen Conference of Parties (COP) in 2009 to reduce GHG emissions by 34 per cent from business as usual by 2020 – an event that was surprising due to the fact that South Africa, as a non-Annex 1 country under the Kyoto Protocol, was not required to implement caps on GHG emissions (this event is described further in Section 6.4) (Eberhard *et al.* 2014). Secondly, the LTMS served as the basis for future energy mix planning, informing both the IRP in 2010 and the *National Climate Change Response White Paper* in 2011.

3.6 New Generation Regulations 2009, and Electricity Regulation Bill 2011

The Electricity Regulations on New Generation Capacity was published under the 2006 Electricity Regulations Act in 2009 with the objective of establishing a policy mandate for the implementation of the REFIT programme, effectively allowing IPPs to participate in national electricity generation. The New Generation Regulations outlined the process for regulating the creation of IPP power purchase agreements for all generation technologies, including renewables and cogeneration. Furthermore, it created the basis for establishing electricity tariffs for IPPs that both encouraged participation by ensuring an appropriate return and that were cost reflective and transparent. Significantly, the regulations outlined the framework for designing and implementing an IPP bid programme.

During the development of REFIT, the DoE initiated a process of revising the Regulations on New Generation with input from foreign consultants. The result was the Electricity Regulation Bill (Second Amendment), which came into effect in May 2011. The bill contained a number of changes to the original Regulations on New Generation Capacity that effectively transferred powers that used to reside within NERSA and ESKOM's mandate to the DoE. NERSA's power to formulate the power purchase agreement (PPA) and selection criteria was removed. The selection process of the REFIT IPPs was taken out of ESKOM's control and the bill made it possible for the Minister of Energy to instruct ESKOM to buy power from an IPP.

In effect the bill placed the development of an IPP programme under the control of the DoE and laid the framework for regulating the RE IPPPP, the implementation of which was not previously supported by any existing policy.

3.7 Integrated Resource Plan (IRP) 2010, and the IRP Update Report 2013

The IRP is intended to be a 'living document', informed by the IEP and the peak-plateau-decline scenarios of the LTMS, to be revised and updated by the DoE at a minimum of every two years according to changing energy demand and supply in the country. The IRP 2010 was approved in May 2011, establishing the country's energy mix for the next 20 years. The plan added 56,539MW, which more than doubled capacity to 89,532MW by 2030, with new generation capacity sourced from various technologies. Coal remained the dominant source with 29 per cent (16,383MW) of the new capacity coming from this traditional source.[5] However, significant allocations for renewables marked a structural shift in the country's energy planning: 16.3 per cent (9,200MW) for wind, 14.9 per cent (8,400MW) for photovoltaic solar (PV), and 2.1 per cent (1,200MW) for concentrated solar power (CSP). Of the total expected capacity in 2030, coal would still remain the dominant form of supply at 45.9 per cent, but renewables from wind, solar and CSP would make up 21 per cent of total capacity. The IRP was hailed as a much needed diversification away from coal-based electricity generation. The plan also made a major commitment to expand nuclear capacity in the additional energy mix: 9,600MW was to be added (16.3 per cent of the additional capacity) so that by 2030 nuclear would constitute 10 per cent of total electricity capacity (DoE 2011a).[6]

Along with the revision of the IEP, the IRP underwent an update in 2013 due to changes in the economic climate taking into account the recession following the financial crisis. The update resulted in markedly different energy demand forecasts than were previously made in 2010. The changes made in the Update Report not only reflected a more accurate calculation of South Africa's energy demand trajectory, but they marked a transition from a single plan with predesignated allocations for different generation technologies to a scenario-based plan. Under this new dynamic plan, future generation options, like nuclear and CSP, are to be weighed against electricity demand, cost, and progress made on alternative generation technologies. For example, the Update Report delays decision-making on nuclear power generation until 2015. At that time, the government can only proceed with nuclear power development if electricity demand exceeds 270TWh, there is no shale gas development, and nuclear generation costs are under US$6,500/kWh (ERC 2013).[7]

The contextualisation of energy policy decision-making in the Update Report represents a significant step towards transforming the IRP into the living document it was intended to be. It also presents the possibility of incorporating the IRP Update Report into a revised White Paper (the revision process was initiated at the REWP's midterm review in 2009) that reflects the country's current energy supply and demand realities. However, the DoE has yet to publish the IRP Update Report as the new IRP iteration. According to a key expert interviewed, the DoE's delay is most likely due to the ministry's hesitation to place limitations on nuclear energy development given the considerable amount of support for nuclear development in government.[8]

[5] GHG emissions will increase from 237 to 272 metric tonnes of carbon dioxide in 2030 (Winkler *et al.* 2011).
[6] The rationale for nuclear energy was not only stability of supply but also to meet the GHG mitigation goals.
[7] www.ercblogs.co.za/2013/irp-update-is-makes-a-step-change-to-informed-decision-making/ (accessed 26 January 2015).
[8] Interview, Anton Eberhard (independent expert).

3.8 National Climate Change Response White Paper 2011

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

3.9 Independent System and Market Operator (ISMO) Bill

The Independent System and Market Operator (ISMO) Bill's original objective was to create an autonomous state-owned entity that would be charged with the development of generation and resource planning, the purchasing of power from electricity generators, the trading of electricity and overseeing systems operations (GIZ 2013). If created, the ISMO would also be in charge of the technical modelling inputs and development of the IRP.

The motivation behind the ISMO Bill has been longstanding and growing. Currently, ESKOM plays the role of majority generator of electricity in South Africa (95 per cent) and sole procurer of electricity – acting as both the 'player and the referee' – a glaring conflict of interest (Baker 2011: 5). The Single Buyer Office (SBO) within ESKOM was intended to be a temporary arrangement until an ISMO could be established, buying electricity from the IPPs in the interim. However, given the multiple revisions of the ISMO Bill, which have essentially watered down its original mandate, and its lack of traction in Parliament (the Bill was presented before Parliament in 2013, only to be withdrawn from the parliamentary schedule), the establishment of an ISMO in the near future seems unlikely. Furthermore, even if an ISMO was established, it is equally unlikely that the independent operator would hold a mandate and level of influence strong enough to pose a credible counterweight to ESKOM.[9]

3.10 Carbon Tax Policy Paper

The National Treasury (NT) published the Carbon Tax Policy Paper for public comment in 2013, following a discussion document published in 2010, and the subsequent inclusion of a carbon tax in the national budget reviews in 2012 and 2013. The policy paper recommends a carbon tax of R120 per ton of carbon equivalent above the determined threshold, to be increased by 10 per cent each year until 2020 (GIZ 2013: 60). Originally due to commence in 2015, the tax's introduction was delayed until 2016 by the NT in an announcement made at the beginning of 2014.[10]

Like the ISMO Bill, the future discussions surrounding the implementation of the Carbon Tax Policy Paper will provide an interesting insight into the political economy dynamics involved in South Africa's climate change decision-making. For the NT, the ministry behind the policy, the carbon tax is valuable in its own right, providing a source of additional revenue. However, the private sector has argued vehemently against the introduction of the tax, citing the current depressed economic environment and concerns over the effects on South Africa's global competitiveness. Labour is equally concerned with the job losses that may occur if the tax negatively affects industrial turnover. The debate surrounding the policy is highly illustrative of the conflicts that exist between climate change policies and national development plans. Implementing climate change mitigation strategies must necessarily involve a complex negotiation between environmental, development, and job creation motivations in government. This negotiation, and the power dynamics that are implicit within the process, will most likely result in further delays, reductions, or, as one key expert interviewed predicted, a 'death' of the carbon tax in South Africa.[11]

[9] Interview, Belynda Petrie (independent expert).
[10] www.bdlive.co.za/national/science/2014/02/26/sas-carbon-tax-delayed-by-one-year-to-2016 (accessed 26 January 2015).
[11] Interview, Belynda Petrie (independent expert).

4 Inventory and analysis of relevant stakeholders

The following section provides an inventory of the relevant stakeholders involved in South Africa's climate change policies, focusing particularly on the creation and implementation of South Africa's current renewable energy IPP programme (RE IPPPP). While there are many actors that played a role in the process (described in detail in Section 5), these stakeholders have been selected based on the role they have played and will continue to play in the unfolding of South Africa's renewable energy programme – both as active participants in, and outcome beneficiaries of, the process. Table 4.1 introduces the relevant stakeholders and the domains in which they operate. Section 4.1 provides a description of each of the stakeholders – their mandates, functions, motivations, priorities and relative levels of influence within the system. Section 4.2 summarises these descriptions graphically, illustrating the stakeholders' priorities and level of influence in relation to one another in order to provide a foundational visual guide to the detailed narrative that will follow in Section 5.

Table 4.1 Inventory of stakeholders at multiple levels

Stakeholder/arenas	International	National	Local/provincial
Government departments		NT DoE DEA DPE DTI Presidency	Provincial departments Local municipalities
Government agencies		NERSA	
Parastatals		ESKOM	
Private sector	EIUG IPPs	EIUG IPPs	
Civil society	NGOs	Labour unions NGOs Research units Consulting firms	Communities and householders

4.1 Inventory of stakeholders

4.1.1 Government departments and agencies

Department of Energy (DoE)

In South Africa, energy policy has historically been under the control of the Department of Minerals and Energy (DME), one of the country's oldest national departments. In 2009, newly elected President Zuma separated the two sectors into the Department of Mineral Resources (DMR) and the Department of Energy (DoE). A mandate for the DoE, separate from the interests of the mineral sector, was determined. The DoE is charged with ensuring secure and sustainable provision of energy for socioeconomic development in South Africa. The ministry is divided into four branches: policy, planning and clean energy; energy programmes

and projects; petroleum and petroleum products regulation; and nuclear energy – each with a deputy director general. For the purpose of this study, the policy, planning and clean energy branch is the most relevant actor within the ministry.

The DoE's mandate is complex, requiring a balancing act between ensuring enough supply for energy demand, maintaining the low prices that industrial and household users are accustomed to in South Africa, diversifying the energy mix as a matter of energy security, and adhering to the international and domestic commitments towards GHG emissions reductions and climate change mitigation efforts. Furthermore, energy production, provision and prices are inherently tied up with national priorities of economic growth and job creation. This is true of any country, but is especially significant given both the historical and current weight of the minerals and energy sectors in South Africa as discussed in Section 5.

Over the past ten years the DoE (and previously the DME) has played vastly different roles in the story of climate change and energy policy in South Africa, varying in agendas, priorities, competencies, and in relative influence. This can mostly be attributed to the fact that the department has gone through multiple changes in ministers since 2004, each change in leadership accompanied by a different direction for the department.[12]

Given the frequent changes of leadership in the DoE, the complex set of priorities the ministry faces, and the tendency of the ministers to influence the weighting of those priorities, the DoE has been marked by contradictory and incoherent actions over the years. This makes it difficult to pinpoint a discrete set of motivations and priorities driving the ministry. The DoE's recent involvement in South Africa's successful renewable energy IPP programme (RE IPPPP) further complicates the matter. However, as the narrative in Section 5 describes in detail, the DoE's involvement and subsequent leadership position in the programme was heavily driven by energy security concerns, spurred by the 2008 energy crisis.

Department of Environmental Affairs (DEA)

The DEA is in charge of setting climate change policy in South Africa. The ministry is mandated with ensuring the adherence to environmental standards on pollution, ecological degradation, conservation and sustainable development. Within the realm of energy policy, the DEA is charged with promoting clean energy and efficient energy use in South Africa. More than any of the other relevant government stakeholders, the DEA's priorities are in line with international climate change objectives.

The DEA's level of influence relative to the National Treasury and DoE is significantly less due to the fact that its mandate is not tied up with the immediate national priorities of economic growth and job creation. This is an unfortunate reality given the centrality of environmental and climate change impacts in long-term economic growth. However, there are signs that this short-term mindset is slowly transforming within government. The LTMS, published by the DEA in 2007, greatly influenced the voluntary targets President Zuma set at the Copenhagen Accords for South Africa's emission reductions. Although this decision itself was not motivated principally by climate change concerns, rather being politically driven by the desire for international recognition of South Africa as a leader in emerging economy climate change efforts,[13] the results that followed were significant and ultimately led to the development of an informed IRP and the implementation of RE IPPPP.

While the analytical narrative in Section 5 will highlight the fact that climate change is not the main driver for a green transformation in South Africa, the DEA is still able to exercise some influence, albeit minor. This is mostly due to South Africa's current positioning in the

[12] Interview, Hilton Trollip (independent expert).
[13] Interview, Belynda Petrie (independent expert).

international context. As one of the emerging BRICS[14] economies and as a leader in the African continent, South Africa receives and encourages attention from the global stage with regard to its progressive policies. This is especially true with regard to climate change, as South Africa seeks to become a regional leader and a BRICS leader in climate change policy in the public sphere.[15]

Given this motivating force, regardless of how serious the country's commitments may be in reality, the DEA does have growing international pressure for climate change mitigation on its side. As the analytic narrative illustrates, this pressure has served to catalyse action in the past and may lead to a further elevation of the ministry's relative influence regarding energy decision-making in the future.

National Treasury (NT)

The mandate of the National Treasury is to manage national government spending. With regard to energy-related activities, the NT approves all budgets from government departments (DoE, DEA, DPE, etc), is responsible for the oversight of state-owned enterprise finances (e.g. ESKOM), and administers energy-related subsidies, incentives, and taxes (GIZ 2013: 36).

Given the broad nature of the NT's mandate and the expanse of its responsibilities across all departments, it is not surprising that the Treasury played such an integral role in the success of South Africa's renewable energy programme. The decision to support the formulation and implementation of RE IPPPP evolved from a number of highly contextualised motives, the most pressing of which was the security of energy supply after the 2008 energy crisis. Yet, the decision can equally be attributed to the personal motives and high level of commitment of leadership within the NT and key staff within its Public–Private Partnership Unit.

Because the NT coordinates government finances, it has the highest level of influence among the governmental stakeholders described in this section. Furthermore, the government employees within the Treasury are generally regarded as highly skilled, qualified and competent. This level of capacity, paired with the ability to make funding decisions, ensures that NT-backed projects are accompanied by a high level of political and bureaucratic support. It was within this context that the NT was able to provide the strong foundation of political buy-in necessary for the success of the RE IPPPP programme.

Department of Public Enterprises (DPE)

The DPE, as the ministry charged with the oversight responsibility of South Africa's state-owned enterprises (SOEs), is the sole shareholder of ESKOM. The events presented in the following narrative strongly suggest that the DPE has little independence from ESKOM with regard to energy policy priorities and mostly backs the utility's decision-making processes.

Interviews conducted with a number of key experts indicate that the main priority of the DPE is to preserve ESKOM's monopoly over the entire energy value chain, thus maintaining the ministry's status of owning one of the biggest companies in South Africa.[16] Interviewees regarded the ministry as 'weak' and 'vulnerable' with low operating capacity.[17] Unsurprisingly, the DPE, as the ministry charged with overseeing public enterprises, is a stalwart for public sector-led economic development, and hence maintaining ESKOM's controlling presence throughout the value chain. The ministry's stance is indicative of a larger ideological conflict within government, and South African society as a whole, contrasting the role of the developmental state and that of the private sector in achieving national development

[14] Brazil, Russia, India, China and South Africa – grouped together as emerging economies.
[15] Interview, Jon Kornik (independent expert, IPP investment).
[16] For example, interview, Ferdi Kruger (ESKOM).
[17] Interviews, Belynda Petrie, Anton Eberhard, Hilton Trollip (independent experts).

objectives. This ideological debate can be seen throughout the unfolding of South Africa's formation and implementation of renewable energy policies.

Department of Trade and Industry (DTI)

The Department of Trade and Industry's mandate is generally focused around the inclusive and equitable economic development of South Africa. This mandate includes the priorities of building global competitiveness in industry, diversifying industrial activities, creating an environment conducive to foreign investment, increasing local ownership in industry, and, finally, creating employment opportunities.

While the DTI played a minor role in the actual formulation of RE IPPPP, the department played an important role in building the coalition necessary to implement the programme. Job creation, industrial diversification, and local participation in renewable energies had to be a key aspect of the programme in order to gain widespread support within not only government, but the consumer base as a whole. These factors are integrated directly into the RE IPPPP selection criteria. Project developers have to demonstrate minimum levels (subject to increase for each subsequent bidding round) of job creation, local content, local ownership, local enterprise development, and socioeconomic development projects targeted towards the communities that are directly impacted by the construction of wind and solar infrastructure. Points are awarded to the project developers based on the relative levels of impact their economic development plans will make above and beyond the minimum threshold levels.

Gaining DTI support was an important component of the political buy-in process to ensure a green light from government for the process to continue. However, continued support of the DTI is contingent upon whether or not the local economic development components (Box 5.4 in Section 5.4.4) will deliver on their promised results. The potential challenges facing the implementation of these development objectives are discussed at length in Section 6.3.

The Presidency

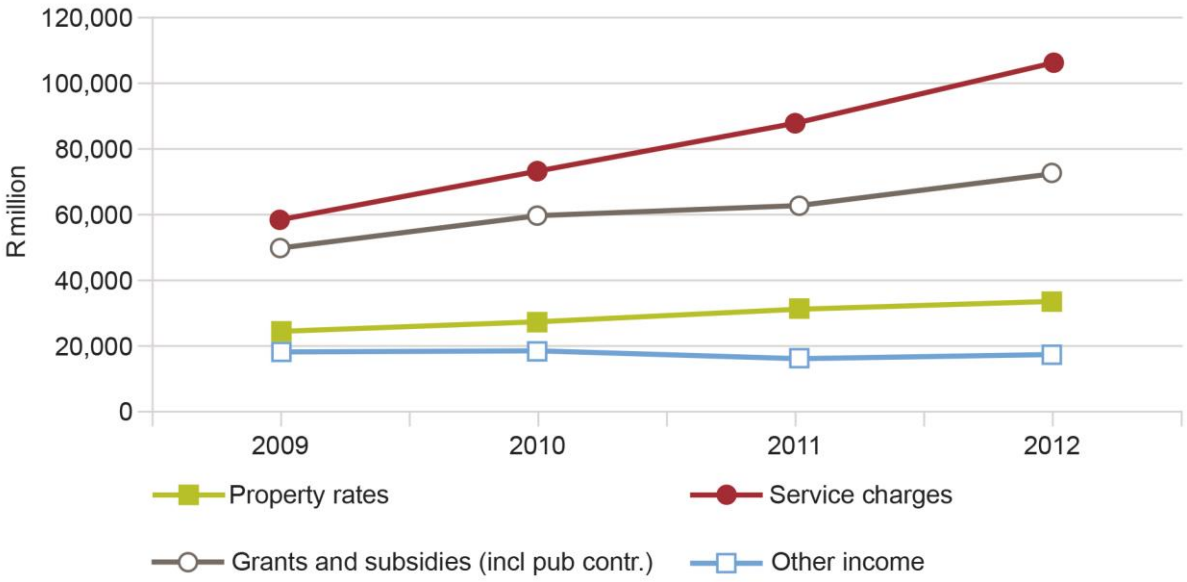
The office of the president has had a complex and contradictory position with regard to renewable energy and conventional coal-based electricity supply. On the one hand, especially under Zuma's Presidency, it has been conspicuously absent in providing the necessary political will and direction for driving an alternative renewable strategy. On the other hand, during 2014, Zuma's influence has been evident behind the scenes in altering the political economy dynamics in three conspicuous ways: firstly, in prioritising nuclear energy options, and supporting secret negotiations, especially with the Russian government, around investment to build nuclear power stations; secondly, in shuffling his cabinet in his second term to place a new minister at the head of the DoE who is more compliant in supporting nuclear electricity generation; and thirdly, in creating a new coalition between the Presidency and the DoE focused on signing nuclear power agreements with certain foreign governments, the Russians in particular. What lies behind this presidential intervention is somewhat opaque but, as documented above, there are numerous public and private speculations and allegations of individual and political party benefit from such deals.

Local government

Municipalities play a key role in the distribution of electricity, supplying 40 per cent of total electricity sold to 60 per cent of ESKOM's customer base. ESKOM directly supplies 60 per cent of electricity volumes to 40 per cent of the total customer base (GIZ 2013). Most of these municipalities consistently struggle with securing the revenue necessary to fund the services and development objectives articulated in South Africa's National Development Plan and New Growth Path (*ibid.*).

Figure 4.1 illustrates that the revenue gained from property taxes and other sources of municipal income has remained static over the years, while reliance on service charges and national grants and subsidies has steadily increased from 2009 to 2012. Electricity service charges have become a main source of income for municipalities (60 per cent), with mark-ups ranging from 20 per cent to 150 per cent (GIZ 2013). Electricity tariff increases across the board, as dictated by NERSA, have created a negative backlash from industries and households in response to the municipality mark-ups, which significantly exacerbate the burden of rising electricity costs (see Kaplan, Morris and Martin 2014 for a discussion of municipal electricity mark-ups in the Eastern Cape Province).

Figure 4.1 Municipal income by type



Source: Adapted from GIZ (2013).

Municipality support for renewable energies is limited. Their main priority is to limit further increases in electricity tariffs in order to maintain the mark-ups necessary to continue their operations without further irritating their residents. If they view the entrance of renewable energies as a tax on the consumer, raising tariffs even further as ESKOM is forced to expand its distribution network to accommodate IPPs, then it is not in their interest to support such a programme. Ultimately, their influence within the system is minimal – they are subject to buy the electricity that ESKOM supplies at the rates that NERSA determines – and they play little role within the realm of renewable energy decision-making.

National Energy Regulator of South Africa (NERSA)

NERSA is South Africa's electricity regulator, ultimately responsible for determining electricity tariffs; granting licences for electricity generation and overseeing its distribution and transmission; and controlling electricity import and export. In addition to these functions, the Energy Regulation Act defined NERSA's mandate as the protector and enforcer of the national electricity policy framework. It stipulated that NERSA is to act within the guidelines of the forthcoming IRP 2010, and all subsequent national energy policies.

NERSA's role as the enforcer of national policy has led to misinterpretations as to its role and motivations in policymaking and implementation, especially with respect to its involvement in renewable energy policy. Due to NERSA's initial leadership in the development of South Africa's renewable energy feed-in tariff (REFIT), NERSA has often been misconstrued as a proactive, interventionist body, pushing a renewable energy agenda (Baker *et al.* 2014). While it is the case that NERSA is an independent body that often acts in opposition to

ESKOM's wishes (e.g. NERSA's refusal to grant the full amount of ESKOM's tariff increase applications), NERSA is fundamentally a reactive body of government, giving it very little power and influence over actual energy sector interventions.[18]

NERSA's main role and primary motivation is the regulation of energy prices. In this respect, like government, it is caught between two conflicting sets of demands. On the one hand there is serious pressure on the body from government, industry, and household consumers to maintain low prices. On the other, ESKOM has been pushing for radical and steep price increases to fund its capital finance programme and ensure energy security. NERSA's priority is therefore to strike a balance between maintaining affordable prices, while still ensuring enough revenue for ESKOM to provide new generation capacity to secure future energy supply. This negotiation between two conflicting priorities makes it difficult to pinpoint NERSA's main motivation at any point in time. NERSA's recognition of IPPs as an efficient mechanism for quickly increasing electricity generation capacity as a means for securing energy supply and its acceptance of the ability of the IPPs through the competitive bidding process to drive renewable electricity unit prices downwards have ensured its latecomer support of the RE IPPPP programme.

4.1.2 Business – public sector parastatals and private sector

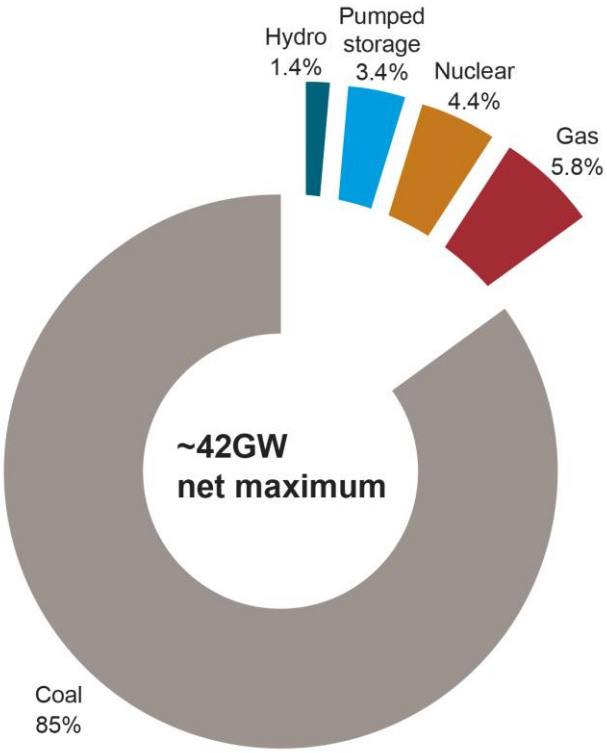
ESKOM

ESKOM, South Africa's vertically integrated state-owned energy utility, holds monopoly power over the electricity value chain linkages of generation, transmission, and distribution of electricity. The utility currently generates 95 per cent of the country's electricity (as of 2012, the maximum generation capacity was 41,647MW), 85 per cent of which is generated by coal-fired power plants (Figure 4.2) (DoE 2014). New generation capacity from the construction of two new coal-fired power plants – Medupi and Kusile – will add an additional 4,764MW and 4,800MW respectively (ESKOM 2011).

ESKOM has monopoly control over access to and exit from the transmission backbone. ESKOM does not control the price of purchasing electricity from power suppliers as this is set externally, but it exercises crucial monopoly control over how access occurs. This involves a series of technical issues as power in the main transmission backbone is moved at high voltage while entry and exit occur at lower voltages. ESKOM controls entry to the transmission grid from electricity generation points (coal, nuclear power stations and renewable energy IPPs). In the case of power stations these are usually constructed close to coal mining sources and ESKOM has constructed access substations in the immediate vicinity. Theoretically, once IPPs win their competitive bid they have access to the transmission grid. However, an IPP may not be geographically close to a substation and this complicates issues for ESKOM, since it either requires building a substation access point or making alternative technical arrangements. Although ESKOM therefore has technical reasons for delaying the access process, they also provide it with the possibility of finding numerous ways of obstructing the linkages of IPPs to the transmission grid.

[18] Interview, Hilton Trollip (independent expert).

Figure 4.2 Breakdown of ESKOM's maximum generation capacity



Source: Adapted from ESKOM (2012).

In terms of the distribution network, ESKOM also has monopoly control over exit points from the transmission grid. It supplies electricity both directly (60 per cent) to consumers and indirectly (40 per cent) through municipalities (the municipalities then redistribute electricity to their respective consumer base – an arrangement discussed later in this section) (GIZ 2013: 30). Electricity unit tariffs are determined by NERSA, based on a multi-year price determination (MYPD) process. ESKOM can apply for a tariff adjustment, as it did in 2008 and the years following in response to South Africa's energy crisis, but NERSA has the ultimate power over whether, and to what extent, tariff increases are implemented.

ESKOM's mandate is dual in nature. As a parastatal public enterprise it falls under the oversight responsibility of the DPE, but, as the electricity provider, it purportedly falls under the policy direction of the DoE – supposedly answering to two ministries with very different objectives. This conflicting duality is evident in ESKOM's two principal functions: (1) to provide affordable and reliable electricity to all South African businesses and households; and (2) to operate as an 'engine of development', catalysing economic growth, industrial expansion, and job creation.[19] The contradiction between these two mandates is key to understanding ESKOM's expressed decision-making processes, widely acknowledged inefficiencies in operation and the manner in which it uses this mandate in public pronouncements to defend its control over the entire electricity value chain.

The internal structure of ESKOM is complex due to the multitude of its value chain responsibilities – as one interviewee stated, ESKOM is essentially three businesses located within one entity.[20] The majority of its turnover is comprised of generation activities (60 per cent), followed by distribution (30 per cent) and transmission (10 per cent).[21]

[19] Portfolio Committee on Energy (PCE) meeting at Parliament, 29 July 2014, ESKOM chairperson.
[20] Interview, Ferdi Kruger (ESKOM).
[21] Interview, Ferdi Kruger (ESKOM).

The reliance on generation revenue within ESKOM has major implications with regard to (1) the utility's internal governance structure and (2) the utility's priorities.

Governance: The emphasis on generation turnover within ESKOM has translated to an asymmetrical internal power structure within the utility. Personnel within the generation sector tend to dominate governance structures within ESKOM's larger corporate framework. Furthermore, because they capture the majority of turnover, they are also able to attract personnel with high capacities. This results in the following: (1) generation priorities (i.e. coal-based generation priorities) are elevated above the needs of the transmission and distribution sectors; and (2) the knowledge and capacities specific to the generation sector are carried through to higher levels of decision-making. Consequently, ESKOM lacks a holistic knowledge base inclusive of distribution and transmission realities at the top level of its governance structure, resulting in the misalignment (and subsequent inefficiencies) between generation, transmission and distribution planning.[22]

The governance issue is further complicated by the government's reliance on ESKOM for energy-related policymaking. Due to the high level of technical capacity within ESKOM, its personnel are often 'seconded to government bodies and subcommittees, which often rely on [ESKOM] rather than internal resources for technical expertise' (Pegels 2014: 13). This allows for the asymmetrical power structure and knowledge base (one heavily weighted towards coal generation) to be filtered into other realms of energy policymaking – realms that should ideally operate independently of ESKOM's influence.

Priorities: Electricity generation is the driving force behind ESKOM's actions. In order to maintain revenues, ESKOM must necessarily maintain its hold over South Africa's electricity generation. This means that any attempt to introduce competition (e.g. IPPs) into the energy market will be opposed by ESKOM in order to keep its majority market share – an act of rational self-preservation. This opposition is not done overtly but, although ESKOM appears to be compliant, this is merely a facade. ESKOM will not directly oppose any energy policy that threatens to dismantle its monopoly, but will instead sit on its hands until the policy eventually dissipates (see Section 5 and Section 6 in the analytic narrative).[23] This 'wait and see' strategy is highly effective given the amount of political weight ESKOM carries behind it through its close ties with African National Congress (ANC) political leaders and the EIUG. Generally speaking, if ESKOM does not explicitly support a policy, the policy will struggle to gain the political backing necessary to see it through to implementation. However, there is substantial evidence that this pattern is changing. The successful formulation and implementation of RE IPPPP, despite ESKOM's absence from the process, holds great promise for the future of independent energy policymaking in South Africa. As long as renewable energies are not perceived to threaten the position of ESKOM within the market – that is, as long as coal continues to be the dominant source of energy generation in South Africa – or as long as ESKOM misjudges the likely effectiveness of a particular renewable energy policy (as it did in the RE IPPPP) and therefore ignores it, then renewable energy strategies are likely to have a greater chance of being successful.

Renewable energy Independent Power Producers (IPPs)

South Africa's RE IPPPP programme, over three bidding rounds, has produced 64 renewable energy IPPs with over 100 shareholding entities, generating a commitment of roughly US$14bn in investment in wind, PV, CSP, small hydro, and biomass projects (Eberhard *et al.* 2014). The majority of projects in Rounds 1 through 3 have been financed through project finance (although Round 3 witnessed a growing share of corporate financing) with debt funding sourced from commercial banks, development finance institutions, and pension and insurance funds – 86 per cent of which is sourced from within South Africa. This

[22] Interview, Ferdi Kruger (ESKOM).
[23] Interview, Anton Eberhard (independent expert).

level of interest, and subsequent success of RE IPPPP in harnessing that interest, has placed South Africa within the top ten countries in terms of global renewable energy investment (*ibid.*).

The influence and priorities of the IPPs operating in South Africa's RE IPPPP are representative of both domestic and international renewable energy private sector actors. These actors' ultimate goal is profit and maintaining competitiveness in the market.

The primary private sector drivers in South Africa's case have been international wind and solar developers, and their associated international wind and solar sector lobbyists. The global economic crisis that began in 2008 negatively affected the renewable energy market in developed countries, primarily in Europe, a market that was already becoming saturated. This downturn provided the impetus for the private sector to look elsewhere – towards emerging economies, like South Africa and Brazil – to take advantage of opportunities presented by the prospect of large-scale national generation capacity programmes in wind and solar.

The influence of the private sector and the international wind and solar lobby in the implementation of South Africa's IPP programme was very significant. Encouraged by the initial development phases of NERSA's feed-in tariff programme, international wind and solar developers began planning projects and lobbying for the programme's approval.[24] When it became apparent that the feed-in tariff programme was losing traction within government (described in detail in Section 6), the private sector swiftly realigned their support behind the development of RE IPPPP and played an integral role in its subsequent implementation. The amount of demonstrated private funding and technical experience that the private sector was willing to invest in South Africa became too large, and too public, to turn down.[25]

The influence of a committed and vocal private sector created a highly pressurised situation for government: RE IPPPP had to work, and work well, or risk losing international confidence in South Africa as a viable and reliable renewable energy investment market.

Energy Intensive Users Group (EIUG)

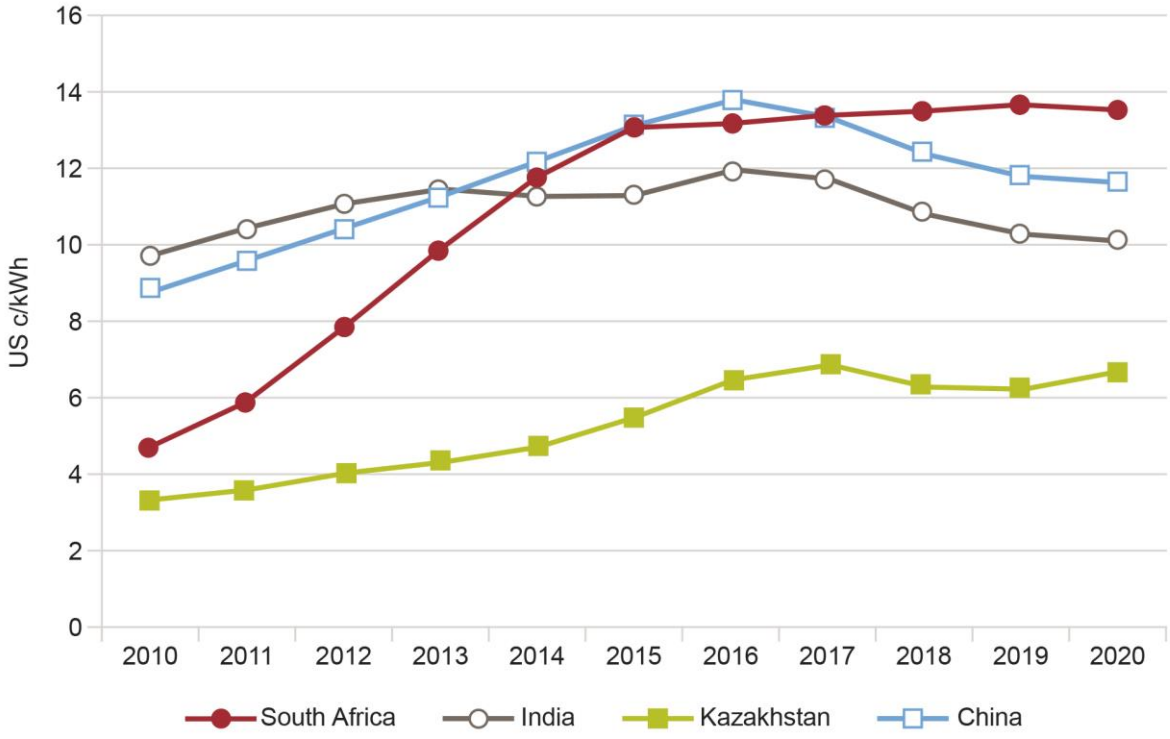
The Energy Intensive Users Group is a lobbying body for the largest industrial electricity users in South Africa. The vast majority of its membership is located in the mining (40 per cent) and manufacturing (46 per cent) sectors.[26] Comprising 38 companies in total, the EIUG consumes more than 100GWh per year, roughly 44 per cent of total electricity use in the country (GIZ 2013; Burton 2011). In the past, many of these companies, including BHP Billiton and Anglo American, had long-term power contracts with ESKOM. ESKOM's sale revenue was based on commodity prices and exchange rates, effectively allowing the companies to buy electricity at a much lower rate than the cost of production. These deals were made when energy supply was abundant and cheap in South Africa, but are no longer financially viable for the utility to maintain. Only BHP Billiton's contract remains intact, with the rest of the EIUG paying ESKOM's megaflex rates.

The EIUG is charged with representing the interests of big industry in government. Its level of influence in terms of key relationships with government officials, close ties with the ANC and ability to impact policy formation and implementation is substantial. Historically, although not necessarily so in the current era, the EIUG and ESKOM have played a role in lobbying for mining-centric growth strategies (Pegels 2014).

[24] Interview, Hilton Trollip (independent expert).
[25] This point was made repeatedly in different ways in the following interviews of independent experts – Anton Eberhard; Jon Kornik; Belynda Petrie; Hilton Trollip.
[26] www.eiug.org.za/about/membership/ (accessed 27 January 2015).

The EIUG's one driving priority has been and will continue to be ensuring a reliable energy supply so that these companies can retain the low electricity prices upon which they have built their global competitiveness. In the past, maintaining low electricity prices meant aligning with ESKOM. However, ESKOM's new generation expansion programme and the subsequent inefficiencies that have accompanied that process (as evidenced in the delays and costs associated with constructing Medupi and Kusile) have translated to increasing electricity tariffs. Figure 4.3, presented by EIUG at a meeting of the Technical Task Team charged with formulating the IRP, illustrates the body's growing concern with the effect of these price hikes on South Africa's global competitiveness. Furthermore, rolling blackouts during the 2008 energy crisis and subsequent periods of load-shedding in the years that followed, demonstrated ESKOM's inability to guarantee a consistent supply of electricity.

Figure 4.3 EIUG presentation on South Africa's competitiveness



Source: Adapted from Burton (2011).

In the future, ESKOM may not be in a position to continue to offer the cheapest or most reliable energy supply in South Africa. Economies of scale and technological advancements have led to declining production costs for renewable energies and a cost-based case for renewables is strengthened further when taking into account the externalised costs of traditional fossil fuels (i.e. costs of environmental degradation and climate change) (BWE 2012). Shifts in electricity costs will thus affect the EIUG's relationship with ESKOM.

The EIUG will continue to place its support behind any system that can guarantee the most reliable electricity at the lowest price. This system may take the shape of higher private sector participation in energy generation through expanded IPP programmes across multiple technologies, including coal and renewable energy. This future system may also involve intensive energy users building their own coal-fired plants, at a cost lower than ESKOM, to supply electricity for their own operations with the ability to sell excess generation back into the national grid through a future co-generation feed-in programme.[27]

[27] Interview, Anton Eberhard (independent expert).

4.1.3 Civil society

Labour unions

The labour union stakeholders – primarily the Congress of South African Trade Unions (COSATU) and the National Union of Metalworkers of South Africa (NUMSA) – played a role in influencing energy policy and the energy sector institutional framework during the sector's period of transition in the late 1990s and early 2000s. The 1998 energy White Paper's attempt to separate ESKOM's functions into separate operating entities and open up the market to private sector generators was strongly opposed by organised labour. The period following the 1998 White Paper was one of misalignment between policymaking and policy implementation – a symptom of a country that was in the midst of a larger ideological debate over whether the private sector or the public sector should be the driving force in economic development. Organised labour, viewing the public sector as the preferred mechanism for sustained job creation and equitable distribution of development benefits, positioned itself on the side of state-owned enterprise-led development in South Africa.

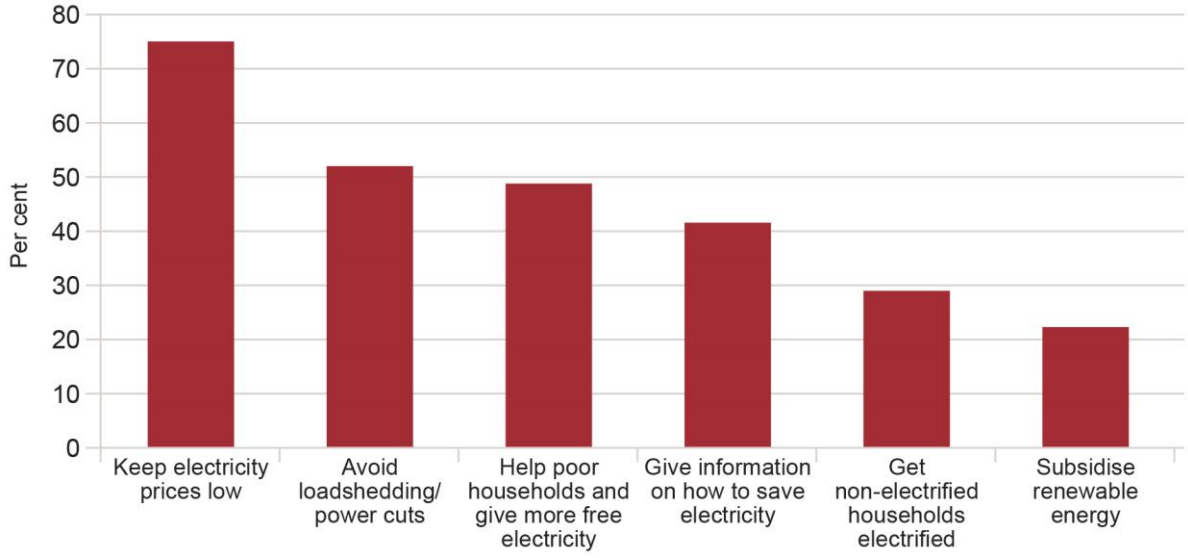
South African labour unions have historically supported ESKOM as a public sector corporation. However, this stance has become less clear in recent years in response to the largely private sector-led development of the renewable energy industry. Organised labour's economic objectives are maintaining employment levels, supporting conditions of employment, and growing union membership. Publicly, in policy statements and speeches, unions such as NUMSA support the growth of the renewable energy sector as a means for job creation, encouraging 'green growth' and 'green jobs' (International Trade Union Confederation 2011). In reality, their ideological stance has not changed. It is built on the essential components of state-owned providers (which NUMSA calls 'socially owned') operating to facilitate employment and provide public goods to reduce inequality. Hence, as long as private sector participation in renewable energy does not affect the position of ESKOM as a public entity with a broad developmental mandate, the unions will not oppose the expansion of the renewable energy sector, although they would prefer this was based on a greater public sector role (NUMSA 2012, 2013).

Communities and households

At the bottom of this electricity value chain are the household consumers. They are the least influential actor in the decision-making process, but are ultimately the most affected by process outcomes. South Africa's history of extremely low electricity prices has resulted in industry and household consumers alike constructing their operations around the assumption that electricity rates will remain cheap. Rising electricity prices have resulted in anger and frustration among the populace. However, household consumers are not organised around this issue, and despite the public outcry that occasions a demand for a price increase from ESKOM, this does not translate into political struggles at the local or national government election level. The impact is hence indirect and not directly felt by government or ESKOM.

In contrast to consumers in countries like Germany with highly developed renewable energy markets, these concerns do not translate into 'green' political and organisational agendas. South African consumers do not rate environmental and climate change concerns as a top priority. Moreover, their concerns about electricity supply, load-shedding resulting in ESKOM intermittently imposing rolling blackouts, and escalating prices, no matter how vociferously expressed in the media, are politically diffused and instead find expression in a variety of dispersed outlets. Pegels (2014) cites a recent survey conducted by the DoE in 2012, the results of which show that 75 per cent of the population would support the government's prioritisation of low electricity prices, while only 22 per cent would support the prioritisation of renewable energy subsidies, ranking last amongst the list of possible priorities (Figure 4.4).

Figure 4.4 Electricity policy preferences of South Africans



Source: Adapted from DoE (2012: 79).

Because electricity price is the primary concern of the population, the average consumer's 'willingness to pay' for the added 'tax' of a renewable energy programme is minimal. This concern – although driven by more powerful industrial players with similar priorities – played a large role in the ultimate decision of implementing a competitive bidding programme as opposed to a renewable energy feed-in tariff. It also played a subsequent role in the design of RE IPPPP. The selection criteria were crafted to include baseline thresholds for job creation, local economic development, and local ownership in order to win the support of the consumer base (and the more influential support of the DTI), and particularly the communities directly affected by the wind and solar farm infrastructural development. The economic development components of RE IPPPP have yet to show conclusive results and face many challenges (discussed in further detail in Section 6.3). Whether they prove to be successful in delivering benefits and gaining the support of local communities remains to be seen and is an important topic for future research.

4.2 Analysis of stakeholder priorities and level of influence[28]

The purpose of this section is to understand the basis for the various stakeholders' involvement in renewable energy. It provides an analytic framework for analysing and mapping the priorities and levels of influence of the various actors and institutions, situating each stakeholder within the framework so as to locate the critical driving forces facilitating or constraining climate change policies. In many senses it is the static core of the project and the foundation for the dynamic processes discussed in the analytic narrative of periodisation that follows.

Figure 4.5 illustrates these two dimensions – priority and influence – within one graphic. The x axis specifies what these actors and institutions are primarily concerned with, and driven by – i.e. climate change, energy security, monopoly value chain control, final consumer electricity prices, industrial diversification and job creation, profit and competitiveness. The y axis evaluates each stakeholder's influence according to high, medium, or low levels of

[28] The source for the figures on 'influence' and 'priorities' (Figures 4.5 and 7.1) is based on the authors' judgements regarding the political economy dynamics prevalent within the value chain and the institutional stakeholders. It is derived from the authors' research – various expert interviews and reading of the secondary literature. The levels of influence and priority were a focus of discussion within expert interviews. The final representation and weight accorded was 'tested' so to make sure that it did not contain gross misrepresentations. However, the authors take sole responsibility for the graphic interpretation and presentation of these political economy dynamics.

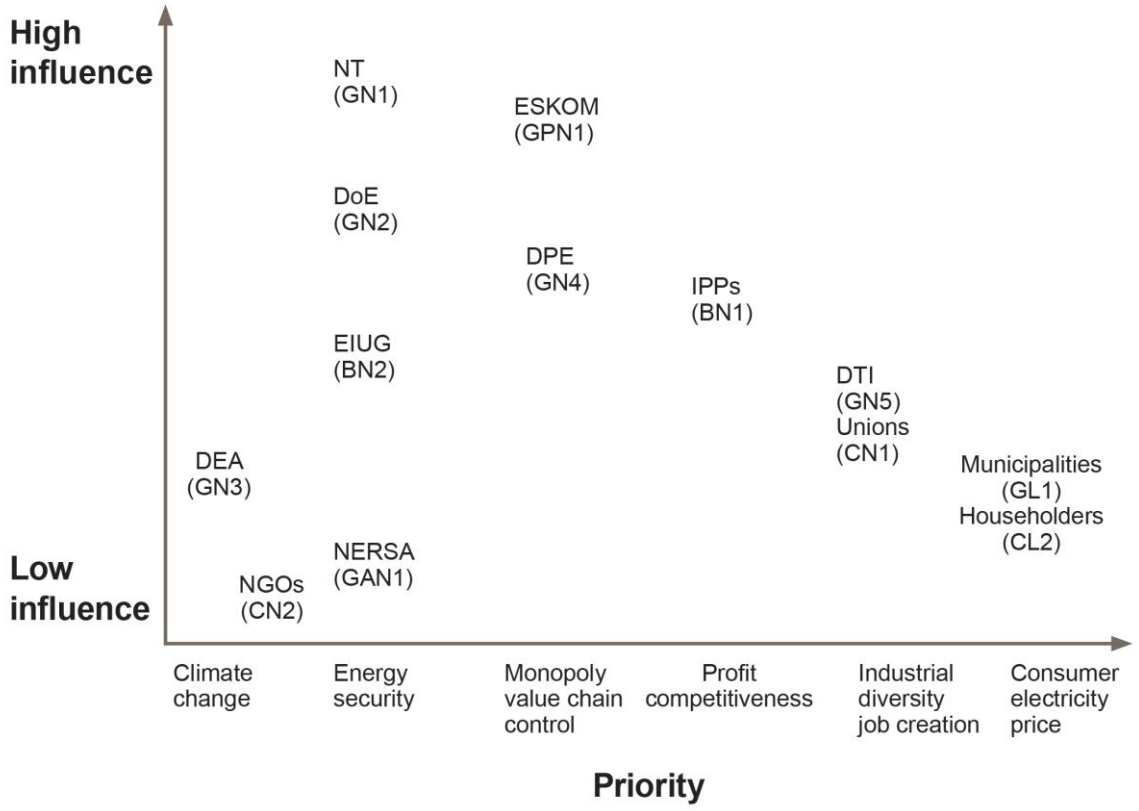
influence with regard to their ability to facilitate or constrain climate change policies. Each actor is designated by their name, as well as in brackets an appellation specifying institutional location, and sphere of operation. Institutional location is represented by (G) for within or accountable to government, (B) private sector business, and (C) for actors within civil society. In addition, government is further broken into an independent agency responsible to government departments (GA) for NERSA, and (GP) for a parastatal state-owned enterprise with government as the sole shareholder (ESKOM). Sphere of operation is represented by national (N) or local (L). The number at the end of the appellation simply differentiates each stakeholder within each category.

In order to locate the stakeholders within the framework it is necessary to limit the scope of the policy issues at hand. For the purpose of this report, the policy focus will be on South Africa's renewable energy policies, specifically the creation and implementation of South Africa's current renewable energy IPP programme. In other words, it is focused on the current stage within the periodisation framework analysed in Section 5. The relative levels of influence are determined according to the demonstrated level of power that each stakeholder has to 'make or break' the programme – whether the stakeholders act on that capacity is another question. For example, ESKOM has a high level of influence over whether RE IPPPP is successful as it controls the distribution and transmission networks necessary to connect the IPPs to the national grid. However, whether or not ESKOM exerts that influence to facilitate or obstruct the implementation of RE IPPPP is subject to a complex set of factors that cannot be represented in the graphic.

This example illustrates the inherent shortcomings of any attempt to translate a dynamic and complex process within the confines of a static representation. While Figure 4.5 is useful to give a generalised overview of the manner in which South Africa's renewable energy policy was formulated and implemented, it has its limitations. Each stakeholder is motivated by many, sometimes overlapping priorities, which often fluctuate in response to a set of hard-to-predict variables (timing, internal leadership, external pressure, etc). The same holds true for levels of influence, which may vary at any time given the contextual realities of the situation. Finally the representation in Figure 4.5 is bounded by time frames contained in any periodisation and is hence specific to the latest period under discussion. As it stands, the recent intervention of the Presidency in pushing the nuclear option for its own interests may well shift the political economy parameters of influence and policy priority in the coming years.

What can be gained from this representation are the general observations which follow and which serve to form a foundation of understanding upon which a more nuanced analysis surrounding South Africa's renewable energy policies can be built in the following section.

Figure 4.5 Level of influence and policy priority of stakeholders



Source: Authors' own.

The following is apparent from Figure 4.5:

- Climate change mitigation is not a major motivating priority of the key stakeholders, especially those with high levels of influence.
- The primary driving force of government and business is to ensure reliable energy supply. This is a function of the crisis in electricity supply that has plagued the economy since the turn of the millennium. This maintains ESKOM's position of relative influence, since no actor/institution is going to rock the boat and threaten energy security, but it also opens space to clip its wings for those pushing for renewable energy as additional sources of electricity supply.
- A secondary driver is the need to ameliorate the escalating cost of electricity for businesses and households, which is integral to, and a direct consequence of, the energy security crisis.
- Although the price of electricity for final consumers is a major issue, the level of influence they have, especially householders and local government, is limited.
- Big business has greater influence than householders but its major concern in this respect is to ensure stable electricity supply. This is, however, not to underplay the impact of raised prices on its operational abilities.
- While mandated with meeting South Africa's energy demands, ESKOM's (and by association the DPE's) foremost concern is self-preservation within the electricity value chain – i.e. maintaining its monopoly hold on the generation, transmission and distribution activities in South Africa.
- Given the need to maintain energy security, in terms of the ability to exercise influence, there is an intricate balancing act taking place between the major stakeholders over shoring up ESKOM and developing IPPs as an additional form of renewable energy supply.

5 Periodisation of the analytic narrative

5.1 Context – historical relationship between ESKOM, coal and large industry

Apartheid-era (pre-1994) energy policy was based on providing low-cost energy supplies to the mining and primary industries and energy security for the apartheid state. This was reflected in the distribution of electricity supply. Industry and mining consumed 60 per cent of electricity, whilst residential consumers accounted for only 16–18 per cent. This historical foundation created a path dependency ensuring that industrial unit prices for electricity are cheaper than average residential prices. For example, a low price deal between ESKOM and the Australian mining corporation BHP Billiton estimates the price paid by the corporation at about 350 per cent less than low-income residential customers in 2008/09 and less than half of ESKOM's reported production price in the period (Greenpeace Africa 2012). Moreover, in 2011, mining and industry paid an average of 36.2c/kWh while between 4 to 5 million direct residential customers paid 66.4c/kWh (Greenpeace Africa 2012).[29]

5.2 Building a policy framework and ESKOM's role in flux: 1998–2005

By the late 1990s, three trends coalesced to provide the political impetus for reform of the energy sector: (1) the global 'intellectual momentum' behind democratisation and privatisation of energy generation; (2) the post-apartheid pressure to address the vastly unequal access to electricity between white and black communities; and (3) the need to improve the efficiency of state-owned enterprises (SOEs) through corporatisation, governance reform, taxation reform, and regulation and monitoring mechanisms (Eberhard 2005).

5.2.1 The formation of the White Paper on Energy Policy

In response to these pressures, the government published the *White Paper on Energy Policy* in December 1998. The aim of the White Paper was to incentivise private sector competition in the energy sector, encouraging private firms building and connecting coal-fired power stations to the grid (DME 1998). This also provided the South African government with a rationale for breaking up ESKOM's monopoly over electricity generation, transmission and distribution.

The White Paper was supported by South African industrial and residential consumers alike, who hoped that competition in the electricity sector would help maintain low energy prices. In principle, ESKOM also supported the document, but was wary of any further efforts to eat away at its hold on electricity generation. In practice, the utility fought against any attempt to unbundle its activities into separate entities.[30] In an attempt to stall moves towards privatisation, ESKOM suggested the establishment of a private equity partner under the umbrella of ESKOM Holdings. ESKOM also suggested placing its transmission and distribution activities into subsidiary entities within ESKOM Holdings – all attempts to maintain control over the entire energy system (Eberhard 2005).

[29] All references to cents per kilowatt are Rand cents unless otherwise stated.
[30] Interviews, Belynda Petrie (independent expert), Ferdi Kruger (ESKOM).

5.2.2 The restructuring of ESKOM

The White Paper was followed in April 2000 by a World Bank-sponsored ministerial workshop on electricity supply industry reform. The end result of the workshop, which included international experts, representatives from relevant ministries, as well as ESKOM and NERSA (then NER), was a draft policy paper. ESKOM vehemently opposed several elements of the draft – most significantly, the recommendation to limit ESKOM's share of electricity generation to 35 per cent – and lobbied hard against the proposed reforms (DME 2000). The result was a partially watered down version of the draft, published in 2001, which proposed the following:

- ESKOM's share of the market would be maintained at no less than 70 per cent;
- Vertical unbundling would occur by initially creating a separate transmission company under ESKOM Holdings that would later operate independently of the utility;
- A multi-market model would be used to reconfigure the electricity market framework – this system would include a variety of platforms and independent government mechanisms;
- A regulatory framework would be established to allow for the entrance of independent power producers (IPPs), allowing for the diversification of the market and a mechanism for private sector investment.

In August 2000, the DPE published *A Policy Framework: An Accelerated Agenda towards the Restructuring of State-owned Enterprises*, which targeted ESKOM, among other SOEs, in order to clarify its mandate and relationship to the state. The intention of the DPE was to corporatise ESKOM, create different entities within ESKOM for transmission, distribution and generation, as well as to form different companies within ESKOM's generation entity to facilitate internal competition before the entrance of the private sector. This corporatisation process would have the effect of starting the process of creating separate businesses within ESKOM – each with their own accounting, costing and profit structure – which would lead in the longer term to an unbundling of the corporation and a break-up of its monopoly hold over the value chain. This framework reiterated the strategy proposed in both the energy White Paper and the subsequent Ministerial Workshop draft policy paper.

Government's attempt to chip away ESKOM's monopoly was further etched into the policy framework in 2001 when the cabinet ruled that ESKOM was no longer allowed to build further generation capacity.

The effort to restructure ESKOM was strongly opposed by organised labour (COSATU), arguing that the corporatisation of ESKOM would place upward pressure on electricity prices and the move towards privatisation would impede its developmental function and place employment at risk (Tinto 2002, cited in Eberhard 2005). In response to COSATU's opposition, the ESKOM Conversion Bill in 2001 was amended to include a clause protecting ESKOM's development mandate and labour force. Opposition continued into 2002 when COSATU held a national strike against the privatisation of ESKOM and other SOEs. This prompted a fierce debate in government and further delayed any plans for restructuring.

The role that organised labour played in delaying ESKOM's restructuring is significant. Labour unions have played, and continue to play, an important role in maintaining ESKOM's incumbent position. Their role in the current energy sector debates, especially those surrounding renewable energy generation, has not been adequately addressed in the existing literature. The dynamics of how their position on privatisation and diversification of the energy supply has persisted or evolved given the current period of energy transition has two dimensions: (a) formal statements and policy positions on renewable energy, and (b) actual involvement in any processes and coalitions. Generally speaking, despite relatively positive formal statements and policy positions, the unions have been primarily concerned

with maintaining existing levels of employment and hence membership. As long as ESKOM remained a public entity with a broad mandate, and issues of privatisation in the policy discourse were not on the agenda, the union movement in reality focused its attention and activities elsewhere.

In 2002, when the ESKOM Conversion Act was finalised, ESKOM was transformed into a public enterprise with the government as sole shareholder. Its new mandate attempted to balance the utility's role as (1) a provider of affordable electricity and (2) an 'engine of development'.[31] It is important to note that ESKOM continues to face the pressures of this conflicting dual mandate. This contradiction is key to understanding the motive behind ESKOM's poor decision-making, both in the past and in the present.

5.2.3 Restructuring abandoned, ESKOM's role solidified

2004 marked a shift in government policy as a result of two important events. First, it became clear that South Africa was quickly depleting its energy reserve margin. Once this emerged in the public sphere, government came under heavy political pressure from industry, organised labour, and residential consumers to secure energy supply and maintain the low prices that they had become accustomed to. Second, the 2004 elections brought in a new minister of public enterprises, whose platform was based on a political consensus that SOEs should be the driving force in infrastructure investment as a means to accelerated economic growth and job creation. He was clearly opposed to any attempt to dilute ESKOM's monopoly hold over the value chain and the drive to separate businesses within its corporate structure which had developed its own dynamic towards an internal market. The new minister ensured that ESKOM was suddenly awash with posters declaring 'One ESKOM' which clearly stopped this dynamic in its tracks.[32] The minister's stance was indicative of a broader ideological shift in the developing world that SOEs should play a key role in government-led economic development. Eberhard (2005: 36) describes this shift as a response to a 'decade of market-friendly reforms' that resulted in 'inadequate economic growth and job creation, and persistent poverty among a significant proportion of the population'. Given these realities, the state adopted a public sector-led development approach predicated on the key role of SOEs as drivers of economic growth and job creation – a shift that left little room for the introduction of privatisation and competition into the energy sector.

A survey of relevant stakeholders conducted by NERSA (then NER) in 2004 revealed that electricity users were seriously concerned about the reliability of electricity supply (Eberhard 2005). They feared that policy indecision was preventing essential decisions from being made about expansion of the distribution network and generation capacity. These delays would have deleterious effects on industry in the near future. Industry's previous support for competition and privatisation in the hopes of maintaining low energy prices waned, given the reality of urgent energy needs and a sluggish political process. Industrial support shifted to the incumbent power that could address their practical needs – i.e. ESKOM itself.

In 2004, under intense pressure to increase generation capacity quickly, government appointed a technical advisor to design a tender process to introduce IPP participation into the energy sector. The competitive multi-market model built into the energy policy framework just a few years prior was abandoned. Instead, IPPs would operate within the existing system with ESKOM as the single buyer.

The subsequent procurement programmes run by ESKOM were, unsurprisingly, unsuccessful. The final result was a few power purchase agreements with industrial generators for less than 400MW. Not one renewable energy PPA was licensed. Furthermore, electricity prices in South Africa at this time were the lowest in the world – up until as late as

[31] PCE meeting at Parliament, 29 July 2014, ESKOM chairperson.
[32] Interview, Ferdi Kruger (ESKOM).

2007, ESKOM's average electricity price was 2.5USc/kWh. As long as ESKOM's tariffs remained close to the marginal cost of production, IPPs could not possibly compete.

The slow progress towards building a successful IPP procurement framework and the little success in garnering private sector interest did not bode well for the future of the IPP programme. It quickly became clear that the introduction of IPPs to fill the 30 per cent share of generation allotted in the White Paper could not occur at a rate fast enough, nor at a scale large enough, to address the depleting reserve margin.

Faced with the reality of a looming energy crisis, energy security became the primary driver in decision-making processes. In June 2004, in a parliamentary speech, the Minister of Minerals and Energy conceded, 'the state has to put security of supply above all and above competition especially' (Eberhard 2007: 251). The ambitious restructuring plans were set aside. Government reneged on its 2001 ruling and authorised ESKOM to begin building power plants again, forced to turn to ESKOM as the 'supplier of last resort' (Eberhard 2005: 5316).

Box 5.1 Summary: building a policy framework and ESKOM's role in flux: 1998–2005

1. In 1998, international pressure to privatise and diversify, coupled with support from the private sector and residential consumers, allowed a policy framework to be put in place that sanctioned the restructuring of ESKOM and the entry of IPPs.
2. However, no regulatory framework for IPP procurement was established, rendering implementation of the new policies impossible.
3. Furthermore, electricity prices in South Africa during this period were among the lowest in the world, which ultimately deterred private sector actors from entering the market, especially those in renewable energy.
4. Faced with a looming energy crisis, government gave way to pressure from industry, unions, and voters to maintain the energy supply at low prices and abandoned its plans for restructuring ESKOM.
5. Any attempt within government to build a coalition of influence in favour of renewable energy supply melted away when faced with the energy security crisis and the power of the ESKOM/DPE lobby.
6. At the end of the period, ESKOM remained a vertically integrated monopoly power maintaining control over the value chain – the incumbent regime was preserved.
7. 'Policy developments ran ahead of the political process… There was thus never any strong political leadership to implement the proposed reforms' (Eberhard 2005: 5316). In short, policy formation was influenced and driven by private energy analysts and international consultants providing backing to government officials, but it lacked the political backing necessary for implementation.

5.3 Conflicting energy policies and political gridlock: 2005–2009

With the palpable and imminent energy crisis facing the country, plans to restructure ESKOM were put on hold. The result was that from 2005 to 2009 South Africa's energy policy, and stance towards renewable energy was confused and muddled.

5.3.1 ESKOM's expansion programme: Medupi and Kusile

In 2005, ESKOM began its generation expansion programme, moving forward with plans to build two very large new 'clean coal' power plants, Medupi and Kusile – each producing about 4,800MW. The total cost of the expansion was estimated to cost roughly US$50bn (although this number has since risen dramatically due to construction time delays), half of which was expected to be financed by ESKOM itself.[33]

[33] http://mg.co.za/article/2009-09-10-Eskom-crisis-will-spark-new-deal (accessed 27 January 2015).

In 2009, on the back of the 2008 electricity crisis, it became apparent that ESKOM was facing a funding crisis, unable to finance the massive expansion programme necessary to meet electricity demand (Van Gelder and Spaargaren 2010). That year, the National Treasury approved a US$9bn loan to ESKOM, in addition to a US$18.1bn debt guarantee, granted specifically for the funding of Medupi's construction. Even with the massive injection of government capital, ESKOM still faced a funding gap of roughly US$8.1bn.[34]

In 2010, the World Bank made the controversial decision to grant South Africa a US$3.75bn loan to help finance the construction of Medupi and Kusile (see Box 5.3). The World Bank justified the grant on the grounds that Medupi and Kusile would use 'clean' supercritical coal technology, and would require US$260m of the loan to be spent on two additional renewable energy projects, the Sere Wind Farm and Upington Solar Power Plant (Baker *et al.* 2014: 17).

Inefficiencies in the building of Medupi and Kusile have put the power plants more than two years behind schedule. In 2014, ESKOM started servicing the debt raised on the capacity building programme. However, neither Medupi, nor Kusile are currently producing any power, providing no revenue stream for ESKOM, and further compounding its funding crisis. In 2010, ESKOM received an 'equity injection' of roughly US$2bn from government to enable ESKOM to accelerate its international borrowing in order to continue to build Medupi and Kusile, as well as complete the necessary upgrade of the transmission network.[35] In April 2014, ESKOM went to government for a further US$5bn 'equity injection'. The Treasury has agreed to a further equity injection and R10bn is planned to be made available by June 2015.

5.3.2 The creation of NERSA

In November 2005, NERSA replaced NER as a result of the National Regulator Act of 2004. Its mandate and relationship with ESKOM was later defined in the Electricity Regulation Act (ERA) in 2006. Given the solidification of ESKOM's role in the previous period, the ERA is an important document that clearly spells out the governance structure of the energy sector. The ERA stipulates that ESKOM is the sole purchaser of generated electricity in South Africa, thereby maintaining its control over the electricity value chain – a ruling that essentially shut down any hope of privatisation of the market through a competitive power exchange model. This had major implications for any future IPP programmes.

The ERA redefined the role of NERSA as the protector and enforcer of the national electricity policy framework. It stipulated that NERSA was to act within the guidelines of the forthcoming Integrated Resource Plan (the first iteration of which was only released at the end of 2009). NERSA ultimately determines electricity tariffs; grants licences for the generation, distribution and transmission of electricity; and controls the import and export of electricity.

5.3.3 Energy crisis 2007/08

In 2007 and 2008, South Africa experienced rolling blackouts as a result of rising demand and inadequate generation capacity. ESKOM and government had been aware of the upcoming crisis for some time. The rapid electrification expansion programme initiated in the 1990s (which raised levels of household connectivity from 30 per cent in 1994 to 87 per cent in 2012) and steady growth of industry placed heavy strain on South Africa's generation capacity (DoE 2012). During this time of consistently increasing demand and decreasing reserve margins, investment in new generation capacity was delayed until 2004. The question that is raised is: why did this happen?

[34] http://mg.co.za/article/2009-09-10-Eskom-crisis-will-spark-new-deal (accessed 27 January 2015).
[35] www.engineeringnews.co.za/article/funding-gap-becomes-plan-as-sa-confirms-r20bn-Eskom-equity-injection-2010-11-11 (accessed 27 January 2015).

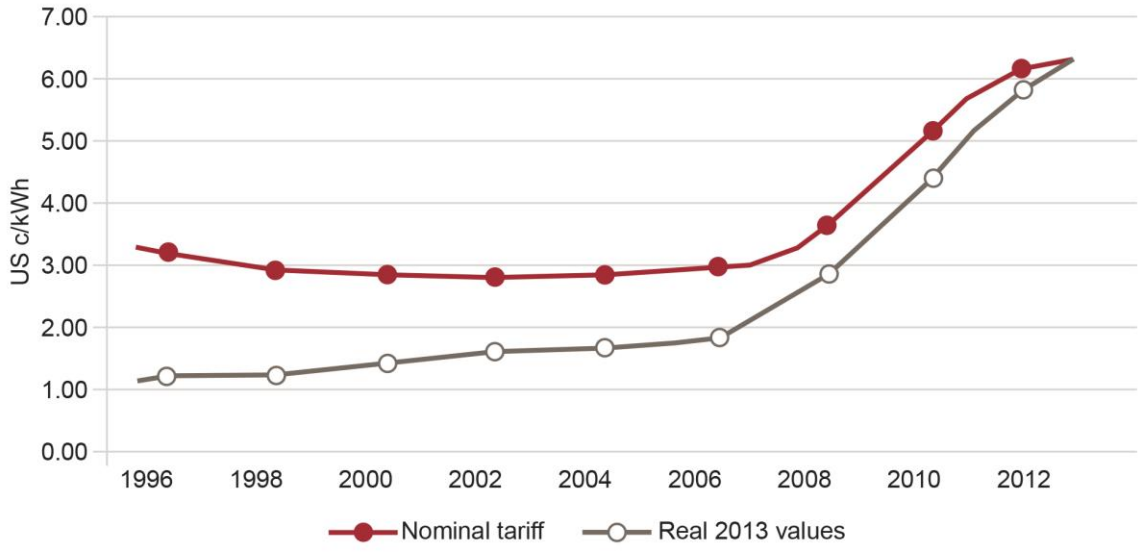
Pegels (2014), supported by information gained from our key expert interviews, cites ESKOM's dual mandate as the reason for this glaring misjudgment. The pressure on ESKOM to maintain low prices – that the consumers had become accustomed to and that industry had built their competitive advantage around – resulted in delayed decision-making when it became time to commit to the construction of new power stations, even in the face of decreasing reserves. By the time ESKOM and government made the decision to proceed with building plans, it was too late.

It is estimated that the blackouts ultimately cost the economy US$7.1bn (Swilling and Anneke 2012). After 2008, the DME and ESKOM published a policy paper entitled *National Response to South Africa's Electricity Shortages*, which essentially set forth plans to recommission 1,463MW of older generation capacity that had previously been mothballed, and to accelerate the construction of Medupi and Kusile.

5.3.4 Electricity tariff increases

In accordance with its mandate as stipulated in the ERA, NERSA began enacting sharp increases in electricity tariffs in 2006 to fund ESKOM's massive expansion programme. Figure 5.1 illustrates the severity of these price increases. In 2008, ESKOM requested a 60 per cent increase in the electricity tariff in response to the now urgent energy crisis at hand. NERSA responded by authorising a 27.5 per cent increase in 2008, and a further 31.3 per cent increase in 2009 (Pegels 2014). In April 2010, NERSA approved a further three-year tariff increase of 25 per cent each year until 2013. In March 2013, NERSA agreed to 8 per cent increases per year until 2018 in response to ESKOM's request for a 16 per cent increase. According to ESKOM, NERSA's refusal to grant the utility the 16 per cent tariff increase created a financing gap of US$28bn for a five-year period, beginning in 2013 (ESKOM 2013). This move by NERSA is still cited by ESKOM's board of directors as the main contributor to ESKOM's current financial turmoil.[36]

Figure 5.1 Average nominal and real ESKOM electricity prices (USc/kWh)



Note: Exchange rate R10/US$1.

Source: Adapted from Eberhard *et al.* (2014), constructed from data extracted from ESKOM annual reports and StatsSA.

[36] PCE meeting at Parliament, 29 July 2014.

It is estimated that electricity prices could rise as high as 110USc/kWh by 2020 (Creamer Media 2011). The impact that these increases have had and will continue to have on the global competitiveness of energy-intensive industries is a point of major concern, eliciting mounting pressure from the EIUG and the Chamber of Mines on ESKOM and the government to restrict tariff increases (EIUG 2013).

Furthermore, increasing tariffs cause major issues for the municipalities that have a stake in keeping prices low to maintain their profit margins. Many municipalities 'live off the mark-up' they attach to ESKOM's rate (Kaplan *et al.* 2014). A recent GIZ analysis of South Africa's electricity sector reported that the sale of electricity is the primary source of income for most municipalities – e.g. it accounts for 21 per cent of the City of Johannesburg's operating budget (GIZ 2013). Rising electricity prices mean lower profit margins for municipalities or, alternatively, pressure to maintain mark-ups to ensure cash inflow. However, the latter path has resulted in negative backlash from residents and the increasing inability of customers to pay for electricity, which subsequently results in the inability of municipalities to pay ESKOM for supply. In 2014, ESKOM reported that municipal debt has grown exponentially – today totalling R2.9bn – further adding to ESKOM's funding crisis.

The establishment of NERSA created an important institutional link in the value chain. Established as the regulator, seemingly independent and standing above the other links, in reality it acted as a buffer for government and ESKOM in respect of the crisis of rapidly rising electricity prices.[37] Although this appeared as a distribution issue, the rapidly escalating price of electricity was fundamentally a generation problem at heart. As the regulator making the ultimate decision on the back of recommendations it received, NERSA's political role was to partially deflect responsibility for future price increases and supply problems away from both ESKOM and government. On the one hand, the increasing heat prevalent in the society for the lack of heat generated by systemic value chain failure could be shifted onto NERSA for unpopular price increases. On the other, if it failed to agree to these demands for multiple, rapid and continuous increases, then ESKOM could shift the blame for its financial woes (and hence financial inability to raise the capital to deal with adequate electricity generation) onto NERSA. The problem was externalised out of the corporation and presented in the form of 'if we can't get price increases then we are dependent on borrowing'.

Simultaneously, there was confusion about the exact scope of NERSA's role. As the regulator, independent of ESKOM, it was also charged with controlling the import and export of electricity. But in what sense? In a purely administrative sense of granting licences, or was it supposed to have a more fundamental role as an independent quasi-government agency intervening and managing the process? If the latter then this would have had fundamental implications for breaking the hold ESKOM had over the electricity value chain, particularly in respect of creating space for renewable energy generation.

5.3.5 The introduction of REFIT

At the time of the first set of tariff increases and the construction of Medupi and Kusile, the government was still in the midst of a deadlock over the IPP issue. The IPP framework that had been put in place as early as 1998 had not produced any meaningful results. Support for IPP development from the wind and solar industries, NGOs, and foreign donors and consultants, was growing. Yet, ESKOM continued to block any progress made towards creating a regulatory framework for IPP participation.

It has been argued that the creation of NERSA offered a new opportunity for a structural break in respect of renewable energy alternatives (Baker *et al.* 2014). The essence of this view is the following. As the body became more regulatory with the ERA in 2006, NERSA gained some independence from ESKOM and, unlike ESKOM, was able to be influenced by

[37] Interview, Anton Eberhard (independent expert), who makes a similar point.

the growing body of renewable energy supporters. Clearly NERSA was more approachable, as one expert supportive of renewable energy interviewed explains: 'If we went to ESKOM, we would be dead before we started. If we went to the DME, it would be the same as going to ESKOM'.[38]

According to Baker *et al.* (2014), the new institutional arrangements allowed for a small group of individuals within NERSA as a 'niche intervention' to begin developing the Renewable Energy Feed-in Tariff (REFIT) programme in 2006/07. 'Inspired by study tours to Germany and Denmark' they pushed NERSA to develop and promote REFIT. In so doing, NERSA acted beyond its mandate, Baker *et al.* (2014) argue, since under the 2006 ERA, it is the DoE's responsibility to set policy, while NERSA's implementation role is licensing and regulation. Hence in this version it appears that NERSA saw the 2005 National Regulator Act as an opening to forge its own policy mandate. The net result of this active intervention by NERSA was that by late 2010 REFIT had become so 'high profile and apparently irreversible' that it was removed from NERSA and ESKOM jurisdiction and taken over by the DoE (Baker *et al.* 2014).

The fact that NERSA's director encouraged international wind and solar developers to not only begin to develop projects but also make their presence known in South Africa is seen as further evidence of NERSA's interventionist, proactive role in promoting interest in the REFIT programme (Baker *et al.* 2014). Many international companies such as Suzlon Energy (India), Goldwind Africa (China) and Vestas (Denmark) set up offices in South Africa. Private sector commitment grew and firms began planning projects, eager to take advantage of South Africa's renewable energy potential. Much of this intense interest can be attributed to the timing of REFIT's development. The programme design process coincided with a saturation of the market for wind and solar technologies in Europe. Companies looking to expand to different markets jumped on the potential opportunities that REFIT presented.

While this is one interpretation of the events that transpired during the beginning of the REFIT design, there is little consistency as to NERSA's role in this narrative. When NER was created in 1995, it consisted mostly of former ESKOM employees. However, over time, Eberhard (2005: 5312) argues, NER (and later NERSA) emerged as 'one of the more capable and independent regulatory institutions in the African continent'. Baker *et al.* (2014: 9) attribute a proactive independent role to it, yet describe NERSA as 'backed by ESKOM', in opposition to the DoE 'backed by National Treasury'. These conflicting interpretations of NERSA's loyalties and motivations provide little clarity as to why and how South Africa's renewable energy programme was able to gain traction.

The interviews conducted for this report diverge from the story previously presented. Our research found that the birth of REFIT was not a result of a 'niche intervention' by individuals within NERSA.

Firstly, this 'niche intervention' view misunderstands how an independent regulatory institution such as NERSA operates within the institutional configuration of the State. Yes, it is independent in the sense that it has an independent board and does not always give ESKOM what it wants, but this does not mean it isn't/wasn't in constant communication with and under pressure from various government departments (and ESKOM). In reality, NERSA is fundamentally a reactive government body, rather than being a proactive agency. It is set up to ensure that its business is regulation not policymaking or implementation. NERSA had neither the institutional capabilities nor powers to make policy or drive REFIT. As a high level official within NERSA summed it up in contesting this view: 'We are receivers (of policy), not makers'.[39]

[38] Interview, industry expert (confidential).
[39] Interview, Rod Crompton (NERSA).

Secondly, NERSA as an institution, or individuals within it, could make proposals but its formal administrative actions (i.e. interventions) are responsive. As one interviewee put it: 'NERSA makes many suggestions, most of which die, so the real issue is not what is tossed out, but why some ideas get taken up and driven by other powerful actors'.[40]
Thirdly, the ideas underlying a feed-in tariff were being discussed and proposed in the renewable energy space a number of years before REFIT emerged formally.[41] Clearly NERSA played an important administrative role in regard to formalising tariff pricing regulations – it was their regulatory role. Indeed individuals within NERSA could well have supported REFIT, but this is very different from intervening as a proactive independent agency lobbying and implementing a new space for renewable energy.

Instead, it appears that, as an institution, NERSA's role in REFIT was a result of it acting in response to government, heavily influenced by the DEA's push for integrating renewables and the international pressure created by the approaching Copenhagen Accords. Our findings suggest that NERSA did not take a leadership role in developing a renewable energy programme, but was merely executing orders by the state.

This interpretation of the events, gleaned from our interviews, also sheds new light on why REFIT eventually met its demise and offers an alternative possible explanation for why ESKOM allowed NERSA to proceed with the REFIT design process. Government handed over responsibility to the Department of Environmental Affairs which is notoriously politically weak in the Cabinet. The Department of Minerals and Energy (DME), under which it should fall, was not going to pick up this ball and play with it. This ministry was dominated by the minerals division which was focused on facilitating mining investment, and since coal mining was a key minerals player this meant backing ESKOM. Moreover, key factions within the ANC alliance (including COSATU and the Communist Party) were ideologically opposed to the whole concept of power production independent of the state parastatal ESKOM. As one expert put it: 'When they hear IPP all they hear is just the P of privatisation'[42] – and privatisation was seen as a major political bogey to which they were implacably opposed. These divisions in the governing party were reflected within the state apparatuses themselves. In reality this effectively sidelined REFIT within government and effectively paralysed the ability of the state to intervene in the process.

This created a problem of institutional incoherence since, if NERSA was to drive REFIT, as a regulatory body it had neither the will nor the capacity do so. It was simply not managerially and administratively capable of undertaking this task. This also explains why ESKOM did not even bother to publicly oppose REFIT, since it did not perceive it to be a threat and, in its assessment, it was bound to fail. Without a committed 'champion' for renewable energy, REFIT had little hope of success.

Finally, the electricity supply and pricing crisis, which came to the fore at this time, also ensured that REFIT could not take off. Clearly there was support for renewable energy. There were individuals in the public and private sector both pushing for it and being encouraged by the publication of the REFIT guidelines. However, electricity was driven by the need both to ensure supply and to maintain cheap unit costs. When it became clear that the REFIT process would have to set prices for the IPPs well above that which ESKOM supplied, key sections within the state ran scared. Indeed, in the absence of a strong champion, the DME ensured that government scuttled straight back into the arms of ESKOM as the certain option.

[40] Interview, Hilton Trollip (independent expert).
[41] Interview, Belynda Petrie (independent expert).
[42] Interview, Hilton Trollip (independent expert).

The planning of the feed-in tariff was plagued with policy incoherence, uncertainty and confusion – the result of continued resistance from an incumbent regime battling to maintain power over energy generation. From the inception of the REFIT planning process, it took NERSA three years to produce a set of feed-in tariffs and four years to produce a draft of the IPP selection criteria. However, an important practical effect of NERSA publishing administrative regulations for REFIT was that it galvanised the international private sector involved in renewable energy to start planning and pushing the policy space envelope. In this sense it opened up the space for other actors, which was important in creating a structural break in the next period, but it was an unintentional side effect rather than a 'niche intervention'. As we shall see below, this also explains why the process was eventually removed from the hands of NERSA and captured by a coalition of motivated stakeholders who were able to garner the funding and the capacity necessary to build a successful programme.

Box 5.2 Summary: conflicting energy policies and political gridlock: 2005–2009

1. This is a period where ESKOM was able to use the energy security crisis to exercise influence and mount a pressure campaign to maintain itself as the monopoly player in energy generation and control over the value chain. However, the very means of doing this through increasing prices coalesced stakeholders in the beginnings of a counter campaign.
2. In 2005, ESKOM began its generation expansion programme with plans to build two very large new 'clean coal' power plants, Medupi and Kusile. However, the decision to invest in new capacity building was made too late. In 2007/08, South Africa faced rolling blackouts as a result of a decade of rapid electrification programmes and industrial growth, with no additional generation capacity to account for the substantial increases in demand.
3. In 2006, NERSA, in response to pressure from ESKOM, began enacting sharp increases in electricity tariffs to fund the generation expansion programme. The impact of these increases on industries, municipalities and everyday consumers resulted in mounting pressure from these stakeholder groups to restrict tariff increases in the future.
4. As the regulator, NERSA was caught in between two opposing forces: the pressure from ESKOM to increase revenue in order to secure energy supply in the future and the pressure from industry (including the highly influential EIUG) to keep prices low in order to maintain South Africa's historical global competitive advantage.
5. At the same time as the energy crisis, NERSA began developing REFIT, which garnered intense interest from international private sector actors seeking new investment opportunities in response to the global economic downturn and saturation of renewable energy markets in Europe.
6. The planning of the REFIT was plagued with policy incoherency, uncertainty and confusion – the result of continued resistance from an incumbent regime battling to maintain power over energy generation.

5.4 From Copenhagen to REFIT to RE IPPPP: 2010–2014

The dynamics of this period are best understood in terms of a number of stages, which temporally overlap as well as run sequentially. The initial stages laid the foundation for structural change of a substantial nature later on. Hence they have to be understood simultaneously even if the mode of presentation requires a sub-periodisation.

5.4.1 Stage 1 – Creating the foundation for a paradigm shift

There is a consensus among the key informants interviewed that the major catalyst for the development of a renewable energy programme in South Africa was President Zuma's speech at the Copenhagen Accords in December 2009. He set a voluntary target for South Africa to reduce carbon dioxide emissions by 34 per cent by 2020, and 42 per cent by 2025.

Why he committed to this when it was not required and who was behind it remain unclear.[43] Indeed the motivations may well not even have been that important.

Zuma's presidency has been characterised by a lack of leadership on key issues – unless they affect his personal financial situation or his political survival. He says many things in various forums which simply pass on the wind and produce few real policy-altering ripples. What is clear is that the speech instigated a flurry of activity around South Africa's renewable energy programme in the following year. Hence from a political economy perspective, when a major shift like this occurs, the key challenge is to look behind the written or spoken words and understand what other forces, people and institutions have taken advantage of these utterances in order to implement structural change.

At his presidential inauguration in May 2009, Zuma announced his new cabinet which would have an important impact on the political economy dynamics of renewable energy. The previous Department of Minerals and Energy was split into a Department of Mineral Resources and a Department of Energy (DoE), each with its own minister. The latter utilised joint department resources until the end of March 2010 when the new DoE became a stand-alone entity. The significance of this was that for the first time energy policy was not necessarily dominated and determined by the coal producers and ESKOM. As a key stakeholder, the DoE achieved a level of independence that it could utilise if it so wished.

Copenhagen opened up a series of discussions and pressures over the next two years which laid a foundation for a structural break in the political economy of renewable energy. In the background, four debates were playing out (in public and in the confines of government) which would critically impact on the renewable energy sector's role.

Box 5.3 Controversy surrounding the World Bank loan

In the midst of intense international debate and outcry, the World Bank approved a US$3bn loan for Medupi on 8 April 2010. Civil society groups and global NGOs arguing against the loan called on the UK and the US to withhold support for the loan on the grounds that coal should only be used as an option of last resort. Consequently a smaller loan of US$260m for the Sere Wind Farm and Upington Solar Power Plant was tacked onto the World Bank Medupi loan.

Further complicating the World Bank's decision was the controversy surrounding the ANC's investment arm Chancellor House's 25 per cent stake in Hitachi Power Africa, a Japanese firm awarded an R40bn contract in 2007 to install boilers in Medupi and Kusile. The ANC later sold their stake in March 2014 for an undisclosed amount. In 2012, it was revealed that Chancellor House also has a 10 per cent stake in Bateman Africa, an engineering company that received a R2bn contract in 2010 for materials handling at Kusile. Medupi was supposed to be the first to come on line in mid-2013, but after frequent delays and postponements, Medupi has yet to be synchronised to the grid.

The first debate, highlighting the real driver of electricity policy, surrounded the World Bank's controversial decision to grant South Africa a loan for the building of Medupi and Kusile coal-fired power stations in April 2010 (see Box 5.3). Medupi and Kusile are estimated to provide 37 metric tonnes of carbon dioxide (MT CO_2) emissions annually, increasing South Africa's total contribution to climate change by 10 per cent (Greenpeace Africa 2012). Occurring in the midst of the development of South Africa's first IPP renewable energy programme, the decision brought to light the inconsistencies in South Africa's energy and carbon emission

[43] From some of our interviews with government and independent experts it seems that it was a combination of the DoE and Foreign Affairs behind the statement. They were responding to international green pressure and pressing for further action on renewables. Simultaneously, South Africa received some funding at COP for green economy issues, much earmarked for ESKOM which was negotiating with the World Bank, making the deal more palatable.

reduction policies and emphasised that the policy was driven more by the need for securing electricity supply than mitigating climate change.

The second debate was focused on the renewable energy policy and was to have a substantial impact despite climate change mitigation not being the driver of energy policy. This debate was over whether or not a feed-in tariff system was appropriate for South Africa's energy sector. NERSA, foreign donors and the private sector all backed a feed-in tariff system. However, the DoE stood in opposition, arguing that a bidding system would promote greater competition and lower energy prices.

The third debate focused on the legality of the REFIT policy itself and whether it contravened the constitution, public procurement regulations and provisions of competition regulation. The constitution stated that organs of the state must purchase goods or services in a fair, equitable, transparent, competitive and cost-effective manner. When the process was deemed to be non-competitive and prohibited by the government's public procurement regulations the writing was on the wall for REFIT.

Zuma's seemingly throwaway lines at Copenhagen also had the unintended consequence of opening up a fourth debate within government – in the Treasury itself and within an inter-ministerial committee on energy. Following Copenhagen, the DEA wanted a turn towards green energy in line with global trends, and hence was pushing for taking IPPs seriously. The DoE was receptive but, lacking a clear enough plan of its own, was not ready. The Treasury was concerned about the economic costs of the electricity supply and pricing crisis and ESKOM's power within the value chain to hold the economy to ransom. Consequently, with the backing of the Treasury Minister and in cooperation with the new DoE, it was keen to explore other alternatives of electricity supply as well as mechanisms to competitively drive down its price. Their position was summed up as 'let's access clean tech funds and do IPPs and green together'.[44]

Zuma's promise at the Copenhagen Accords placed added pressure on the success of a renewable energy programme. There was also international pressure coming from the financial and technical assistance from foreign multilateral and bilateral donors – Dutch and German donors, the World Bank, and other development finance institutions – who played a large role in the research and project development inputs that informed the policymaking process.

Additional pressure also came from the private sector. REFIT and the aftermath of Copenhagen garnered an impressive amount of attention from international solar and wind companies who began setting up offices in Cape Town in the early stages of the REFIT development process. These project developers had spent a substantial amount of time and money preparing projects for an IPP procurement process. The amount of private finance and technical experience that these companies offered became too large, and too public, to turn down.

5.4.2 Confusion surrounding REFIT

Since NERSA began the design of the REFIT programme in 2006/07, the project had been beset with issues surrounding the creation of an IPP procurement system within the context of an existing policy and institutional framework that, in itself, was unclear and highly contested. While progress was sluggish at first, Zuma's speech provided the impetus for the REFIT programme to move rapidly forward. The chain of events that transpired (described below) under REFIT from 2009 to 2011 lead one to conclude that the policymaking process outpaced the technical and institutional inputs necessary for such a programme to succeed.

[44] Interview, government official in Treasury and DoE.

This added further confusion (and concerned potential private investors who had already begun investing large sums of money in preparing projects) to an already complex process.

In March 2009, NERSA had approved REFIT's Phase 1, which included a set of tariffs covering four technologies: wind, small hydro, landfill gas and CSP. In November 2009, NERSA approved another set of tariffs under REFIT's Phase 2 for six additional technologies, including biogas, biomass and PV. However, the tariffs were released prior to any indication as to the nature of the procurement process, the licensing process, or who would even qualify for the tariffs.

In March 2010, NERSA released the REFIT selection criteria for public comment. This process took over a year, with some revisions to the structure. With the selection criteria still under fierce public debate, the DoE announced a 'request for information' for potential private developers for the REFIT procurement process in September 2010.

Finally, to add even further uncertainty and frustration to the REFIT process, NERSA released a consultation paper in March 2011 – months before the REFIT programme was intended to launch – that proposed a set of reduced tariffs for IPP generation, with some reduced as much as 40 per cent. This confused and angered IPP developers who had planned projects with the original tariffs in mind and had invested millions of dollars in preparing their projects for the selection process. The South African Wind Energy Association (SAWEA) calculated that wind project developers alone invested more than US$50m in preparation for REFIT (Naidoo 2011).

The most significant turn of events occurred in November 2010 when the new DoE started flexing its muscles. It initiated a process of revising the Regulations on New Generation for the procurement of new IPP generation capacity with input from foreign consultants (Danish and German).[45] The revised regulations, which came into effect in May 2011, contained a number of changes that effectively transferred powers that used to reside within NERSA and ESKOM's mandate to the DoE (with the backing of the National Treasury). Most significantly, the selection of the REFIT IPPs was taken out of ESKOM's control. Furthermore, NERSA's power to formulate the power purchase agreement (PPA) and selection criteria was removed. Finally, these regulations made it possible for the Minister of Energy to instruct ESKOM to buy power from an IPP. Previously ESKOM was not obliged to do so. Hence, formally speaking, it had not needed to block an IPP. Given that it controlled the transmission link which governed supply generation entry in the value chain, it could simply wait and do nothing, which left the IPP hanging out to dry. At a legislative stroke these revised regulations placed the REFIT programme under the control of the DoE, emasculated NERSA, and isolated ESKOM and the DPE in respect of renewable energy.

5.4.3 The Integrated Resource Plan (IRP)

Coinciding with the Copenhagen Accords, in what was surely a strategic move during a time of international scrutiny, the DoE published its first Integrated Resource Plan (IRP 1). The aim of the IRP is to forecast energy demand levels for a 20-year period and determine the appropriate energy mix in order to meet those levels of demand in the future. The first IRP, published as an interim five-year plan – a mere three pages long – was flawed and heavily criticised. A revision began immediately in January 2010 to dramatically expand the rushed IRP 1.

In May 2011, IRP 2010 was approved, establishing the country's energy mix for the next 20 years. The plan added 56,539MW which more than doubled capacity to 89,532MW by 2030. It also added new capacity to come from a variety of sources. Coal was still to remain

[45] Back in August 2009, the new DoE had gazetted the Electricity Regulations on New Generation Capacity (under the 2006 ERA) to establish rules and guidelines for the procurement of new IPP generation capacity.

dominant with 29 per cent (16,383MW) of the new capacity added coming from this traditional source.[46] However, the structural changes to note were significant allocations for renewables in this new capacity. Renewables comprised 38 .1 per cent (21,534 MW) of the new capacity to be added – comprising 16.3 per cent (9,200MW) for wind, 14.9 per cent (8,400MW) for photovoltaic solar (PV), 4.6 per cent (2,609MW) for imported hydropower, and 2.1 per cent (1,200MW) for concentrated solar power (CSP). As a result, of the total expected capacity in 2030, coal would still remain the dominant form of supply at 45.9 per cent, but renewables from wind, solar and CSP would make up 21 per cent of total capacity. This was hence hailed as a much needed diversification away from coal-based electricity generation. The plan, however, also made a major commitment to expand nuclear capacity in the additional energy mix – 9,600MW was to be added (17 per cent of the additional capacity) so that by 2030 nuclear would constitute 10 per cent of total electricity capacity (DoE 2011a).[47]

IRP 2010 was created in part by an interdepartmental 'technical advisory group' established to provide the technical inputs (i.e. model forecasting for supply and demand projections) necessary for the plan. The minutes of the meetings still remain confidential. Additionally, all members signed confidentiality agreements with the DoE. The advisory group was largely comprised of representatives from ESKOM, the DoE, the coal industry, and the Energy Intensive Users Group (EIUG) – all powerful actors who all have a stake in maintaining a coal-based energy regime. There was no one from the renewable private sector.[48]

Baker *et al.* (2014) (and others) have made the composition of the technical advisory group a focal point. Criticisms of the lack of representivity of this committee are justified but they do not provide an explanation of the dynamics underlying renewable energy decisions. The reason is that the IRP 2010 has since been updated and a different (even less representative) process followed – ironically, however, with a much better renewables outcome. Clearly the renewables trajectory needs to be analysed in terms of other forces operating in the background.

5.4.4 Stage 2 – A new renewable energy programme (RE IPPPP) and a new coalition

Arising from the meetings within the Inter-Ministerial Committee on Energy to discuss South Africa's energy crisis and ESKOM's dire financial situation, in 2010 the Minister of Finance asked a small group within the Treasury's PPP Unit to identify the barriers to private sector entry into the energy sector and to start exploring ways to remove those barriers. This group, headed by Karen Breytenbach, took this window – what was essentially intended to be an information gathering exercise – as an opportunity to bring IPPs back to the forefront of the discussion surrounding solutions to South Africa's energy mix. Coincidentally, but to its advantage, this window occurred when pressure was already building for South Africa's scheduled hosting in Durban of COP17 in 2011. Capitalising on the fact that South Africa needed a tangible success to present to the international community at COP17, this new unit, in coordination with the deputy director general of the DoE, decided that the path of least resistance towards integrating IPPs into the energy mix would be in going 'green'.[49]

Originally when the PPP Unit members were tasked with looking into the barriers to IPP electricity generation, they were busy working on a model to incorporate IPPs into the health insurance and hospital management market using funding from the Development Bank of Southern Africa (DBSA). Since there was no funding available to hire external consultants to review the various options, the DBSA was asked to apply that model to renewable energy

[46] GHG emissions will increase from 237 to 272MT CO_2 in 2030 (Winkler *et al.* 2011).
[47] The rationale for nuclear was not only stability of supply but also to meet the GHG mitigation goals.
[48] There was one academic environmental expert but he was never informed of any meetings.
[49] Interview, Karen Breytenbach (Treasury/DoE).

IPPs. When the DBSA signed on, this secured enough financial support to bring in a group of highly skilled international consultants to begin working on the project. This solidified the beginning of a new coalition, a three-way partnership with the Treasury and the DoE, backed by the powerful Minister of Planning in the Presidency who had been the previous Minister of Finance, and coalescing in this unit, which existed in the interstices of departmental formality.

In essence, due to the relatively high capacity of its personnel and their ability to make funding decisions on behalf of the programme, the National Treasury took advantage of the political space that was created. This was (1) the pressure to showcase South Africa on the international stage; (2) moving to act on the electricity crisis; and (3) the inability of ESKOM to meet both the financial demands and time demands to generate the capacity that was immediately required for energy security.

This small unit, headed by Breytenbach, moved out of the Treasury building and found offices adjacent to the DoE. It was, formally speaking, accountable to the Treasury and always ensured it had high level political and bureaucratic backing from within it, but through this move and its informal status was able to operate relatively independently of the Treasury. The important thing is that it was perceived as not being an arm of the Treasury due to the fact that it was procuring energy on behalf of the DoE. This was a factor that was 'absolutely essential to the success of the programme'.[50] They had at their disposal a small team of people from both ministries as well as a highly experienced group of international consultants. They were described as 'lean, mean and flexible'. As Breytenbach explained: 'We were not the Treasury, we were not the DoE, we were this partnership mix which speaks to cooperative governance. We were a knitted-together coalition of departments'. This perception was practically reinforced, and the coalition strengthened, by always presenting its findings, recommendations, proposals, and activities through the DoE management structure, rather than Treasury. The DoE was publicly seen to be driving the renewable energy processes and outcomes brought about by this unit.

By this stage the debate had already started contrasting the appropriateness of a feed-in tariff over a bidding process. This unit was then tasked with designing an IPP programme within the context of South Africa's legal environment. Commissioned consultants reported that REFIT did not comply with the legal requirements under South Africa's public procurement policy. REFIT, as it was designed, even with the reduced tariffs released in March 2011, did not meet those requirements. This sparked tension with NERSA (and ESKOM) which had built its framework around the premise of feed-in tariffs; a model that was used by countries at the forefront of renewable energy policy around the world. Not only did the DoE question the programme's legality, but also the ability of NERSA to act as both a regulator and overseer of the IPP programme. Ultimately, the DoE used the IPP procurement regulations under Section 4 (Electricity Regulations on New Generation Capacity) of the Electricity Regulations Act, 2006, to rule that IPPs would not be selected by NERSA. It also started to attack the highly vertically integrated nature of the electricity value chain. The DoE would now be the procurer of new IPP capacity and ESKOM would be the sole buyer.

REFIT (and NERSA/ESKOM control over it) was effectively dead and buried. In July, the DoE launched the Renewable Energy Independent Power Producer Procurement Programme (RE IPPPP), a competitive bidding programme, and formally announced the abandonment of REFIT in August 2011. A month after its launch the DoE issued a Request for Proposals for RE IPPPP. The RE IPPPP was designed to procure the 3,725MW of new renewable energy generation allocated in the IRP 2010 according to the following allotment for each technology: 1,850MW for wind-generated power; 200MW for concentrated solar power (CSP); 1,450MW for solar photovoltaic power (PV); 12.5MW for biomass and biogas

[50] Interview, Karen Breytenbach (Treasury/DoE).

power; 25MW for landfill gas power; 75MW for hydroelectric power; and 100MW for small-scale IPP projects of less than 5MW.

This unit with no official name but which we shall call the 'IPP Unit' was then faced with the decision of how much electricity would be procured and over what period of time. According to the recently released IRP, a total of 3,725MW of renewable energy was initially allotted for new grid-connected energy capacity. With the tacit backing of key actors in the various coalition departments, the unit proposed that the Minister of Energy sign off on the allocation of all 3,725MW under the bidding programme. The decision to allocate smaller amounts through five windows was then proposed with the following motivation. First, it allowed potential project developers time to prepare their bids, creating a broader scope for participation. Secondly, multiple bidding windows would allow for increased competition between developers in order to drive the price down. Most significantly, the segmented allocation also gave ample opportunities for 'learning by doing', and ensured that the process would remain dynamic and open to improvements. This decision proved to be fundamental to RE IPPPP's eventual success.

Another factor in the IPP Unit's success was systematically widening the coalition of support – gaining approval from the DEA; Department of Agriculture, Forestry, and Fisheries (DAFF); the Department of Water Affairs (DWA); and the DTI. The DEA was on board with the programme from the beginning, but was concerned about the capacity required to actually deal with the volume of environmental impact assessments (EIAs) that it would require. In the end, the department gave its full support and pushed through the workload with the capacity they had. The DAFF and DWA had concerns over the land and water use that the IPP projects would require, resources that could otherwise be used for agricultural production. In order to overcome this obstacle, the IPP Unit worked with those ministries to make joint decisions on land allocations that were outlined in the procurement documents.

The final department to bring on board was the DTI. Job creation and new industrial development needed to be a key aspect of the bidding programme in order to gain widespread support within not only government, but organised labour and the consumer base as a whole. Historically, the discussion surrounding the entrance of renewable energy technologies in the South African energy mix elicited many serious concerns from industry and labour:

- The sector would mostly be comprised of international firms.
- Few jobs would be created, while jobs in the mining sectors would be eroded.
- The few jobs created would cater towards highly skilled workers.
- Increases in electricity prices would cause energy-intense sectors to cut jobs to lower production costs.
- Communities affected by new infrastructure on their land would not reap any benefit from the projects.

In order to get DTI support, the programme needed to have a built-in local content requirement and development projects for the communities that the construction of these wind and solar farms would be directly affecting.

The South African Preferential Procurement Policy Framework Act (PPPFA) dictates that tenders will be selected on a 90/10 preference point system. A maximum 90 points are determined by price and 10 points are allocated for a specific set of development-based criteria. The IPP Unit requested an exception and were granted a 70/30 preference point system (See Box 5.4 for RE IPPPP's selection criteria). The 30 points would place a heavy burden on the private sector, risking decreased interest in the programme and, therefore, a decrease in the amount of competition necessary to ensure lower prices. However, the IPP Unit deemed this risk necessary to ease the tension between the DoE and National

Treasury's energy security aims and DTI's developmental objectives, as well as to assuage the concerns of industry and labour.

Box 5.4 RE IPPPP selection criteria

Bids were evaluated based on two components: **price** (70 per cent weight) and **economic development** (30 per cent weight), with a total of 100 points.

Price criteria: The bidder provides the consumer price index (CPI)-linked price, an equivalent annual tariff (EAT) is calculated based on a formula, and that EAT is then compared to the lowest EAT for the same technology category.

Economic development criteria: The score for economic development criteria is based on the following categories, each with separate weightings:

- Job creation (25 per cent)
- Local content (25 per cent)
- Ownership (15 per cent)
- Management control (5 per cent)
- Preferential procurement (10 per cent)
- Enterprise development (5 per cent)
- Socioeconomic development (15 per cent)

Points are awarded for each of the separate categories based on scoring between a threshold level (minimum of zero points) and a target level (maximum of ten points). These thresholds and target levels were designed to change for each bidding window with the aim of increasing the economic development requirements for bidders as the RE IPPPP process progressed.

The design of the programme differed from international norms in another very important aspect. Unlike other first movers in Europe, South Africa was primarily driven by the urgent need for generation capacity – environmental concerns played a very small role in the actual motivations behind the renewable energy programme (although outwardly the rhetoric surrounding RE IPPPP may have elevated the importance of the environmental motive). Due to the energy crisis in South Africa at the time, it was essential that the projects selected through the bidding windows be successful; therefore, RE IPPPP required that projects reach full financial close within six months of being selected as a preferred bidder. This requirement, although placing heavy burdens on the private sector and the banking system, was also necessary due to the financial constraints on the programme. It was feared that the National Treasury would be forced to pull its support if the projects were not financially viable and give ESKOM ample ammunition to block the programme from advancing. In August 2011, the DoE held a bidders' conference. More than 1,000 people attended, far surpassing expectations for the amount of interest in the programme.

After an evaluation of the first window, it was clear that the electricity prices of the selected projects were too high. At this point, the IPP Unit faced the decision of whether to proceed with the process. As one interviewee put it, 'We were faced with the question of do we announce or don't we announce the preferred bidders?'. However, the IPP Unit got the go-ahead from high up in the Treasury. It was conceded that the prices were too high, but that South Africa 'must show the world that we are serious, that will be the impetus'. It was better to demonstrate to the international community that the South African renewable energy policy environment was stable, and hence worth investing in.[51]

The tactic worked. Prices decreased by 22 per cent for wind and 40 per cent for solar PV between the first and second window, and then again by 27 per cent and 46 per cent

[51] Interview, Treasury official.

respectively. Over the entire three bidding windows the prices dropped dramatically: for wind a reduction of 43 per cent, and for solar PV a massive 68 per cent (Table 5.1). The RE IPPPP system was clearly successful in terms of the principal issue on which had been criticised.

Table 5.1 RE IPPPP average bid prices (2011 prices in SAc/kW)

	Round 1	Round 2	Round 3
Wind	114.3	89.7	65.6
Reduction from previous round		-21.5%	-26.9%
Total reduction from round 1			-42.6%
Solar PV	275.8	164.5	88.1
Reduction from previous round		-40.4%	-46.4%
Total reduction from round 1			-68.1%
Concentrated solar power	268.6	251.2	146.0*
Reduction from previous round		-6.5%	41.9%
Total reduction from round 1			-45.6%

Source: Eberhard *et al.* (2014).

The process proved to be sufficiently reliable and sound to warrant increased interest in RE IPPPP from international project developers. Competition between IPP bidders was also increased and 'was no doubt the main driver for prices falling' (Eberhard *et al.* 2014: 18). Over the period of the RE IPPPP process (i.e. encompassing competitive bids 1, 2 and 3) there has been a steady increase of interest from investors in bid applications and a flow of successful bids granted despite a more stringent process from one window to the next. In the first round there were 54 bids submitted with 28 granted, in the second 79 bids submitted and 19 granted, and in the third round 93 bids submitted and 17 preferred bidders granted. In total 64 bids were selected over the three windows. From the perspective of the Treasury and the DoE, attracting FDI through the RE IPPPP has also been a major investment success story. In total it has attracted over R120bn or US$14bn into renewable energy projects (*ibid.*).

The energy crisis had an ironic outcome. It strengthened ESKOM's hand in terms of building new coal-based power generation, but simultaneously provided the opportunity for a new coalition for change to develop. The context of a crisis provided the impetus for RE IPPPP to advance quickly and weakened the position of dissenting opinion. This coalition garnered sufficient influence to radically shift the balance of power within government and create a structural break around renewable energy generation. 'Redesigning the REFIT process brought in international interest. There were too many vested interests involved to kill it'.[52] Moreover, the scale and scope of the private sector involvement was 'a class interest of a serious note… (and) changed the nature of the game'.[53]

[52] Interview, Belynda Petrie (independent expert).
[53] Interview, Anton Eberhard (independent expert).

Box 5.5 Summary: from Copenhagen to REFIT to RE IPPPP: 2010–2014

A small but influential inter-ministerial unit played a key role over this period. This IPP Unit created an inclusive coalition for change, through joint decision-making processes and compromises to include all necessary ministries.

The severe nature of the electricity crisis allowed the coalition to be formed without ESKOM's involvement. Energy security was a top priority for all stakeholders and it was widely believed that ESKOM could not adequately address the crisis on its own.

This coalition allowed the IPP Unit to effectively isolate ESKOM and the DPE from the process. The key informants involved in the process acknowledged that ESKOM never publicly blocked any progress towards an IPP renewable energy programme, but rather employed a strategy of using its control over the value chain to delay the process and then waiting until the proposed programme eventually met its demise. This tactic was described by one interviewee as 'malicious compliance – they always project that they are on board, they will never say that they disagree with a government policy, but they will do what they can to stop it'. The strategy had worked before with REFIT, which had been overwhelmed by policy incoherency, regulatory confusion, missed deadlines and, most crucially, the lack of strong stakeholder influence within government driving it. ESKOM did not believe that RE IPPPP would work. It thought it would follow the same trajectory as REFIT.

RE IPPPP pulled in substantial vested interest from the private sector, increasing its zone of influence. The nature of the process involved large foreign firms investing in renewable energy generation. The competitive bidding process gave the banks a pre-eminent status since they carried most of the risk. The entry of such major players in the private sector effectively acted to change the nature of the game.

The institutional nature of the IPP Unit was crucial. It comprised a small group of individuals that did not bureaucratically fall under the watch of any single department. This contributed to its success in being able to build a coalition of influence within government. Essentially operating as a proxy for the DoE, but with the tacit backing of the Treasury, without having to work within the confines of the department's internal procedures, it was able to 'fly under the radar for long enough' to gain the traction necessary to ensure that the process, once moving, would not be stopped. This unit managed to create the joined up government that was necessary to move beyond the normal state silos that act to constipate and stifle intervention.

6 Challenges facing RE IPPPP and climate change policy

There are a number of serious challenges facing the renewable energy sector which may well destabilise the coalition and produce a variety of differing outcomes. In this final section we consider four major problem areas which have the potential to destabilise the coalition and create a different trajectory:

6.1 The institutionalisation of the IPP Unit

The strength of the IPP Unit is simultaneously also its Achilles heel. Its perceived informal status, lack of a seemingly formal institutional home, and absence of direct accountability enabled the key members to cross departmental boundaries and construct a necessary coalition. It floated between departments when this was appropriate, but at other times when something else was required was able to pin itself firmly under the cover of either the DoE or Treasury. It could draw on the substantial backing and power of the Treasury standing in its shadows, but also give credit to the DoE for any of its successes. Its *ad hoc* status meant that it was accountable to no one and yet willingly answerable to everyone.

As long as the key personnel acted within broad government parameters, they could avoid the stultifying suffocation of departmental politics and regulation. No single department had to take responsibility for its activities, and yet all could claim a proportional piece of the resulting outcomes. Its smallness – described as exhibiting 'lean-and-meanness' by interviewees – enabled it to maintain the necessary flexibility to be proactive, respond quickly, and interact effectively in bringing business and government together. And its flexibility meant it could attract the kind of staff who were decidedly not regulation-governed government bureaucrats simply occupying seats rather than intent on going places. The link to the DBSA created funding flexibility to access high-level consulting services and utilise expert personnel within the unit. Shifting this funding role to the DBSA meant that cumbersome government tendering regulations could be sidestepped and slow payment procedures avoided.

Yet this is also the body's weakness. Its very success means that there are strong pressures for it to formalise and become a discernible government unit (Eberhard *et al.* 2014). But this formalisation process is not without significant problems. Where would such a formal unit institutionally sit? How could it be placed in a single government department and still play the linkage role between departments? How would it remain flexible if it was formally accountable to the rigid hierarchies of departmental regulation? Furthermore, success breeds growth and it is unlikely that the 'Unit' will be able to remain small and still handle the increasing workload. It will have to grow, and growth will bring an increase in the sheer workload, put increasing strain on the existing personnel and hence require a substantial change in the staff complement. Finally, there is the issue of the expansion in its scope, which will increase pressure for institutional formalisation. The irony is that the success of the renewables platform will create demands for a similar process to be followed in respect of future private sector-based gas and coal electricity generation, as well as drawing on co-generation activities in the existing large business enterprises.

This increase in scale and scope can only increase pressure for the formalisation of the 'Unit' and the growth and complexity of its institutional structures. Such demands will come from friend and foe alike, for wholly opposite reasons and intentions. Those who are driving an agenda for an expansion of the competitive, flexible renewable energy programme will argue

for formalisation as a means of institutionally firewalling it as a means of protection. Likewise those actors, agencies, and institutions wishing to retain ESKOM and DPE control over the major links in the electricity value chain, defend the status quo, oppose the structural shift to a private sector renewable energy drive and widen the chink for nuclear energy generation may see the formalisation of the unit as a means to institutionally hobble its activities, bring it under a single department's control, and in the process destabilise the current coalition.

One solution would be to formalise the unit, but take it out of the formal political terrain of any single department. It could instead be placed in the office of the Presidency. However, the current president has too many question marks over his lack of independence to make this a viable solution.

6.2 Structural shifts in investment and decreasing competition

The first couple of phases resulted in project-funded bids rather than corporate-funded bids. They were based on bank funding using the project assets to back the loans. This formula placed all the risk (around 80 per cent) on the banks which meant that they imposed stringent governance requirements on a project bid and its operations: fixed term, fixed performance and upfront penalty. As a result all projects have been on time and on, or under, budget. The result has been a highly successful competitive bidding process, with strict financial and operational controls exhibited and tariff prices below the feed-in tariffs initially proposed. Indeed, prices have been on a downward trend.

This bank-backed process has been complicated and required intensive upfront regulatory procedures, but it has maintained strict fiduciary responsibility and as a consequence has been clean. There has been no space for offering bribes and the ability to hide corruption in the process has been extremely limited.

A new trend emerging, as the pressure to lower tariff prices in the third round competitive bidding process increases, is investment shifting away from project/bank guarantees to corporate guarantees. Large foreign utilities, having seen the success of the South African competitive bidding process as compared to other country programmes, are preparing their proposal bids using their own corporate financial security to back their bids. They may borrow money from the banks but it is on the basis of their corporate balance sheet and not a project guarantee. This removes the banks from the focal point of the risk and concentrates it in the foreign large corporation/utility which is able to absorb or cut some of the costs and thereby come in with much lower pricing.

In the first two rounds 45 out of 47 projects (96 per cent) were bank financed. However, by the third round this had dropped to only 11 out of 17 (65 per cent). The remaining six were corporate finance by a large European utility, demonstrating a structural shift away from project bank financing to large foreign corporate financing (Eberhard *et al.* 2014). In the fourth round it is expected by some commentators that all the upcoming bids will be won by a couple of foreign corporate utilities. Hence this structural shift towards corporate-financed bids is expected to accelerate in coming rounds. The banks will no longer be in the market. Nor will the small local developers be in the market because they will not be able to compete on price. The result will be that instead of the renewable wind energy market being fragmented among a large number of players it will become highly concentrated in the hands of a few large corporate utilities backing the various operational IPPs.

This throws up a major challenge for the coalition-backing IPPs. On the one hand it will demonstrate the success of the competitive bidding programme, make it administratively easier to deal with in terms of processing and allocating bids, and vindicate the coalition headed by the DoE and Treasury. However, it does not necessarily satisfy the DTI industrial diversification interest in spreading local ownership and creating local content, and is a

potential threat to maintaining that ministry's active support. How this plays out in terms of coalition stability is more complex, for it all depends on how government responds to the key economic development component enshrined in the competitive bidding process. This holds the possibility of a resolution of this challenge.

6.3 RE IPPPP economic development requirements

The economic development requirements that a bidder has to fulfil are an important aspect maintaining the current coalition of stakeholder support for the RE IPPPP. These economic development requirements span two major issues: facilitating local economic activity and meeting social development needs. The former revolves around stimulating local ownership and local content of inputs, while the latter is concerned with distributing some gains to local communities in the vicinity of the IPP. Bids are judged in terms of two sets of issues: price comprising 70 per cent and development comprising 30 per cent of the score.

The latter development requirements lock in backing to the RE IPPPP from other arms of government concerned with stimulating local business involvement, local labour utilisation and social development. Outside of government they also create support for the RE IPPPP from different segments of civil society across the class spectrum. They encompass those segments concerned with distributing the gains to poorer local communities in various direct and indirect forms, as well as at the opposite end of the social class spectrum, the new black middle class who have new opportunities to be black economic empowerment (BEE) beneficiaries. Finally, increasing local economic development favours future local employment and this brings potential support from the labour movement.[54]

Although these two elements of economic and social development are bundled up together under one heading in the bidding process, they are analytically distinguishable and their challenges should be separately discussed.

6.3.1 Local economic development

A consequence of the project-financed modality has been that it has tended to block local new IPPs or project management firms from entering the sector since the banks have gone with least risky options. However, this has not stopped IPPs using BEE equity investment to make up for local investment. These black empowerment deals have either involved politically connected individuals or community trusts. This has consolidated an important class segment of the citizenry behind the model.

A positive outcome has been the building of local managerial capacity in running the projects. Initially, local entrepreneurs were simply engaging in land speculation, buying properties that they were either tipped off about or that looked likely for IPP wind farm development. They then sold this to the bidder, with no long-term economic spin-off. Then, when this form of unproductive and parasitic tenderpreneurship was frowned on by government, these local investors realised that they were more attractive to foreign capital through combining land with project development expertise – hence adopting a longer-term perspective through building productive development capacity.

However, we have not seen an increase in domestic industrial content and hence an increase in the number of locally based manufacturing firms spun off from this sector. These local content requirements were principally met through procuring a variety of non-critical inputs and services which did little to foster new trajectories of domestic industrialisation. Foreign-based IPPs used local cement and steel for construction of the plant, opened up

[54] However, if it means a reduction in ESKOM's reach and scope then those particular unions organising the parastatal face a potential loss in membership which they have to balance against broader development objectives.

new administration offices in South Africa and added a small number to local employment figures, satisfied BEE requirements and used some local project management professional services. The impact on more technology-intensive component activities requiring manufacturing conversion processes (blades, turbine components, gear boxes, etc.) has thus far been insignificant. There is a reason for this. The economies of demand are too small and fragmented. This is not only a size issue. It is related to the competitive bidding process itself, which has thus far tended to fragment the market into a number of dispersed bids. These bidders cannot commit to meaningfully stimulate local manufacturing in their proposals since they first have to win the bid. The result of this fragmentation process and small market is that local production cannot reach sufficient economies of scale to be reasonably competitive. Hence this undermines the stated local content/ownership objectives of the DTI's support within the renewables coalition.

Ironically, the structural shift towards corporate financing, a trend we are already seeing and which is likely to escalate, has the possibility of providing an opportunity to increase local content. This shift will result in greater concentration of large foreign corporates or utilities in the IPP sector. Concentration has the potential to overcome the lack of economies of demand and of scale holding back local production of more technically demanding components for renewable energy wind generation operations. It will concentrate buying power and potentially allow utility corporates to procure locally on a greater scale. However, this will not necessarily happen in and of itself as a natural tendency arising from increased economies of demand. It is only likely to do so if pushed by appropriate government policy in this direction. The corporate utilities, if left alone to their established procurement devices, may well prefer to import all components from their home base as the least risky option. Following this trajectory will increase tensions within the renewables coalition as local content and local ownership fails, and it will play into the hands of those wishing to redirect electricity generation away from private sector renewables.

Concentration therefore contains a potential threat. But it also contains a tangible opportunity if government changes the regulatory bidding rules to take advantage of this situation and utilise it to nudge IPPs towards increased local procurement. For example, government could institute a policy requiring greater and additional economic development commitments for any parties that win more than a certain number of projects (e.g. two-thirds). This will force these large utilities to take advantage of their economies of demand and concentrate attention on the supply side to achieve the necessary economies of scale. These large foreign utilities are not in the business of manufacturing such componentry. But they do have strong relationships with established suppliers in their home regions or elsewhere in the world and could be demanding that these companies set up shop in South Africa to provide them with the necessary supply. This could be facilitated by government policy incentivising the process. There is therefore no reason why 'follower sourcing', as happens in the automotive industry, should not become the basis for deepening local content on the back of this process of concentration of IPP ownership.

6.3.2 Facilitating social development

The social development requirement requires that each successful IPP project invests 1 per cent of revenues (often through a community trust) in some form of local development. These local development initiatives within adjacent communities are unspecified. They can range from building a local school, creating bursary funds, setting up a library, installing solar geysers, etc. Basically, the requirement is well intentioned but ill thought out. There are a number of problems contained in the requirement.

Firstly, it requires IPP technically oriented companies who know nothing about undertaking major corporate social responsibility programmes to design effective social development programmes which they have no experience in undertaking. Hence these companies

basically regard it as a penalty tax and seek a way of paying it off. If a company does not have the capacity, knowledge or desire to engage itself, it will give money to a third party to do the job, with or without specific guidelines. This results in the emergence of supposed 'specialists' setting themselves up and undertaking to spend the money for the companies in various disadvantaged geographical areas. The more innovative sponsors try to set up local businesses, and then earn a return on their operations. The rest? Who knows, given the deficiency in monitoring and evaluation.

The second problem with the scheme is that it requires these successful bidders to throw large sums of money at local communities who lack the structures to absorb them and ensure proper governance mechanisms. It may work in some well-organised communities but in most cases it leads to confusion and disappointment as local communities do not understand the benefits they are supposed to be reaping, and if they do then they do not understand why these should take time to come to fruition. In any case most poor communities do not have the capacity to set up and manage effective community trusts. Unlike the competitive bidding process, which is clean, this social development requirement is a recipe for corruption. In most communities with no clear accountability structures it encourages a host of backhander payments to any local powerful person who can make the demand and threaten the company with community action. It also provides an open invitation for local municipalities to get involved and help themselves to available cash from these community trusts for other legitimate and illegitimate activities.

Thirdly, this system requires effective monitoring over the lifespan of the project. Yet there are no regulatory mechanisms in place to ensure this has to happen. Indeed, the DoE could not do this without a major expansion in its capacity. Take, for example, the problem of monitoring the programme effectively given expanding scale with each successful round. There are already 64 separate IPP contracts. Each project has an expected lifespan of 20 years and involves numerous and highly varied economic development targets. Each is also required to report performance on a quarterly basis, which is supposed to reflect in performance credits or deductions. The DoE simply does not have the staff capacity nor ongoing budget allocation to undertake the required performance monitoring and evaluation costs. Hence 'it is difficult to see how this monitoring work can be sustained at an appropriate level' (Eberhard *et al.* 2014).

One way for the DoE to limit the confusion, frustration, and corruption arising from this process, with its attendant possibility of creating fissures in the renewable energy programme from social partners, is for the DoE to regulate the scope of development investment required and provide greater policy direction. It could limit the variety of acceptable investments, link them to renewable energy projects so as to make the relationship to wind farms clearer, and hence specify what would be acceptable expenditure. For example, requiring the development expenditure to fit all houses in the local community with solar geysers; or to set up local factories to build solar water heaters and PV panels for sale nationally. Government has been loath to do this as it would prefer to create a buffer between itself and these development projects, since it recognises that it lacks the necessary capacity to manage them. Hence it stresses the need to create an open innovative window for the private sector to meet its social commitment. The IPP investors would prefer government regulation as it would provide guidance, take the heat off them, limit corruption and allow them to redirect community complaints, enquiries and issues to appropriate government channels.

6.4 ESKOM's transmission and distribution networks and IPP connectivity

The transmission/distribution backbone operates on the relationship between high voltage (400kVA) and low voltage (132kVA) delivery of electricity once it has been generated. The transmission backbone transmits electricity across the country in high voltage form. From this

backbone it is supplied to regional or municipal distribution loops (akin to an arm, carrying on the skeletal analogy) in a low voltage form, who then deliver it onto individual consumers in lower voltage distribution (around 60kVA) fingers. Although ESKOM itself refers to the process of lower voltage delivery to municipal/regional as its own form of distribution, for ease of analysis we have used transmission to encompass both high and low voltage (132–400kVA) and distribution to refer to lower voltage delivery to individual residential and business consumers.

Individual consumers are simply worried about the cost of connecting to the fingers (a basic connection at a standardised cost), whereas ESKOM has to be concerned about a number of transmission/distribution connection variables: the cost of connecting to the arm, how to connect arms to fingers, where to connect to the fingers, how to balance the system load between arms and fingers, how to maintain differential amounts of electricity in the system depending on varying demand in the day, where and how to connect feed-in IPPs into the transmission system and maintain the load balance and the overall cost structure. Simply put, from an input connection perspective a geographical area may be the best location for wind or solar renewable energy, but on the current configuration it may not be the best place from ESKOM's point of view to connect supply generated into the transmission backbone. If the feed-in and feed-out loads are in the wrong places then new connection stations have to be constructed by ESKOM. This takes time as ESKOM has an incredibly bureaucratic mode of decision-making and implementation is seldom anywhere near scheduled time frames,[55] imposes additional costs, and creates system constraints on ESKOM's operations.

These are recognisable real problems and constraints. They are rooted in genuine structural issues and ESKOM uses them effectively when arguing its case. But they are not pre-given. Different corporate policy, receptivity to including renewables, genuine acceptance that IPPs are an integral part of the future, genuine consultative procedures, etc. on the corporation's part, all would produce differential outcomes.

The problem arises not simply from neutral structural constraints but is integral to the exercise of value chain governance. It is created and feeds off ESKOM's monopoly position in control of the entire value chain, and it is magnified by the fact that supply generation ties up around 60 per cent of turnover in the chain. Given this structural position of supply in the system, and the fact that the managers of ESKOM tend to come from electricity power station experience with limited understanding of the complexity of transmission and distribution issues, the driver of the chain is necessarily the electricity generation link.

The biggest threat to ESKOM supply generation is the existence of IPPs. The issue here is the fact that these are private sector forms of generation, whatever the source of the generation – whether it be wind, solar, gas, or competitive coal-fired power stations. From their public sector-driven perspective perceiving this is as a threat is a perfectly rational mindset. However, their concerns about protecting coal-based power generation backlash into alternative feed-in mechanisms to the transmission backbone. Its problems ripple through into transmission (which creates roughly 10 per cent of turnover) and distribution (about 30 per cent of revenue). ESKOM cannot stop the current march of IPPs and private sector renewable energy generation – for the moment it has lost that battle – but because it also controls the transmission backbone, it can raise numerous obstructions in respect of connecting to the grid, while appearing to be complying.[56] Moreover, through its DPE backer

[55] This was described by an internal ESKOM expert in the following terms: 'You need to go through four committees to get signed off for the IPPs. To get the proposals through takes five to six committees, five committees for the project charter… You need to allocate a two week lead time between each meeting. It is slow moving and an enormous amount of time is wasted in committees… We work with other people's money and the frustrating thing is that instead of getting rid of the bad people that take bribes, they try to develop a system that is foolproof, that can't be corrupted... It slows down the process of connection and the net effect is that we are slower to build a substation than the private sector takes to build a [renewable generation] plant': Interview, Ferdi Kruger (ESKOM).

[56] Interview, Anton Eberhard (independent expert).

and influence in various committees, it can use this to shift the terms of the renewable energy/electricity generation policy debate. This it does fairly effectively, despite increasingly frustrated public opinion about its cumbersomeness, inefficiency and cost structure.

One policy solution to this problem of value chain governance that is touted in discussion – interestingly, also within ESKOM from those segments not integrally tied into generation – is to break up the corporation's hold over all the links in the electricity value chain. In other words, unbundle ESKOM and leave it to be simply concerned with generation. Transmission could then be regulated and managed by a different entity with its own costing structure. The systems operator and energy planning would be taken out of ESKOM's control. This entity would buy power from all generators including ESKOM and the IPPs, which would then be delivered through the transmission network. It could be publicly owned or private sector driven. What matters is a single buyer purchasing power from many generating suppliers and then selling power to different distributors. From ESKOM's point of view this is a major threat to its key governance component – monopoly control over the value chain – as it would immediately break its hold over the transmission and distribution backbone. From a renewable energy perspective, however, it would create a level playing field. From the DoE perspective it would enormously strengthen the current coalition, ensuring a balanced renewable energy profile.

This is the essence of the current ISMO Bill that is floating around parliament, and over which the governing party blows hot and cold depending on which faction is able to exercise the necessary power over the debate. The DPE, which is ESKOM's shareholder, would have the largest corporation in its stable suddenly reduced in size and power, and is opposed to the break-up of ESKOM. This goes as far as internal opposition to creating business units with individual costing procedures within ESKOM itself. It is seen as the thin end of the wedge threatening the vision of 'One ESKOM'.

Opposition also comes from the union movement and other leftist factions in government who see the break-up of ESKOM's control over the various links in the value chain as preparing for a process of privatisation of state-owned enterprises. The unions are concerned about the possible impact on employment as efficiencies get driven through the value chain. But it feeds into a generalised ethos of ideological anathema focused on the ills of privatisation and the threat to the developmental state which is the unions' current political mantra.

In terms of the coalition, these conflicts and debates produce policy and implementation stasis, rather than generating the necessary movement within the state to tackle the systemic inefficiencies and blockages in the manner in which the value chain is governed and managed. As long as stasis dominates, these inefficiencies can always be used and deflected as practical examples caused by renewable energy itself by those intent on preserving the status quo, or shifting the energy mix in favour of nuclear, or the need to protect coal reserves, etc. – and threaten the currently successful coalition. As one interviewee put it, the problem is that 'no political leader wants to be the person who is seen as presiding over the breaking up of ESKOM'.

7 Conclusion: coalitions for change

The driving force pushing South Africa into renewable energy policies and modalities of implementation was not a result of a major commitment to addressing the issues of climate change. The change in the renewable energy policy debate and policy implementation was triggered by a crisis in the supply of electricity. This crisis has its roots in the governance of the electricity value chain, which took the form of a vertically integrated set of linkages (covering generation, transmission and distribution) internalised within the public sector-owned company, ESKOM. The importance of achieving energy security was brutally put on the political agenda by an inability of ESKOM to meet the new demands of a post-apartheid period of industrial growth and rapid electrification programmes for the poorer, previously disadvantaged segments of South African society. The breakdown of ESKOM's generating, transmission and distribution capacity and rapidly escalating electricity prices shook business and residential householders to the core.

The power and influence of ESKOM and its ministerial protectors within government (Departments of Public Enterprises, as well as Minerals and Energy) enabled it to turn the energy crisis to its own ends. Policy lip service was paid to opening up the space to renewable energy through setting up an independent regulatory agency (NERSA) and creating a policy framework designed to bring in independent power producers. However, in reality this coalition of ESKOM and its government backers blocked rather than facilitated both the entry of private sector actors and the move to using renewable energy options. In face of the fear of systemic energy and its potential effects on the economy, ESKOM was able to use its own failure to reassert its control over the electricity value chain.

The rolling blackouts and demand for massive price increases to fund ESKOM's new capital investment and maintenance costs after a decade of complacency had an initial paralysing effect on counter forces within government and society. Despite interest from foreign renewable investors, the political economy dynamics resulted in policy incoherence, confusion and uncertainty on the part of government. As a result the first renewable energy policy framework (REFIT) emerged stillborn.

Ironically for ESKOM, the continuing electricity crisis and its tightening hold on the whole value chain produced a crisis of confidence in ESKOM's ability to ensure energy security for the country. A series of unintended consequences – the incoming President Zuma in shuffling his cabinet created a new Department of Energy, throwaway commitments he made in a speech at COP15 – opened up a space for the formation of a coalition for change focused on spreading electricity generation away from ESKOM's monopoly to include renewable energy electricity generation.

Given the energy security crisis and the loss of confidence in ESKOM, it catalysed the Treasury to investigate renewable energy alternatives in a new light by allowing a small unit skilled in creating public–private partnerships to have its head in investigating setting up IPPs. This unit occupied space adjacent to the DoE building, operating and giving credit as if it was institutionally located there, brought together a coalition of public and private sector support around its activities and produced a competitive bidding implementation platform called RE IPPPP which allowed IPP investment to take off and drive tariff prices down in the process.

This allowed the DoE to intervene decisively in the policy space, passing new legislation, confining NERSA's role to regulation only and removing it from the IPP selection process; and effectively clipping some of ESKOM's power to control purchasing from IPPs. The result

was to shift the balance of forces in the energy political economy space away from ESKOM's paralysing grip over the value chain. ESKOM still remains a very powerful actor in the terrain of electricity generation, transmission and distribution, but for the moment its total monopoly has been weakened. In short, this has resulted in a current structural break with the previous period, manifested in policy shifts and operational changes, reflecting the power of a new coalition of influence in the political economy of renewables. Whether this leads to the required corporate unbundling of ESKOM and an electricity value chain operating without its stultifying monopoly control is the political economy challenge facing a new coalition for change.

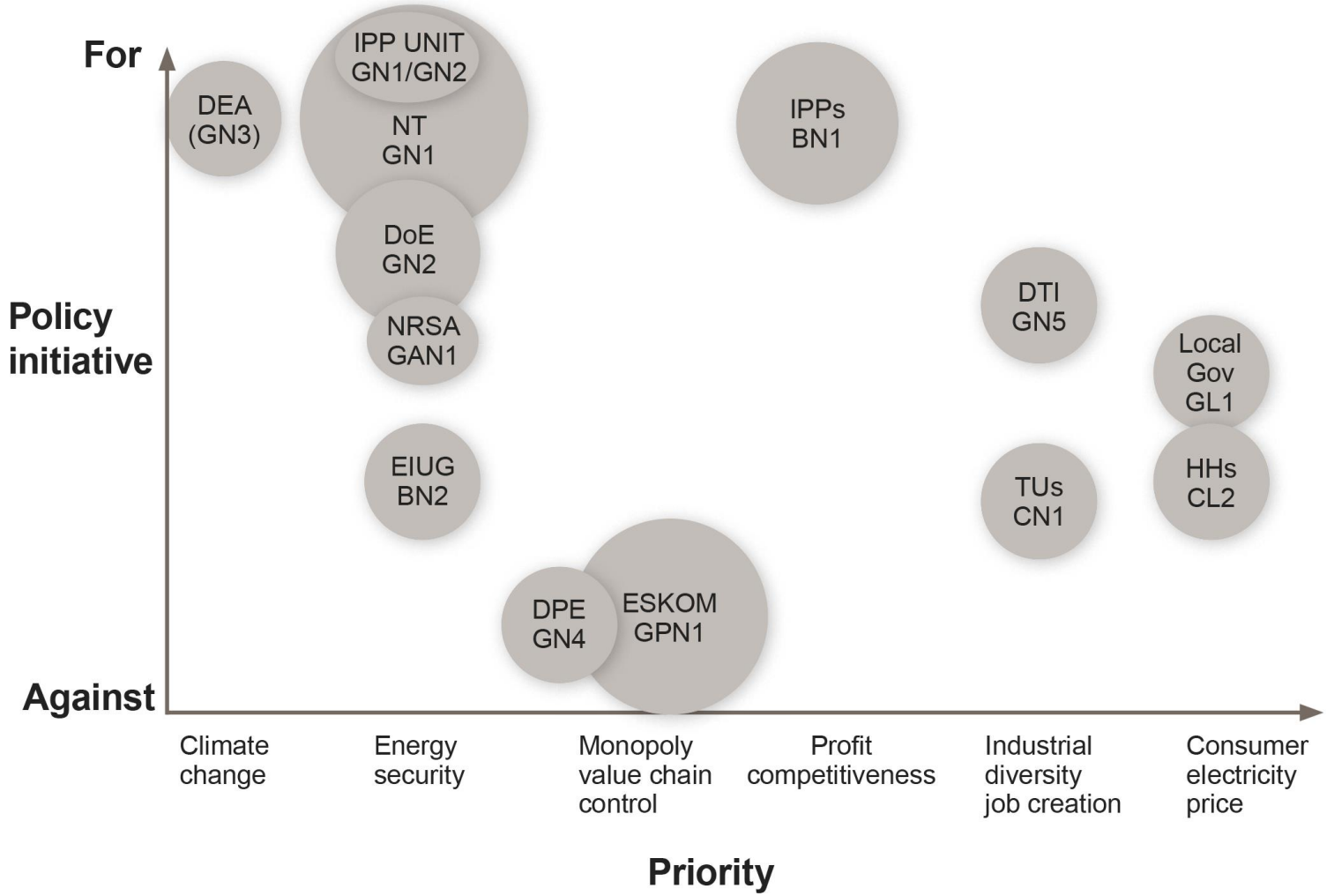
Figure 7.1[57] provides a static snapshot of the various stakeholders and their relative influence in respect of this current periodisation of renewable energy policy. It provides a visual representation of the different stakeholders – their relative levels of influence, their main priority, and their stance on the new renewable energy policy direction of RE IPPPP. It shows the relative position of the various stakeholders – government, business and civil society – in terms of these dimensions. Their primary priority is reflected on the horizontal axis and their relative influence in respect of this new renewable energy policy initiative is shown as 'for' and 'against' RE IPPPP on the vertical axis.

Figure 7.1 demonstrates that the coalition for change is currently in a relatively powerful position. In the public sector its core is comprised of the Treasury, DoE, DEA and NERSA, with conditional support from DTI. Private sector core support is principally derived from the foreign-owned IPP companies and other ancillary business professionals/owners tied to, or benefiting from, their operations. The EIUG and other large corporations are primarily concerned with energy security and low prices. As long as this is not threatened by renewable energy policy their position is relatively neutral. If new opportunities came up which allowed some of the coal mines to move into private sector coal-based power stations then they would most likely jump at this and abandon a long-standing historical alliance with ESKOM, which has already suffered some tension from having to bear the brunt of power shortages.

In the current scenario, in civil society the householder associations unions are either fairly neutral or too busy fighting their own battles. The municipalities who feel the brunt of householder ire, and in that sense are close to civil society pressure, are also located in a relatively neutral space as long as their economic fundraising interests are not jeopardised and their voting constituencies are not aroused. NGOs linked to climate change are strongly in support but, given the low profile this issue has among an array of societal concerns, this is not a substantial source of powerful influence.

[57] The derivation of this graphic representation is explained in footnote 28.

Figure 7.1 Mapping coalitions in RE IPPPP – supporting and opposing stakeholders by degree of influence and priority



The key stakeholders arraigned against are ESKOM and DPE. As is clear from the size of the bubbles, they form a powerful and substantial bloc whose power is not to be underestimated. They are simply keeping their powder dry since fundamentally their interests and control over the electricity value chain are not threatened. ESKOM's occupation of the coal-generating capacity space going forward is still overwhelmingly substantial, and its grasp over the IPP agenda has simply been loosened. Existing discussions taking place in government about expanding the IPP terrain to include private sector coal-fuelled power plants are a threat to ESKOM's monopoly control over the coal-based energy generation link. Moreover, although there is not a serious attempt to unbundle the vertically integrated value chain of generation, transmission and distribution under its public sector governance, this might be viewed as the thin edge of the wedge. On the renewable energy front ESKOM is simply lying dormant, albeit grumpily and in bad faith. If the break-up of the integrated value chain is put on a serious policy agenda then ESKOM is most certainly likely to strike back with some considerable exercise of power. Moreover, if the unbundling process was to happen, and if it were viewed by ESKOM as directly linked to the renewable energy policy direction or as a process of privatisation, then the unions are likely to swing substantially against a green growth energy trajectory.

The coalition appears to be strong and on a roll but this is deceptive. It has a number of soft underbelly areas, some of which have been extensively discussed in the section on challenges and in the periodisation narrative, which render it still fragile in some respects. Moreover, as the coalition is ultimately still very dependent on internal government configurations, and hence potentially shifting political alignments, this could exacerbate its weaknesses. All this is not to say that one is expecting a roll back of renewable energy but that one should be very cautious of being overly optimistic and complacent.

Finally, just as unintended consequences derived from other processes have opened up space and changed the trajectory of the renewable energy drive in positive ways, so the opposite can also occur. The current political desire of President Zuma and key members of the ANC government to benefit from nuclear energy deals with other states – the most prominent being Russia – may well have the unintended consequence of constraining or shifting this trajectory in new, less positive directions.

In summary then, the structural shift creating a formal platform for a renewable energy path was heavily dependent on building a supportive coalition of stakeholders across a diverse base. The formal programme has been created. The rules of engagement by independent power producers have been accepted. A dynamic with significant momentum in this direction has been unleashed. Large amounts of FDI have been invested. The balance of forces driving electricity generation has significantly shifted over the past few years. In short the political economy terrain has altered significantly. However, the future trajectory of sustainable energy is by no means assured.

Annex 1 Key experts interviewed

Key expert	Position
Karen Breytenbach	Senior project advisor for the National Treasury, PPP and IPP Unit; leader in the development and current implementation of the RE IPPPP programme under the DoE's IPP Unit
Rod Crompton	Current full-time regulator member at NERSA. Former member of COSATU's Central Executive Committee, executive member of the International Federation of Chemical, Energy and General Workers Union; former director of Minerals and Energy Policy Centre; former director of chemical and allied industries at the DTI, deputy director general, hydrocarbons, at the DME, and participant in the process of formulating the *White Paper on Energy Policy* and the *White Paper on Renewable Energy*.
Anton Eberhard	Professor at the UCT Graduate School of Business; lead expert in the management and reform of South Africa's electricity sector, introduction of IPPs, and transformation of SOEs; policy advisor for the DPE, DoE and Department of Science and Technology.
Jon Kornik	Past experience in carbon asset management and climate change consulting in South Africa; involved in the formation of the South African Renewables Initiative (SARI); currently employed by Google under its Energy Access & Investments division.
Ferdi Kruger	Chief engineer at ESKOM, involved with price modelling of energy planning scenarios, PPA negotiations with IPPs, contract management with short-term IPPs; former regulatory specialist at NERSA involved in technical and pricing support for evaluation of ESKOM's multi-year revenue application.
Andre Otto	Currently the renewable energy technical advisor at South African National Energy Development Institute (SANEDI) under the DoE. Past project manager of the South African Wind Energy Programme under the DoE and director of new and renewable energy at DoE.
Belynda Petrie	Expert on regional and international climate change adaptation and mitigation; led the Southern African Regional Climate Change Programme (RCCP); chief executive of OneWorld Group, a sustainable development consultancy, based in Cape Town.
John Taylor	Managing director at Fieldstone Private Capital Group; focus on projects in power and infrastructure industries – specifically with private sector bid development for RE IPPPP; experience advising NERSA and ESKOM on co-generation development.
Hilton Trollip	Faculty member at the University of Cape Town's Energy Research Centre and senior researcher with Idasa's Economic Governance Programme; principal engineer for the Energy and Climate Change Unit under the Environmental Resource Management Department for the City of Cape Town.

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