An analysis of collective ownership models to promote renewable energy development and climate justice in South Africa

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"The costs and risks of energy policy thus are not random, but fall most heavily on those least able to participate in the decision-making process- including future generations, which leads to a major quandary. The losers are a poor, disorganised minority, and in the case of posterity, politically irrelevant. In contrast, the winners are numerous, rich, and politically powerful... Participation is essential as a countervailing influence to offset the elite biases, ensure accountability, and to prevent domination of energy policy by special interests. The dominance of technical experts has risen with increases in the scale, sophistication, complexity, and capital requirements of energy technologies. The consequences for democratic societies are troubling. The typical response from advocates of either supply or conservation perspectives is that technological developments represent either necessity or progress."

(Orr, 1979:1049-1052).

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ABSTRACT

This study broadly investigates South African energy policy with specific emphasis on the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). It investigates how the procurement programme links to rights-based climate justice principles. Climate justice principles have the potential to greatly impact the socio-economic development characteristics of the renewable energy sector. These principles incorporate the notions of participation and self-representation, equality, and the anti-commodification of nature, thus linking to the collective ownership aspect of renewable energy plants. Depending on the procurement model chosen, renewable energy has the potential to offer true broad-based empowerment and developmental benefits to the country.

A neo-Gramscian theoretical framework was selected in order to draw links between the renewable energy sector and the political economy which are so entrenched in the Minerals-Energy Complex (MEC). The neo-Gramscian framework demonstrates strength in the uncovering of the shift in the social relations of production and how these interact with the state and the international class project. It is utilised to expose the character of power and hegemony and how the needs of transnational capital are satisfied within local perceptions of development. This research revealed that the renewable energy sector has been annexed by the transnational neoliberal agenda through the non-participative nature of the REIPPPP. To challenge this power relation, the neo-Gramscian notion of a counter-hegemony is particularly pertinent. Community renewables, the focus of this research, are presented as such a counter-hegemonic alternative.

A number of European countries have successfully integrated community owned renewable energy plants into their energy sectors. Various case studies of community renewables in Denmark, Sweden and the UK respectively are proposed as alternative ownership models to those being promoted in the REIPPPP in South Africa. Barriers to community renewables in the South African context have been identified. These identified barriers allow one to make informed predictions about the future ownership of the renewable energy sector in South Africa. Recommendations are suggested that would work towards promoting a more inclusive and participatory renewable energy sector with greater adherence to climate justice principles.

Keywords: Community renewables, climate justice, renewable energy, REIPPPP, socio-economic development, independent power producer

OPSOMMING

Die navorsing ondersoek die Suid-Afrikaanse energie-beleid, met spesifieke klem op die Hernubare Energie-onafhanklike Krag Produseerder Aankopings Program (HEKPAP). Die studie ondersoek hoe die aankoop-program inskakel by regs-gebaseerde klimaat-geregtigheidbeginsels. Klimaat-geregtigheidbeginsels het die potensiaal om ’n aansienlike impak op die sosio-ekonomiese ontwikkelings-eienskappe van die hernubare energie-sektor te maak. Hierdie beginsels inkorporeer die idees van deelname en self-verteenwoordiging, gelykheid, en die anti-kommodifisering van die natuur. Afhangende van die aankoop-model wat verkies word, het hernubare energie die potensiaal om ware breë-bemagtiging en ontwikkelings-voordele aan die land te bied.

’n Neo-Gramscian teoretiese raamwerk word gebruik om die verband te lê tussen die hernubare energie-sektor en die politieke ekonomie, wat verskans is in die Minerale-Energie Kompleks (MEK). Die neo-Gramscian raamwerk blyk deurslaggewend te wees in die verskuiwing in die sosiale verhoudings van produksie, en die gevolglike interaksie tussen die staat en die internasionale klas-projek. Die teorie word gebruik om die aard van mag en hegemonie en die bevrediging van die behoeftes van trans-nasionale kapitaal binne plaaslike ontwikkelings-persepsies bloot te lê. Hierdie navorsing het getoon dat die hernubare energie-sektor gekaap is deur die transnasionale neo-liberale agenda, as gevolg van die nie-deelnemende aard van die HEKPAP. In uitdaging van hierdie mags-verhouding, is die neo-Gramscian idee van 'n teen-hegemonie veral pertinent. Gemeenskap-volhoubare energie, die fokus van hierdie navorsing, word as so 'n teen-hegemoniese alternatief voorgestel.

’n Aantal Europese lande het op suksesvolle wyse gemeenskap-hernubare energie-bronne in hul energie-sektore geïntegreer. Verskeie gevallestudies van gemeenskap-volhoubare energie in Denemarke, Swede en die Verenigde Koninkryk word onderskeidelik voorgehou as alternatiewe eienaarskap-modelle en as alternatiewe vir dit wat voorgestel word deur die HEKPAP in Suid-Afrika. Hindernisse in die weg van volhoubare energie-opwekking in die Suid-Afrikaanse konteks, is ook geïdentifiseer. Hierdie geïdentifiseerde hindernisse laat die navorser toe om ingeligte voorspellings oor die toekomstige eienaarskap van die hernubare energie-sektor in Suid-Afrika te maak. Aanbevelings word voorgestel wat kan bydra tot die bevordering van 'n meer inklusiewe en deelnemende hernubare energie-sektor, met 'n groter beklemtoning van klimaat-geregtigheidbeginsels.

Sleutel woorde: Gemeenskap-hernubare bronne; Klimaat-geregtigheid; Hernubare energie; Sosio-ekonomiese ontwikkeling; Onafhanklike krag-voorsiener

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

LIST OF ACRONYMS AND ABBREVIATIONS

ANC	African National Congress
BBBEE	Broad -based Black Economic Empowerment
BEE	Black Economic Empowerment
BRE	Basil Read Energy
CDM	Clean Development Mechanism
CJ	Climate Justice
CLCO	community-led community-owned model
COD	Commercial Operation Date
COSATU	Congress of South African Trade Unions
CSP	Concentrating Solar Power
DBSA	Development Bank of South Africa
DoE	Department of Energy
FFL	Fossil Fuel Levy
FIT	Feed-in Tariff
GEAR	Growth Employment And Redistribution
GW	GigaWatt
IDC	Industrial Development Corporation
IPP	Independent Power Producer
IRP	Integrated Resource Plan
IRR	Internal Rate of Return
ISMO	Independent System and Market Operator
kW	Kilowatt
kWh	Kilowatt hour
LMTS	Long-term Mitigation Scenario
MEC	Minerals Energy Complex
MW	Megawatt
MYPD	Multi-year Price Determination
NEG	Non-Eskom Generator
NERSA	National Energy Regulator of South Africa
NFFO	Non-Fossil Fuel Obligation
NFPA	Non-Fossil Purchasing Agency
NPV	Net Present Value
NUMSA	National Union of Metal-workers South Africa
PPA	Power Purchase Agreement
PV	Photovoltaic
RDP	Reconstruction and Development Program
RE	Renewable Energy
REBID	Renewable Energy Bid
RED	Regional Electricity Distributor
REDD	Reducing Emissions from Deforestation and Degradation
REFIT	Renewable Energy Feed-in Tariff
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RFI	Request for Information
RFP	Request for Proposals
ROC	Renewable Obligation Certificate
SA	South Africa
SAPVIA	South African Photovoltaic Industry Association
SAWEA	South African Wind Energy Association
SBO	Single Buyer Office

SED	Socio-Economic Development
SOE	State Owned Enterprise
SPV	Special Purpose Vehicle
TGC	Tradable Green Certificate
TREC	Tradable Renewable Energy Certificate
UK	United Kingdom
UNFCCC	Nations Framework Convention on Climate Change
VFPC	Victoria Falls Power Company

CHAPTER 1 BACKGROUND

1.1 Introduction

Since the end of Apartheid, the Reconstruction and Development Plan (RDP) was promulgated as one of the more progressive policy documents prioritising the electrification of low-income households on a mass scale. The shift towards the Growth, Employment and Redistribution (GEAR) policy in the late 1990's saw the original redistribution policies being scrapped in favour of more aggressive cost recovery policies, trade liberalisation, privatization, tax cuts, and deregulation (Narsiah, 2002; Schneider, 2003). The corporatisation of Eskom is linked to the GEAR policy which resulted in strict cost recovery and reflectivity principles in the electricity sector. This has further resulted in mass disconnections and service delivery that continues to be geared away from basic needs and service provision to the poor but rather towards profitability and continued preferential provision in favour of the Minerals-Energy Complex (MEC) and the many linked corporations (McDonald, 2009). The South African energy system is inherently interlinked to the MEC, keeping up with demands of providing cheap, constant power. Supplying this electricity has been the sole responsibility of the monopoly enterprise, Eskom.

Amongst other issues, energy security and global trends that work towards combating climate change have seriously challenged Eskom's social and environmental licence to operate. As a measure to mitigate climate change, the Government of South Africa has committed to diversifying electricity supply through renewable energy generation. The White Paper on Renewable Energy sets a target of 10 000 GWh renewable energy contribution to final energy consumption by 2013 which is the equivalent of 1667 MW or 4% of the predicted demand (The Department of Minerals and Energy, 2003). Although this commitment may not be enough, it is a definite step in the right direction.

Renewable energy by its nature is a form of decentralised power generation. The technical benefits of this decentralisation are system stability and reduced transmission losses. The environmental benefits of renewable energy are widely researched and far reaching. The renewable energy generation process ensures that there are no fuel impacts, no waste products nor the production of greenhouse gas emissions. More relevant to this research however, are the social benefits of small renewable energy decentralised generating stations. These social benefits are broad scale as their decentralised nature ensures that there is an opportunity for localised/regional benefits that would be spread countrywide, bringing opportunities for local development and job creation to areas that are often marginalised. The manageable size of the projects also creates an opportunity for community ownership and involvement, hence increasing social equity.

Two major renewable energy generation procurements are currently underway. The first consists of developments internally at Eskom and the second is the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) (The Department of Energy, 2011a). Eskom, being the largest supplier of electricity to the national grid, has embarked on the development of two major renewable energy plants; these being 100 MW Concentrating Solar Power (CSP) plant as well as a 100MW wind farm. Although these two plants are under 10% of the current REIPPPP capacity, they are still significant. Although Eskom is solely owned by

Government, it has been corporatised and driven by profitability. This corporatisation means that the company is not defined by democratic and participatory structures of ownership and control, nor is it democratically accountable (Greenberg, 2009:76). This corporate model puts serious constraints on the social equity allocations through the retailing of electricity and also hinders social ownership of the generating facilities.

The second programme taking place is the REIPPPP (The Department of Energy, 2011a). In August 2011 the Department of Energy promulgated the REIPPPP which aims to procure 3275 MW of renewable energy into the national grid. This programme, which also aims to decentralise supply and to include broad social objectives, has the potential to improve social equity through the localised and collective ownership of electric generating facilities. The REIPPPP has certain socio-economic development criteria that each bidder is obligated to accomplish before being awarded a Power Purchase Agreement (PPA). This procurement programme arose out of pressures such as environmental stewardship and supply security (The Department of Minerals and Energy, 2003). This programme marks an immense paradigm shift in the workings of electricity provision in South Africa. Firstly, as a stark contradiction to existing supply, South Africa will be experiencing clean renewable energy coming onto the grid. Secondly, the power will be generated in smaller, distributed power stations. This lies in stark contradiction to the existing large-scale centralised generators of Eskom. Thirdly, the power stations will be privately owned, which for the first time will challenge the efficiency of Eskom in the provision of generating infrastructure. Such a procurement mechanism has the potential to greatly increase the social equity to the rural poor of the country as well as vastly improve socio-economic development benefits as a whole.

The use of renewable energy in electricity generation has significant positive effects as a mitigation tool against climate change. Within the climate change debate, issues of climate justice are key in determining those who are liable and financially responsible for climate change. Climate justice seeks to find equitable climate agreements which according to Schlosberg (2012:445), can be split into mainstream and rights-based approaches. The rights-based approach includes the notions of participation and self-representation, equality, anti-commodification of nature and the limiting of transnational corporate influence. Collective or common ownership over our natural resources and energy sources is also stressed within this approach. Such ownership would ensure democratic and participatory community controlled development of renewable energies, and would allow the communities, in these resource rich areas, to build an autonomous and empowering development path. Using these principles as the basis for ensuring a truly just transition to a low carbon future, it can be concluded that social and community ownership is favoured over corporate/utility ownership which continues to strive for hegemonic control. In order to enable renewable energy policies that are geared towards climate justice principles, there is a need for public participation in the formulation of these energy policies as well as broad participation in the planning procedures (unknown author, 2002). Policies that are not dictated by the corporate, financial and governmental elites but ones that are directed by democratic and participatory principles would then be established (Orr, 1979).

Community ownership has been the most successful in European countries (Bolinger, et al., 2004), in which electricity is viewed as a tool to promote socio-economic development without the aggressive pricing policies linked to broader neoliberal agendas. These models, which promote broader public participation and ownership of energy systems are introduced in this

research and their general operating principles are investigated. Community renewables show strong links to climate justice principles, sharing characteristics such as those described above. These models are then discussed within the neo-Gramscian theoretical framework (Cox, 1993) adopted in this research. Community renewables have the potential to contribute as a counter-hegemonic alternative, that will serve to challenge energy provision which is so powerfully linked to the political economy of the country.

These models are starkly different to that being promoted under the REIPPPP. The community ownership aspects of the REIPPPP are investigated in order to compare the emerging ownership models in South Africa to those successfully implemented in Europe. The analysis of the REIPPPP is extended to form a view of the emerging sector and to determine the characteristics of the emerging hegemony. The barriers to true community-led and developed projects are investigated and listed. Models that have been successful overseas are also introduced in relation to the South African context. These are also discussed in terms of their operating principles and climate justice principles.

Finally, the results of this investigation led to some conclusions about the make-up of the renewables sector and thus suggest some recommendations in order to ensure the community ownership aspects of the REIPPPP work towards fostering a more participatory energy sector. Final recommendations are given in order to overcome barriers and enable community renewables in South Africa.

1.2 Problem statement

Historically, the state has an important role to play in the achievement of greater social and economic equity. The new dispensation in South Africa emerged from a history of a non-democratic, minority, authoritarian rule. Even in the face of international sanctions, the state was able to protect the interests as well as improve the social and economic equity of the white minority. This was done through the repression of democratic opposition, and by state influence over the economy in order to protect the interests and improve the social and economic equity of the white minority. After South Africa's subsequent transition to democracy, the state accepted the responsibility to restructure the economy in order to promote broader participation and opportunity. The aim was to promote equality and equal access to opportunities (Seekings & Natrass, 2005).

However, almost 20 years later, South Africa still faces rampant poverty, mass unemployment, lack of education, vast inequality and service delivery issues (McDonald & Pape, 2002). In addition, a newly articulated ‘class apartheid’ has led to a minority black elite benefitting from a change in power that originally promised freedom and equality for all. The dominance of apartheid Afrikaner political power in the previous dispensation, managed the country on behalf of essentially English mining capital. In the process, the majority of the black South African population was stripped of their land, turning them from a peasant class to an underclass that had neither land ownership, nor ownership of the productive assets in the country. This lack of economic empowerment has contributed to the poverty crisis the country is still facing. Attempts have been made through affirmative action and Black Economic Empowerment (BEE) to spread the economic wealth but it has failed to spread this wealth to grass roots level. Furthermore, the BEE model has not challenged the foundations of the extractive economy which is based on the supply of cheap labour (Marais, 1998).

External to these local problems of vast social inequality is the international dilemma of mass ecological destruction and climate change. The depletion of fossil fuels, energy security and anthropogenic climate change, have had serious detrimental effects on global political economy. The recognition of this has driven increased interest and investment in alternative and renewable energy forms. Capitalism's continued need for extraction of resources and growth as well as its energy intensive industry has contributed to such anthropogenic climate change. This has given birth to the climate justice movement. This movement appeals to governments globally to address the vast inequalities worldwide and make provision for the poor that will bear the brunt of climate change. The current world crisis and ever increasing amount of catastrophes caused by climate change require the world to re-strategise. This would entail a movement away from the subjugation of the economies to market dependence and more sustainable means of development, where greater emphasis is placed on broader social and economic equity (Bond, 2012).

Renewable energy has been identified as one of South Africa's main climate change mitigation measures in its drive to move to a low carbon economy (The Department of Minerals and Energy, 2003). This has proven a challenge given that South Africa has adopted a pollution prone, coal based, electricity sector that is driven by the Minerals Energy Complex (MEC) and has monopoly domination by Eskom. With renewable energy in its emergent stages in the country, there still remains scope for the democratic and equitable control over these resources. This would imply that Government protects the best renewable sites from corporate land grabs and recognises the opportunity to use renewable energy as a tool to achieve governmental goals in promoting equity and equality throughout South African society at large.

The recent promulgation of the REIPPPP is crucial to the success of the renewables industry. However, this programme has come under intense scrutiny and has attracted a mixture of public criticism from various sectors. The National Union of Metal Workers South Africa (NUMSA) has been particularly vocal about ownership criteria (Mdluli, 2012). It is argued that the socio-economic development obligations in the REIPPPP will not be sufficient to leave a lasting impact on the socio-economic status of South Africa, nor will it be able to promote climate justice. This is mainly due to Government allowing neoliberal ideals to create a renewable energy sector that will eventually be owned by transnational capital. Only when broader ownership models are incorporated and democratisation of the energy system takes place, will South Africa be able to deliver equity and equality to the nation as a whole.

The predicament identified in the deployment of renewable energy in South Africa, is that it is executed in a way that favours transnational capital and does not allow for collective ownership models to participate. This research therefore aims to investigate these alternative ownership models in more detail as well and level of participation that the REIPPPP aims to promote in the renewable energy sector in South Africa. The inclusion of such ownership would potentially have a marked influence on social equity provision in the country, as well as contributing to climate justice.

1.3 Research questions

Against the background of the formulated problem statement, the following research questions will be answered:

1. To what extent does energy policy in South Africa promote collective ownership and climate justice?
2. What are the community ownership patterns in Europe and how do these models help contribute to climate justice and collective ownership as an alternative?
3. What are the ownership characteristics that are currently being formed in the REIPPPP and what are the barriers to true community-led and developed renewables?
4. What recommendations can be made to promote community renewables and greater participation in the renewables sector in South Africa?

1.4 Research objectives

The following are the main objectives of the research:

1. To investigate South African energy policy with regards to the promotion of collective ownership and climate justice.
2. To investigate community renewables and the models being deployed in Europe and how these models link to climate justice
3. To identify the ownership pattern being formed in the REIPPPP as well as to identify the barriers that face true community-led and developed renewables?
4. To make recommendations to promote community renewables and greater participation in the renewables sector in South Africa.

1.5 Theoretical approach

1.5.1 Introduction

The central theme of this research is to understand renewable energy policy in South Africa with regards to its approach to the provision and promotion of socio-economic aspects of development in the energy sector. How have we arrived at such a point? Who are the actors? Who are the beneficiaries? What does the future hold? Political economy theory debates what the role of the state is or should be with regards to the economy. It also looks at the limits of state intervention in the economy and questions the role it should be playing in ensuring equal and fair development of a country. This theory also considers how much of this should be left to the workings of the private industry and the market?

Two central problems are continually debated in political economy circles (Caporaso & Levine, 1992:2). The first concerns problems with the self regulating market. It considers to what extent private agents acting out of self interest in the market should be able to satisfy their wants and whether political intervention will aid or impede the process. The second debate involves the notion of the public agenda and whether private interests should bear upon the setting of public goals, that is, what is the relationship between private interests and public services?

The neo-Gramscian framework is adopted in this research in order to understand energy policy in South Africa and its influence on renewable energy policy in particular. Through the understanding of the hegemony of the state in the Gramscian definition, the basis and nature of the alternatives can be proposed. The central theme of this research is the focus on alternatives.

Collective ownership and climate justice principles promote an alternative to both private and corporate ownership as well as to centralised state utility ownership. With collective ownership working together with climate justice, a counter-force can be established that will challenge the current status quo in the energy sector. Before neo-Gramscian theory is elaborated, some background to the development of the neo-Gramscian theory is introduced.

1.5.2 Critical theory

By linking the broader political economy to energy policy, Buscher (2009:3952) illustrates that most of the energy policy debate in South Africa is centred around two main axes. The first seeks to address the historical inequalities, through 'attaining universal access to energy by 2014' and 'accessible, affordable and reliable energy, especially for the poor'. The second axis of debate centres on the issue of sustainability of the energy sector. Being so reliant on coal generated electricity, a major concern in energy policy is energy security, the need to diversify energy sources. Reliance on coal as a single source of energy is increasingly threatening future economic growth and it is widely agreed that there is a need to diversify energy supply (The Department of Minerals and Energy, 1998). As the MEC forms the backbone to South Africa's political economy, the MEC should be on the forefront of the debate around energy security issues. Buscher (2009:3952) argues that it is not.

South African energy policy, discussed further in Section 2.4.2, is strongly rooted in a neoliberal framework. As a result more reliance on market principles is found and therefore, a gross bias of service provision towards those that can pay - industry and the middle classes of South Africa. Drawing further from Buscher's (2009: 3952) arguments, the energy policy debates in South Africa "either displays a strong technical, quantitative bias and/or entertain sometimes rather simplistic ideas about policy processes and dynamics". The result of which is a one-sided focus that hampers a deeper understanding of the links between energy, the environment and poverty. Buscher (2009:3952) argues that the two axes described above have been insufficiently connected to the political economy that drives them. The energy inequality crisis that South Africa faces should therefore not be challenged or debated using problem-solving approaches within a neoliberal framework which are typically utilised in energy policy debate. This crisis should rather be considered within a critical theory approach that "puts primacy on understanding the combination of political and economic determinants that make up the contemporary South African, and global, 'framework of existing power relations and institutions'" (Buscher, 2009:3952).

Critical theory, developed by the Frankfort School, is primarily a philosophical method with Jurgen Habermas being a leading scholar (Braaten, 1991). Habermas sees critical theory as a way to recognise the end purpose or '*telos*' of society and to normatively evaluate society's current state as it relates to the fulfilment of that *telos*. "For Habermas, this *telos* is the end of coercion and the attainment of autonomy through reason, the end of alienation through a consensual harmony of interests, and the end of injustice and poverty through the rational administration of justice" (Braaten, 1991:111).

Cox (1981) applies this critical theory methodology to political economy theory. Contrasting other approaches to political economy, critical theory for Cox, "does not take institutions and social and power relations for granted but calls them into question by concerning itself with their origins and whether they might be in the process of changing" (Cox 1981:129). It analyses how existing world orders emerged and how dominant norms, institutions and practices were

established. Importantly, this is not a purpose in itself, but serves as a starting-point for the identification of those forces, able to develop an emancipatory project for a new and more just world order"(Bieler & Morton, 2004:85).

Cox's work was situated within a historical materialist framework of social transformation and drew on the work of the Italian Marxist Antonio Gramsci. This crucial break from mainstream approaches to hegemony in International Relations(IR) theory emerged with the neo-Gramscian theoretical framework (Bieler & Morton, 2004:85). The development of a neo-Gramscian perspective by Robert Cox has been noted as a rejection of mainstream neo-realist and neoliberal institutionalist approaches to IR theory. Furthermore, the more radical alternative of world-systems theory, are also rejected as problem-solving theories -they aim to implement new strategies to make institutions and areas that create conflict, work smoother. These methods represent a guide to tactical actions which sustain the existing order. The neo-Gramscian approach aims to analyse the emergence of existing world orders and how dominant institutions and practices have been developed. It questions the origins and the improvement potential of the existing patterns of interaction (Ünay, 2010:41).

1.5.3 Neo-Gramscian view of hegemony

Cox (1993) elaborates on Gramsci's interpretation and the understanding of the dominant forces in the establishment of hegemony. An actor's idea or an actor's behaviour is never fully autonomous. It is instead, embedded in a historical context that the actor is operating in. This context is what Cox (1981:165-137) describes as the "framework for action".

Stephan (2011:5) cites Cox's (1981:138) identification with the forms of production as a starting point of a neo-Gramscian analysis. The mode of production will determine the interrelation between the "forms of state" and the social forces that are engendered in the mode of production. The dominant social force, usually the capitalist class, tends to have material capabilities as well as the influence over the state apparatuses that can be used to ensure that hegemony prevails.

Gramsci identified the actors involved in establishing hegemony and how forms of social democracy work towards preserving the established hegemony by entrenching it in civil society. This is the consensual aspect to hegemony. The second aspect of hegemony that Gramsci was concerned with was hegemony's coercive characteristics. To Gramsci, as long as the consensual aspect of power is in the forefront, hegemony will prevail with coercive strategies only applied to marginal and deviant classes (Cox, 1993:52). Power and hegemony to neo-Gramscian thought is therefore not only coercion but a “combination of consent and coercion" (Cox, 1993:52). Consent does not always have to be participative but can also be fabricated consent through the claiming of intellectual and moral leadership. This identification led Gramsci to extend the definition of the state to encompass all forms of society and institutions (for example, churches, education systems, media) which help to create behaviour in people that are consistent with hegemonic social order (Cox, 1993:51). Having a powerful position within civil society results in significant influence over societal institutions and allows the discursive power to present one's ideas as being that of general interest (Stephan, 2011:5). When subordinate groups start to consent with the dominant ideas, proposed by the dominant social force, as being in the general interest can be begin to speak of the hegemony of this force.

Gramsci describes hegemony being upheld by the 'historical bloc'. He describes the historical bloc as comprising of state and society as a solid structure. Revolution could only be successful when another structure forms within it that is strong enough to replace the first. A historical bloc can only exist with a hegemonic social class. The hegemonic class maintains cohesion and identity within the bloc through the propagation of a common culture. In order to establish a new bloc, it is vital for dialogue to take place to unite subordinate groups (Cox, 1993:57). The more divided the subaltern groups and the working class of society, the harder will it be to establish a new bloc or a counter-hegemony.

Stephan (2011:5) cites the work of Bieling and Steinhilber (2000) who present an altered version of the analysis of the historical, suggesting the differentiation between three different layers of hegemony: historical bloc, hegemonic bloc and hegemonic project. The 'historical bloc' as conceived by Gramsci encompasses both the historical bloc and the hegemonic bloc of Beiling and Steinhilber (2000). Their version of the historical bloc refers to the structural level, containing all "material and discursive" elements, forming the specific structure of the mode of production and the corresponding in the political and civil society. The hegemonic bloc in this case refers to the actors themselves as well as the alliances within the social forces which render the group as hegemonic. As discussed, it is the role of this hegemonic bloc to propagate the morals and the culture within civil society to maintain the cohesion within the historical bloc. The third analytical category, the hegemonic project, refers to "concrete political initiatives promoted by a social force, which tend to appear as the solution to pressing social, economical, political or ecological problems" (Stephan, 2011:6).

Gramsci describes the difference between a 'war of movement' and a 'war of position', rejecting the notion that vanguard parties will be able to maintain power and stability through a war of movement in societies with strong civil societies. He describes the hegemony of Western Europe; arguing that only a war of position that slowly builds up the strength and social foundations of a new state, will have the power to challenge existing hegemony. However, if the impetus for change is not derived from local socio-economic pressure but from ideological currents from international hegemonic blocs then a 'passive revolution' can occur. Certain policies and ideologies may be introduced without subordinate groups being opposed to it, perhaps because they were excluded from debate or discussion. Satgar (2013) describes three crucial dimensions of the politics of the passive revolution. The first dimension is that it is primarily the politics of social change led from above. This takes place with a conscious effort to limit mass initiative and subaltern hegemony. It usually happens when there is no thorough social revolution, allowing bourgeoisie hegemony to be established and the development of economic structures to take place on these lines. The second dimension is about a gradual or 'molecular transformation' which does not seek to transform the social order. Again, the content of reforms merely meet the needs and requirements of dominant class and social forces. The third dimension describes how through passive revolution, the "modification of economic structures engenders capitalist social relations that produce either a 'bastardised capitalism' (marriage of pre-capitalist and capitalist structures) or variants of state capitalism" (Satgar, 2013:10). Underpinning the passive revolution are "more degenerate authoritarian political forms like 'Caesarism' (rule by a strong political personality or even a corrupt parliament) and *trasformisio* (Satgar, 2013, 10)." *Trasformismo* describes how leaders of subaltern groups are co-opted, leaders that may have been able to resist or oppose the social forces are brought into the hegemonic bloc (Cox, 1993:55). Cox (1993:55) notes "By extension, *trasformismo* can serve

as a strategy of assimilating and domesticating potentially dangerous ideas by adjusting them to the policies of the dominant coalition and can thereby obstruct the formation of class-based organised opposition to established social and political power."

Finally, core to this research is what critical theory enables; a discourse in examining alternative order. A 'counter-hegemony', through the leadership of the working class, actively building alternative resources and linking alienated workers with other classes from below. This will stand to challenge the existing order. This will be a difficult task to achieve and maintain whilst refraining from relapsing into the old order (Cox, 1993:53).

1.5.4 Significance of the neo-Gramscian framework to this research

As will be discussed in Chapter 2, the renewables sector is emerging within an energy sector that is founded within neoliberal policy as well as the globalised MEC (Fine & Rustomjee, 1996). The energy sector over the past years has been corporatised with the state now promulgating a privatised renewable energy sector, separate to the state machine of Eskom. "For neo-Gramscians, global restructuring of capitalism led by transnational capital has been linked to neoliberalism and how transnational capital rules the current world order" (Satgar, 2013:9).

As Bieler and Morton (2003) describe, the neo-Gramscian construction of hegemony is broadened to become more than simply state dominance. This is reiterated by Satgar (2013). The neo-Gramscian framework takes Gramsci's historical materialism further, in terms of mapping a more complex frame to understand power dynamics. Gill (1998) describes two subtle differences in power; direct and structural power. Direct power refers to networks of influence and lobbying to advance the interests of transnational capital. Structural power refers to the mobility of capital and how this constrains the nation state. These formulations of power and dominance are incorporated in the neo-Gramscian framework and descriptions of hegemony. Hegemony, within a historical structure, is constituted through three spheres of activity, the social relations of production, forms of state and world orders. Using the neo-Gramscian theoretical framework brings these three spheres into the discussion which is particularly pertinent to this research on the emergent renewable energy sector in South Africa. The neo-Gramscian analysis will show its strength in uncovering this shift in the social relations of production and how it interacts with the state and an international class project. It will also be important in uncovering the character of power and how the needs of transnational capital are satisfied within local perceptions of development.

Most relevant to this research is the neo-Gramscian formulation of a counter-hegemony. Counter-hegemonic activity, through linking of the subaltern and working classes, will need to stand to challenge the existing order. Part of their responsibility is to present working alternatives that will challenge those promoted by the existing order and transnationalised capital. Chapter 3 presents community renewables as such an alternative.

1.6 Methodology

1.6.1 Research design

The research is based on a qualitative investigative paradigm. Denzon and Lincoln (1994), suggest that qualitative research is useful in the way that it allows for the description of problematic elements of a specific phenomenon to be investigated. Qualitative research gives

the researcher the chance to understand and explain the phenomena investigated, without any predetermined boundaries, by making use of data and literature.

In order to provide trustworthy findings, Cronjé and Chenga (2007:213) illustrate four important elements noted for increasing the **trustworthiness** of qualitative research:

- **Truth value** (confidence in the truth of the findings and the contexts in which the study was undertaken).
- **Applicability** (the degree to which the findings can be applied to other contexts and settings or with other groups).
- **Consistency** (whether the findings would be consistent if the enquiry were replicated with the same subjects or in a similar context).
- **Neutrality** (the degree to which the findings are a function solely of the informants and the conditions of the research and not of other biases).

1.6.2 Research Procedures

This research combined the principles of "basic social scientific research" as well as the principles of "evaluation research" as defined by Smith (1975:293-312). Evaluation methodology is utilised in order to comment on the current status of community renewables and the procurement of renewable energy in South Africa.

Three research procedures were used to conduct the research, namely:

- Literature review
- Survey procedure
- Historic-comparative procedure

1.6.2.1 Literature review

The specific methodology of this research started with a review of literature related to the theoretical orientation of the research, viz. the neo-Gramscian theoretical framework. The literature review also investigated the historical framework for action, being the MEC in South Africa. It investigated the principles of Climate justice, renewable energy policy and broadly defined community ownership structures.

The historical procedure was used to conceptualise and contextualise all facets of the research. Accordingly, books, scientific journal articles, newspaper articles, reports, popular articles and internet web sites were used as sources for the literature review.

1.6.2.2 Survey procedure

This investigation was done within a qualitative research paradigm through semi-structured interviews as the main data collection method. Respondents were allowed to expand on their points of view without being limited by structured questions. Firstly, semi-structured interviews were performed in order to understand the perception, broader perception and objectives of the renewable energy sector through the eyes of the policy makers and industry leaders. These in-depth interviews assisted in clarifying what themes and topics were considered to be important. Secondly, the outcomes of a focus group, hosted by the University of Cape Town, were utilised as part of the survey. A focus-group discussion is a special type of interview wherein the participants of the research project get together to converse under the guidance of a supervisor or researcher (Neuman, 2003:396). Such focus-group interviews are of

great value since they create the opportunity for the participants to air their opinions, ideas, perceptions and concerns freely. Finally, unstructured field interviews were also used in the survey. These were performed over the course of 2012 and were done informally. Neuman (2003:390) states that the field interview is a joint production by the field researcher and research subject. This conversational nature of the interview allowed the researcher to explore the participants' experiences, feelings and beliefs. The field research interviews also made space for the mutual sharing of experiences in order to build trust (Neuman, 2003:391).

1.6.2.3 Historic-comparative procedure (case study comparison)

A case study is considered a specific approach or strategy that can be used as a unit of analysis and also a means by which data can been gathered, organized, and presented. One of the primary goals of conducting a case study is to generate rich, detailed explanations of the phenomenon that is being investigated (Wolff, 2007). Case studies examine society to understand a variant of a specific social phenomenon. These include changes that may occur due to for example the implementation of a policy, program, or specific event. Case studies can also be implemented as a means to understand a specific segment or group in society.

A case study analysis was performed in this research in order to investigate the ownership models utilised in various European countries. This comparative analysis was performed in order to understand what alternative ownership models are available and how these fit onto the energy mix and broader policy objectives. This was necessary in order to understand community ownership for South Africa and to identify the potential barriers. These case studies illustrated certain points and helped with the process of pattern-matching and explanation-building (Babbie & Mounton, 1998:280-283).

1.6.3 Data collection

Data utilised for the literature review and the historic-comparative procedure made use of information various forms of documentation (books, journal articles, project reports, news articles, policy analysis articles, etc.) which were collected and extracted appropriately.

The survey procedure utilised three main sources of data. The first data set was sourced from the semi-structured interviews that were held with industry leaders and Government representatives (see Section 1.6.4 for sampling). The second data source of the survey procedure was sourced through the views and opinions of various industry representatives and in a community ownership focus group workshop that was initiated and led by the Energy Research Centre (ERC) of the University of Cape Town that the researcher participated in. The workshop was attended by 22 participants comprising representatives from IPPs (representing wind, solar and hydro), the South African Photovoltaic Industry Association (SAPVIA), the Development Bank of South Africa (DBSA), the Industrial Development Corporation (IDC), as well as community development practitioners from Community Development Resource Association (CDRA), South African National Biodiversity Institute (SANBI) and Conservation South Africa.

Thirdly, informal/unstructured interviews with farmer groups and other civil society and community leaders were performed over the course of 2012 in order to gain an understanding of the barriers to community renewables in South Africa. The results of the interviews and focus group were combined with some initial, high-level socio-economic development indicators that have emerged from bid window 1 and 2 of the REIPPPP.

1.6.4 Sampling

The semi-structured interviews were performed with the following organisations:

1. National Government

   National Government agencies and officials were interviewed to try to understand the drivers behind the nature of the REIPPPP and its lack of provision for community ownership models. Questions asked aimed to gather information regarding the change in the procurement programme from a REFIT structure to the current competitive bid of the REIPPPP. National government is running the procurement process and therefore their views on this change are essential in understanding the possible influence of hegemonic forces. Further questions to Government included attitudes towards community ownership and some of the barriers that exist in South Africa and their future plans/intentions to address these. By interviewing a representative from Eskom, the monopoly electricity utility and the owner of the national grid, which has been resisting the introduction of competition, it would be important to hear their views on the control and perceived reaction to private ownership structures being introduced through the REIPPPP. Departments targeted included:

   - Department of Energy.
   - National Energy Regulator (NERSA).
   - ESKOM.

2. Industry associations

   There are a number of industry associations that have recently been formed and it was most valuable to gain their perspective of the current procurement programme and the private sector's reaction to the REIPPPP. This aided in further understanding of the social forces behind the bid as well as the nature of the private sector influence over the procurement. The following industry associations were interviewed:
   - South African Photovoltaic Industry Association (SAPVIA).
   - South African Wind Energy Association (SAWEA).

3. International technology manufacturer

   Interviewing a major technology provider and understanding their lobbying strategies and their procurement preferences. Their international experience with different procurement programmes were examined and their views on community ownership were also investigated. The following technology provider was interviewed:
   - Vestas (Wind Turbine Manufacturer, Denmark).

4. Developer

   Interviewing a 'preferred bidder', successful in the first round of procurement was done in order to understand the major barriers to the REIPPPP. An understanding into the community ownership aspects of the bid were probed as well as the democratic nature of the trusts that are being formed. The following developer was interviewed:
   - Basil Read Energy.

5. Banks

   Questions relating to the financing of a renewable energy sector were asked. The banks were considered essential in determining the future make-up of the sector. Furthermore, their reaction to social ownership of renewable energy systems were probed. The following bank was interviewed:
   - Nedbank.

6. Organised labour union

   Organised labour (COSATU) was interviewed as they are strongly tied to the private sector in some regards but also strongly support the notion of a socially owned sector (NUMSA). They offered valuable insight into the political nature of the decision making as well as the working class reaction to ownership questions. They provided valuable information on how to finance the community renewables without impacting on the electricity price. The following labour union was interviewed:
   - NUMSA.

7. Civil Society

   The South African context is very different to that of Europe which would have an effect on the uptake of community renewables. Civil Society was interviewed in order to understand and identify some of the barriers facing some of the suggested ownership models investigated. The following community based organisation was interviewed:
   - Soweto Electricity Crisis Committee (SECC).

The interview schedule is outlined in Table 1.

Table 1: List of interviews

	Sector	**Organisation**	**Interviewee**	**Position**	**Date Interviewed**
1.	National Government	Department of Energy	Maduna Ngobeni	Manager	05/12/2012
2.	National Government	National Energy Regulator (NERSA)	Thembani Bukula	Regulator: Electricity	05/12/2012
3.	National Government	Eskom	Yousuf Haffejee	Head: ISMO	05/12/2012
4.	Industry Association	South African Wind Energy Association (SAWEA)	Johan van den Berg	Chairperson	19/11/2012
5.	Industry Association	South African Photovoltaic Industry Association (SAPVIA)	Mike Levington	Deputy Chairperson	15/11/2012

	Sector	Organisation	Interviewee	Position	Date Interviewed
6.	International Technology Provider	Vestas	James White	Sales Manager	13/11/2012
7.	Developer	Basil Read Energy	Ian Curry	CEO	04/12/2012
8.	Bank	Nedbank	Sakkie Leimecke	Lead Principal: Energy	06/12/2012
9.	Union	NUMSA	Dinga Sikwebu	Head of Education	07/12/2012
10.	Civil Society	SECC	Trevor Ngwane	Organising committee	05/02/2013

1.6.5 Data analysis

Qualitative document and content analysis were the primary analysis tools adopted in this study. All interviews were analysed utilising thematic content analysis. Thematic content analysis portrays the thematic content of interview transcripts (and other texts) by identifying common themes in the texts provided for analysis. This study followed the steps outlined according to Busch et al. (1994-2012:3):

1. Deciding on the level of analysis.
2. Deciding on how many concepts to code for.
3. Deciding whether to code for the existence or frequency of a concept.
4. Deciding how to distinguish between concepts.
5. Developing rules for the coding of texts.
6. Deciding what to do with irrelevant information.
7. Coding texts.
8. Analysing results.

1.6.6 Ethical considerations

The research was guided by an explicit ethical policy that was made available to all interviewees. Most importantly, the researcher disclosed his identity and explained the nature of the research to the participants. A consent form obtained permission from respondents to use the information gathered from interviews and the questionnaire for the purposes of this study. Participants were also informed that they were free to withdraw from the research at any stage. Respondents were informed that participation in the study was completely voluntary, and that confidentiality would be maintained.

The following ethical considerations were kept in mind while conducting the research:

- *Voluntary participation.* No participant was forced to take part in the research and participants were free to withdraw at any moment. Participants were informed that there were no benefits or risks associated with participating in the study. A consent form was provided to the participants.

- *Confidentiality.* All information gathered during the study was handled confidentially and permission from the participants was obtained if some of the information was to be shared publically. It was communicated that any tape recordings would be destroyed

once the data had been transcribed so that the transcriptions could not be linked to the participants, thus ensuring confidentiality.

- *Deception.* The most common form of deception involves misleading participants about the purpose of the study. To counter this threat, participants were informed fully about the aim, the purpose and the procedures of the study beforehand.

1.6.7 Significance and limitations of the study

The REIPPPP is currently being run in order to bring much needed renewable energy capacity onto the grid. It is gaining significant momentum that should lead to a promising and prosperous renewable energy sector. Environmentalists, banks, international developers, technology providers, as well as local and international equity financiers have all contributed to shaping the procurement programme. However, due to current policy and the rules and nature of the REIPPPP, there is very little scope for the community ownership of renewable energy generating plants. This study will introduce some of the best practices found overseas and highlight the challenges for the implementation of these plants in South Africa.

Because the industry is new to South Africa, limited local experience was found in the literature. This research aimed to extend existing knowledge in the area under investigation. This extension of knowledge will have substantive and methodological significance in that it aims to add insight to the current procurement of renewable energy, as well as to introduce community renewables as an alternative.

CHAPTER 2 LITERATURE REVIEW: CLIMATE JUSTICE AND ENERGY POLICY

2.1 Introduction

This Chapter serves as an introduction to climate justice as well as energy policy and some mechanisms to promote renewable energy development. More specifically this Chapter introduces the character of South Africa's political economy and its renewable energy policy. Bieler and Morton (2003:online) describe the first point of departure in a neo-Gramscian analysis as the investigation of the production structure in order to identify dominant social forces as the key collective actors. In conceiving the current make-up of the Gramscian notion of the historic bloc and the social forces involved in ensuring control over the nature of South African development, we need to take a step backwards in order to understand the historic framework, pre-democracy. We can then understand the interaction that this has with the electricity sector of South Africa. Finally, this policy background is linked to the principles of climate justice in order to determine how they have been incorporated into policy and the energy sector.

2.2 Climate justice

2.2.1 Mainstream vs. rights-based approaches

Mainstream climate justice debate commonly recognises the following issues when trying to reach a just and equitable climate agreement (Shah, 2012: online):

- The Industrialised nations have emitted far more greenhouse gas emissions than developing nations, providing a cheaper way to industrialisation.
- Rich countries therefore face the biggest responsibility and burden to initiate action addressing climate change.
- Developed countries, therefore, must support developing nations, helping them to adapt so that they avoid the pollution path (i.e. easier and cheaper) to development. This could be done through the transfer of financing and technology.

Justice is most often framed in terms of distribution and emissions rights. De Lucia (2008:2) notes that the discourse of climate justice brings together politics, business and civil society. The influence of business and politics pushes the dialectical debate on climate justice between extreme neo-liberal and market radicalism in order to secure a 'just' agreement that allows for business as usual. De Lucia (2008:1) notes "In this context, justice becomes an ideological tool aimed at winning the consent of a wide social base necessary for the renegotiation and (re)solidification of an emerging hegemonic historic bloc, aimed at the reconfiguration of capitalism under conditions of ecological/climate crisis." This dialectic is occuring within the transnational capitalist class formation process and is what Gramsci would describe as the 'passive revolution' (Stephan, 2011:13).

The establishment of the United Nations Framework Convention on Climate Change (UNFCCC) and the promulgation of the Kyoto Protocol, deals with climate justice in terms of responsibility and distribution of costs and benefits. The main focus of these is on market-based mechanisms such as the establishment of a carbon market, technology transfer and monetary solutions. At the other end of the climate debate lies a small counter-hegemonic force that calls for a social/re-distributional compensatory rights-based approach to climate justice.

The rights-based approach to climate justice movement is described by Bond (2012:185) as ".. the name of the new movement that best fuses a variety of progressive political-economic and political-ecological currents to combat the most serious threat humanity and other species face in the twenty-first century". The rights-based approach to climate justice movement takes the climate debate a step to the 'left' by placing the blame on the world's super powers. This movement thus calls for social justice and compensation to those who have been hit hardest and will be affected the most by climate change, the world's poorest. The climate justice movement denounces programmes such as the 'green economy', the Clean Development Mechanism (CDM) and Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (REDD). According to them such green 'neo-liberal' approaches are ineffectual in solving the crisis owing to climate change. This crisis rather calls for system change exposing the ecological dimension of capital accumulation and therefore, any market-based approach to tackle climate change will be ineffectual (Bassey, 2011; Bond, 2011; Storm, 2009).

There are various rights-based climate groups who have listed sets of principles of climate justice. For example, the 1991 People of Color Environmental Justice Leadership Summit Principles of Environmental Justice (People of Color Environmental Justice Summit, 1991), the 10 actions of Climate Justice Policies (Miller & Sisco, 2002), the Bali Principles of Climate Justice (unknown author, 2002), the Milan Declaration of the Sixth International Indigenous Peoples Forum on Climate Change (Representatives of the Indigenous Peoples, 2003), the 10 principles for Just Climate Change Policies in Minnesota (Environmental Justice Advocates of Minnesota Working Group, 2007), and the Environmental Justice Leadership Forum on Climate Change Principles of Climate Change (Environmental Justice Leadership Forum on Climate Change, 2008).

2.2.2 Hegemony, climate justice and community renewables

Stephan (2011) uses the neo-Gramscian approach to illustrate the triumph of the market-based global emissions trading scheme. The 'carboniferous free market' is used as the historical framework where energy giants such as BP (being one of the largest economies of the world) have given it the material means to exercise coercive power in order to organise societal consensus. A global market economy that is dependent on energy growth has made such corporations extremely dependent on the world's addiction to fossil fuels. Mechanisms such as carbon tax will add costs to the energy giants and it is quite obvious that a carbon market, presenting the energy companies with large assets and additional profit streams, would be the preferred solution.

The neo-Gramscian analysis of the climate justice debate warrants a few observations. The hegemonic project, being the market-based mechanism of emissions trading, is supported and driven by the hegemonic bloc being the large carbon emitters and world political hegemonies. This all takes place in the historical bloc being the system of accumulation and world capitalist system. De Lucia (2008:8) presents an example of five large civil society organisations such as Greenpeace and WWF who work to legitimate the solutions of the United Nations Climate Regime (UNCR). This has taken place as Gramsci describes as the 'passive revolution' (Cox, 1993:55). Stephan (2011:13) describes in detail how the passive revolution of the emissions trading scheme took place through the co-opting of European elites and environmental NGO's by the historical bloc originating in the U.S., a hegemonic project that has taken a global transformative character.

Climate change, whilst being a global problem has local effects through specific climate phenomena, such as droughts, floods and other climate induced disasters. Through the process of *trasformismo* and championing of market-based solutions to climate change, the voice of the local communities affected by climate change will never be heard. This constant fight for rights-based solutions to climate change are reflected in the principles of climate justice. One of the central themes of this research is community renewables and how it relates to climate justice principles. By examining the Bali principles of climate justice (2002) which are the most extensive, the community emphasis is disaggregated from the list. These community specific principles that relate to community participation have been slightly altered by the author to form 'climate justice goals', listed in Table 2.

Table 2: Climate justice goals

1. To promote local community participation and self-representation
2. To allow affected communities to play leading role in processes to address climate change
3. To limit the effect of transnational corporations' influence on national decision-making
4. To protect the rights of those affected by climate change by promoting compensation of loss as well as protection of livelihoods
5. To promote clean, renewable, locally controlled, and low impact energy resources
6. To promote access to affordable and sustainable energy for all people
7. To oppose any form of commodification of nature, its resources and human's basic needs
8. To promote policy that is free from any form of discrimination or bias
9. To protect indigenous communities against any action or conduct that may result in the destruction or degradation of their territories and cultural way of life.
10. To allow local communities to participate effectively at every level of planning decision-making in projects that may affect their way of life.
11. To promote environmental and sustainability education equally.

From these above mentioned goals for climate justice, the notions of participation, equality, community representation and the limiting of transnational corporate influence, it can be concluded that social ownership as opposed to corporate/utility ownership is needed to ensure a just transition to a low carbon future. Comparing these goals and principles to energy and climate change policy it will enable the reader to delineate suggested solutions and to determine whether they are biased towards an existing hegemony.

Apart from co-opting major civil society organisations to promote market-based solutions, these organisations also tend to overlook models of deployment when promoting large-scale climate change solutions. This is found when climate groups around the world, as part of the larger climate movement, tend to have a strong ecological focus. They tend to lack a coherent stance on

the social inequalities that large corporate renewable projects have had and how these impacts will be aggravated by climate change (Baer, 2011: 259). For this reason it is important to comment on the method of deployment and the argument that the ownership (corporate or collective ownership) of these technologies should also be a consideration when promoting climate change programmes.

Abramsky (2010:636) stresses the importance of collective or common ownership over the earth's natural resources and energy sources. Such ownership would ensure democratic and participatory community controlled development of renewable energies. This would also allow the communities in these resource rich areas to build an autonomous and empowering development path. The successful democratic ownership and control patterns that have emerged in the renewable energy sector in Europe are currently being undermined and threatened by larger private institutions and free trade agreements.

Further to the argument of the ownership of renewable energy, Abramsky (2010:639) deliberates some reasons why democratic and collective ownership of fossil fuels are vital in ensuring a just and swift shift away from human's reliance on these fuels to a renewable energy based economy. Collective ownership would make it possible to use the world's remaining fossil fuel resources in a rational, coordinated and collectively planned way, rather than in an inequitable, wasteful way in which competitive market logic allocates resources. This is necessary to ensure the move away from fossils to renewable sources. Secondly, the economic revenues from the rent of these resources would be allocated to collective social needs and to finance the rapid transition towards renewable energy.

2.3 Electricity markets and renewable energy policy mechanisms

2.3.1 Electricity market structures and reform

> *"Electricity is most efficiently supplied, under capitalism, by a monopoly. Even the most ardent believer in free competition will usually see that two or more large power station networks, with two or more overlaid reticulation systems, arranged so that consumers can choose between suppliers, are likely to be an uneconomic waste of resources. It rapidly becomes obvious to competing capitalists that a merger or cartel would suit all parties better: consumers might get lower prices because of increased economies of scale, and suppliers would have security of demand, so that capital would not lie idle. Power networks are so large and take so long to build that once a vested interest is established 'entry into the market' is exceedingly difficult. Nevertheless entries are made and competition does occur at the boundaries of networks. The sheer size, however, of investments in electricity systems, means that high risks are run where systems compete"* ((Christie (1984), as cited in Gentle (2009:60)).

Eberhard (2006:229) identifies three major international drivers for electricity sector reform:

1. Improved investment and operational efficiencies that blight the performance of monopoly utilities, especially State Owned Enterprises (SOEs) that are not accountable to shareholders.

2. The need for massive new capacity expansion places increased demands for finance that are not readily available from the public sources, calling for greater reliance on private sector involvement.
3. Restructuring and privatisation create the opportunity for redistributing the rents and assets of the electric power system and for unlocking economic value or reducing government debt.

Electricity sector reform would follow the course of moving away from natural monopolies by introducing competition. Gratwick and Eberhard (2008:3954) describes four archetypal electricity market structures. These are listed below and illustrated in Figure 1:

1. The vertically integrated monopoly;
2. The single buyer model, whether state-owned or investor-owned;
3. The wholesale competition model; and
4. The retail competition model.

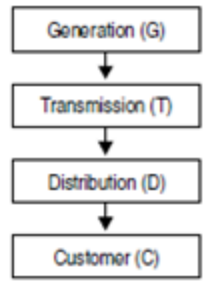
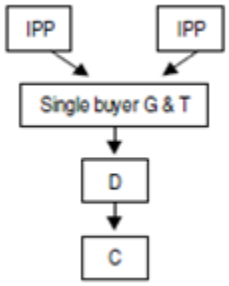
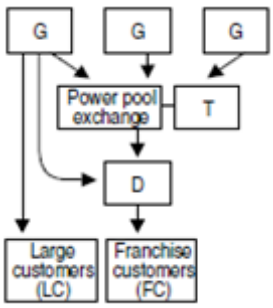
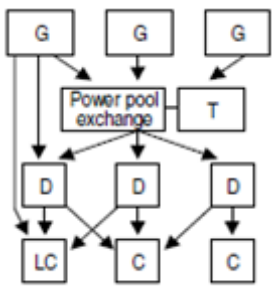
Model 1: Natural Monopoly	**Model 2: Single Buyer**	**Model 3: Wholesale competition**	**Model 4: Retail Competition**
• Utilities are vertically integrated • Generation, transmission and distribution are not subject to competition • No-one has choice of supplier	• Singe buyer chooses from various IPPs • Access to transmission not permitted for sale to final customers • Single buyer has monopoly over transmission networks and oversees sales to final customer	• Distribution companies buy direct from generator (IPPs) • Distribution companies have monopoly over final customers • Open access to transmission grid • Generators compete to supply power	• All Customers have choice of supplier • open access to T&D wires • Distribution is separate from retail activity • Retail industry is competitive
			

Figure 1: Archetypal electricity market structures (Gratwick & Eberhard, 2008:3954)

The four models illustrate the series of stages towards increased power sector competition. The stages towards power sector reform generally include the following activities (Eberhard & Gratwick, 2008:3952):

- corporatisation;
- commercialisation;
- passage of the necessary legislation;
- establishment of an independent regulator;
- introduction of IPPs;
- restructuring and vertical unbundling;

- divestiture of generation and distribution assets; and
- introduction of competition at wholesale and, eventually, retail levels.

This formulation is largely based on the early power sector reforms that have been carried out in England and Wales, Chile and Norway.

These steps are often not followed to completion in other countries, and a hybrid model has been introduced by Gratwick and Eberhard (2008:3958). An example of such a hybrid model is illustrated in Figure 2:

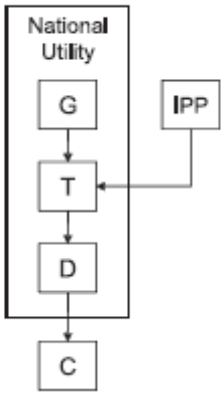


Figure 2: Hybrid model typical in Africa (Pickering, 2010, p. v)

Historically, Eskom and South Africa's electricity market have functioned most closely to the principles of a natural monopoly. The structure of South Africa's power market is shown in Figure 3:

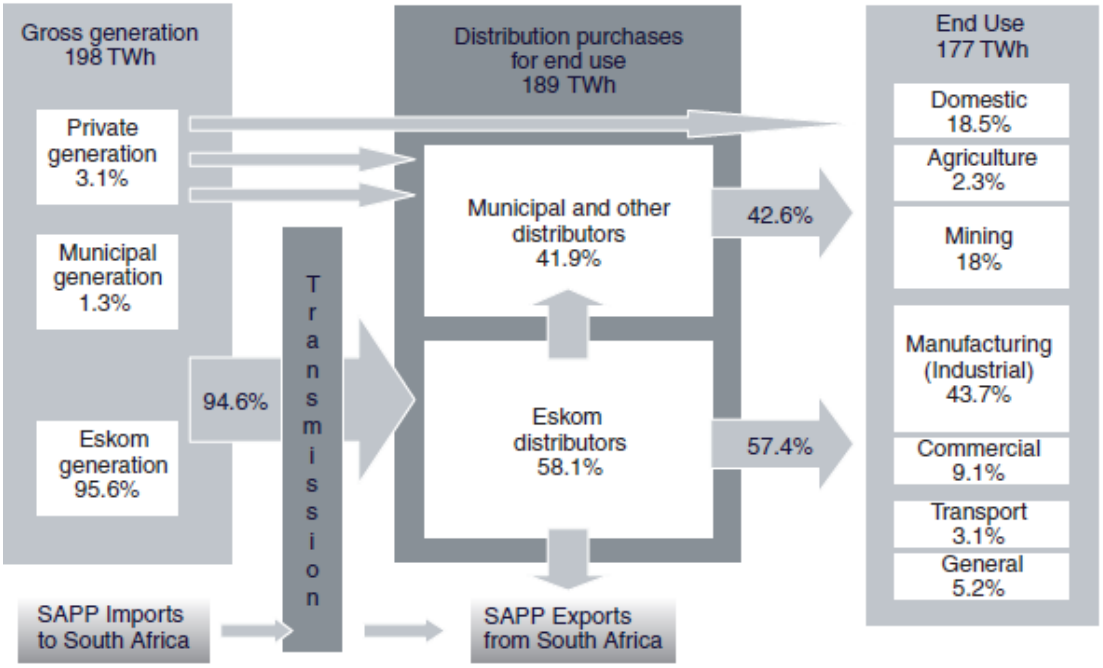


Figure 3: South African power sector structure, and energy flows (Eberhard, 2006:224)

Because the ISMO bill has yet to be passed by parliament (The Department of Energy, 2011c), South Africa's electricity market, through the REIPPPP procurement, would resemble the hybrid model shown in Figure 2 instead of model 2 in Figure 1.

2.3.2 Barriers to renewable energy development

There are many barriers that act to block renewable energy from entering the market. Beck and Martinot (2004:3) summarise these barriers into the following three categories: Costs and Pricing; Legal and Regulatory; and Market Performance.

The contributing factors to the cost and pricing of renewable energy barriers are mainly due to to their competition with fossil fuel power. Public subsidies have traditionally favoured fossil-fuel power which has resulted in the lower consumer cost. These subsidies take many forms from direct subsidies on the fuel price to reseach subsidies. Furthermore, because of the world's addiction to fossil fuels, high demand has been placed on renewable technologies resulting in an immature market with very high capital costs. The high intial capital costs result in a higher levelised electricity price for renewables. This is especially relevent to newer technologies such as wind and solar. Hydro electricity for example can produce power for less than fossil powered electricity because it is a more mature technology. Higher transaction costs of smaller scale projects increase the price of renewable power. The fossil mega projects are able to reap cost reductions from economies of scale whereas renewable projects are generally smaller. Other costing implecations are the fact that environmental externalities are not priced into fossil power and the distributed energy benefits of renewables are not financially accounted for.

Legal and regulatory barriers to renewables include the lack of legal frameworks and programmes that enable independent power producers. Without a set of rules, small-scale investors and developers will not be enabled to feed-in renewable power, leaving it to the responsibiliity of the utilities. Utilities usually favour large-scale centralised power stations that provide base-load power and not renewables. Transmission access for small projects, interconnection requirements, siting restrictions have also played as a negative factor for renewables in the past.

The market performance category deals with barriers such as the credit worthiness of small developers and projects who lack the access to capital, due to lack of collateral and distorted capital markets. Uncertainty risks of off-take agreements have also hindered lenders' appetite for investments. The percieved technology and resource uncertainty risk has also acted against renewables. Renewables lack long-term commercial experience, especially with technologies that are constantly changing. This, plus the resource uncertainty have acted against the investment appetite of renewables. All of these factors have a knock-on effect and the dominance of fossil fuel investment results in a market with a lack of technical or commercial skills and information.

2.3.3 Policy mechanisms to promote renewables

For the reasons listed above, countries around the world have attempted to use different policy mechanisms to promote renewable energy development. The main instruments used, as Beck and Martinot (2004) describe, are price-setting and quantity-forcing policies. Price-setting policies establish favourable pricing standards relative to other forms of generation whilst the quantity-forcing policies set a fixed quantity of renewable energy at unspecified prices. The price-setting policies incorporate the notion of fixed feed-in tariffs whilst the quanity-fixing

policies encompass competitively-bid tenders or auctions, and Renewable Portfolio Standards (RPS) or quota systems.

The RPS/quota systems are usually found in more liberalised electricity markets with a number of wholesalers and retailers. This system puts the onous on the market players to abide by set quotas for renewable energy and if these aren't met, they are liable to pay penalties. Tradable Renewable Energy Certificates (TRECs) are usually assosiated with such a market to allow utilities with disadvantaged renewable resources to purchase an equivalent quota from other market players (Van der Linden, et al., 2005). Such quotas will find highest success in a more liberalised energy market with multiple players. South Africa's energy market has been dominated by Eskom, a monopoly power, and as the country begins to allow independent power producers into the market, it is assumed that this system was not an appropriate option for the promotion of renewable energy. For this reason, only the feed-in tariff mechanism and the competitively-bid tender mechanisms are introduced here.

Electricity Feed-in Laws

The feed-in tariff mechanism sets a fixed price per unit of electricity for a utility to purchase renewable energy. These tariffs differ between technologies and are usually locked into long-term power purchase agreements over 10-20 years. This mechanism favours producer surplus (Winkler, 2005:31) allowing the market to determine the quantity of renewable energy entering the grid.

Gipe (2006) illustrates that the feed-in tariff mechanism of support is by far the most successful mechanism world-wide. "Renewable Tariffs have proven the most successful mechanism for stimulating investment in renewable electricity generation worldwide. Renewable Tariffs have resulted in more installed generating capacity and more robust competition among manufacturers and have stimulated more renewable technology development than any other policy mechanism. Mendonca (2011:24) concluded a survey on the performance of the FIT scheme with the following, non-exhaustive, list of benefits:

Table 3: Benefits of the FIT programme in the UK (Mendonca, 2011:24)

Social	Economic	Political	Integrated
• Awareness raising • Behavioural change • Citizen engagement • Social cohesion • Community empowerment • Charity/ NGO facilitation and communication roles • Energy education • Encourage energy efficiency • Opportunity to combat fuel	• SME opportunities • Entrepreneurial opportunity • Investment security and expansion • Technological innovation • Supply chain • development • Local business support • Farming opportunities • Green job creation • Domestic manufacturing and export opportunities	• Demonstrate commitment to low carbon economy • Cooperation among varied actors • Public engagement • Meeting targets on energy and carbon • Decentralisation	• Interaction of all actors • Overall carbon reduction • Increased energy security • Increased local resilience • Reduced pollution

Social	Economic	Political	Integrated
poverty	• Create hedge against fuel • price volatility • Reduce renewable energy costs		

Competitive-bidding tenders

A competetive bid differs from the FIT where government sets the price upfront. The winners of the bid are awarded according to the lowest price bid. In order to increase competition, the competitive-bid places a cap on the capacity of renewable-energy that a government wants to procure. Competition then focuses on the price per kWh. Similarly to FITs, the price is guaranteed in a long-term power purchase agreement once the tender process is completed (Winkler, 2005).

Table 4: Summary of differences between competitively bid tenders and FITs

Policy Driver	Electricity Feed-in Laws	Competitively-bid tenders
Effectiveness	Highly effective in promoting renewable energy development, resulted in large-scale roll-outs	Historically not as effective. UK and Ireland have abandoned such schemes due to lack of effectiveness
Efficiency	Less efficient than competitive bidding	Generally viewed as more efficient in driving down electricity prices
Ensures quantity of renewable energy	Hard to predict the exact amount of RE that will make use of the tariffs	Quantity is fixed with a cap
Local industry development	Feed-in tariffs can create local manufacturing and development infrastructure benefits	Will favour least cost generation over local industry development
Competitive parity, transparency	Policy drives competition between manufacturers. Cost of electricity is driven down manually by the government.	Policy favours established market players over new market entrants and can allow market manipulation by existing companies
Simplicity	Most simple design, administration, enforcement, contractual, and development simplicity	More complex, high administrative expense, bureaucratic process
Certainty for industry	Provides high degree of certainty and stability	Because of the competitive nature, investor confidence and certainty is usually lower
Equity	Enable broader participation though less riskier investments	Because of their inherent risks and high transaction costs, have led to a concentration of renewable ownership in the hands of multinational electric utilities.
Distributed generation	Because there is equal treatment of all developers, far more, smaller scale projects enter the	Distributed generation benefits are minimal through large-scale projects, trying to make use of

Policy Driver	Electricity Feed-in Laws	Competitively-bid tenders
	market and tend to be distribute in nature across the country	economies of scale to gain a competitive advantage.
Technology support	Can support all RE technologies if separated into bands, more effective if these bands are not capped	Can support all RE technologies if separated into bands. Because there is a quota system, some systems may get an unfair allocation. If allocation is too low then investor confidence decreases.
Encouraging local and regional benefits	Can be prescribed as qualification criteria. Benefits tend to be greater with FITs because of greater potential for local developer success.	Can be prescribed as qualification criteria.

Sources: (European Wind Energy Association, 2002; Beck & Martinot, 2004; Wamukonya, 2005; Wiser, et al., 2002; Van Dijk, et al., 2003; Commission of the European Communities, 2008; Winkler, 2005)

Two indicators that aim to measure the different mechanisms are Effectiveness and Efficiency. The effectiveness of a policy results in a larger amount of capacity (kW) added or amount of renewable energy that is generated (kWh) (Van Dijk, et al., 2003). Results have shown that a FIT is the most effective policy instrument in Europe (Commission of the European Communities, 2008:10). The tendering system that was utilised in Ireland and the UK demonstrated only moderate effectiveness.

The efficiency indicator compares the total amount received for renewable energy (level of support) to the generation cost. The closer the level of support is to the generation cost, the more efficient a support mechanism is in terms of covering the actual costs (Commission of the European Communities, 2008). It is generally accepted that the competitive-bid policy results in greater pressure on developers to bring down bidding tariffs in light of price competition. However, results have shown that FITs can produce efficient tariffs especially when FITs decreases annually with technology costs getting cheaper and open feedback from the market.

2.3.4 The Independent System and Market Operator (ISMO)

In order to facilitate the fair purchase and sale of renewable energy from IPPs there is the motive in South Africa to establish an ISMO (The Department of Energy, 2011c; The Departement of Energy, 2011f). Pickering (2010:iii) defines the core function of the ISMO. This definition is given below and is illustrated graphically in Table 5.

> *"All system operators perform a core function which relates to the scheduling and dispatching of generation resources to meet demand. In order to cope with unexpected surges in demand and unplanned loss of generating capacity the system operator must maintain a safe reserve margin between the anticipated demand and the available generating capacity. Besides dispatching supply-side capacity, system operators can also deploy demand-side measures, such as interruptible load and, as a last resort, load shedding. To achieve its target reserve margin the system operator must monitor and control a wide range of factors relating to both the supply and demand balance (i.e. generation and demand-side measures) and the means by which electrical power is conveyed to consumers (i.e. the transmission system)."*

Table 5: Functions that an ISMO could perform (Pickering, 2010:ix)

Planning	• Undertake/Facilitate new generation and capacity planning
Allocation	• Allocate new capacity opportunities between Eskom, SOE's and IPPs
Procurement	• Procure new IPPs (on behalf of the buyer)
Buyer	• Enter into PPAs with generators, on behalf of the distributor • Aggregate the wholesale cost of power
System Operator	• Ensure the short-term security of supply • Dispatch generation and dispatchable load • Operate transmission network
Transmission	• Build, own and maintain transmission infrastructure

2.3.5 Participation in energy policy

Very pertinent to the theoretical approach of this research is the case for participation in energy policy decision making. The neo-Gramscian perspective illustrates how monopoly capital manipulates policy discourse in their interests. Furthermore, the case for participation strongly links to the climate justice theme of this research. A very significant article by Orr (1979) illustrates an observation in US energy policy in the 1970's. He describes three perspectives to energy policy:

1. Supply perspective

   This argument holds that we should produce our way out of the crisis, because "the country that runs on energy, can't afford to run short" (Orr, 1979:1030). It assumes that energy demand is highly inelastic and inextricably linked to economic growth. By not continuing to increase the supply there is the risk of unemployment and recession. Conservation of energy would not only decrease the standard of living but also reduce efforts of poverty alleviation. The most important actors in this perspective to energy policy are corporations followed by government. This group aims to control energy policy in their interests. The goal of this group is to achieve an inexhaustible supply of cheap energy.

2. Conservation perspective

   This view aims to tackle an energy crisis by reducing the demand of energy. There are huge inefficiencies in our energy system and therefore, a 'technical fix' is required to increase the efficiency of the energy conversion process as well as a fix on the demand side to become more energy efficient. This approach is mainly viewed as a government intervention. It is only when government exerts its control over the energy system that it will be able to ensure energy is priced at its replacement level. This would also enable them to offer consumers incentives for conservation. Proponents of this perspective argue that conservation need not affect economic growth as growth and energy consumption can be de-coupled.

3. Energetics perspective

   This third perspective asserts that the energy crisis is more than a problem of inadequate supply or inefficiency but a fundamental social and cultural crisis. This perspective draws

the link between energy as the basis of societal development and its social, political and economic structures. One of the energetics paths described here is the 'soft energy path'. This perspective argues for widespread public involvement in policy making decisions. The soft energy path will lead to a solar-based, decentralised, egalitarian, and participatory society, leading to one that is more sustainable, less extravagant and one that promotes equity and participation. This path will lead to a depolitisisation of energy policy that remains in the realm of consumer choice.

Advocates of the first perspective are usually corporations or a sector geared towards the supply to corporations. They believe that once freed from government constraint, the energy market would correct itself. The conservation approach calls for greater government intervention in order to control prices and protect society. Government control is essential to remedy market deficiencies. The third perspective proposes changes to public process in policy making that would enhance public involvement. The utilisation of decentralised generators promotes democracy because it is not easily monopolised. This view then favours renewable energy technologies over large-scale centralised power stations that are complex, capital-intensive, risk-prone and environmentally destructive. These large-scale fossil plants are therefore incompatible with democracy.

When considering the three perspectives on energy policy that Orr (1979) illustrates, we can quickly make the conclusion that, historically, the supply perspective is the dominant perspective dictating South African energy policy. Indicators that lead to this conclusion are:

- Although historically the energy sector has not been corporately owned, the corporate as well as strategic government influence over Eskom has been to supply cheap electricity, that will fuel the MEC as well as economic growth.
- Electricity has previously been over-supplied allowing for an energy inefficient economy.
- Recent demand reduction programmes launched by Eskom are merely viewed as short term solutions to bridge the gap between the current supply shortage and the future completion of Medupi and Kusile which aim to substantially increase supply.
- Eskom has been corporatised, with privatisation also attempted. Government aims for Eskom to be autonomous and improve its 'stand-alone' credit rating. With less government involvement the corporate entity will tend to favour supply perspectives as profitability favours growth.
- Energy policy is based in a neoliberal framework, with supply security being the largest driver.

2.4 South African energy policy

2.4.1 The historical framework for action - Eskom and the Minerals Energy Complex in South Africa

In line with neo-Gramscian analysis this chapter sets out the historical framework for action by identifying the social forces playing in the energy sector of South Africa. An attempt is made to identify those players acting in opposition or forces that could act as a counter hegemonic force to energy sector dominance.

Fine and Rustomjee (1996) explore the workings of the political economy by presenting the nature of the Minerals Energy Complex (MEC) of South Africa. The MEC complex, as a system of accumulation, was the definitive driving force of the South African economy in apartheid South Africa. The MEC-bloc is made up of a core of extractive mining firms. However, at the same time it is vertically and horizontally integrated into manufacturing and industrial services as well as financial services. The MEC therefore refers to the broader economy whereby conglomerate hegemony ensures accumulation from all sectors.

To fuel the MEC with energy intensive extractive processes, the South African energy system has become closely interlinked with the industry in keeping up with demands of providing cheap, constant power. The coal-to-petroleum industries, the mining industry and mineral benefication sectors all contribute to making South Africa one of the most energy intensive countries in the world.

The inheritance of a non-democratic electricity sector

By 1948, as much as 59 percent of electricity generated was consumed by gold mining alone (Christie, 1984:6). Because of the nature of South African gold mines being deep level, low grade ore and far from ports, a huge burden was placed on cost reduction strategies in order to ensure profitability. At the time the price of gold was fixed internationally which meant that in order to remain competitive, the South African costs of labour and other running costs had to be kept to a minimum.

The deep level nature of mining and the distance of mines from ports required huge investments in refrigeration and cooling as well as blasting and transportation. With these high energy costs in the gold mining industry, the government needed to ensure a cheap and reliable electricity supply system. Before the establishment of a state electricity corporation, cities and mining centres were electrified privately and by municipalities, with the largest private supplier being the Victoria Falls Power Company (VFPC). Through the Electricity Act of 1922 the state was able to ensure the supply of electricity as a public service, without profit, and thus gave it the authority to expropriate private power companies (Gentle, 2009:57). A Government Gazette on the 6th March 1923 announced the establishment of The Electricity Supply Commission (ESCOM) with the purpose of ensuring the provision of cheap, efficient and abundant electricity to government departments, railways, harbours, industries and local authorities (ESKOM, n.d.).

Over the interwar period, Davies (1979:281-331) explains how economic power was held mainly by English mining capital. The state then attempted to create Afrikaner-based capital by yielding its political power, which correspondingly created political support from the Afrikaner working class. However, the dependence of the state on mining capital created limits to its political objectives, and the limits to mining capital accumulation were similarly circumscribed by mining relations to the state.

Imperial capital was strongly identified with mining whilst national capital was linked to agriculture and manufacturing (Fine and Rustomjee, 1996:123). Economic policy during this period was specifically designed to strengthen national capital through the protection of domestic agriculture. This was undertaken through massive state subsidies, and the promotion of localised industry through the formation of major state corporations, especially in steel (ISCOR) and electricity (ESKOM). These industries served to create the required infrastructure to promote a highly profitable mining sector that the state was so reliant upon. This was done

primarily through the taxation of these mining industries. The other purpose of these industries was to create employment relief to poor whites. The Report of the Carnegie Commission (1932) helped bolster support for segregation and strict limits and laws for black South Africans. It also led to the successful creation of state industries which were key in creating white jobs (Fourie, 2012:19). These enterprises were pivotal in creating thousands of jobs internally as well as ensuring the provision of the required infrastructure to promote the private mining industry that further employed vast amounts of human capital.

DF Malan came into power in 1948 leading the National Party's programme of apartheid. This saw dramatic shifts of previous segregation policies into a more aggressive racial architecture. In the beginning, the National Party demonstrated strong national socialistic tendencies, many of its leading figures were the products of German universities in the 1930s. National Socialism organises society for the benefit of national capital, in return national capital is required to make some concessions to the working class. In the South African context those concessions were not made to the entire working class. They were restricted to the white working class which became a labour aristocracy, benefitting both from state legislation and regulation, and from the concessions made by capital. Thus, the state passed legislation that privileged the white worker, while capital, especially mining capital ran near social welfare systems for white workers, building entire towns with mine subsidised housing, sport and recreation facilities, hospitals and schools.

"As a system of accumulation, the underlying thrust of the MEC over the post-war period was the empowerment of Afrikaner capital, ultimately fostering the latter's successful interpenetration and co-ordination with English capital" (Fine & Rustomjee, 1996:181). The share of Afrikaner capital in the mining industry increased dramatically from the 1960's onwards. This change was rooted in the Nationalist Government's support of the MEC in favour of Afrikaner capital, and partial international disinvestment due to growing political concerns. Eskom at the time served a major role in signing large coal contracts with Afrikaner capital. These contracts resulted in a major building programme in Eskom which contributed the massive oversupply of electricity by the late 1980's.

The provision of cheap electricity created industries that are massively reliant on cheap, dirty energy. This reliance on cheap energy has perpetuated into post-Apartheid South Africa with Eskom still providing cheaper electricity to large industries than to poor consumers (SAPA, 2013). Cheap electricity is required for profit making and forms an essential feature of the accumulation model. To ensure the provision of cheap electricity to these sectors, the state continues to exert full control over the electricity sector with the monopoly rule of Eskom. The state also continues to exert its control on most aspects of the commercial energy system through strict regulation. Although not to the level previously known, the transition saw the deregulation of the coal industry and the privatisation of some of the state energy entities.

Post apartheid democracy and a faltering hegemonic project

Marais (2011) gives an account of the downfall of the Apartheid government. Part of this account is the important observation of the nature of the hegemony of the Apartheid government. Gramsci's notion of hegemony comprises a “combination of consent and coercion" (Cox, 1993:52). This was not characteristic of the Apartheid government which utilised primarily coercion to maintain power. The government effected the coercion of the black

working class through the consent of the white working class (Davies, 1979). However, because of the lack of consent of the black working class and the failure to enforce it, a multidimensional crisis resulted in the demise of Apartheid. The economic model of Apartheid accumulation decayed whilst the political, ideological and social spheres completely undermined the same model of accumulation (Marais, 2011:46). The Apartheid relations of production became a fetter on the further development of the forces of production.

As a result, by the 1990's the economic model of accumulation, dominated by the conglomerates and monopoly capital rooted in the MEC, was desperate for a re-vamp. For them, the imperative was to restructure and to globalise operations as growth within the South African market was historically limited due to the weak purchasing power of a cheap labour economy. However, in order to globalise monopoly capital needed political stability before such economic reforms would be possible. In Gramscian terms, what was required by South African capital was the "reorganisation of hegemony through various kinds of passive revolution...while providing for the continued development of the forces of production"(Bottomore, 1983:195).

Marais (2011:389) describes the deadlock that was reached between the apartheid state and the liberation movement in the years before the end of Apartheid. After the collapse of the Soviet Union, the liberation movement became heavily reliant on capital, which was a key player in determining the socio-economic outcome of the country. It was them who decided on the neoliberal path as the trajectory to follow. The economy was restructured on the terms of monopoly capital, allowing for a new conquest of accumulation in a globalised operation. This analysis is also shared by Murray (1994:15) - "By championing as much market competition as possible and promoting as little state intervention as necessary, the National Party leadership adopted a programme of explicitly capitalist reform. How ironic it was that this Afrikaner elite, who trumpeted the virtues of business freedom and personal liberties as a bulwark against the state-managed programmes of socio-economic upliftment, owed its very class existence to massive state intervention and to the denial of political rights for the majority. The De Klerk administration wished to address the ongoing economic malaise and resolve the political crisis of legitimacy at a single stroke. This entailed incorporating the ANC and its allies into a governing partnership at the top with as little change at the bottom as possible." The ANC executive committee's conclusion to the liberation movements' stalemate was that it could be surmounted through a negotiation process, combined with mass action in order to qualitatively change the balance of forces (Marais, 1998:85).

Through the neo-Gramscian lens, Satgar (2008) gives specific insight into the make-up of the hegemony rooted in post-Apartheid South Africa. While Marais (2011: 389) favoured, the balance of forces depiction of the neo-liberal path that was followed, Satgar (2008:39) suggested that South Africa's neoliberalisation was not inevitable. Instead, through a 'passive revolution', South Africa's trajectory shifted from transformation in favour of the historically oppressed to one favouring transnational capital. The notion of the 'passive revolution' implies a "non-hegemonic form of class rule" (Satgar, 2008:40). Whether the national liberation struggle moved from one with a purely socialist vision or not, literature agrees that no specific alliance of forces has succeeded in achieving hegemony (Marais, 2011:390; Satgar, 2008:40).

Satgar (2013) provides further evidence of why post-Apartheid South Africa is in a state of 'passive revolution'. Passive revolution is a non-hegemonic form of bourgeoisie class rule. The passive revolution in a sense is a "form of politics that exists between consent and coercion, it is

'corruption-fraud'; it is a politics aimed at containing the working class and subaltern social forces. It is not a politics for the working class."(Satgar, 2013:10).

> *"Understanding the post-apartheid South Africa as the making of a passive revolution, requires us to bring into view ANC state-civil society relations in the conjuncture of the Afroneoliberal state. COSATU's political defeat regarding a democratic corporatist state was further re-enforced with the structural squeeze on the working class once neoliberalisation kicked in. Retrenchments, rising costs of living and high unemployment all serve to undermine the structural and direct power of labour. In this context the ANC (also working through the state) effectively won over key leadership strata of COSATU to business unionism, careerist paths in ANC politics and Black Economic Empowerment (BEE) deals. Moreover, state practices around Black Economic Empowerment mire the state in corruption and patronage relations. Finally, ANC state-civil society relations evolved from demobilisation, instrumentalisation, bureaucratisation to outright criminalisation of civil society."* (Satgar, 2013, 17-21).

This passive revolution therefore manifests itself in favour of globalised capital as well as a new form of 'junior capitalists' in the black middle classes. The formation of the black middle class and 'junior capitalists' in the form of Black Economic Empowerment (BEE) was a deliberate move of the ANC government to accelerate the transformation of racialised accumulation while retaining the cheap labour economy that the MEC derives its profits from. Marais (2011:389) points out the recognition of ANC leaders of the compatibility of corporate accumulation with the creation of a black middle class. The sharing of capital with a new black elite could serve as a top-down approach to wealth re-distribution whereby a share of capital would trickle down from the newly created ruling class inclusive of black capitalists, to the poor of South Africa. The resulting neoliberal form of this restructuring has resulted in severe inequality. This may not have been the liberation movement's original goal but what it has ultimately allowed for was monopoly capital to transform itself into one of transnational character. Furthermore, the attempted capital deracialisation was a necessary tool for transnationals to gain political access to the state (SABC, 2012). Shangase (2007:43) cites Southall (2006) who argues that the black elite are not merely black professionals or business people but rather in most cases they are people with strong political connections within the ANC or former struggle activists. Examples of this would include the likes of Tokyo Sexwale, , the mining magnate Bridget Radebe(Patrice Motsepe's sister) and her husband Minister of Transport Jeff Radebe (formerly with Public Enterprises).

The power of these individuals, as representatives of the ruling class acting on behalf of the MEC, cannot be more clearly demonstrated than in the recent Marikana massacre where 34 striking miners were killed in August 2012. It also illustrates Satgar's (2013) manifestation of the passive revolution into the criminalisation of civil society. Munsamy (2012:online) illustrates how the business tycoon Cyril Ramaphosa committed the ultimate betrayal of the workers on whose shoulders he rose to prominence. Ramaphosa has been slated in the media for a series of emails which reveal his role in drawing intervention from the highest levels of government and the ANC to clamp down on the striking workers at the Lonmin platinum mine at Marikana. The evidence implicating black elites utilising the state to protect their wealth and continual capital accumulation has never been so stark. Corporativism, as notebly part of the MEC-plus drive, is a concept that Gramsci associated with the fascist goverment of Italy (Cox,

1993:55). The government smashed independent unions and worker groups just as the South African government has now done in Marikana.

The MEC therefore represents an alliance of classes in struggle against other classes in a complex context. The ruling class has to contend not only with the fact that it is in a struggle with a working class that is predominantly black, but also that this working class forms the election base of the ruling ANC party. The ANC on the other hand has to model its accumulation strategies around the fact that it is heavily dependent on COSATU to mobilise its members to vote for the ANC. The ANC elite depend on the MEC to accumulate capital but on COSATU to win elections. COSATU in return expects favours from both the ANC and the MEC. The MEC expects the ANC and COSATU to not only retain the cheap labour economy but also to manage the working class on its behalf – blunting the class struggle and minimising the demands of labour and labour unrest.

The faltering hegemony, driven by the model of accumulation and in favour of transnational capital, entrenched in the MEC-plus still continues to pursue large-scale extraction. With policies that have both developmental and neoliberal aspects, is there room for alternatives and would they be able to fit into the current framework? If there is going to be a counter-hegemonic force, there needs to be a mass-based and collective change. The subaltern groups will need to organise themselves gaining consent and providing alternatives if they are to change the social forces and power relations. The theme of this research focuses on renewable energy as an alternative which could act to secure the social equity that was once promised to the nation.

2.4.2 South African energy sector dominance

> *"Policy goals come into contradiction with other institutional or 'system goals.' Policy models are poor guides to understanding the practices, events and effects of development actors, which are shaped by the relationships and interests and cultures of specific organisational settings"* (Mosse, 2004: 664).

Buscher (2009:3952) argues that policy debate in the South African energy sector has been insufficiently connected to the political economy that drives it. Buscher's (2009) criticism points to the disconnect that Mosse (2004) observes between policy goals and 'system goals'. Bearing this criticism in mind, this section aims to discuss energy policy in South Africa since the end of apartheid and draws links with the political economy context and socio-economic provision in South Africa.

Gentle (2009:50) describes how the apartheid government, through the Electricity Act of 1987, scrapped the notion of electricity supply being 'in the public interest' and that the Commission's operations should be carried out 'neither at profit nor at a loss' ... 'to provide the system by which the electricity needs of the consumer may be satisfied in the most cost effective manner, subject to resource constraints and the national interest'. The change from the 1922 Act to the 1987 Act marked a defiant adjustment in the nature of capitalism in South Africa's as well as in the very nature of Eskom's operating field.

Soon after the promulgation of this act, South Africa transitioned into democracy. This paved the way for the government to address the mass inequality that it inherited from the apartheid regime. The Reconstruction and Development Plan (RDP) was one of the more progressive policy documents that included electrifying low-income households on a mass scale. The mid

1990's experienced a shift towards the neoliberal based Growth, Employment and Redistribution (GEAR) policy whereby most of the original redistribution policies were scrapped in favour of more aggressive cost recovery policies trade liberalisation, privatization, tax cuts, and deregulation (Schneider, 2003:43). The GEAR policy framework, influenced by the global neoliberal trend, mapped out an unequivocally market-oriented growth strategy (Narsiah, 2002:33). As Satgar (2008) describes, this shift could be described as Gramsci's 'passive revolution', with an intensified mode of accumulation. The latest National Development Plan (NDP) shows no change in strategy, also following a neoliberal policy (National Union of Metalworkers South Africa, 2013b). The cost reflectivity approach to social policy has reduced citizens to consumers, clients and users (Edigheji, 2007). This has consequently changed the nature of state-society relations, resulting in further alienation of citizens from the state.

GEAR changed the rules of the game in all sectors of the economy, including the energy sector. The backdrop to and objectives of South Africa's Energy policy is found in the 1998 Energy White Paper. The Department of Minerals and Energy (1998) propose the following policy objectives:

1. increasing access to affordable energy services;
2. improving energy governance;
3. stimulating economic development;
4. managing energy-related environmental and health impacts; and
5. securing supply through diversity.

Although the objectives may be interpreted as developmental, the policy's emphasis is on GEAR, with the primary focus on "promoting growth through exports and investment" (The Department of Minerals and Energy, 1998:7). This strategy mirrors that of the past, supporting the Minerals-Energy Complex, whereby in order to stimulate economic development, an "investor-friendly climate in the energy sector is needed" (The Department of Minerals and Energy, 1998:8). This is essential in order to "maintain export momentum and to stop balance of payments constraints" (Fine & Rustomjee, 1996:196). Gramsci's concept of *trasformismo* illustrates the pacifying of developmental proponents through the use of developmental rhetoric. The obvious aim of the policy is the attempt to reassert the interests of the MEC. This phenomenon speaks to what Mosse (2004:664) explains where "*policy is an end rather than a cause; a result of social processes"*. Apart from reasserting the interests of the MEC, the release of this policy document was done so, in a strictly neoliberal context. This would explain the pricing tariffs that are skewed in favour of large industry. It also explains cost recovery mechanisms that are aimed at poorer citizens who have also suffered cut-offs and poor service delivery (Van Heusden, 2009; McDonald, 2009:21). Free basic electricity to the quantity of 50kWh/month was promised to those underprivileged. This was the ANC's commitment to providing free basic services to the poor of South Africa. Major contradictions are apparent in this provision with a large proportion of South Africa's poor not having access and those that do are forced to receive substandard electricity infrastructure. Ruiters (2009:249) argues that on the one hand free basic electricity seemingly represents the State's caring for the People's welfare but on the other, it is a tool to 'manage' and isolate the 'problem' of mass poverty. This service only works to strengthen the state's bureaucratic power over the poor and limit their capacity for resistance.

The GEAR policy framework led to major structural reform in the government industries including the electricity giant Eskom. The Eskom Conversion Act of 2001 resulted in Eskom being operated as a private company, with strict cost recovery techniques and a resulting flow of profits that would enrich its single shareholder, the Government. Another goal of the Act was that it was designed to put Eskom in the legal position enabling them to be listed as an entity on the Johannesburg Stock Exchange (JSE). Eberhard (2006:229) suggests that none of the traditional drivers for reform were strongly experienced in South Africa. He argues that Eskom has historically operated with reasonable efficiency and with a well functioning bond market. Eskom had no difficulty in raising the finance required for large-scale expansion projects. Furthermore, public finances were well managed and the National Treasury did not have a desperate need for privatisation receipts. There were however, some drivers that were identified by the government that motivated reform in the electricity sector. Eberhard (2006, p. 230) identifies these drivers as being:

- Inefficiencies in the distribution industry and responding to electrification backlogs.
- Government policy of the mid-1990's sought to improve efficiencies in SOEs. This new focus sought to change the relationship between the state as a shareholder placing performance contracts on SOEs.
- In order to avoid past mistakes where Eskom heavily overinvested in capacity expansion, there was a new driver to create an industry structure that allocates risk in a manner that encourages investment efficiency.
- Increasing black economic empowerment by divesting generation assets into private ownership.

The privatisation of Eskom never actually materialised. Bond et al (2010) detail the social action taken against privatisation. Even though Eskom was not entirely privatised, it still remains corporatised, driven by profits and operating similarly to a private firm. The failure to privatise Eskom has not resulted in a loss for the neoliberals as there are more palatable mechanisms such as public-private partnerships and corporatisation which would ensure political buy-in and enable continued capital accumulation. Furthermore, the introduction of Independent Power Producers (IPPs) into the market has led to massive multinational energy companies investing in South Africa. This indicates the direction the sector is moving in.

The privatisation of SOEs was punted as a BEE transformation tool. Without privatising, Eskom needed to approach transformation from another angle. This was not necessarily a loss, Shangase (2007) argues that most of the criticism towards BEE is directed at the 'narrow' approach. This narrow approach[1] is one that has been so starkly used in the private industry thus no focus has been on broad-based empowerment. Eskom would transform, not through privitisation but through the creation of small and medium size black enterprises servicing Eskom. The BEE ownership element of traditional SOEs is clearly a neoliberal conception that is premised on the transfer of ownership from public to private. Shangase (2007) argues that the

[1] when a small group of black entrepreneurs become the beneficiaries of the transfer of a large sum of wealth and assets as shareholding in private companies. After realising that the redistribution process realised a few very wealthy individual black businessmen in the late 1990's, the second approach to BEE implemented an institutionalised Broad Based Black Economic Empowerment (BBBEE). This approach would effectively alter power relations in the political and economic spheres, rather than the simple replacement of white individuals with black ones.

BEE transformation case study of Eskom has been largely successful in acheiving broad-based empowerment even though the entity itself was not privatised. Part of the vision of the BEE transformation was the establishment of the large, black owned, coal suppliers to fuel Eskom's generating fleet. An example of such is Cyril Rhamaphosa's investment firm Shanduka (with coal interests in Xtrata/Glencore (Speckman & Crotty, 2013), which has lead him to become one of the richest men in South Africa.

As a result we can depict some characterics of the nature of the players in the energy sector of South Africa. The MEC with its constant need for cheap energy directs any energy infrastructure development in its direction. This is seen historically with vast overproduction of coal based electricity as well as transmission and distribution replacing the colonial rail networks from yesteryear (McDonald, 2009: xvi). The energy policy framework, which states cost reflectivity and recovery principles means that electric provision to the MEC is legitimised because they can pay. Further characteristics noted are the State's reliance on mining revenues and the intimate bond between the ANC's political alliance and mining capital. The dominent BEE investors and transnational capital further direct energy development in their interests. The new black junior capitalists with coal mining interests have made sure that further electric development remains coal based with Medupi and Kusile being the third and fourth largest coal fired stations in the world. Not only will the main beneficiaries of this power be BHP Billiton and Anglo American (Bond, 2012:165) but the deal iteself was mired in rumors of corrupt deal making. The contract for the boilers was given to Hitachi which the ANC is invested in. Large-scale energy projects of this nature, when procured by the state, open the doors for large political kickbacks, corruption and dealings of ruling classes.

There has been little effective resistance in the neo-Gramscian understanding of counter-hegemony in the energy sector. The electricity sector's neoliberal policy dominance has led Eskom and many of the distribution companies to install pre-paid electricity meters in the homes of the poor (Heusden, 2009). As a result, resistance resulted in court cases (Dugard, 2009), cut-offs and service delivery protests. Civic organisations such as the Soweto Electricity Crisis Committee formed in response to electricity cut-offs. Further examples of resistance in the energy sector is championed by the environmental justice work of Earthlife Africa who strongly opposes nuclear energy (Earthlife, 2012:online). Other coalitions opposing fossil energies are the Coalition Against Nuclear Energy (Cane, 2013:online) and the Treasure the Karoo Action Group (TKAG, 2013:online) who oppose hydraulic fracturing for gas. Similarly, the 1 Million Climate Jobs Campaign "promote civil society solutions to transition to a low carbon development and create decent work in the process amongst all relevant stakeholders and decision makers" (One Million Climate Jobs Campaign, 2013:online). The final example of counter hegemonic action is the work of the National Union of Metal Workers South Africa (NUMSA) in their articulation of a building a socially-owned renewable energy sector in South Africa (National Union of Metal Workers South Africa, 2012:online). These organisations do not have wide public support resulting in a very little power base. Understanding that there is no climate justice associated with large-scale, centralised fossil generators, politicians have done very well to promote their benefits (Campbell, 2013.) The nature of the technologies and their effects are only understood by professionals and technocrats. The author attended a public energy planning colloquium hosted by the Department of Energy in March 2012 (The Department of Energy, 2012c) and observed little opposition to the Department's energy planning, thus reaffiming the weakness of these organisations. Renewable energy generation in

its decentralised form is a technological ally to counter hegemonic action, with the above listed organisations being in unanimous support of its immediate promulgation. The following section introduces renewable energy policy in South Africa in order to understand the influence that social forces have had in the shaping of the renewables sector.

2.4.3 Renewable energy policy

The policy objectives 4 and 5 listed in the 1998 Energy White Paper (Section 2.4.2) point toward the increasing pressure to move towards a diversified portfolio of energy generators that would include some level of renewable energy generation. This becomes even more obvious for managing energy-related environmental and health impacts, so stark in South Africa's coal dominated power sector. As a result, the White Paper on Renewable Energy of the Republic of South Africa (The Department of Minerals and Energy, 2003) was promulgated. This policy document introduced the following target:

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

The White Paper on the Renewable Energy Policy discusses the policy against the backdrop of the following documents: The Constitution, The White Paper on the Energy Policy of the Republic of South Africa, the Reconstruction and Development Programme (RDP), the Growth, Employment and Redistribution (GEAR) policies, and the Integrated Sustainable Rural Development Strategy (ISRDS).

Not surprisingly, the policy document places an emphasis on energy security and the instruments needed to promote the industry with no reference to climate justice principles. The strategic goals of the policy are the following (The Department of Minerals and Energy, 2003:xi):

1. To institute financial Instruments.
2. To institute legal Instruments.
3. Technology development.
4. Awareness raising, capacity building and education.

Being high level in its objectives, the policy does not go into great depths on actual implementation strategies and neither does it incorporate broader development objectives.. Governments' vision for the paper talks more to development: "*An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation.*" Other mentions of development opportunities are through the following strategies:

- maximising local content;
- operation and maintenance of such facilities; and
- promotion of employment opportunities.

The White Paper on the Renewable Energy Policy, whilst emphasising certain development criteria, focuses on the need to set up legal and financial instruments that are required to promote renewable energy. It mentions the objective of enabling of Independent Power Producers (IPPs), which is clearly in line with Government's agenda at the time for the privatisation of Eskom and the energy sector. However, it was only until the late 2000's that Government started chasing the renewable energy target that they set themselves in 2003.

Shortly before the procurement programme for renewable energy was promulgated, the Department of Energy released the **Integrated Resource Plan (IRP)** (The Departement of Energy, 2011f). The IRP lays out the proposed generation new build fleet for South Africa for the period 2010 to 2030. Adding to the existing supply, which is largely coal based, the plan includes a mix of new power generation supply forms. Table 6 illustrates the current mix of electricity generation by Eskom who supplies 95% of South Africa's electricity. The additional planned capacity is taken from the IRP 2010 showing the additional planned capacity which would introduce renewable energy from IPPs.

Table 6: Generation Mix (ESKOM, 2013; The Departement of Energy, 2011f:17)

	Current Capacity [MW]		Additional Capacity [MW]		Total Capacity [MW]	
Coal	37715	85%	16383	29%	41071	46%
Nuclear	1910	4%	9600	17%	11400	13%
Hydro	661	1%	2653	5%	4759	5%
Pumped Storage	1400	3%	1332	2%	2912	3%
OCGT	2426	5%	4930	9%	7330	8%
CCGT	0	0%	2370	4%	2370	3%
Wind	3	0%	9200	16%	9200	10%
CSP	0	0%	1200	2%	1200	1%
PV	0	0%	8400	15%	8400	9%
Other	0	0%	465	1%	890	1%
Total	44115	100%	56533	100%	89532	100%

In selecting the generation mix, the following driving factors were taken into account:

1. reducing carbon emissions;
2. new technology uncertainties such as costs, operability, lead time to build, etc;
3. water usage;
4. localisation and job creation;
5. Southern African regional development and integration, and;
6. security of supply.

The renewable energy programme was prioritised because of the recognition of the opportunity for job creation, localisation and skills development in the sector. This was clearly a triumph for the proponents of renewable energy and a path that South Africa has needed to take for a long time. Although the IRP is merely a guiding document and not a policy document, the selection criteria used were very similar to the objectives of the energy policy with new emphasis on the reduction of carbon emissions. Again, principles of climate justice do not show up explicitly in this document. Even though coal and uranium mining has contributed to shocking

environmental and health conditions in South Africa as well as requiring large amounts of water in a water scarce country it is still a prominent feature on the list.

Shortly after the promulgation of the IRP, on 3 August 2011, the Department of Energy (DoE) formally invited interested parties to submit proposals for the finance, construction, operation, and maintenance of facilities that generate renewable energy. This procurement was to be called the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP). The methods to deliver renewable energy will focus on onshore wind, solar thermal, solar photovoltaic, biomass, biogas, landfill gas or small hydro technologies (The Department of Energy, 2011a:6). The final objective is that renewable electricity will be purchased by the "buyer" being, at this point, Eskom. This programme, aims to decentralise supply and to include broad social objectives in a cost competitive way. Competition is based on price (tariff) bid as well as socio-economic criteria with the evaluation of bids being out of 100 with a 70/30 split between the sale price of electricity per kWh and the Socio-Economic Development (SED) obligations per IPP bidder.

In determining the SED principles that REIPPPP was to follow, the procurement documents highlight the following policy documents that were considered (The Department of Energy, 2011a:93):

1. Constitution of the Republic of South Africa, 1996;
2. Preferential Procurement Policy Framework Act, 2001;
3. Broad-based Black Economic Empowerment Act, 2003 ("BBBEE Act") and the BBBEE Codes of Good Practice ("BBBEE Codes") published pursuant to the BBBEE Act, 2007;
4. Department of Energy ("Department") Procurement Policy;
5. White Paper on Renewable Energy, 2003 ("White Paper");
6. New Growth Path published by the Department of Economic Development ("NGP");
7. Accelerated Shared Growth Initiative of South Africa ("ASGI-SA");
8. National Industrial Policy Framework ("NIPF");
9. Industrial Policy Action Plan 2010/11 - 2012/13 ("IPAP 2") and IPAP 2011/12 to 2013/14; and
10. Eskom's Competitive Supplier Development Programme, 2008 - 2013.

Understanding the importance of a competitive bid's short-falls in terms of localisation issues, the REIPPPP incorporates the following socio-economic objectives (The Department of Energy, 2011a:98), which are closely linked to the BEE procurement objectives:

1) job creation, with aim to contribute towards creation of employment and alleviating the unemployment crisis facing the country;
2) local content, which should encourage, *inter alia*, increased local manufacturing;
3) fostering rural development and the involvement of local communities;
4) education and the development of skills;
5) enterprise development through the promotion of, and packages for new entrants;
6) socio-economic development; and
7) participation by historically disadvantaged citizens and marginalized regions in the mainstream of the industrial economy, through:
   a) the participation of Black People in the IPP Procurement Programme;
   b) effective participation of Black People in the management of the development; and

c) subcontracting to empowered companies, companies owned by Black People or Black Enterprises or Local Communities.

Each bidder must commit to these objectives before being awarded a Power Purchase Agreement (PPA). Table 8 in the Appendix shows the threshold and target criteria for photovoltaic solar power. Each socio-economic group is divided into sub-groups that each IPP is required to commit to in their bid against other developers. The Department awards Power Purchase Agreements (PPAs) to those developers who obtain the highest score according to the combination of price and Socio-Economic Development (SED) requirements. As the REIPPPP is the only renewable energy procurement programme currently taking place in South Africa, it will form the basis of the discussion of this research. The main focus will be to understand how these economic development goals measure up compared to other policy instruments used overseas and what the outcome of this will be on renewable energy sector as a whole.

Shortly after the release of the procurement documentation for the REIPPPP, the National Climate Change Response White Paper (The Government of The Republic of South Africa, 2011:11) was released. Although the paper addresses the need for integrated planning, mentioning its desired incorporation in the IRP for electricity generation (The Government of The Republic of South Africa, 2011:31), it is disappointing to see that it was not included in the list of documentation consulted for the design of the REIPPPP. This document was unfortunately (conveniently?) released one month after the release of the REIPPPP documentation.

The National Climate Change Response White Paper states South Africa's objectives with regards to its response to climate change as follows:

1. To effectively manage inevitable climate change impacts through interventions that build and sustain South Africa's social, economic and environmental resilience and emergency response capacity.
2. Make a fair contribution to the global effort to stabilise greenhouse gas (GHG) concentrations in the atmosphere at a level that avoids dangerous anthropogenic interference with the climate system. This should be within a timeframe that enables economic, social and environmental development to proceed in a sustainable manner.
3. Furthermore, the overall strategic approach for South Africa's climate change response has been prioritised as "needs driven and customised; developmental; transformational, empowering and participatory; dynamic and evidence-based; balanced and cost effective; and integrated and aligned".

According to the National Climate Change Response White Paper, the achievement of South Africa's climate change response objectives is "guided by the principles set out in the Constitution, the Bill of Rights, the National Environmental Management Act (NEMA), the MDGs and the UNFCCC". The principles set out in the White Paper are outlined below (The Government of The Republic of South Africa, 2011:11):

1. **Equity** – ensuring a fair allocation of effort, cost and benefits in the context of the need to address disproportionate vulnerabilities, responsibilities, capabilities, disparities and inequalities.
2. **Special needs and circumstances** – considering the special needs and circumstances of localities and people that are particularly vulnerable to the adverse effects of climate

change, including vulnerable groups such as women, and especially poor and/or rural women; children, especially infants and child-headed families; the aged; the sick; and the physically challenged.

3. **Uplifting the poor and vulnerable** – climate change policies and measures should address the needs of the poor and vulnerable and ensure human dignity, whilst endeavouring to attain environmental, social and economic sustainability.
4. **Intra- and Inter-generational sustainability** – managing our ecological, social and economic resources and capital responsibly for current and future generations.
5. **The Precautionary Principle** – applying a risk-averse and cautious approach, which takes into account the limits of current knowledge about the consequences of decisions and actions.
6. **The Polluter Pays Principle** – those responsible for harming the environment paying the costs of remedying pollution and environmental degradation and supporting any consequent adaptive response that may be required.
7. **Informed participation** – enhancing public awareness and understanding of climate change causes and impacts to promote participation and action at all levels.
8. **Economic, social and ecological pillars of sustainable development** – recognising that a robust and sustainable economy and a healthy society depends on the services that well-functioning ecosystems provide, and that enhancing the sustainability of the economic, social and ecological services is an integral component of an effective and efficient climate change response.

The Climate Change Response White paper incorporates more progressive principles than the other policy documents encompassing some of the imperative climate justice principles (see Section 2.2) such as "informed participation", "equity", "uplifting the poor and vulnerable". However, when digging deeper into the suggested implementation strategies outlined in the document we find another case of what Bond (2012:152) describes as the "Pretoria Formula" of "talking left, walking right". Further criticism has been given to the Climate Change Response White paper which sets the emissions targets of limiting global temperature increases to below 2 degrees Celsius. Critics say this eventual disaster will be inevitable in South Africa unless temperature doesn't exceed 1-1.5 degrees Celsius (Bond, 2012:153).

Furthermore, the principles of equity, uplifting the poor and vulnerable, intra and inter-generational sustainability, informed participation, outlined in the paper are not elaborated on further. Instead, mitigation measures seem to focus on top-down approaches and market-reliance on delivering targets to mitigation. Strategies that involve the majority and the poor are excluded thus further contradicting the much needed equitable solution to climate change response.

Directly in-line with the South Africa's Long-term Mitigation Scenario (LMTS) of peaking emissions in the period from 2020-2025 is the announcement by government to procure 7761 MW of base-load fossil power from coal, gas and large-scale hydro. The move will ensure the securing of private capital to fund the projects as another element of the Independent Power Producer (IPP) rollout (Creamer, 2012a:online). It is unclear how such large-scale, fossil fired, centralised generating plants, would be promoting the principles outlined in the Climate Change White Paper.

2.5 Conclusion

Linking climate justice principles to the Climate Change Response White Paper and energy policy we can draw on Buscher's (2009) arguments, these outline the need to link specific energy policy and developmental objectives to the overall policy framework. Although there are strong developmental objectives laid out in energy policy there are still major disparities in equity in the energy sector. Government's large-scale centralised generator procurements as well as the failure for policy to address the developmental objectives can be linked to the neoliberal framework that prescribes these specific policy documents. This finding needs to be emphasised as particularly revelent to this research. The neoliberal nature of the production structure as well as the energy provision aimed at servicing the MEC leaves no space for the principles of climate justice to be incorporated in the emerging renewable energy sector. Furthermore, the supply perspective that Orr (1979) outlines proposes that the most important actors are corporations followed by Government. This group aims to control energy policy in their interests. The goal of this group is to achieve an inexhaustible supply of cheap energy.

The reasons for the move to renewable energy can be explained in a number of ways. The main reasons proposed by Government may be the same as those listed in the Renewable Energy White Paper, being able to fulfil its vision of "*An energy economy in which modern renewable energy increases its share of energy consumed and provides affordable access to energy throughout South Africa, thus contributing to sustainable development and environmental conservation.*" Other views are explained by the fact that world pressure on climate change issues resulted in the move and perhaps a more practical explanation is that they had no choice. The outrage towards the granting of the World Bank loan to Eskom to build the Medupi coal station has made Government turn to renewables to satisfy international pressures. Furthermore, Eskom do not have the resources to put through a short term renewable expansion, leaving the private sector as the obvious choice. Even though there is a massive drive to bring renewables into the grid, one can see from the IRP that coal, nuclear and gas plans will not be abandoned.

This section also noted the weaknesses of opposing forces to those that are determining energy policy and energy planning. NGOs and anti fossil coalitions are failing to join forces. The extent of civic organisations protests to service delivery failures results in South Africa's classic reaction by burning tyres in the streets. The lack of education and extreme marginalisation results in the failure to take the debate forward in a way that will directly challenge the ANC and technocrat dominance. Furthermore this group of energy elites which comprises of energy company executives, technical experts, policy analysts, and all those who will be benefitting from tenders and government kickbacks, rely on this mass dependence and incompetence. Orr (1979:1046) provides the Swedish example of the government who initiated a campaign of study groups organised by political parties, labour unions and religious groups to debate nuclear issues. As a result, Sweden's nuclear plans were abandonded and the participation in the sector played a crucial role in the defeat of the Palme government. Perhaps, the weakness of some of these groups can be explained using Gramsci's definition of *trasformismo.* The developmental rhetoric articulated in policy documentation is used to passify developmental proponents. An example of such is the objective: "Increasing access to affordable energy services" used in the Energy White Paper (The Department of Minerals and Energy, 1998). At face value this reads as transformative goal but access means nothing in the neoliberal setting where if you can't afford the service then you get cut off.

As opposed to corporatised monopolies of large private sector ownership, it is clear that the principles of climate justice would favour truly community-led projects that are open and participatory and developed for the common good. The next chapter, addressing the second research objective, serves to introduce community renewables and the importance of community ownership in the climate justice debate as well as a weapon of counter hegemony . The Chapter also introduces some case studies from Europe in order to understand the benefits of each of the models and how they contribute towards climate justice.

CHAPTER 3 CASE STUDIES - COMMUNITY OWNED RENEWABLES IN EUROPE

3.1 Introduction

This Chapter starts by introducing community renewables in general as well as key concepts and categorisations. Specific case studies are then investigated in three countries; Denmark, Sweden and the United Kingdom. Existing case studies are drawn upon as well as best practice documentation. Models from these three countries are introduced with the purposes of presenting an alternative ownership pattern to the one currently existing in South Africa. The previous sector showed that the ownership model followed in the South African energy sector is that of a corporatised, state owned monopoly. As will be shown, the small-scale, decentralised nature of community renewables that aims to serve the people, lies in stark contradiction to what is currently found in major energy systems. In neo-Gramscian terms, community renewables serve to offer a counter hegemonic alternative that will bring about structural change- "A war of position involves building up the socio-political base for change through the creation of new historic blocs." (Cox, 1993:64).

3.2 Community renewables

Owing of the high wind energy resource in Europe, the lower cost of wind generating technology, and the necessity for community buy-in as compared to other renewables, has resulted in the successful implementation of wind energy in general but more specifically 'community wind'. As a result, most of the current literature focuses on community wind as opposed to the broader definition of 'community renewables'. Bolinger, et al (2004) define community wind as "...locally owned projects, consisting of one or more utility-scale turbines that are interconnected on either the customer or utility side of the meter." Table 7 below shows the percentage ownership of wind projects in selected European communities by the year 2000. This ownership trend not only led Denmark to becoming a major wind turbine manufacturing hub but also contributed to massive social benefits in the country.

Table 7: Community wind power development in selected European countries (2000) (Bolinger, et al., 2004: 4)

	Total Wind Capacity (MW)	**Community owned wind capacity (MW)**	**% Community owned**	**Number of household investors**
Germany	6161	~ 5400	88%	~ 100000
Denmark	2268	~1900	84%	~175000
Sweden	240	~ 30	13%	~15000
UK	414	~ 3	1%	~ 2000
Total	**9083**	**7333**	**81%**	**292000**

A distinction needs to be made about the types of 'community' involved in community renewables. Mitchell (1994) defines **communities of locality** as being made up of people living in a certain geographical area, be it a small hamlet, village, town, county, or a densely populated city. **Communities of interest** comprise of individuals living in many different communities of locality that share a common interest. Their motives may be ethical, such as environmental stewardship, or purely financial, such as an investment group, or any mixture of these.

3.2.1 Advantages and disadvantages of community renewables

There are various advantages and disadvantages of community renewables. The following section outlines some of the advantages of community renewables identified in the literature.

Investments in these community renewables are able to utilise **new sources of capital**, from community groups as opposed to traditional corporate and project finance (Bolinger, 2001:4). This community member finance often comes with a **lower cost of capital,** which didn't require strict corporate returns**.** With community ownership there will be **increased public support** for renewables (Bolinger, 2001:4; MacArthur, 2010a:6) which in turn raises public acceptance of renewables resulting in **fewer permitting denials** and community backlash. MacArthur (2010a:6) explains how community backlash results in the rhetorical construction of 'NIMBYism', or 'not in my back yard', and that community ownership of wind turbines in Europe have resulted in massive investments and local community acceptance. The **distributed generation benefits** of small-scale, localised projects are technically advantageous over large-scale renewable projects and has the potential to reduce transmission costs. There is usually no grid reinforcement needed and the added generation serves to strengthen the network (Bolinger, 2001:4; Walker, 2008:2). **Electricity price stability,** is possible when community owned projects are able to lock the price they will pay for electricity (Bolinger, 2001:4). This is dependent on the community purchasing the power from themselves or arranging with local government for a fixed price wheeled agreement. Options that lead to pricing stability are fixed upfront payments or fixed average monthly payments would particularly benefit South African consumers who are constantly fighting municipalities about electricity billing issues. **Local income** is increased through sale of electricity and **local development** increased through the construction and operation of renewable plants (Mazza, 2008:12). **Intergenerational equity** is secured because instead of "money flowing to bastions of wealth such as large, private corporations" (Tabuns, 2011:20), money is distributed throughout the community. **Local Control** through ownership allows communities to protect themselves. Dunning and Turner (2005:43) note that "suspicion can understandably run high in dealings between communities and third parties, with the copious application of jargon often obscuring shared aims and mutual opportunities". MacArthur (2010a:6) explains how renewable energy technologies deployed locally helps to **educate communities** about their resources, also pushing the agenda of ethical and environmental commitment. The idea of **ethical and environmental commitment** to projects has also allowed for cheaper equity to be sourced from shareholders who have an environmental investment agenda (Walker, 2008; Bolinger, 2001). Hoggett (2010) has also noted how innovative social-technical community projects contribute to social change and bottom-up approaches to sustainability. Community renewables enable local community enterprises to develop and through the establishment of community networks, **social capital** will inevitably develop. The Commission of the European Communities (2001) notes that **competitiveness and economic development** is strengthened through social interaction and the trust formed through economic relationships that community enterprises foster.

There are fewer disadvantages to community renewables with Bolinger (2001:10), MacArthur, (2010b:3) and Mazza (2008:15) illustrating the **diseconomies of scale** usually attributed to community renewables. Large-scale renewable projects have the advantage of spreading the fixed costs over many turbines and procuring cheaper technology with larger orders. The **lower speed and efficiency of deployment** of community renewables compared to the speed of corporate projects makes them unattractive to governments wanting to take little risk (Tabuns,

2011:20). Community owned projects can potentially experience **internal administrative burdens** due to the number of investors involved. This however depends entirely on how the project is structured (Bolinger, 2001:11). Community renewables can have a **greater perceived risk** to government. In order to attract community groups to invest in renewables, the investments themselves need to have little perceived risk for the communities. In order to de-risk the project and the environment as far as possible, governments would need to take on certain risks themselves. This may be viewed as a disadvantage to particularly risk averse governments, especially trying to procure power in time of crisis.

3.2.2 Development/ownership model categorisation

Ownership in a project can be active, whereby the owner assists and participates or it can be passive whereby someone else develops the projects on behalf of the owner. Bolinger (2001:43) describes three general models that categorise European ownership over community wind projects, these being:

1. Community-Led.
2. Developer-Led.
3. Investment Funds.

Table 8 shows this categorisation with examples from respective European countries.

Table 8: Community ownership models (Bolinger, 2001:41)

Community-Led	Developer-Led	Investment Fund
Denmark General Partnerships Sweden Real Estate Commune Consumer Cooperative (traditional/local)	Germany Limited Partnerships UK Cooperatives Sweden Consumer Cooperative Denmark Middelgrunden	UK The Wind Fund Netherlands "Green" Funds
Community of Locality ⟶		Community of interest

3.2.3 Community-Led

Bolinger (2001:44) defines community-led models as being those projects that are "initiated, developed, and operated" by the local community or 'community of locality'. These projects encompass some of the purest forms of community ownership, whereby little development experience is sought outside the community. All of the decision making is within the community, allowing it to retain the maximum amount of benefits.

The ownership of community-led schemes will usually end up being community owned, that is the ***community-led community-owned model*** (CLCO) (Stamford, 2004). These projects usually service the needs of the community either electrically or financially. The CLCO model usually results in smaller projects that have a lower electric capacity than larger commercial plants. This is due to the high amount of equity needed to fund large-scale projects. Furthermore, geographic and tax related restrictions on these schemes will place further constraints on capacity output. Bolinger (2001:45) describes how Denmark eliminated geographic ownership restrictions to community wind investments in order to attract new forms of investment finance

into the sector. A similar trend was found in Sweden where local cooperatives joined with larger developers in order to sign in new members nationwide. These community-led developments in Denmark and Sweden slowly adapted to the changing environment that called for larger projects and new financial resources. Bringing in a third party to minimise transaction costs is how the developer-led model became successful.

3.2.4 Developer-led

Bolinger (2001:45) describes developer-led models as being those projects that are initiated and developed by external developers. Communities play a passive role, usually only through investment. Table 8 includes models from the UK, Sweden, Germany and Denmark in this category. These projects may involve the community of locality but because of the broader definition of developer-led projects, they can also include communities of interest.

Due to the broad nature of this category it can encompass different levels of community investment as well as different levels of risk undertaking. Developer-led models may offer community benefits such as a share in project revenues, or other financial incentives such as land lease agreements or local enterprise development. This may be a very attractive route for a community to take as there is very little risk involved for a community who is uneducated about renewable energy development. Stamford (2004:66) describes the model "*Developer-led Schemes with tangible benefit to the community*" to include such incentives. He uses the Breckland community in the UK as an example of such a beneficiary of the developer-led project by Enertrag UK Ltd. A special fund was set up for the community which appointed a local panel to decide how the money gets spent in the community. The benefits from such funds result in very little opposition to project development from local communities. These funds however do not give the local community any controlling stake or votes in a project. As a result, the benefits accrued to the community, however large they are, are usually a fraction of the benefits accrued to the developer.

Further alternatives to the developer-led model include models that are differentiated by the levels of risk the local community is willing (or able) to take. Early stage/project initiation investing is deemed the most risky and developers could offer investment opportunities to the local community at this stage. If such opportunities are taken, the community would have to provide some of the development finance required to progress the project to the bankability stage. In countries where renewable energy developments are relatively low risk, one would typically find a stable off-take market with guaranteed feed-in tariffs or other incentives such as low-cost debt finance. In such cases, communities are more willing to providing such upfront development finance and in turn have a greater stake in the project. Bolinger (2001:45) has established such conclusions, with cases of communities taking early risk Germany and Denmark. In the UK, through the Non-Fossil Fuel Obligation (NFFO) programme, similar to REIPPPP South Africa, developers have to bid a tariff to be granted a PPA. This process is inherently risky and has resulted in communities in the UK only coming on board in the post-development stage of projects, resulting in less benefit being accrued to the community.

3.2.5 Investment funds

The final community ownership model as described by Bolinger (2001:46) is the investment fund. Investment funds take money from the 'community of interest' and invests that capital in larger scale developer-led projects. Bolinger (2001:46) comments on the distinction between the developer-led model and the investment fund approach. Investment funds raise finance for

a fund that would then be used for any number of renewable projects, whereas the developer-led model will raise the finance for a specific project. The investment fund approach is one step further away from true community ownership. Investment funds have often been used to provide finance when it is being built or just prior. It therefore takes on a slightly higher risk the community who buys in once the plant is operational. The example used is in the UK when *The Triodos Renewable Energy Fund plc (TREF plc)*, sold one of its four 600 kW turbines at Haverigg II to the Baywind Energy Cooperative. Nedbank has a similar investment scheme in South Africa called the Green Savings Bond[2], however because these schemes do not epitomise true community renewables projects, they will not be investigated in this research.

3.2.6 Legal entities

The choice of the ownership form is very important in determining the rights of the owners and the benefits to the community. The countries analysed in the case studies each have different legal entities with most of the entities following aspects of the consumer/producer cooperative.

Cooperatives

A cooperative is defined as a democratically controlled, voluntary association, established to meet member needs. They can be classified as worker cooperatives, manufacturing cooperatives and services cooperatives (COPAC, n.d.:20). Individuals from the local community or further afield (community of interest) can become members of the cooperative and buy shares in order to finance the project. The following Principles in the Cooperative Identity was adopted at the 1995 Congress and General Assembly of the International Cooperative Alliance (International Cooperative Alliance, 1995).

1st Principle: Voluntary and Open Membership: Cooperatives are voluntary organisations, open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, social, racial, political, or religious discrimination.

2nd Principle: Democratic Member Control: Cooperatives are democratic organisations controlled by their members, who actively participate in setting their policies and making decisions. Men and women serving as elected representatives are accountable to the membership. Cooperatives have equal voting rights (one member, one vote).

3rd Principle: Member Economic Participation: Members contribute equitably to, and democratically control, the capital of their cooperative. At least part of that capital is usually the common property of the cooperative. Members allocate surpluses for any or all of the following purposes: developing their cooperative, possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the cooperative; and supporting other activities approved by the membership.

4th Principle: Autonomy and Independence: Cooperatives are autonomous and controlled by their members. If they enter into agreements with other organisations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their cooperative autonomy.

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[2] http://nedbank.co.za/website/content/greensavingsbond/index.asp

5th Principle: Education, Training and Information: Cooperatives provide education and training for their members, elected representatives, managers, and employees so they can contribute effectively to the development of their cooperatives. They inform the general public - particularly young people and opinion leaders - about the nature and benefits of co-operation.

6th Principle: Co-operation Among Cooperatives: Cooperatives serve their members most effectively and strengthen the cooperative movement by working together through local, national, regional, and international structures.

7th Principle: Concern for Community: Cooperatives work for the sustainable development of their communities through policies approved by their members.

Community development trusts

Feedback Research and Analytics (n.d.) produced a report outlining the opportunities and challenges that face South African Previously Disadvantaged Individual (PDI) Beneficiary trusts. PDI Beneficiary Trusts have proved useful as a vehicle for channeling funding for development, administering development programmes and empowering the victims of underdevelopment. Advocates of Corporate Social Responsibility (CSR) support the notion that business and industry should build society and communities, not only by creating employment and paying taxes, but also by directly funding the (Feedback Research and Analytics, n.d.:5):

- establishment of schools, hospitals and other critical infrastructure;
- the growth of local economies and small business enterprises;
- the protection and promotion of the interests and rights of marginalised peoples; and
- other obligations more readily attributed to the state first, and civil society next.

PDI Beneficiary Trusts are usually set up by corporates or projects affecting local communities. They are usually put in place with a specific purpose of community philanthropy and fund raising to fund vital infrastructure needs. This mechanism can also be extended to include a variant of community ownership. Although not used extensively in Europe, there are examples of this form of ownership in the UK whereby the community trust receives benefits and dividends from projects. It is this entitiy that is the most common form found in the South African REIPPPP.

PDI beneficiary trusts, or 'community trusts', are a mechanism used extensively in the mining sector of South Africa. These trusts have inherent problems (see Van Wyk et al. (2009) for a mining case study example) where the community has negetive perception of the trusts. The situation on the ground does not always match the reports given by the corporate counterparts and there is a desperate need for better communication, democratisation and a bottom-up approach to community development.

3.3 Denmark

3.3.1 Overview and government support

Denmark has always been known as one of the world leaders in wind power. In the 1930s, some 30,000 windmills were scattered around the countryside, some even producing electricity. Electric wind turbines became most popular after the oil crisis in the 1970s when the Government provided massive subsidies, trying to promote alternative energy sources. Szarka

(2007:30) notes that the 'Danish Model' was succeeded by social activism against fossil fuel sources as well as nuclear energy. Through successful lobbying against Government and technocrats who were pushing the nuclear alternative, the Danish population chose wind energy in a populist, democratic victory.

The Danish Government's subsidy strategy for renewables was to support mechanisms that did not involve extra government expense (Helby, 1998c:8). A large amount of support is therefore done through Government mandates to private parties. For example, electric power utilities are obliged to buy power at artificially high prices. Electric power utilities are obliged to use certain amounts of biomass; natural gas utilities are requested to promote solar heating; district heating companies are obliged to convert to biomass; private home owners are mandated to connect to district heating.

Other support mechanisms involve indirect support to credit arrangements such as local Government guarantees, liberal lending limits and tax subsidies. Tax exemptions are also more popular than direct subsidies, and exist in the form of energy tax exemptions as well as income tax exemptions (Helby, 1998c:9).

As a result of Government support for wind power in particular, Denmark became the world's leader with the highest percentage installed of total capacity. In the year 2000 some 2300 MW made up 14% of the total electric capacity (Bolinger, 2001:9). The community ownership implications were also impressive with over 175 000 households owning 80% of all wind turbines in Denmark.

3.3.2 Feed-in laws

The introduction of Feed-in Tariffs (FITs) in 1993 was instrumental in sparking more growth in the wind industry in Denmark. Danish parliament's stated goal was to "encourage individual action toward meeting Danish energy and environmental policy" ((Gipe, 2004), as cited in Tabuns (2011:41)). It was the feed-in tariff mechanism that truly enabled community wind.

Traditionally, Denmark has had a purchasing obligation above a certain minimum amount of full-load hours. This obligation guaranteed a set purchasing price from all wind projects, taking away the purchasing risk of wind developments. From 2000, this obligation was removed and wind power has to prove it can be competitive (Tabuns, 2011:42). This termination was not due to poor performance but was due to the neoliberal trend that swept the worlds governments in the early 2000's. After feed-in laws for wind were taken away, new tariffs were again introduced in 2008. However, Denmark does not have a coherent FIT scheme (Maegaard, 2010a). Each technology receives a different tariff and the tariff for wind in particular is calculated based on certain variables such as onshore/offshore and year of commissioning. The tariff comprises a market power price element, power balance compensation and a Government subsidy.

3.3.3 Tax implications of renewables

Denmark has traditionally offered various tax incentives in order to promote wind turbine ownership. It was impractical for everybody to have their own wind turbine at their house and Helby (1998c:44) demonstrates how the Danish tax rules were based on this implication. A share in a cooperative wind turbine should be treated as equivalent to a private turbine serving the household directly. Based on this notion, income from investments in wind turbines was tax exempt as long as the share equivalent did not exceed the power costs of the household. Being

an administrative burden, these rules were eventually changed to a simpler calculation giving each tax-payer a fixed exemption over small possessions. The same notion applies to central heating with sources derived from solar and biomass.

Furthermore, wind partnerships receive a partial re-imbursement on energy tax as well as a full re-imbursement on carbon tax. Interest on loans financing renewable projects are tax deductible. Special tax depreciation incentives are also offered to renewable energy technologies. These tax incentives meant that the FIT that was offered by the Danish Government did not need to be too high in order to make projects financially feasible.

3.3.4 Ownership structures

Maegaard (2010a:14) attributes the success of the wind industry in Denmark to the ownership model adopted rather than the tariff scheme followed. The ownership model was the key factor to the high public acceptance and also enabled a much faster development because of the amount of people that got involved.

However, in 1998, the energy sector was liberalised and the ownership patterns began to change. The restrictions of ownership were abolished and because anyone was allowed to own as many wind farms as they could, large take-over bids took place. This resulted in a decrease in the public involvement. The results of this liberalisation had significant effects on the amount of privately owned wind power coming into the grid (Figure 4).

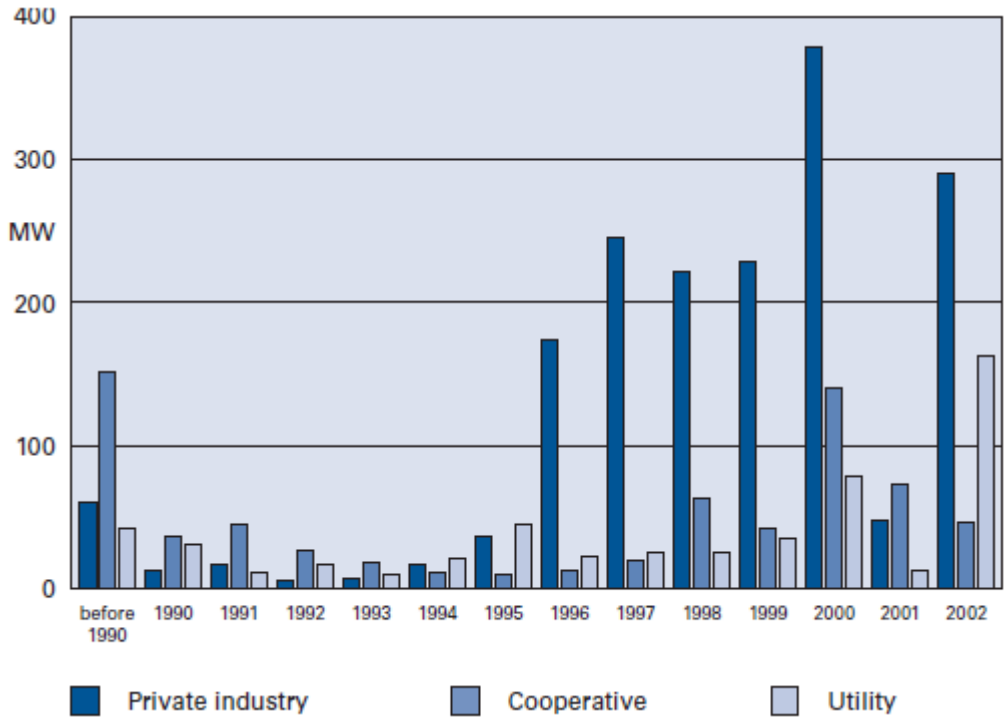

Figure 4: Danish Wind Power Ownership (Source: (DTI, 2004:21))

Maegaard (2010a:11) further explains that after the liberal-conservative government took over in 2001, the progressive renewable energy programmes which were instrumental in promoting community wind farms and that established Denmark as a world leader in this emerging sector, were abolished. Since these measures were taken, the installed capacity has increased by close to zero percent.

3.3.5 Financing of renewable energy projects

A very important form of finance to community wind projects are personal savings from members. Renewable energy projects are attractive as a pension saving mechanism because of the long-term annuity that is accrued. This cost of capital is relatively low, with most members only requiring interest rates that correspond to long-term savings interest rates (Helby, 1998c:42).

Households in Denmark in a good economic situation have the choice between standard bank finance or mortgage bank finance. Banks in Denmark allow free collateral on existing real estate to be used for investments in energy projects. Typically, the mortgage approach is a cheaper form of finance and is preferred (Helby, 1998c:37). Some community wind projects in Denmark have often been marketed together with a bank loan offer. In exchange for the loan the bank would typically require security over the shares. These offers have seldom been subscribed to with investors usually sourcing their own finance from their own bank. Furthermore, this loan option can only work when there is a stable off-take, guaranteeing the repayment of the loan.

3.3.6 Standard interconnection agreements

Power law in Denmark mandates the sharing of grid-connection costs for all renewable energy projects (Helby, 1998c:11). The project is required to pay the costs of connection to the nearest transformer on the grid. If the closest connection point is not desirable from a connection point of view, the utility is required to pay for the additional costs in securing another connection point. This is important to de-risk project development, as their connection to the grid is more or less guaranteed with costs being known before hand.

3.3.7 Community ownership models

Limited liability cooperative (Andelsselskab, Andelsforening- med begrænset ansvar)

The limited liability cooperative is the most prevalent ownership form in Denmark for all kinds of public utilities, such as water, electric power and district heating. Helby (1998a:34) outlines the Danish view of a cooperative; it is association "created to satisfy some common need of a group of producers or consumers, with profit sharing based not on capital but on use (e.g. amount of trade), and with voting rights that are not dependent on capital". The cooperative ownership protects consumers against misuse of monopoly power. The consumers thus get double protection through the ownership structure as well as protection through state regulation.

Helby (1998a:16) outlines the operation of the consumer cooperative. A cooperative member does not own legal shares but rather has control through membership. Each member in the cooperative has an 'economic' stake in the cooperative which contributes to their share of services (energy) sold by the cooperative. Thus, any equity contributions needed to upgrading facilities or management is split pro-rata to member usage, financed through an increase in service fees. Any payback of equity will be done through the same mechanism via rate reductions. If a member terminates consumption/membership, they automatically lose any legal right to the equity of the cooperative.

If a new member joins the cooperative, that member immediately assumes the economic rights corresponding to their use of services. This includes the right to the pay-back of equity through rate reductions, even if this new member has made no contribution to the accumulation of this equity. The mechanism that protects members from losing their investment is the fact that

energy usage is closely tied with real estate ownership. Members leaving or joining the cooperative usually take place on the sale or purchase of real-estate in the area. Real-estate prices will incorporate the cost of energy in the area and when members leave the cooperative they will be compensated for their share in equity through the sale of real-estate.

Table 9: Case Study Denmark Marstal District Heating Consumer Cooperative (Helby, 1998a)

Project	**Marstal district heating cooperative**
Year Commissioned	1996
Development model	Community-led
Legal Structure	Limited liability cooperative
Country specific legal entity	Cooperative (Andelsselskab, Andelsforening)
Community level of involvement	community of locality
Community members	1250 members
Capacity	Heat derived from:11,6%: The solar panels (3,5 GWh) 85,9%: Boilers using waste oil (25,9 GWh) (i.e. used mineral oil products from manufacturing, auto shops etc.)
Financial Structure	22% member equity financed, collected on a surcharge. 78% debt financed
Share Structure	No shares in cooperative. Only membership and monthly rates.
Partners	None
Vote	One member one vote

Partnerships (Interessentskab, I/S)

During the late 90s, Danish electricity law stated that wind turbine ownership could only be held by the electricity consumers themselves. As a result, the only legal entity allowed in Danish law is the partnership. The legal form of this structure is a contractual relationship between several owners (electricity consumers) that pool resources in order to run a business (Helby, 1998a:34). The partnership then owns the plant and sells electricity to a utility at an attractive rate. The members of the partnership continue to use electricity separately and purchase power from the local utility as opposed to from the cooperative itself. Investments in such a partnership are very attractive because they usually offer high returns, especially when combined with tax advantages of the investment. Certain income from the investment is tax exempt and loans to purchase shares are tax deductible.

Table 10: Study Denmark Middelgrunden Wind Farm Producer Cooperative (Vikkelsø, et al., 2003)

Project	**Middelgrunden Offshore Wind Farm**
Year Commissioned	2001
Development model	Developer-Led
Legal Structure	Partnership
Country specific legal entity	Partnership (Interessentskab, I/S)
Community level of involvement	Community of interest
Community members	8552 members
Capacity	40MW (20MW owned by Copenhagen Energy and 20MW by Middelgrunden cooperative)
Financial Structure	Community portion 100% member financed.
Share Structure	40500 shares in 1000kWh blocks.
Partners	Copenhagen Energy (Municipal Utility)
Vote	One member one vote

3.4 Sweden

3.4.1 Overview and government support

Fossil fuel power has traditionally dominated Sweden's supply mix with an abundance of cheap oil fuelled power. Several factors have worked against the uptake of renewables (Helby, 1998d:5). These factors include Sweden's excess in cheap power whereby renewables were viewed as costly and not favourable for an energy intensive society. Furthermore, nature conservation has been quite strict on the use of wind power and small hydro. Instead of implementing renewable projects, the Swedish government subsidised renewable energy research which produced some of the best funded programmes in the world. Since the beginning of the decommissioning of the country's nuclear power plants the goal of increasing electric capacity through renewables increased.

For the small amount of support for wind power Sweden started with a contrasting view to Denmark's view of government support. Support for renewables in Sweden has generally been in the form of direct investment subsidies into renewable energy projects. The reason for this view is that the Government wanted to avoid continuous support and long-term commitment to projects. Furthermore, the security that up-front capital provides to investors which acts to

decrease the financial barriers to renewables was viewed as a favourable approach to promoting renewables. Furthermore, Government has also tended to support the notion of a joint tender for the supply of equipment to a number of independent power projects. This is viewed as an effective means to increase competition on the sales side and to create a market pull for better technologies.

3.4.2 Feed-in laws

Up until 2003, a feed-in tariff was one of the main instruments used to promote renewable energy in Sweden. From 2003 a Tradable Green Certificate (TGC) scheme was introduced in order to reach the ambitious targets set by Government. Sweden's target of 10GWh of increased renewable generation is the same target that South Africa adopted for the period 2003 -2013 (The Department of Minerals and Energy, 2003:i; European Renewable Energy Council, 2004:7). The framework is designed as a quota-based system, whereby an obligation to purchase electricity from renewable energy sources is placed on the electricity user. This obligation started at 7.4% in 2003 and aimed for 16.9% by 2010. This obligation is fulfilled by purchasing the TGCs from the renewable energy generators and surrendering them to the Swedish Energy Agency.

A further subsidy was granted to wind power because the TGC prices were too low under the TGC scheme to promote wind power. This bonus is given until a wind turbine has run for an equivalent of 25 000 equivalent full-load hours from its start. The subsidy was given for a 5 year period in which the bonus was gradually phased out (European Renewable Energy Council, 2004:8).

3.4.3 Tax implications of renewables

In 1996 when community wind was growing, the personal tax laws for individuals were similar to that in Denmark. An individual's share in a renewable energy project is tax exempt if the share invested is not greater than the individuals household electricity consumption per year. There is also another tax break of 30% of the interest costs if the share was financed by a loan (Helby, 1998d:22). These tax laws are still applicable (Ribbing, 2012).

3.4.4 Financing of renewable energy projects

Finance for personal and community renewables are sourced in a similar way to Denmark. Personal savings are the dominant financing mechanism with the cost of equity being very similar to conservative forms of savings such as government bonds. Small unsecured loans are a common form of finance for renewable projects whereby banks offer the loans with no security provided an automatic deduction is made from the account accruing a wage income. Larger loans are also derived through mortgage finance but because they are costly to arrange and more complicated, these are less common for wind power investments. Mortgage finance is more common in larger bio-energy and solar heating installations made in housing projects through a housing association (Helby, 1998d:21). The implications of these forms of finance are similar to that of Denmark. Finance is only available to wage income members or members with significant collateral.

3.4.5 Standard interconnection agreements

The same interconnection rules followed in Denmark apply to Swedish renewable energy projects. Projects wanting to connect to the grid are required to pay for the line and connection

and metering costs. The utility itself is required to pay for any reinforcement/deep connection costs.

3.4.6 Community ownership models

Real-estate Commune (Vindsamfällighet)

Bolinger (2001:20) describes the real-estate commune as being quite unique to Sweden, evolving from common law tradition into a modern communal ownership structure. The structure is somewhat limited to real-estate owners who would pool their funds together in order to raise the required finance to jointly own and install a wind farm. Shares are typically sold in 1000 kWh blocks and the communes receive an income by selling the power into the national grid. Any profits are split pro-rata to the shareholding.

The real-estate commune itself is not an organisation. The fishing rights etc. of the commune are part of the individual property rights. The individual owners of the property are allowed to partake in the communal rights of the individual properties through a type of management association or trust. The property owners delegate their rights to this association to manage the commune on behalf of their individual real estates. This association has a definite organisational form and hold meetings with elected officials. This model is distinctly local, however, proximity is not a legal requirement (Helby, 1998b).

Table 11: Study Sweden Glimminge Wind Farm, Producer Cooperative (Helby, 1998b)

Project	**Glimminge Wind Power Real-Estate Commune**
Year Commissioned	1995
Development model	Community-Led
Legal Structure	Real Estate Commune. Operates as an association selling power to the utility. Each household is a member of the commune with rights being attached to property, not individuals
Country specific legal entity	Real Estate Commune (Vindsamfällighet)
Community level of involvement	Community of interest. The shareholders are not limited by proximity. Must own real-estate to participate.
Community members	15 farmers 4 other individuals. All local people
Capacity	500kW
Financial Structure	35% subsidy 65% equity (from members)
Share Structure	Each share corresponds to 1000 kWh/year blocks.

Project	Glimminge Wind Power Real-Estate Commune
	Number of shares corresponds to own consumption.
Partners	No single developer. Developer role was shared between the manufacturer sales agent and two promoters among the owners
Vote	One household one vote to appoint leaders of the association. The association makes decisions on behalf of the commune.

Consumer cooperative selling to the utility (Vindkonsumföreningar)

According to the principles of the cooperative model, any profit earned is distributed to each cooperative member, pro-rata to the volume of business conducted with the cooperative. (i.e., dividends are distributed based in the level of patronage rather than the level of investment). In order to match this level of patronage to the level of investment, a member is only allowed to invest proportionately to the amount of electricity he/she expects to consume.

Bolinger (2001:23) explains how the consumer cooperative model works very similarly to the real estate commune model. Individuals come together in order to pool resources in order to develop and own a wind farm. The output of this wind farm is then 'sold' to the utility. Each member of the cooperative is billed as usual by the distribution utility. At the end of the year the amount of wind energy produced by the wind farm is calculated and the cooperative then distributes the pro-rata share of the revenues to its members. In effect, this model is a form of 'net-metering', however the consumers themselves are not net-metering on site but are doing so through a centrally located wind farm.

This model is viewed as a means of promoting sustainability and renewable energy as opposed a profit making venture. The size of the share in the plant can only be equal to the level of consumption of each individual. If the member's consumption falls short of his level of investment, then that member forgoes a share of the profits and the cooperative will need to decide what will happen to the excess energy. They could sell the energy to a third party, and distribute the revenue to the members, or the energy could be used again by other cooperative members if they have sufficient excess consumption. This arrangement requires a special role for the local utility. The utility only passes on the power produced by the cooperative to the members. This role makes it an agent and not an owner of the power.

Table 12: Case Study Sweden Sånna, Åstorp Wind Farm net-metering consumer Cooperative (Helby, 1998f)

Project	Sånna, Åstorp Vindkraftverk
Year Commissioned	1996
Development model	Community-Led

Project	**Sånna, Åstorp Vindkraftverk**
Legal Structure	Partnership between: Björnekulla Wind Consumer Cooperative and Vattenfall AB national utility. The Partnership sells electricity to the utility
Country specific legal entity	Consumer cooperative selling to the utility (Vindkonsumföreningar)
Community level of involvement	Community of Locality
Community members	55 local consumers.
Capacity	500 kW
Financial Structure	Vattenfall (80%) shareholding, consumer cooperative (20%)
Share Structure	850 shares divided into 1000kWh blocks
Partners	Developer and organising role was taken by the cooperative who elected a board. Procurement and technical issues done by Vattenfall.
Vote	The partnership vote is split according to shareholding and the cooperative follows the 1 member 1 vote policy.

Consumer cooperative selling directly to members (Vindkonsumföreningar)

This model was originally devised and championed by a partnership made between the Swedish distribution utility Falkenburg Energi and the Svergies Vindkraftkooperativ (Sweden Wind Cooperative). The agreement meant that Falkenburg Energi continues to provide distribution services allowing Svergies Vindkraftkooperativ to sell wind power directly to members throughout Sweden. This cooperative removed the locality constraints of the previous two models described, allowing anyone to form part of the cooperative.

In order to join the cooperative, households need to be serviced by the distribution utility. They are also required to invest an upfront amount for each 1000 kWh/year block of wind power. Doing this allows each member to purchase an equivalent amount of wind power at a greatly reduced rate and for the cooperative to invest the initial funds in wind farms around Sweden. Through the generous environmental subsidies that the cooperative has access to as well as the reduced value-added tax (VAT) amount that the members pay for electricity, the overall rate that members pay for electricity ends up being far less than what non-members pay. This saving translates into the 'return' on the initial investment. Bolinger (2001:26) performs a comparison

between the traditional model selling to the utility and the Falkenberg model showing the return to members being 9.1% and 9.9% respectively.

Table 13: Case Study Sweden Wind Power Cooperative, net-metering consumer cooperative (Ribbing, 2012)

Project	**Swedish Wind Power Cooperative**
Year Commissioned	2012
Development model	Community-Led
Legal Structure	Consumer cooperative selling power to the members. Requires partnership with utility but partner does not own shares.
Country specific legal entity	Consumer cooperative selling directly to members (Vindkonsumföreningar)
Community level of involvement	Community of interest. Anyone who is serviced by the utility is allowed to invest in the cooperative.
Community members	19000 members
Capacity	12.8MW
Financial Structure	100% member financed.
Share Structure	20000 shares divided into 1000kWh blocks. Number of shares per member corresponds to own electrical consumption.
Partners	Partnership between Valkenberg Municipal utility who services the customers and the cooperative that sells power to the members.
Vote	One member one vote. Board runs the cooperative who makes decisions on new turbines.

3.5 United Kingdom

3.5.1 Overview and government support

Prior to 1989, the electricity sector in the UK was owned and controlled by the sole state energy supplier, the Central Electricity Generating Board (CEGB). In 1989, the electricity sector was privatised, splitting CEGB into 4 components under distribution, transmission , generation and supply. Since privatisation, independent power producers have been introduced into the generating mix. Competition was also introduced into the retail market when at first, bulk users had the choice from which supply to purchase electricity from with domestic customers also being given the right to choose (Helby, 1998e).

The renewable energy sector was kick-started through the Non-Fossil Fuel Obligation (NFFO) programme starting in 1990. The Regional Electricity Companies (RECs) were obliged to pay a premium for nuclear and renewable electricity but only within the NFFO programme and had no further obligation to purchase renewable energy. The initial support for renewables would be to the limit of 600MW, which by 1994 had increased to 1500 MW (Mitchell, 1995:1086).

3.5.2 Feed-in laws

Non Fossil Fuel Obligation (NFFO)

The NFFO was originally designed as a way of financing the extra costs of nuclear power which became clear in the run up to privatisation. Included in the NFFO was a portion of allocation to promote the renewables sector. The RECs pay the generators a premium price for renewable electricity and the difference between the premium price and the average monthly pool purchasing price is reimbursed to the REC by the Non-Fossil Purchasing Agency (NFPA). This finance is recovered from the fossil fuel levy (FFL) on electricity, paid via customer electricity bills (Mitchell, 1995:1077).

The money was allocated to new renewable projects via a series of four bidding rounds whereby renewable energy projects bid for a per KWh price on long-term off-take agreements (8 and 15 years). Winning bids were selected by lowest cost within each technology category (Pollit, 2010:18). The principle behind the NFFO was that the RECs would be paying a premium price for the electricity from near market technologies in order to stimulate the market as well as promote the competitiveness of the technologies.

Renewables Obligation Certificate (ROC) Scheme

The ROC Scheme was promulgated in 2002 which aimed at promoting renewable energy through tradable green certificates as a replacement scheme to the NFFO. The Government mandated all electricity suppliers to purchase a minimum amount of electricity from renewable sources. The suppliers of renewable energy therefore get a split price income for their energy, the wholesale price of electricity plus the price for the ROCs that they have generated (Pollit, 2010:19).

Feed-in Tariffs

“Through the use of FITs DECC hope to encourage deployment of additional low carbon electricity generation, particularly by organisations, businesses, communities and individuals who are not traditionally engaged in the electricity market. This “clean energy cash-back” will allow many people to invest in small-scale low carbon electricity, in return for a guaranteed payment both for the electricity they generate and export”(Ed Miliband (Department of Energy and Climate Change (UK), 2010) as cited in Mendonca (2011:7)).

New feed-in tariffs were announced in the UK in 2008 and took effect in April 2010. The tariff is available only to renewable sources producing up to 5 MW power with specific rates being offered to different technologies installed according to capacity. The purchase agreement is for a period of 20-25 years with the tariff being fixed on installation (Mendonca, 2011). There are several qualification requirements and the programme has also set up a number of anti-gaming rules in order to prevent larger power plants from moving from the ROC scheme to the FIT

scheme. The FIT is split into a generation tariff that is due to all generation that is used on site or exported and a separate export tariff for all energy exported to the grid.

The programme has been performed successfully in the first year, with 28,028 (78MW) total solar installations and 1,348 (20.4MW) wind installations.

3.5.3 Financing of renewable energy projects

The NFFO was designed to offer developers long-term off-take agreements that enable them to secure long-term commercial loans. In order to remain competitive, private developers sought finance from UK commercial banks and other finance institutions that could offer competitive interest rates and financing terms. A lot of the projects were initially developed using unsecured project finance but as the bidding rounds became more competitive, developers sought better deals and financing terms. In order to reduce their bid price, developers used private financing and corporate financing. This led to projects only being awarded to the larger commercial developers that had access to large balance sheets in order to obtain competitive corporate financing rates. Similarly, larger companies were able to put in massive projects that made use of economies of scale on larger tracts of land. Thus, the competitive bidding nature of the NFFO led to large-scale developments by large companies. As a result, there were no successful cooperative/community owned projects (Helby, 1998e:5).

Mendonca (2011:10) notes that the majority of the customers participating in the FIT programme are usually those in the "able to pay" group, those that can afford the upfront capital to install such renewable energy systems. Often, pension payouts or downsizing properties fees up the required capital for the system. Banks are not offering special loans for the systems, with individuals buying the systems on normal credit or mortgage loans. Rent-a-roof enterprises offer to install the systems at their own expense but then take all the financial benefit of the generation tariff in exchange for free electricity to the home-owner. Any excess energy exported the grid will be for the benefit of the enterprise.

3.5.4 Tax implications of renewables

The Enterprise Investment Scheme (EIS) is a UK Government scheme that allows certain tax reliefs for investors who subscribe for qualifying shares in qualifying companies. The selling of electricity is an eligible activity for EIS tax relief purposes. Shareholders can apply for capital gains tax savings and an income tax reduction worth 20% of their investment after the start of trading (Stockport Hydro Society, 2010). Furthermore, income from FIT on own use systems are tax exempt (Mendonca, 2011:26).

3.5.5 Standard interconnection agreements

During the first years of the NFFO and the ROC, there were numerous difficulties with grid connection. The Government had not defined the responsibilities for stakeholders with regards to grid connection. Projects securing NFFO contracts were reasonably guaranteed that they would be connected. Non-NFFO contracts face great risks with respect to interconnection (Bolinger, 2001:34).

With the newly implemented feed-in tariff programme, the onus is on the project owner to inform the relevant distribution authority of the imminent connection on successful qualification for a FIT. Larger projects will often have to pay for the costs of this connection (Feed-in Tariffs Ltd, 2012:online).

3.5.6 Community ownership models

Industrial Provident Society (IPS)

An Industrial Provident Society may be registered as a cooperative society or as a society for the benefit of the community (Stamford, 2004:53). An IPS must have at least seven members and can issue a maximum of 20 000 Pounds worth of shares to each members. An IPS is slightly more flexible than a traditional cooperative allowing dividends to be based on the level of investment rather than the level of patronage. Furthermore, it is possible to restrict/favour members from certain geographic areas and to enforce an minimum number of shares to be purchased per member. The other advantage that an IPS has is its unrestricted ability to advertise shares to the public. A public limited company, for example, must raise the stated amount within 40 days which can be restrictive when seeking funds from society.

An Industrial Provident Society has, like a company, members and directors. Unlike most companies limited by shares the voting rights attached to the shares are, in a bona fide cooperative society, one person one vote. The directors are chosen by the members as a result of the one person one vote policy (Helby, 1998e:8).

Table 14: Case Study UK IPS Wind Power Cooperative, producer cooperative (Energy Saving Trust, 2004; Bolinger, 2001)

Project	**Harlock Hill Wind Farm**	**Bro Dyfi Community Renewables Ltd (BDCR)**
Year Commissioned	1997	2003
Development model	Developer Led	Community-led
Legal Structure	Producer cooperative in partnership with a limited liability company.	Producer Cooperative
Country specific legal entity	Limited Liability Company owned by The Baywind Cooperative operating as an Industrial and Provident Society (IPS) and The Wind Company Ltd, a limited liability company	Industrial and Provident Society (IPS)
Off-take Agreement	Competitive bid under the NFFO resulted in a long-term PPA being signed where the wind farm sells electricity to the utility.	Private, long-term PPA signed with the Centre for Alternative Technology.
Community level of involvement	Community of interest. Open to anyone in the UK. 40% of membership from the locality	community of locality

Project	**Harlock Hill Wind Farm**	**Bro Dyfi Community Renewables Ltd (BDCR)**
Community members	1300	57
Capacity	2500kW	75kW
Financial Structure	2/5 wind turbines are 100% member financed by Baywind-Energy Coop, the remainder of the finance provided by The Wind Company UK	58% of Capital received in grants. The remaining 42% community member financed.
Share Structure	Baywind minimum investment of 300 pounds, with max investment of 20000 pounds.	Shares = 1000 pounds each
Partners	Partnership between Baywind Energy Coop and The Wind Company UK with the main development work performed by The Wind Company UK.	Centre for Alternative Technology (partner and off-taker)
Vote	Vote in Harlock Hill LLC split according to shareholding but the Baywind Cooperative follows the 1 member 1 vote policy.	1 member 1 vote

3.6 Summary of ownership models

From the three countries analysed the following section summarises the types of models that are found. These models have differing legal structures in each country and the models have been named differently to the previous section in order to follow the classifications found in the literature. The classification given here is an attempt to narrow the differing classifications into a simple set of models. The classification is based on the operational characteristics of the models as opposed to legal structures.

3.6.1 Consumer cooperative

The consumer cooperative model truly epitomises community renewables. The consumer cooperative is formed as a voluntary association providing electricity to a certain community. The cooperative ownership provides democratic legitimacy in relation to consumers who are able to connect voluntarily, as well as legitimacy in relation to local government service and responsibility (Helby, 1998a:34). This model has been championed in Denmark as it is a typical tradition to rely on protection through civil society institutions, rather than relying exclusively on state regulation and service provision, thereby protecting consumers against misuse of monopoly power. The Danish case study that follows this model is the Marstal District Heating cooperative (Helby, 1998a). The cooperative uses renewable energy sources to create heat for

its district heating services. Any upgrades, for example, a solar thermal upgrade that took place in 1996 was financed through a surcharge increase in the rate that members pay the cooperative for heating.

3.6.2 Aggregate net-metering

This model is also very much rooted in grassroots community energy projects. It is very similar to the consumer cooperative but requires buy-in from the distribution utility to assist operations. This model has no location restrictions, allowing for generators to be placed at a distance in resource rich areas, with generation accounted for through net-metering. To join the cooperative, members have to pay upfront capital for their share. Shares are split into 1000 kWh blocks and members are recommended to only purchase about 80% of their individual usages' equivalent because if their final electricity consumption is less than their share they have to forfeit that difference (Bolinger, 2001:26). There are two sub versions of this model that are differentiated by billing and location.

The first version is the **'Aggregate net-metering model selling to utility'** where the consumer cooperative 'sells' power to the utility. Operationally, a group of investors pool their resources together in order to purchase a centralised renewable energy generator. The generator is connected to the distribution grid and the electricity is then 'sold' to the municipality. Each of the members continues to use the distribution services as usual and pay their municipal electricity bill. At the end of the year is the amount of renewable energy produced is calculated, whereby the municipality then pays the cooperative for the aggregate amount produced (Bolinger, 2001:23). This payment is then distributed pro-rata to its members. The cooperative members make its return from the feed-in-tariffs offered, tax benefits, as well as from general subsidies. The case study example for this model is the Swedish consumer cooperative, Sånna, Åstorp Vindkraftverk (Helby, 1998b). This model is viewed as egalitarian because each member is only allowed to own a share as large as his/her electricity usage and is not set up as profit making venture. Although it is 'non-profit', the electricity savings, and tax benefits create a 'return on investment'.

The second version or **"Aggregate net-metering selling to members"** is very similar to the previous one except that an off-take agreement to purchase the power is not required. An agreement with the distribution company is required as the cooperative still uses the services of the distribution utility to transmit power to its members. This way the cooperative is enabled to sell electricity directly to their members, as well as to site plants around the country and to allow any member to join, regardless of geographical location. Because of the upfront share purchase, electricity costs on an ongoing basis will be minimal. The Sweden Wind Power Cooperative case study (Ribbing, 2012) follows this model, whereby the Falkenburg Energi (the distribution utility) continues to provide distribution services allowing Sweden Wind Power Cooperative to sell wind power directly to members throughout Sweden.

3.6.3 Producer cooperative

The producer cooperative is set up not out of the desire to generate electricity for own use but rather when a business venture is identified. A generator is set up because of its profitability, attracting investors with spare capital who are interested in promoting renewable energy and sustainability. The organisation operates democratically, as a cooperative, where each member has one vote and dividends are distributed according to the level of patronage.

This is the model that has made community ownership so successful in Denmark. In order to make this model feasible to the local community, there needs to be a feed-in tariff mechanism with a guaranteed off-take. Two examples of this model are Glimminge- the Swedish Real Estate Commune (Helby, 1998c), and Middelgrunden- the Danish wind partnership (Vikkelsø, et al., 2003). Both projects were successful because they were promoted in countries where community ownership of wind farms was actively promoted by government. Each member has only one vote and in order to limit the shareholding of each member, tax breaks are offered to members when electricity sales revenue is less than the cost of personal electric consumption. This is how the level of patronage is limited to the level of investment.

3.6.4 Multiple owners selling to third party

The multiple local ownership model definition broadly encompasses all ventures whereby generation, instead of being sold directly or indirectly to members, is sold to a third party and creates a return on investment. These organisations operate similarly to the producer cooperative model, however the difference in the operation has to do with slight legal nuances. The producer cooperatives have a one member one vote policy and the level of investment must match the level of member patronage. To adhere to this rule the producer cooperative makes sure that member investment matches own electricity consumption. The multiple ownership model also has a one member one vote policy but does not limit the level of investment and dividends are paid according to the level of investment. The legal entity that would house such a form would differ from country to country but would most likely take the form of a limited liability company.

Bro Dyfi Community Renewables Ltd (Energy Saving Trust, 2004) is one of the first true community renewable projects that have been successfully implemented in the UK, selling electricity to a private entity**.** A second example, where the 'third party' is a utility, is the UK Harlock Hill Wind Farm (Bolinger, 2001:40). The competitive bidding nature of the Non-Fossil Fuel Obligation (NFFO) in the late 1990's meant that the risk perception of trying to develop a renewable energy project was too high to have stimulated the community renewables industry. A Swedish company who had championed community energy in Sweden attempted to do the same in the UK when it partnered with a local community to form the Harlock Hill Wind Farm (Bolinger, 2001:40). It was the developer who took on most of the development risk and assisted with raising the finance. The community group organises itself into a coherent body and assists with site and locality related development work whilst the developer handles all the commercial aspects of the project. This leaves the main role of the community as passive investors that are able to benefit economically from the project.

Table 15: Summary of case studies

Off-taker	Type	Model	Legal entity Structure	Country	Case Study example	Partnership required	Community interest	Technology	Subsidy Type	Off-take agreement	Tax free investment	Standard interconnection agreements	Personal member finance
	C-L	Consumer cooperative	Consumer cooperative	Denmark	Marstal district heating cooperative	no	CoL	Bio-energy, district heating, solar heating	none	no	yes	yes	yes
Sale to Members	C-L	Aggregate net-metering	Consumer cooperative	Sweden	Swedish Wind Power Cooperative	yes	CoI	Wind	Capital + FIT	no	yes	yes	yes
Sale to private off-taker	C-L	Multiple owners selling to third party	Industrial Provident Society IPS	UK	Bro Dyfi Community Renewables Ltd (BDCR)	no	CoL	Wind	Capital	yes	20% of income	No (on-site)	yes
	C-L	Aggregate net-metering	Consumer cooperative in legal partnership with Utility	Sweden	Sånna, Åstorp Vindkraftverk	Yes	CoL	Wind	FIT	yes	yes	yes	yes
	C-L	Producer cooperative	Real Estate commune	Sweden	Glimminge	no	CoL	wind	Capital + FIT	yes	yes	yes	yes
	D-L	Producer cooperative	Danish wind Partnership	Denmark	Middelgrunden	yes	CoI	Wind	FIT, tradable certificates	yes	yes	yes	yes
Sale to utility	D-L	Multiple owners selling to third party	IPS as shareholder in limited liability company	UK	Harlock Hill Wind Farm	yes	CoI	Wind	Competitive bid FIT	yes	20% of income	yes	yes

Key:

- C-L: Community-led
- D-L: Developer Led
- CoL: Community of Locality
- CoI: Community of Interest

3.7 Conclusions

3.7.1 Discussion on enabling factors for community ownership

From the analysis of the various models and case studies in Europe, there are a number of enabling factors that have been identified that are imperative to ensure the successful uptake of community renewables.

1. Long-term guaranteed off-take agreement and FITs

It is clear from the case studies that the common enabling factor that has ensured successful community ownership is the FIT. Denmark, in 2000 realised an 81% community ownership (Bolinger, et al., 2004:4). This was only made possible through a clear and coherent FIT that was completely unbiased. Communities are able to invest in a risk-free environment whereby strict competition is excluded from the market.

Where a FIT is not required, capital subsidies are needed to bring the cost of electricity down. However, a long-term off-take agreement is still a necessity. This agreement will have varying success depending on its nature. For example, a PPA with a private off-taker, as was the case for Bro Dyfi in the UK (Energy Saving Trust, 2004), will only be able to attract finance if the PPA is through a significant, stable and long-term power user who has a high credit rating and the reputation of an ability to pay. What was found in the case studies is that the PPAs that promoted community renewable success in Europe were party to national utilities with a strict government mandate.

It is also clear that the competitive-bid tender system that was held in the UK during the 1990's is not a viable means of promoting community ownership. The UK Baywind Cooperative (Bolinger, 2001) case study was the only successful community project that was identified in the NFFO competitive bid programme. It's success was due to the partnership held with another private developer who had international experience as well as strong social objectives. Furthermore, the partner went to great lengths to remove the risk from the community investors. Although this is not published, this risk removal does not come for free, it is likely that the risk bearer will be compensated for through 'development premiums' payable to the partner. Depending on the appetite of the developer, these risk premiums can be substantial and will in turn reduce the returns due to the parties who do not take the risk. As a result, the community will receive lower returns on investment. As a policy mechanism, the competitively-bid tendering system is generally not recommended and furthermore, its effects are detrimental to community ownership.

It is important to emphasise that subsidies, such as tariff premiums, are only needed when the levelised cost of electricity is higher than the current wholesale price of electricity. It is possible to find some renewable energy technologies that are either below the wholesale cost of electricity or are becoming very close to getting there. For example, depending on the site conditions and commercial terms of the project, small hydro is able to produce electricity cost effectively with many installations owned by either Eskom or independent power producers, selling to municipalities such as Bethlehem Hydro (Pringle, 2009). In these cases, it will most likely not be necessary for the Government to provide monetary subsidies to bring these plants into commercial operation (they will, however, need to provide the market, usually in the form

of an off-take agreement). We will begin to find this being a downward trend as renewable energy technologies become cheaper and fossil power becomes more expensive (Pasolini, 2013). However, until grid parity is reached for these technologies, projects will still need to receive subsidies in order to enable these technologies.

2. Interconnection agreements

All of the case studies have strict requirements on the interconnection of small projects onto the grid. There are set and defined rules on how these costs are shared between the utilities and community projects. These sets of rules allow the community group to know beforehand, what the investment costs will be for grid interconnection. Defining these rules are also important in promoting security of market access.

3. Distribution agreements with utilities

The models that do not require FITs or fixed term off-take agreements are those models whereby the consumers themselves are owners and off-takers, allowing for a more flexible approach to the off-take. These models are the consumer cooperative and the aggregate net-metering models. Instead of a home-owner putting a panel on its roof, they would instead invest in a community project and net-meter their usage from a centralised generator. In order to enable such models, agreements need to be made with the distribution utility to firstly connect the project to the grid and then to distribute the generated power to the community members. The Swedish models that utilised such a model had such agreements in place (Ribbing, 2012). This worked in attracting new customers to the utility and the distribution service charges were still liable to the utility.

4. Capital subsidies and tax advantages

An investment into a community renewable project is capital intensive. Through the clear social mandate, as seen in the European case studies, Governments enacted tax subsidies on income from renewable energy generation which worked to attract individual investment. Other forms of incentives that have been offered to community projects are up-front capital subsidies. Generous loans to individuals investing in the projects also acted to boost investment.

5. Financial resources

All of the community shares in the case studies were financed through individual member's own resources. Most of the projects were fully equity financed and therefore required capital from individuals. Those facing financial difficulties were therefore excluded from participation. Such a factor needs to be addressed especially to enable community ownership in developing countries.

6. Social mandate

It is clear that all the countries that are able to make a success of community renewables have done so with a strict government mandate that supports community social agendas. Through experience and local country differences, each of the Danish and Swedish Governments introduced differing policy measures that assisted in promoting community renewables. Barriers were identified and they were addressed, whether there was a need for capital or production subsidies or whether tax incentives would help in the promotion, education

programmes or grid connection issues- all implemented with a goal of social upliftment. The UK's implementation of the NFFO in the 90's was done so in a neoliberal policy background, aimed at introducing competition into the market which did not stimulate community investment. It is clear that community ownership was not a goal of the UK Government at the time and this should be used as an example for future Governments who are concerned with promoting community renewables. Without a social mandate and government buy-in, community ownership will most likely stagnate on the fringe of the energy sector.

3.7.2 Community ownership on a sliding scale of climate justice?

Maegaard (2010b), the chairperson of the World Council for Renewable Energy, gives an important account of the Danish wind power cooperatives and establishing renewable energy for the common good. He speaks to the Danish wind power cooperatives, defined in this research as producer cooperatives, which fall under collective, community ownership with a common purpose of investing for profit. These cooperatives, such as Middelgrunden (Vikkelsø, et al., 2003) are established to supply the community with a private source of income as opposed to the primary goal of clean local energy. The investors come from all over the country and some from outside the country, falling under the definition of 'community of interest' as opposed to 'community of locality'. In contrast to this model, Maegaard (2010b) gives examples of some 200 other cooperatives in Denmark that are set up for combined power and heat, established as pure cooperatives for the common good. Board members are elected by the community and do not have individual economic interest but work for the benefit of the community. Other public services in Scandinavia that are community owned, for the common good as opposed to economic interests are water, district heating and public transport.

Part of the second research objective was to understand the link between climate justice and community renewables. The case studies analysed have given important insight into the different models under which community renewables projects were implemented. In understanding the principles of climate justice it is important to note the distinction that has been made in the previous sections between developer-led and community-led projects. Although climate justice principles would favour community ownership with profit making objectives over pure corporate ownership, there is definitely a climate justice sliding scale between true grassroots developed projects and top-down developer-led community ownership models. When comparing the list of climate justice goals (Table 2, page 13) to the different community ownership models identified (Section 3.6, page 62), there appears to be certain models that are more in line with climate justice principles than others. The Danish model of collective ownership for private investment, stretches the notion of renewable energy for the common good. Furthermore, collective ownership models with ownership in the hands of the 'community of interest' further stretch the principles of climate justice. Climate justice calls for local control of resources as well as community participation at every level. Some of the aspects of community ownership that affect the degree of 'justice' have been identified.

1. **Purpose for the common good**

   Placing profits and economic sustainability as the main and often only reason for development is the reason we are faced with climate change and a global environmental and social crisis. The president of Bolivia, Evo Morales, in an open letter on Climate Change (Morales Ayma, 2010), blames competition and capitalism's thirst for limitless profits as

being the cause for the destruction of the planet. Community ownership models that are established for the common good, environmental and social sustainability are more in line with climate justice principles than models that are based on competition for profits. This debate can then be extended to include the purpose of energy development and investment to fulfil basic energy needs as opposed to profits.

If a project is designed to sell electricity to a third party and create a profit for the local community then it would be more acceptable if this community is previously disadvantaged or marginalised and the project is designed to bring much needed revenues into poor households. This is where the definition of common good becomes stretched. Through a utilitarian approach to this argument; profit making ventures, projects that benefit the marginalised as opposed to the rich are more in line with climate justice principles. However, preference is still given to projects that are established with the purpose of contributing to social and environmental sustainability. In order to avoid debate on this point, preference should be given to non-profit making ventures, set up for the common good.

2. **Local ownership and control**

Climate justice principles require that the local communities that are to be affected by a renewable energy development, should be the ones that benefit from and control it. Grassroots consumer cooperatives set up in the resource rich areas that have equal and open membership, inherently give ownership preference to the community of locality. It is these types of projects that are truly in line with climate justice principles.

What was found in the analysis of the case studies was a difference between ownership limited to the locality and actual community control of power plants. It is very easy for a large corporate/ utility to partner with a community in a top-down approach whereby the community sits silent as a simple equity partner/owner. Such models exclude the local community from the decision making process, limiting their benefits to a share in profits or other benefits such as community investment funds/trusts. Such forms of ownership, depending on their degree, are rejected by the climate justice principles that call for local control over their resources in order to ensure intergenerational sustainability and equity. To ensure local community control over the renewable energy project, the community itself needs to be involved from the start, with the project ideally initiated by the community. Such local control leads to other benefits such as localised job creation and enterprise support and development (Tabuns, 2011:20). It is the grassroots, bottom-up approaches that are emphasised here that contribute to local knowledge and an increase in social equity. Climate justice therefore prefers local community control of the project as opposed to outside developer/corporate control.

Some community renewables models (for example Sweden Wind Power Cooperative, net-metering consumer cooperative (Ribbing, 2012)) require that a community build a plant in a resource-rich location and wheel the power to them. In such cases, whereby a community group, as the 'community of interest' owns a project but is not located in their locality, that group would need to involve the local community where the project is located. Another example is when private developers with a social agenda may seek to involve some level of community ownership in their projects and invite participation from broader communities.

If these communities of interest are developing these projects for the common good and not exploiting another areas resource for personal and financial gains then there is a case for such a project. However, as found in the research, the greater the control that external and third party ownership has on renewable energy resources, land, and generators, the further away from climate justice principles it is.

3. **Democratic and participatory management**

An important principle in the cooperative movement is the one-member, one vote principle (International Cooperative Alliance, 1995). That is, each member of the cooperative has equal vote regardless of the investment size. The organisation should be managed in a truly democratic form whereby all members have equal control in the decision making processes. Furthermore, the organisation should be voluntary, open to all and have no discrimination nor bias towards membership. As noted in the previous point, all affected parties, especially those in the locality, should have some level of participation in the project.

4. Identity of off-taker

If the identity of the off-taker is a utility and the project is developed for profit (see Glimminge Wind Farm, Producer Cooperative, (Helby, 1998b)), then such a project would fall back on the scale. Consumer cooperatives, when community owners are also the off-takers of the electricity, would be on the other end of this scale. Consumer cooperatives link to the purpose of sustainability and not producing surplus/excess. When third party off-takers are involved, the community organisation tends to set itself up as a profit making venture. There are some cases where individual investors tend to invest for environmental reasons but these tend to be secondary to investment objectives (Walker, 2008).

Producing renewable power that gets fed into the power grid will inevitably create a producer surplus of power that can be easily wasted. The self-generation principle of the consumer cooperative targets efficient management and planning over resources, only producing enough to meet the demand. Community ownership for large-scale third party consumers whilst maintaining the principle of the common good needs to be embodied if the project is to adhere to climate justice principles.

To illustrate these principles, Figure 5 depicts a sliding scale. On the one side are social ownership principles that are in line with climate justice principles moving to the opposite extreme of commercial, profit driven enterprises that exercise no democratic or local control. It is assumed that the extreme to the right will most likely comprise of private/corporate ownership with little to no community participation. Somewhere in between these two sets of extremes, we find the most likely scenarios as well as those that have been largely successful in Europe.

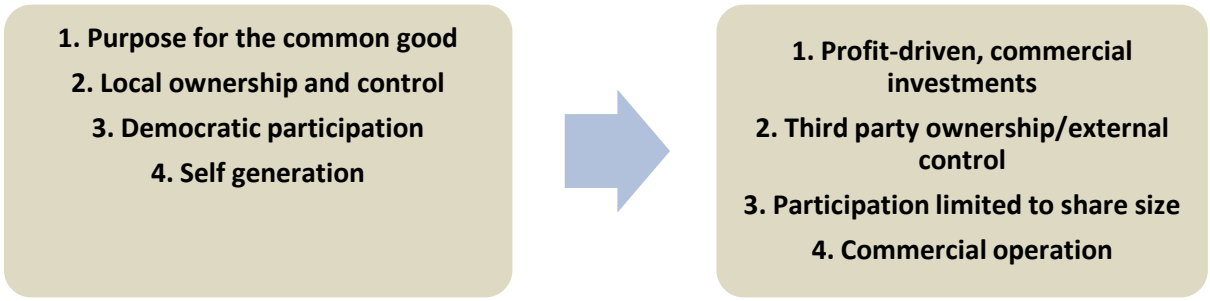

Figure 5: Social ownership principles for climate justice

According to these principles the ranking of community ownership models is suggested:

1. Consumer cooperative
2. Aggregate net-metering
3. Producer Cooperatives
4. Multiple private owners selling to private off-taker
5. Multiple private owners selling to utility

The first model is the one that adheres to climate justice principles the closest, and the last with the loosest adherence to climate justice principles. This ranking is in general terms and uses the case studies investigated in this research.

3.7.3 Theoretical considerations and limitations

In neo-Gramscian terms, as discussed in the Introduction to this chapter, community renewables and the case studies illustrated serve to offer a counter hegemonic alternative that will bring about structural change. What the case study analysis did not do was to gain a deeper understanding of the effect that community renewables, as a counter hegemonic alternative, has had in each of the three countries analysed. This is recommended for future research. Furthermore, in order to predict the detailed effectiveness of community renewables in the South African context, a more detailed political-economic, cultural, and social investigation of each country would need to take place.

Cox (1993:65) details Gramsci's theorising on the success of alternatives in bringing about structural change. The world economic crisis that we currently face will stir some counter hegemonic activity which will take on a different form in the different countries. Cox (1993:65) notes that "Political preparation of the population in sufficient depth may not, however, be able to keep pace with revolutionary opportunity and this diminishes the prospect for a new historic bloc." In other words, the impact that alternatives, such as community renewables, will have on the creation of a new historic bloc is at threat in times of crisis and times of revolutionary action (especially in peripheral countries). Without the formation of a new historic bloc, states are under the threat that they will be reconstructed into monopoly-liberal hegemonies with the restoration of the passive revolution under a new guise. Traditionally, corporations, states and militaries around the world have controlled the earth's energy resources. As seen from the

literature, the renewable energy sector is one source in which local community control has had very positive feedback and experience. However, in order for community renewables to truly work towards system change, it would need to form part of a bouquet of alternatives that all work together to forge a new historic bloc that gain strength in the long-term. The third objective which seeks to determine the ownership pattern emerging in the renewables sector, as well as barriers to community renewables in South Africa, will be investigated in the following Chapter.

CHAPTER 4 COMMUNITY OWNERSHIP IN THE SOUTH AFRICAN RENEWABLE ENERGY SECTOR

4.1 Introduction

Chapter 2 showed that the political economy of South Africa, neoliberal in character, is centred around the MEC and transnational capital. The energy sector is still geared, not by developmental objectives, but to satisfy the energy needs of an extractive economy. In line with the neo-Gramscian framework adopted in this research, it is important to extend the analysis of social forces to the renewable energy sector. These social forces will have a key role in determining the nature of the sector being established. This Chapter, which aims to address research objective 3, involves a broad investigation into the REIPPPP and why this model of procurement was selected. It investigates, through interviewing policy makers and other industry stakeholders, why Government changed the originally proposed REFIT to 'REBID' (Renewable Energy Bid) and what the influences were behind this move. In understanding the motivation behind the change, the actors involved in the process should emerge and indicate how they have influenced the process. Importantly, this will include the beneficiaries of the move and their influence, as key stakeholders, on it. The Chapter further investigates the role that the REIPPPP will have in promoting socio-economic development and comments briefly on its effectiveness. A notable aspect of the programme (The Department of Energy, 2011a:93) is that it incorporates community ownership into the requirements of project proposals. The effectiveness of the community ownership aspect will also be investigated, in terms of socio-economic development and community empowerment.

The second part of this Chapter investigates the general limitations that community renewables face outside of the REIPPPP. Earlier, Chapter 2 introduced community renewables as an alternative ‘model’ that could work towards building a new historic bloc aimed at challenging the current order. The barriers to these models are important in guiding understanding around the possibility for alternatives. Finally, a brief summary of those community renewable models (analysed in Chapter 3) that show potential in the South African context is given.

4.2 REIPPPP: REBID procurement, social forces and community ownership

4.2.1 From REFIT to 'REBID'

The National Energy Regulator of South Africa (NERSA) is mandated as the custodian and the body responsible for the promulgation of the South Africa Renewable Energy Feed-in Tariff (REFIT) (NERSA, 2008:29). The choice of a feed-in-tariff type procurement is outlined by NERSA. The following three instruments were considered before the final selection of REFIT:

1. Mandated targets or a renewable energy obligation or renewable energy portfolio standard.
2. Tendering systems.
3. Guaranteed pricing or feed-in tariffs.

The reason the renewable energy obligation was dropped was due to the obligation being more "...effective in liberalised electricity markets..." and that "...mandated targets have been less effective than feed-in tariffs"(NERSA, 2008:23). The abandonment of the tendering system was argued for thus:

> *"Under a tendering system, potential renewable energy developers bid either for power purchase agreements, or for access to a renewable energy fund, on a competitive basis. Tendering systems tend to favour established businesses and can allow existing companies to keep potential competitors out of the market by bidding low on projects, regardless of whether or not the company has any intention or ability to actually build the renewable energy project"* (NERSA, 2008:23).

NERSA acknowledged that the REFIT programme could create a producer surplus and, to avoid this, proposed that "...by matching the tariff schedule reasonably closely to the costs of production per technology this surplus can be minimised." (NERSA, 2009:2). The benefits of REFIT are discussed in Section 2.3.3 and it is clear that NERSA understands the value and success that a REFIT mechanism has achieved worldwide.

Months before the procurement documentation was released, the Department of Energy (DoE) notified the public that the nature of the procurement was going to change to a competitive bid, and that the legal custodian of the procurement programme would switch from NERSA to a combination of the DoE and National Treasury. Government was clearly concerned with the REFIT prices that were published by NERSA, especially in light of massive cost reductions in some of the major technologies. Government was against the idea of massive developer profits and producer surplus (Salgado, 2011:online). The published REFITs would serve as the bid ceiling price under the new procurement programme. This change in tack from Government came 3 years after NERSA's first announcement that it would be pursuing a REFIT mechanism. Naturally, the renewable energy industry was up in arms about the change (SAPVIA, 2011:online; Creamer, 2011:online).

During the interview process for this work, respondents were asked their opinion on the reasons for the change from REFIT to REBID. It seems that the biggest driver behind the change from REFIT to REBID is the requirement of National Treasury to be a guarantor to the programme. The preferred method of finance was project finance that would be funded by South Africa's five corporate banks and two development banks, the DBSA and IDC. During the REFIT consultation process, the general view of the banking sector was that there needed to be a sufficient guarantee of payments. A Government respondent noted that *"ESKOM had a balance sheet that no bank, no lender would enter an agreement with without the backing of the government."* The banking sector communicated a clear view that in order to fund projects there needed to be sufficient guarantees from National Treasury. The entry of National Treasury meant that the procurement process was again reviewed, by which time there was substantial international interest in the sector. One Government respondent indicated that an estimated R400mil had already been spent on the sector by the time of REFIT was announced.

A Government respondent recalled that *"there was a group of investors, these are some of the things that are not said, a group of investors approached the Minister of Finance and said that they can provide power cheaper than REFIT tariffs".* Another respondent also noted that *"when we had the REFIT there were definitely people going to go on behind the scenes and that said we can do it for less, probably because they were not at the front of the REFIT queue... they knew they we're not going to get bids and they were trying to get another system going."*

At the same time, there was tremendous tariff uncertainty in the renewables sector because of massive cost reductions happening on the technology front. At the time of the change there

were huge technology price decreases, especially for solar photovoltaics (PVs). In the eyes of government, this tariff uncertainty delegitimised the fixed price procurement of REFIT on two fronts. The first being the substantial amount of profits that the developers were likely to make. A government respondent explains the concern saying "*the profit margins of developers, if you don't change into a bidding process, are in the 400% range".* Secondly and more importantly, the concern was the transfer of this cost onto the consumers; *"why would you give this investor ten cents more per kilowatt hour, why would you make the consumer pay a little bit more?".* Another government respondent echoed a similar feeling *"I think from our view, we are more interested on the price; we want to drive the price as low as possible. Given the fact that renewables themselves, at this point, are very expensive and we don't want to make a mistake; otherwise we're going to have people complaining, asking- 'What are you doing? Why are we paying so much money for electricity?' And we're not going to be able to explain that, that's the first layer; we want to deal with the price."*

This technology cost and tariff uncertainty seems to be the justification behind the change in the procurement from a pure REFIT to the 'hybridised' REBID, with the ceiling price remaining at the previously advertised REFIT tariffs. A government respondent appropriately describes government sentiment by noting that "*if you are the Minister of Finance listening to this- no; if that's the case let's have a combination of these things. Have your ceiling price as the REFIT and say that's that. But also allow competition. As a country even if you save one cent per kilowatt hour, once cent per kilowatt hour over twenty years can build a lot of houses".*

Respondents also fell back onto the reasoning that there was no option to go for a REFIT because policy and legislation would not allow for it. The act most commonly referred to is the Electricity Regulation Act of 2006, specifically Section 34 which states the following for new generation capacity:

1) The Minister may, in consultation with the Regulator-
   a) determine that new generation capacity is needed to ensure the continued uninterrupted supply of electricity;
   b) determine the types of energy sources from which electricity must be generated, and the percentages of electricity that must be generated from such sources;
   c) determine that electricity thus produced may only be sold to the persons or in the manner set out in such notice;
   d) determine that electricity thus produced must be purchased by the persons set out in such notice;
   e) require that new generation capacity must-
      i) be established through a tendering procedure which is fair, equitable, transparent, competitive and cost-effective;
      ii) provide for private sector participation.

The legislation clearly states that the tendering procedure needs to be competitive and cost effective. However, the reason to move away from REFIT for policy reasons seems to be a weak argument because, as was highlighted by a government respondent; *"if you follow the history you'll realise that the tariff went out first and then we followed behind with some regulation to try and give it some direction."* The legislation and procurement at the time were new ground and legislation in support of REFIT could just as easily have been designed. Another respondent

shared the same opinion *"Eventually they still have to get ministerial waiver but on one of the acts [for REBID] so they could have done the same for REFIT, they could have fixed it they wanted to."*

Further reference to legislation includes constitutional issues with stopping the issuing of REFIT contracts when there is a potential producer surplus. How do you exclude or stop development in a REFIT environment? It seems unfair for Government to stop the procurement when they feel they have enough power. Respondents note the fear of Government in reneging on contracts as Spain did some years into their REFIT procurement. These arguments do not justify the move to REBID in because under a REFIT structure, these reasons could be planned for and those risks mitigated through other measures. The common way to mitigate this is to set the REFIT tariff as close to the production costs as possible. However, this brings one back to the same argument that most of the Government respondents fall back on; the fact that the cost of generation was unknown at the time of procurement. There are however ways around this such as strictly auditing profits of renewables re projects, for example by reviewing tariffs yearly.

The final justification given for the move to REBID is the long-term sustainability of the renewables sector in a market environment. This motive does not incorporate South Africa specific sustainability which would have to incorporate other elements of localisation but purely the sustainability of renewables in terms of cost. The view here is that in order to ensure that renewables survive, they need to compete at grid parity; i.e. the cost of renewables needs to compete at the wholesale cost of electricity from all sources. The renewable energy industry needs to survive without premium tariffs being paid to promote them and in order to achieve this, price competition is essential in driving down its price. This argument is purely based on market theory whereby, if a market-driven industry is to thrive, you cannot have price fixing or price control. An extension of this argument, one that is more specific to South Africa, is the need for the renewable industry to compete with Eskom. There is a view that in order for renewable IPPs to survive in South Africa, it needs to be able to (eventually) compete with Eskom. By using market forces to determine the costs of generation is theoretically one of the best methods to bring the cost of generation down. There will be at some point a flattening of tariffs whereby the bids coming back to government either stay constant or will increase slightly. At this point, when the costs of generation are better known, it would arguably be an opportune point to move towards a REFIT procurement. Responses to this question differed amongst respondents who had mixed feelings on the future move towards REFIT type procurement. One government respondent seemed to believe that "*At this point I think we will then go back to a very simple process. One of the things we said about REFIT it's simple in the way that you implement it. It's less costly, doesn't need as many of the transaction advisors as you would have. So at this point I think it will have to go back to that, and I think the reason why we took five [bid windows] was we said- I'm sure after five these prices would normalise.* Most other responses did not seem so promising with another respondent stating "*The second they do that, they're going to undermine the industry and it's not going to work. They've shown that it can work on a competitive basis; why now move away to an artificially supported environment? No."*

4.2.2 Hegemonic forces?

This change in the method of procurement will have a large effect on the nature of the renewable energy sector that will be established in the South Africa. Within the neo-Gramscian framework, this analysis should aim to "establish which social forces attempt to formulate a hegemonic project around which ideas"(Bieler & Morton, 2003:online).

As described, Eskom has been the monopoly electricity utility for decades. Government policy from the late nineties has been working towards the privatisation of Eskom. The REIPPPP, promoting private IPPs is an attempt to incorporate private capital into the electricity sector. Both REFIT and REBID are procurement procedures that will enable private ownership of the renewable energy sector. In understanding the forces behind a shift from a REFIT procurement to REBID, interviews were performed with Government representatives. As noted in the previous section, the interviews provided an overwhelming opinion that the move from REFIT to REBID was purely because the consumer's pocket had to be protected. Why make the consumer pay one cent more for electricity sourced from the private sector?, was the common understanding for the move. In their opinion, through REFIT, the private developers and IPPs would be getting an inflated price for their electricity and would be making inflated profits off the electricity consumer. With the huge public outcry against the rising electricity tariffs, how could they justify REFIT to the public and that the competitive model was abandoned? Even with REBID as the chosen procurement, the latest Multi Year Price Determination (MYPD3) includes a 3%[3] increase in the electricity tariff to cover the purchase of electricity from renewables. Because the financing of the renewable energy procurement comes out of the electricity tariff, this reasoning seems completely justified.

Furthermore, the opinion of decision makers is that REFIT and REBID are very similar. They both have the same SED requirements, they both will require private sector ownership, REBID incorporates the same caps on the tariffs as proposed by REFIT and, by adding a bit of competition, Government aims to prevent extreme profits being made off the consumers. The fact that, through competition, a completely different sector will be emerging is purely due to market dynamics and doesn't seem to concern Government representatives.

Eskom themselves are against IPPs in general as they have little to gain. Perhaps REBID is more burdensome on them because of the added burden of preparing grid connection studies for projects that will never become preferred bidders. They have nothing economic to gain from the move to REBID.

In questioning the developers about the larger BEE firms involvement in the sector and their influence with their political alliances with the ANC, there seemed to be a general view that the bid is completely transparent with very little scope for corruption. A respondent's comment summarises this view; *"It's transparent and it's completely measurable. We were successful in round one; we were unsuccessful in round two. We asked them, "Why the hell were we unsuccessful? What happened?" They gave us a full breakdown of exactly where we went wrong, where we were outbid, etcetera. Total transparency; an incredibly well run process. That's very, very difficult, if not impossible, for the typical sort of corrupt activities to actually be taking place."* Similarly another observation points out that; *".. no one could be held up for corruption if had been done on competitive tender process as opposed to the loose things under the REFIT."*

Corruption claims, common in previous Eskom power procurements have not emerged. Some respondents were under the impression that some news of large politically connected BEE firms winning contracts through corrupt dealings may still emerge. However, the large BEE firms would not necessarily favour a REBID procurement, it is more transparent and they will most

[3] http://www.sanews.gov.za/rss/12/12102215051002

likely be involved whichever procurement was taken. The bid requirement for the total black ownership in the projects is a 12% threshold with a target of 30% (The Department of Energy, 2011e). The community ownership requirements will fall under this at a 5% target. A black investor interested in partnering would traditionally also source finance in the form of a loan from the development financiers. This requirement is inherited from the BBBEE codes which aim to transform ownership to a black middle class and black business (Marais, 2011:389) with less emphasis on local community ownership. Comparing the original REFIT documents with the REBID ones, the black ownership requirements would have been the same either way and perhaps black business doesn't stand to gain more, economically, through REBID.

The largest international technology providers and EPC contractors probably stand to gain the most through the move from REFIT to REBID. Two reasons for this exist. First is the fact that the larger your capabilities are and cheaper your technology is, the more likely you are to win bids through lower tariffs. Second, local manufacturers will be left out of the bid, not only because of pricing but because of their small balance sheets and inability to provide the necessary guarantees required for project finance. Responses from government representatives show that it is most likely that the previous REFIT would also be designed for project finance and therefore local manufacturers would also have been excluded.

The developers themselves, when the change from REFIT to REBID was announced, were disappointed. The original announcement of REFIT brought in smaller private developers who would not be able to compete against the international IPPs, they are the ones with the most to lose. For the developer, and even the developers who were successful under REBID, a REFIT style procurement is far easier to operate under, and remains their preference. However, the small handful of large IPPs that will eventually take control of the sector may be unopposed to competition when they know they will always be the winners.

As discussed, two of the respondents interviewed mentioned a group of investors that approached the minister of finance, lobbying for a competitive bid procurement over the REFIT. This group claimed that they could produce power at far cheaper than the published REFIT rates. There was also speculation that this group would not have been ready for the REFIT submission and, by trying to change the procurement to REBID, would be buying them some time. Whether true or not, it is unlikely that the entire procurement was changed for the benefit of this group. As suggested by the respondents, the most likely outcome of such lobbying would be that it alerted the decision makers to the high REFIT tariffs published and the need to insert a mechanism that would ensure value for money.

There has been a major change in the method of procurement of renewable energy which will have, attached to it, major winners and losers. In the eyes of Government it seems as though, under REBID, the winner is the electricity consumer and, under a REFIT, the winner is the private developer and equity investor. There seems to be a general distaste in Government towards the private sector making huge profits off the consumer. Through REBID however, a new set of market players, also private, are able to legitimately establish themselves. Legitimate in the sense that, through the procurement of low cost energy, Government is protecting the consumer. As a result these new market players can only be larger international IPPs and transnational equity investors. This result is not co-incidental and cannot be ignored. Bieler and Morton (2003:online) argue that "transnational capital within globalisation is currently involved in formulating a project around the ideas of neoliberal economics, since this furthers

specific material interests best." This observation best describes the move from REFIT to REBID where it is not necessarily a specific group that caused the change to in order to reap benefits, but instead the neoliberal project entrenched in the country's economic policy, that has determined the procurement outcome. Gramsci's predictions are correct. The international neoliberal agenda prevails and the interests of transnational capital are protected as the renewable energy sector attempts to bring in cost effective electricity to an energy system still catering to the MEC. The interview process has not determined whether or not the previously envisaged REFIT would be necessarily be any different as neoliberal ideals were entrenched in energy policy even before that. It does however seem true that a REFIT procurement is not congruent with neoliberalism and hence the need for the change. Whether or not Gramsci's *trasformismo* has infiltrated the rhetoric of industry leaders is inconclusive. The contradiction that is interesting however, is respondents' emphasis on 'protecting the consumer' through lower tariffs. They seem to believe they are protecting the ordinary South African. However, in an extractive energy system where the majority of electricity consumed by the MEC, the consumer is in fact transnational capital. This research argues that community renewables will in fact bring greater benefit to the ordinary South African than market driven tariffs. Community renewables in such a procurement face almost complete exclusion. This will now be explored.

4.2.3 REBID barriers to entry for small IPPs and community renewables

The REIPPPP currently promotes large-scale competition on the pricing and contracts for renewable energy. In Europe, the only country that adopted such a mechanism is the UK through the NFFO programme which was largely viewed as a failure (Pollit, 2010). As a basis for promoting renewable energy, other countries in Europe have guaranteed a fixed price for renewable electricity per kilowatt hour and is not awarded through competitive bidding. This procurement procedure is far cheaper to government and to the developers, as well as being much less bureaucratic for the organizing body (Mitchell, 1995:1086). However, the literature does not seem to draw a significant conclusion that the overall failure of the bidding mechanism of the NFFO in the UK compared to the success of a REFIT in Europe is due to the financial support mechanism itself. The broader social and economic characteristics of the countries are so different and would also need to be considered in an analysis. South Africa's REBID has aimed to address some of the failures of the bidding type procurement. Whether or not REBID is viewed as a success on other indicators (e.g. quantity of RE into the grid), it will certainly have a profound impact on the nature of the ownership of the sector.

The design of REIPPPP has a number of differences to the other bid type procurements overseas as it seeks to address the certain downfalls. For example, an example of the NFFO failure was that a local renewable energy industry failed to be established. Technology was imported and revenues exported. There was too much uncertainty in the programme and the long-term sustainability of it for proper manufacturing expertise to be established. Furthermore, the limited lifespan of the procurement resulted in little permanent investment (Mitchell, 1995:2). South Africa seeks to overcome this by forcing economic development obligations into the bidding requirements. Local content, job creation, local ownership etc. all aim to address the failures of other programmes. Another example of the failure of a bid programme is that large players tend to game, bid really low, just to win a contract or to exclude other players. A lot of those projects never got constructed. South Africa aims to address this by making bidders pay an upfront 'preferred bidder bond' which amounts to R200 000/MW (The Department of Energy, 2011a). On a large solar project, for example, a 75MW PV plant with a capital

expenditure of approximately R1billion, the bid bond would cost R15 million. This is a significant sum, but on a R1billion rand project it is only 1.5% and whether this is enough to stop gaming, only time will tell.

The interviews conducted aimed at establishing the kind of players the bid is attracting and how the smaller players are able to compete. The other aspect investigated is whether this was a goal of government and whether or not they see it as advantageous. There was no coherent answer whether or not it was the goal of Government to establish large IPPs, with reason being that the nature of the players established will be due to the market dynamics of a competitive bid. The fact that the competitive bid promotes transnational IPPs is a market dynamic was clearly known to the designers of REIPPPP. In order to address this and to try include smaller players, Government has aimed to introduce a separate small projects procurement (The Department of Energy, 2013), which is yet to be promulgated. It will only be the large IPPs that will be able to drive down generation costs to where Government wants them to go.

An industry association representative recalled that these were not the original intentions of the DoE. When their entity was formed they were *"advised informally by DOE that they wanted to see five to ten megawatts projects. They didn't want to see big projects because they only had a small allocation. They wanted to be able to give out [contracts] to enough people.* Another representative iterates the downside of the bid being that because *"there are such high penalties for non-compliance with the rules that really this excludes the small player completely. In order to safeguard the system you really have to almost make it impossible for the small guy to play."*

In a bidding structure it makes sense for all stakeholders to favour the larger players. As the government departments evaluating the bid, there is reason to favour fewer, larger projects, even if it is merely to boost administrative efficiency. All bids need to be given the same and fair evaluation. The results from Bid Window (BW) 1 and 2 are shown in Table 16. The success rate of the bidders decreased from BW 1 to 2 and the capacity of the projects increased at an average rate of 10%.

Table 16: Number of bidders

Bidders	**Bid Window 1**	**Bid Window 2**
Bidders	53	79
Preferred Bidders	28	19
Success Rate	53%	25%
Average Size Solar Project	35 MW	46 MW
Average Size Wind Project	79 MW	80 MW

Moving forward, an industry association representative predicts that this trend will continue. "*One of the things we'll see going forward is they'll remove the cap on PV projects. They want to see 100, 200 megawatt projects being developed. There are some good reasons for it. What it means is that banks aren't not interested in developing projects below 20 megawatts."* This last comment on the financing ability of the projects is a very important one. Through discussions with the banks, the minimum size project that they are willing to support going forward are in the R400 million range. This means that they would only consider 30-40MW projects even though the REIPP minimum bid size is 1MW.

The commercial banks' view of project selection for future rounds will become more selective. They have the ability to tell which projects will be successful or not, so future support will be more informed. *"I say we had to trawl and now we get to line-fish. No more trawling; it requires a big vessel. Lots of fuel burnt. So we will be more selective."* Furthermore, the banks' emphasis on a strategic partner is highlighted. "*I think, importantly, you want strategic investors involved so people have some history, an international track record of renewables as opposed to, let's say, institutional investors funds, two or three individual developers with a bit of money but they don't know anything about the program."*

Another criticism of the bid is that Eskom is burdened with hundreds of grid connection applications that they have to process. Eskom do not stand to gain anything out of the procurement but are mandated by Government to process grid applications that are a tremendous administrative burden on the company. Furthermore, a respondent notes that the distribution system will get clogged with connections, "y*ou'll find ESKOM wanting to do bigger grid connections because going forward we're running out of capacity to connect to distribution network. They want to connect to the transmission network and the cost of that is going to exclude small projects."* The other administrative burden is on the Department of Environmental Affairs that are having to complete hundreds of EIA applications on projects that will never be successful.

To summarise, there are a number of barriers that have been identified for small IPPs who want to enter REIPPPP. These barriers will be exacerbated for community-led and owned projects.

1. **Development Costs**

   The first barrier emerging out of the interviews was the fact that the procurement is so onerous in the development and planning stage. The respective project needs to have all technical and environmental studies complete at the time of bid. This would take over a year to complete and adds over one million Rand to the development costs. The legal aspects of the bid require that a large corporate law firm represents the project as legal counsel adding further costs to the development. Other sources of financial burden are costs that are needed to be spent on independent consultants such as financial model, auditing and independent engineers. Smaller developers who do not have large balance sheets are required to have project finance in place at the time of bid. The costs of performing a project finance due diligence can be between R4-10 million, with all costs needing to be borne by the developer before the time of bid. This level of upfront risk capital is undeniably a barrier to community-led projects. These development costs can be anything up to twenty million rand, depending on the technology and size of the project. Because there is no guarantee of being awarded a bid, the development finance investment stage is at extremely high risk.

2. **Qualification criteria and finance requirements**

   The reason that the development costs described in point 1. above is because in order for the project to qualify under the REIPPPP the following elements are required as qualification criteria (The Department of Energy, 2011a):

   a. Legal, e.g. acceptance of RFP Transaction Agreements, EPC contract agreements.
   b. Land Acquisition & Use: e.g. title / leasehold; Subdivision of Agricultural Land Act.
   c. Environmental Consents, e.g. ROD, other environmental licenses.

d. Financial: e.g. price cap; robust financial proposal, fully funded project
e. Technical, e.g. proven technology, complete bankable designs.
f. Economic Development Thresholds, e.g. RSA Entity ownership threshold, localisation and manufacturing elements.
g. Bid Guarantee. Bid bond of R100 000/MW required at bid.

These elements act as gate keepers and once a bidder qualifies the adjudication committee evaluates the bid price and economic development criteria.

Therefore, it is not only the costs that create the barrier but also the criteria, meaning that in order to be successful, the bidder would require certain development knowledge gained from strategic partners (or expensive consultants). Smaller, local IPPs are forced to partner with international IPPs in order to finance the development and to qualify for debt finance, which is a qualification criterion. The five corporate banks and the two development banks of South Africa are the major funders of these projects. The funding is in the form of non-recourse project finance and requires massive technology guarantees as well as equity guarantees that few South African firms are able (or willing) to provide.

3. Competition

The competitive element of the bid acts as a major barrier to the creation of small IPPs. The majority of small IPPs are not able to fit the development finance bill in order to be bid ready and if they are somehow, then the risk of not being awarded a PPA is extremely high. The larger developers have the required backing to forfeit development capital if not successful and still stay afloat.

Furthermore, the competitive element based on price is forcing developers to produce the largest possible projects in order to make use of the economies of scale. There is no way a 5MW private/community project would be able to compete with a 75MW private project. Small projects do not get the required attention from lenders and therefore struggle to meet the funding requirements of the bid. They are also not able to compete with the large EPC contractors who may be taking a loss to get into the market or technology providers dumping cheap technology.

The way small developers have an opportunity to compete is through the economic development section of the evaluation, yet because this only represents 30% of the total score and the fact that there is no reward for exceeding the targets there is little room for smaller projects to differentiate themselves. Larger developers are not finding it difficult in meeting the targets which therefore excludes this as a basis for the smaller IPPs to compete. Competition by its nature is exclusive and small-scale projects, smaller-scale companies and lower resource sites in particular are at a disadvantage in a competitive system.

4. Timing and the tranche system

The mixed signals from Government and the delays in the bid have caused huge opportunity costs to developers who are unsure of the timing of the bid. Larger projects and developers have the required cash-flows to survive in this environment. The smaller projects that aren't

successful in a bid window have found to sell off their projects to recover cost or go insolvent.

Secondly, the tranche system has a number of disadvantages. In order to evaluate competitive bids, several bidding tranches or windows are held with a number of developers being awarded licenses in each tranche. The problem caused by such a process is that it creates a time lag between tranches. This time lag is needed by the evaluating body to process bids and award licenses as well as giving the developers enough time to prepare for the next bidding round. This results in an unnecessary waste of development costs and inefficiencies in development time. Furthermore, it is a bureaucratic process and with several application deadlines where busy periods are created for those involved and can create staff and time management problems (Mitchell, 1995:1086).

All of these factors create a knock-down effect on the nature of the projects that are emerging as 'preferred bidders'. Projects with the greatest economies of scale are able to bring their bid price so low that they are able to be selected as 'preferred bidder'. The combination of all the elements described above means that the REIPPPP programme favours developers and projects/players that:

- Have major capital resources and large development budgets
- Are existing IPPs/equity players (usually international) that have the required experience to satisfy project finance requirements from banks and the onerous qualification criteria.
- Are large-scale plants in order to justify the large upfront expenditure.
- Are large-scale plants in order to compete.
- Projects with access to large balance sheets to qualify for finance from lenders.

Whether or not this was the original intention of the procurement programme is unclear. What is quite evident however is that in South Africa's broader neoliberal policy environment of competition and cost recovery it is obvious that the Government would choose a bidding mechanism to get the price of electricity down as much as possible. What is unmistakably emerging is that the procurement is favouring the larger IPPs. An interviewee explains this succinctly -*"Government wants to deal with twenty elephants not two million mosquitoes".* It cannot be denied that apart from the cost of electricity drivers, the socio-economic development criteria of the bid is also an important element to government. Whether or not a bid can provide both of these is questionable. The other important element that needs to be understood is how the government is using the bid to enable some level of community ownership in the projects, and other socio-economic development elements.

4.2.4 Socio-economic development

Government and NERSA (at the time when REFIT changed to REBID) were aware that it was necessary for a compromise for the new bid. The compromise, as one of the respondents describes, *"REBID is the most balanced way of dealing with all of the concerned groups because if you wanted REFIT the figure was there[as the cap]; if you wanted to compete then compete below that. But the other instruments that we wanted to use [SED requirements], were not changed."*

Theoretically, a tariff centric bidding mechanism will favour least cost generation over local industry development. This then runs the risk of not generating a sustainable local industry. It also neglects long-term job creation, manufacturing, operations and maintenance base that

could be located within the country. In order to ensure that this does take place, the bidding criteria specifies certain local economic development criteria. Because competition is still based mainly on price (70%), there is still a risk that the SED criteria do not provide the potential benefits that such an industry is capable of providing. However, Government responded (in line with market theory), that by bringing the cost of renewable electricity down, the industry will be more sustainable. Further interview responses indicated that because the country is so reliant on cheap electricity prices that by not introducing competition to the sector, government would run the risk of hindering the competitiveness and broader socio-economic development of the South African economy as a whole.

The first bidding window opened in November 2011, the second in March 2012 and the third which was to be held in October 2012 was delayed to August 2013 (The Department of Energy, 2012b). The results from the first and second round have been published by the DoE (The Department of Energy, 2012a). A substantial drop in the electricity bid price has been realised (Figure 6) between the 1st and the 2nd round as well as a substantial increase in the local content attributes (Figure 7). The results on job-creation attributes from each round for solar PV and for wind are illustrated in Table 17, with graphical representation in Figure 8 and Figure 9.

Table 17: Job creation results for Bid Window 1 and 2

Technology	**Solar PV**		**Wind**	
Bid Window	BW1	BW2	BW1	BW2
MW allocated	632	417	634	563
Construction jobs created	10386	4557	1869	1579
Operation Jobs created	221	194	128	65
Construction jobs created/MW	16.43	10.93	2.95	2.80
Operation Jobs created/MW	0.35	0.47	0.20	0.12

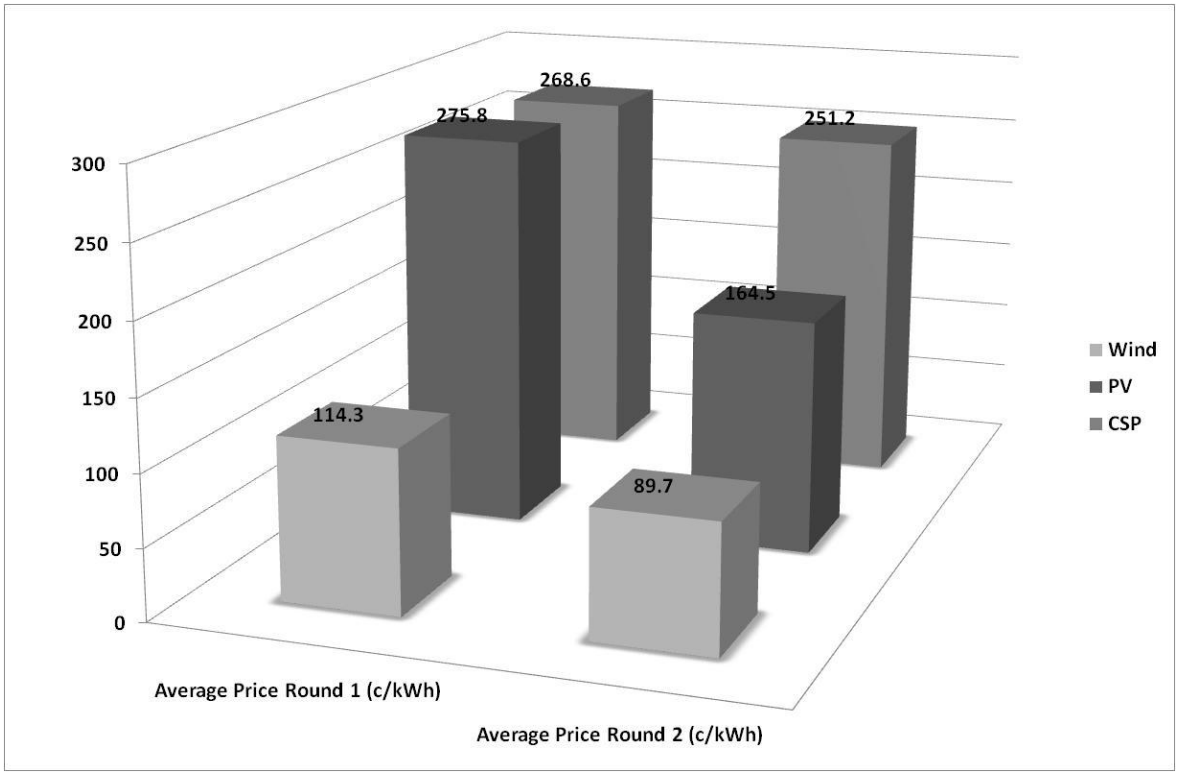

Figure 6: Average price of electricity in Bid Window 1 and 2

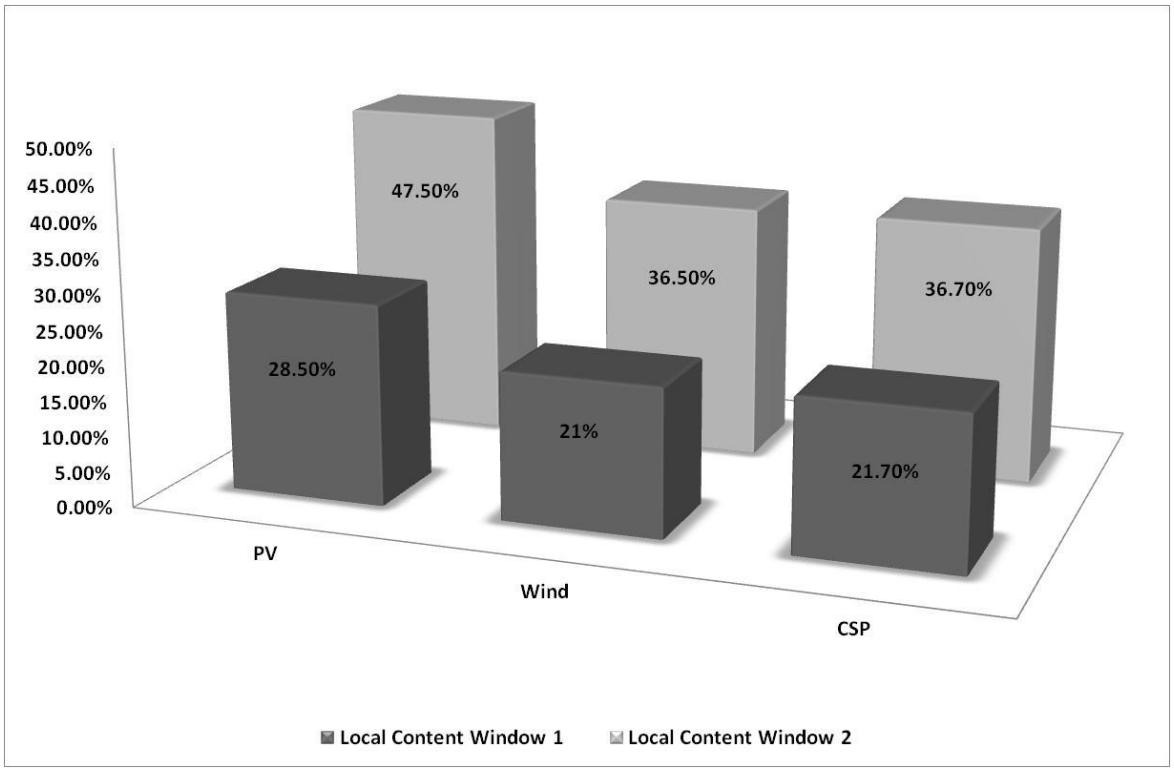

Figure 7: Local content indications from Bid Window 1 and 2

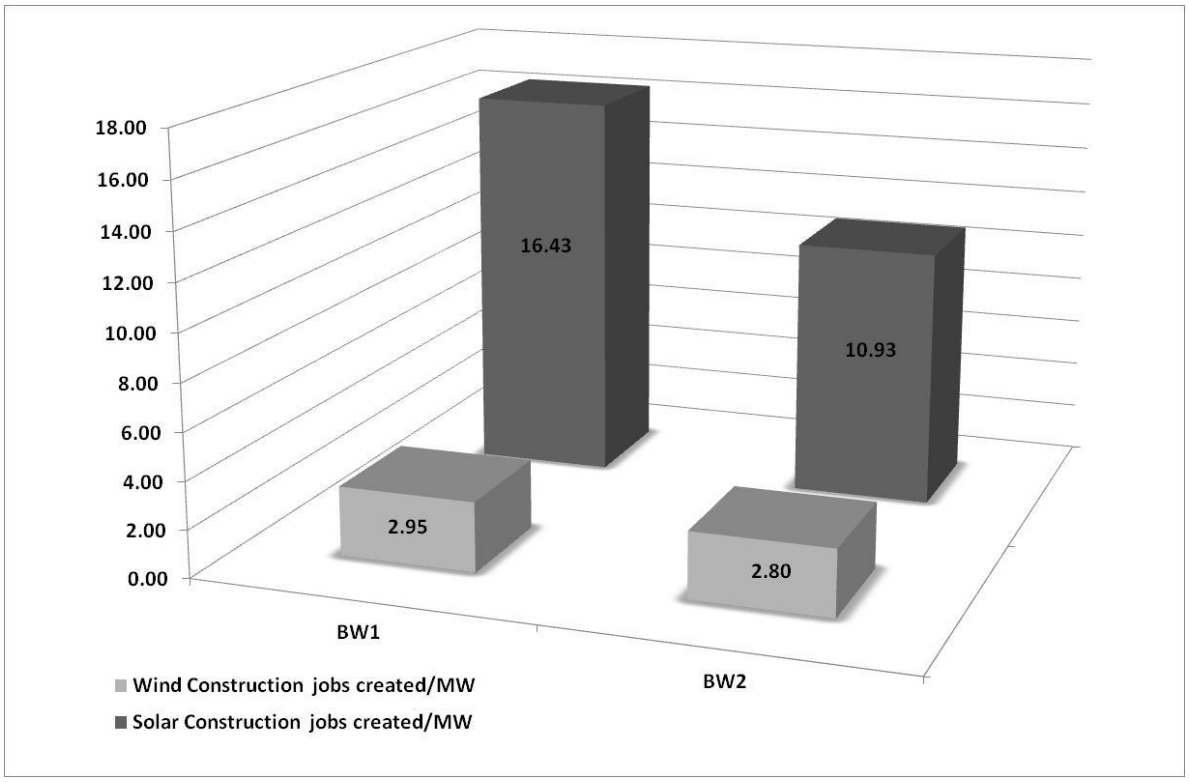

Figure 8: Construction Jobs created in Bid Window 1 & 2

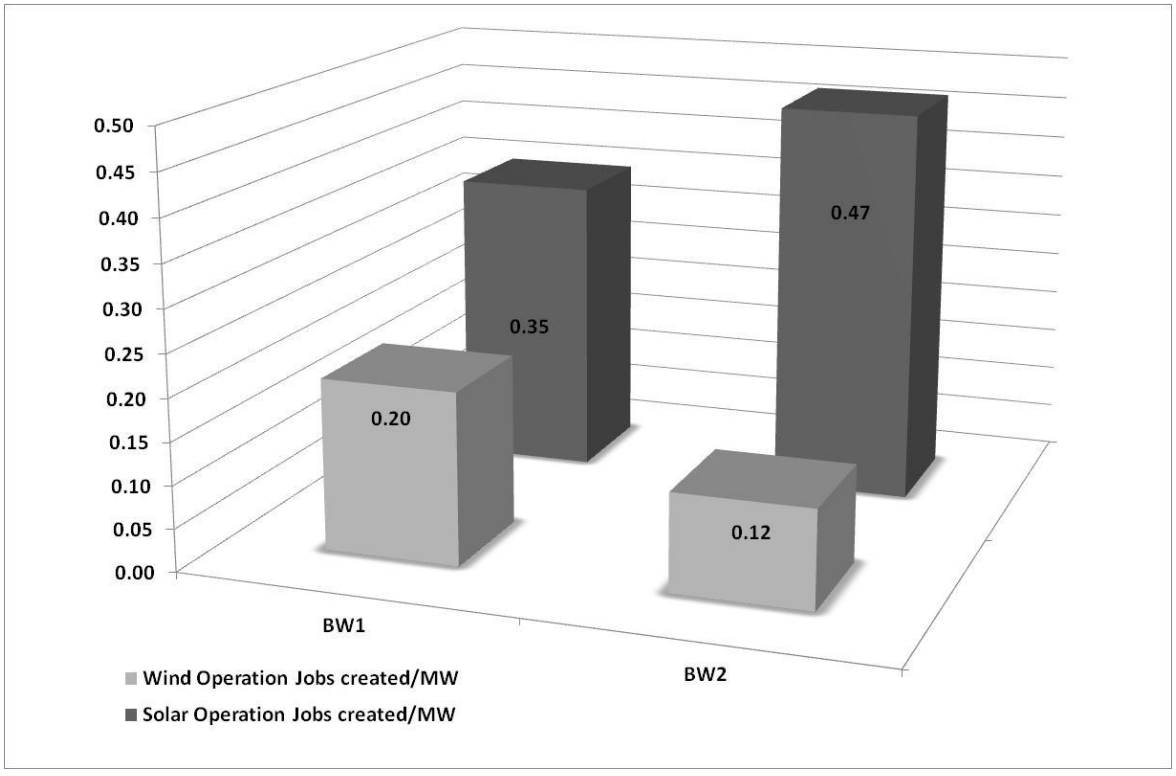

Figure 9: Operation Jobs created in Bid Window 1 & 2

From the results it is apparent that the competitive nature of the bid is driving down the electricity prices. The wind price decreased by 22% and the solar PV price by 40%. Interview responses suggest that the reason for the higher priced bid in window 1 is because the procurement did not put a cap on the amount of MWs being procured. Developers were well aware at the time of bidding that there were not enough projects that were bid ready. In order to fill the allocation they were then able to bid high prices with the view of there being little competition. This mistake was taken into account by the second round and the MW allocation was capped.

The local content aspects of the bid from window 1 to 2 also increased due to the increased competition. What was interesting to note was that the job creation number per MW allocated decreased for both solar and wind for construction in window 2. Operations decreased for wind but for solar it increased. One of the respondents understands this decrease as being due the competitive nature of the bid, *"the problem they [government] have right now is people have to rationalise a lot of their social economic development ambitions to make sure they've got a competitive bid."* Therefore, with such a large weighting on the price, Government runs the risk of bidders rationalising the SED criteria in favour of cost competitive elements. The only way for Government to limit this under a bid is to increase the qualification criteria to include more job creation and localisation. However, Government are aware of the fact, that the more that government prescribes these requirements the higher the tariff will be.

Another respondent noted that one of the biggest challenges to local manufacturing issues is how to make locally manufactured goods bankable. In order to raise the project finance from the lenders they require two things for the manufacturing. The first is track record, which after a few years of demonstration can be proven. The second problem is the huge performance guarantees required to qualify for project finance. Most small manufacturers and design houses are not in the financial position to be able to provide these. The example the respondent used is the Isivunguvungu Wind Energy Converter[4]. It is a Cape Town based manufacturer who has already made a blade and assembled the turbine under license from a German company. The German company is a design company and not a turbine manufacturer and therefore they don't have the balance sheet in order to back up the technology for the bank requirements. This then leaves bidders with the only option of partnering with large international manufacturers.

Another respondent also notes his concern on the PV market whereby there is no promotion of local manufacture of PV panels. Local assembling costs under license can add between 10-15% to the cost of the panels and this fact could result in panels, disguised as local content, entering the market if this are not monitored correctly.

Although local content is specified in the bid documentation, there is no Government specific attempts at creating a local, sustainable manufacturing industry. The findings of this research indicate that the requirements of bid as well as the financing requirements from the banks are creating a technology import industry that at best promotes the manufacture of some parts under license. Job creation prospects will continually be driven downward in order to make a financially more competitive bid.

[4] http://www.i-wec.co.za/#sec-5

4.2.5 Community ownership in the REIPPPP

Part of the qualification criteria (see Appendix, Table 24), is the allocation of ownership to communities at the qualification threshold of 2.5% and a target of 5%. In general, this ownership is being funded by the two major development banks, the IDC and the DBSA. The financing that is granted to the community trusts are typical loans that are able to be repaid over the term of the PPA. The rates provided are exceptionally low and the commercial banks will not be able to compete on the same terms.

The reason that the ownership target was set so low was done so for two reasons. The first was the concern with scaring away foreign investors. The bid did not want to appear as some sort of *"nationalisation process".* Another respondent reaffirmed this by saying that *"I think when we went in we didn't know what was right and what was not right, we had to come up with something, we had to start low and see how it worked out."* The second reason given by the Government was because the communities are being funded by the development banks, which are parastatals, it would be giving the Government too much capital exposure to the projects which is opposed to the main purpose of funding the REIPPPP through the private sector. This reason does not hold much weight when considering that the black ownership targets are 30%. This raises the question: Why not then have community ownership higher than the 16% fraction (of total black ownership) that is targeted, if the funding for regular black ownership would also be sourced from the development banks?

The interviews also investigated the developer's thoughts on community ownership. A respondent noted that community ownership would be extremely beneficial to the project, even if it is for security purposes- *"And it takes some of the burden off you, because wind turbines are not that mobile. But solar panels; bloody hell, those things have got delivered with legs of sweat!"* There is understanding that by giving the communities a sense of ownership, they will protect that asset.

The methodology followed in setting up the ownership is largely dictated by the bidding requirements of the REIPPPP. The REIPPPP defines local communities as (The Department of Energy, 2011b:8):

> (a) the communities in the nearest areas (residential or villages) to the Project Site within 50km from the Project Site; and
>
> (b) in the event that there are no residential areas or villages within 50km from the Project Site, then communities in the nearest residential areas or villages to the Project.

It was found that the developer's common method of setting up the community ownership aspect of the bid is to do so through a community trust. This work is usually done using a social consultant (for example Tshikululu[5]) to perform a needs analysis on the community. The outcome of the study will determine what social development is needed, as well as identifying potential local trustees.

The trustees chosen are usually community leaders with some independent representation, for example someone from the IPP. It will be difficult for Government to dictate much here as the

[5] http://www.tshikululu.org.za/

developers are very weary of "managing the trust". A respondent notes - *"It is something that one has to manage carefully. And it's not a democracy; we're running a company, we're not running a country."* The principles of climate justice call for democratic control and ownership and the approach that the REBID is taking is promoting anything but that. The above mentioned respondent further elaborates that *"I mean, you cannot expect people who have had no business training or leadership management training to suddenly be put into a position of authority and dealing with sums of money that they've never, ever seen in their lives before, and expect it to be run successfully. That's just ludicrous, absolutely ludicrous and naïve to think that that would work. You're setting those people up to fail."* This sentiment is shared amongst most corporate developers and is mostly predictable. An IPPs' objectives are to de-risk the project as far as possible and in order to ensure profitability the main shareholders need to maintain control. Government cannot expect meaningful empowerment to take place when the primary agenda of an IPP is profitability. Without a strong sense of democracy and ownership in the plant and without the community actively participating, **the top-down approach being promoted by REBID will most likely fail** to instil a true sense of ownership and empowerment in the community. The dividends remaining will remain as community hand-outs. This view is shared by a government respondent stating "*In my view this 5% that's been given to that is just some guilt that the government has and that these people [community members] can't see some nice trucks and things driving past and them not benefiting. It is not solving the problem."*

This misalignment of interests calls for Government to intervene on both sides of the bid submission to ensure fair handling of the community trusts. There is a need for independent **management of the community ownership process during the development stage** in order to make sure the **voices of the community are heard. There is also a strong need for monitoring and review process** that will ensure community ownership is creating a sense of ownership and that there is **transparency** in the spending with the community voices again being heard.

The timing and staged approach required by the procurement process is ill-suited to implementing the local economic development requirements. This observation was noted by the ERC (Energy Research Centre, 2013) and also by Pickering, (2012:14) who highlights the two revenue streams that will be accrued to communities and its distribution. The first being 1.5% of revenue; socio-economic development obligations that the project will spend on the community, and the 5% ownership revenue stream. These are illustrated in Figure 10. The distribution pattern that accrues to the community is illustrated in Figure 11.

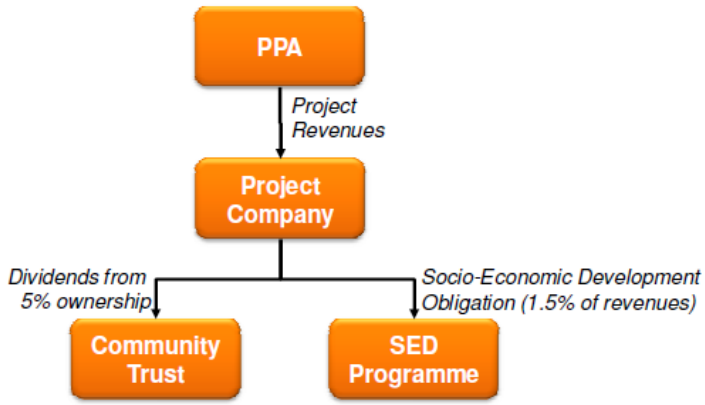

Figure 10: Community revenue streams (Pickering, 2012:14)

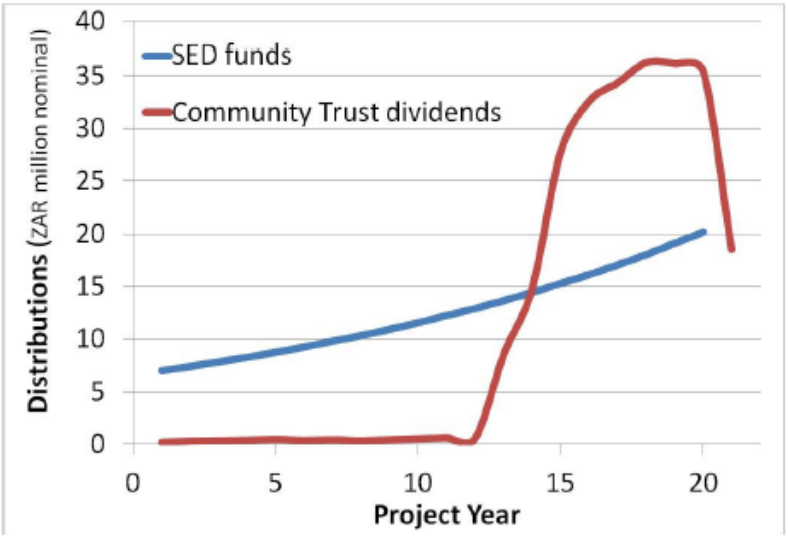

Figure 11: Community distributions (Pickering, 2012:14)

A government respondent also recognises this potential failure - *"It's a failure, it's a hopeless failure. You tell me every community is saying wow we own 5% of the wind turbines in our area. With the jobs, the guys are going to shovel the ground there, they're going to do the civil works. Six months after the COD date the turbines are running, the jobs are all gone. Now we own 5% after the first year with our return, nothing. Second, third, fourth, fifth. Ten years later there is no money, you are going to have massive outcry. You lied to us government, and you mislead us."*

The fact that jobs in the renewable energy industry are mainly created during the construction phase means that it is vital that a community realises alternative benefits from a plant after the completion of the construction. An avenue to ensure this is through ownership and dividend streams from electricity revenue. However, an average plant could take between 3-4 years from inception to the point that it starts to earn revenues. This in addition to the 10 year wait for the community loan to be repaid means that the community will need to wait for 15 years before realising any benefits. This wait is a clear failure in planning and needs to be addressed urgently. The projects will face the possibility of sabotage (on solar PV) or huge community opposition to the installation of wind turbines and more importantly the communities will continue to face social and economic hardship. In the UK, the lack of community involvement in wind projects has resulted in significant outcry and opposition from those communities. UK developers are currently using voluntary economic commitments in order to obtain buy-in from the communities (Aitken, 2010). If communities do not receive any benefits from the wind projects in South Africa, similar issues could be found. This problem calls on Government to intervene in order to **manage the expectations and community relations over a long-term period.**

The bidding process hinders opportunities for collaboration. Respondents from the workshop group, expressed concerns about different developers working in the same area and setting up different trusts encompassing the same community members. Some even experienced the same community leader being a representative on more than one community trust. The focus group emphasised the important need for developers to be collaborative when tackling the community trust aspect of the bid. There is currently no medium or portal for one developer working in one area to collaborate with another developer on socio-economic

development aspects of the bid. Collaboration could lead to gaming and collusion on bids and is therefore not supported by Government. It is suggested that there is a way to prevent collusion if Government acts as the portal and prescribes certain community trusts in the area or provides details of such. With or without pre-bid collaboration, there is a definitive need for a means to **align development spending in areas with more than one renewable energy project.** This will work towards aligning development spend as well as reducing the administrative burden, duplication and confusion amongst the communities. **There is an unequal distribution of development spending**. Some communities will benefit from a cluster of projects in their area and other communities outside the 50km radius of projects will not benefit at all. The respondents of the interviews suggested that there will most likely be issues of jealousy and division amongst communities about who should be the beneficiary of the revenue streams.

In conclusion, the community ownership aspect of REBID seems to be at best a weak measure in the envisaged empowerment plan. There is great need for urgent attention on the financing aspects of the trusts, perhaps through different loan terms from the development banks. Alternatively, funding could be done through a completely different means to make sure that the revenue streams accrue to the communities from year one. There is hope that the developers voluntarily increase the ownership amount surpassing the 5% target as some developers have indicated that they plan to do so. However, unless the Government enables the true community-led and developed projects, the benefits of community renewables will never be realised and the community revenue's will remain as community hand-outs. Furthermore, it is dangerous to transfer the functions of Government to these IPPs, whose main priority is profitability. The following section introduces the small projects procurement which has the potential to include some of the communities that have been left out.

4.2.6 Small projects procurement programme

In the first renewable energy determination, the Minister allocated 100 MW of the 3725 MW to the procurement of small projects. These projects individually have a maximum contracted capacity of a minimum 1MW and a maximum 5 MW. On the 20 June 2012, the DoE released the Request for Information (RFI) for the Small Projects Renewable Energy Independent Power Producer Procurement Programme (The Department of Energy, 2013). The full Request for Proposals (RFP) is expected to be released in 2013.

There is a possibility that the small projects procurement will be used to target the smaller, local IPPs that the main procurement programme has been excluding. There is also a possibility that this programme will have higher local content requirements that would then force the market to look at local technology manufacturers. This procurement process would be a suitable avenue for community-led projects to become commercialised if the procurement method was through a REFIT structure with very little upfront development risk. However, it appears that this is not the intention, with the bidding procedure being substantially onerous. This is illustrated by the following comment from a Government respondent - *"But you will understand, if you want to get funding for these things you've got to get your story right. That's the bottom line. If you can't get your story right, the banks will not give you the money and then who's going to fund you".*

Feedback from the banking community on the small projects has been largely negative. The commercial banks in particular have got very little interest in financing the smaller projects due

of the amount of resources required to complete a deal. For them the returns are too low and they do not seem to have the resources. The potential funders of this procurement will be the development banks, IDC and DBSA. Emerging from the interviews, there is a common view that in order to make these projects viable there either needs to be the common purchase of technology from one or two international technology providers or the leverage of the larger developers in order to source cheaper technology. To reduce the administrative burden on these funders it would make sense for them to produce a standardised funding programme.

It seems doubtful that the small projects IPP procurement will address the onerous nature of the development and reduce the upfront costs to the developers. If the projects are to be project financed with onerous EPC contracts and guarantees, then the barriers to success will remain. The development finance banks can provide a lot of support to the small projects which would help yet would still not be enough to enable true community owned projects from emerging. The emphasis on competitive tariffs in this programme is again the largest barrier.

4.2.7 The Independent System and Market Operator (ISMO)

In conceiving a broader energy system in South Africa that would incorporate community renewables, an independent body player would be required in order to govern it. The ISMO was introduced in Section 2.3.4, outlining its function in the different electricity market structures. The respondents depicted a number of different views on the ISMO. What emerged is that there are considerable conflicting views on its establishment causing further delay to the passing of the ISMO bill in parliament. The motivation to move the ISMO out of Eskom is for the simple reason that you cannot have the player and referee in the same organisation. By introducing competition, Eskom should not be the market operator because it conflicts with IPPs. The ISMO will further enable the de-bundling of Eskom and their loss of monopoly control. The respondents highlighted that the DoE has been pressing for the establishment of the ISMO but because Eskom and their only shareholders, Department of Public Enterprises, have got a lot to lose, they have been resisting.

In the discussion with a representative of NUMSA, the union's position on the ISMO bill was highlighted. NUMSA have been vocal in support of the establishment of the ISMO because they feel that without an independent operator, the move towards a socially owned renewable energy sector would be impossible, *"I am not convinced that you could have forms of social ownership with a vertically integrated company without someone playing referee."* NUMSA, however, calls for a softer approach to the ISMO with the establishment of a strong grid code and the transmission system still remaining within Eskom for a limited time before moving to the ISMO.

NUMSA's view has been contradictory to their mother body COSATU. COSATU views ISMO as a precursor towards privatisation. The energy policy documentation and the electricity acts define an IPP as strictly a private entity, no state-owned organs/parastatals are allowed to generate electricity. By introducing the ISMO, the state would then run the risk of privatising generation with little state involvement. NUMSA recognises this noting that the electricity regulation act and recent policy were promulgated in the *"height of the neoliberal discourse within government"* and therefore these would need to be changed as well to enable socially owned projects such as municipal wind farms.

What emerged from the case studies is that in all the countries analysed, UK, Denmark and Sweden, there was, to different degrees, some form of electricity market liberalisation. What this means for community power is potentially very negative because, depending on the level of liberalisation, wholesale competition makes infrastructural investments a risky venture. To elaborate on this, the community ownership models are split into; those projects whereby third parties are the off-takers, and the models whereby the communities themselves are the off-takers. The projects that involve third party off-takers are then subject to compete against large international IPPs. The second type of model whereby communities themselves are the off-takers can then find their investments unfeasible because they can access very cheap grid power from large IPPs. Sweden and Denmark made huge strides in promoting community renewable power through subsidies, distribution mandates, purchasing obligations, taxation etc. This encouraged community ownership to prosper in a competitive environment. The UK on the other hand, also liberalised, made no attempts to promote community projects but instead ran competitive bidding procurements for renewable IPPs. There was no preference given to community renewables.

These characteristics of the UK echoes the concern of COSATU and NUMSA for market liberalisation and the establishment of the ISMO. Through the establishment of ISMO, there is a risk that the private sector and international IPPs would then dominate wholesale production, creating an elitist renewable energy sector whereby the small player and parastatals are excluded completely. This research therefore suggests that the entire energy regulation framework is reassessed in order to ensure the alignment of public participation and developmental objectives in the establishment of the ISMO.

4.3 Barriers to community renewables outside of the REIPPPP

4.3.1 Regulatory barriers

Alternative off-take options

The reason that the REIPPPP is so attractive to developers and finance institutions is that it guarantees a fixed and reliable tariff over the 20 year project life through a Power Purchase Agreement (PPA) (The Department of Energy, 2011a). This PPA is underwritten by Eskom and National Treasury which de-risks the project to such an extent that all commercial and development banks are willing to sign unsecured debt packages in the form of limited recourse project finance. Without such underwriting, it is unlikely that communities will be granted unsecured finance.

To commercialise a project using unsecured project finance in South Africa, similar guarantees to those of the REIPPPP PPA are in the alternative PPA. As concluded from the investigation of REBID, the South African REIPPPP has not been structured to promote small-scale/community generation. By examining the possible off-takers that the three European countries sold electricity to (which ties in directly with the models suggested in Section 3.6), the following off-take possibilities in South Africa are identified:

1. Sale to the distribution utility

   In South Africa, the distribution utility can be viewed as either Eskom or local municipalities such as city power. Currently, Eskom does not have the mandate to purchase electricity from IPPs unless it is through the REIPPPP programme.

Municipalities currently retail electricity purchased from Eskom. Bethlehem Hydro, an IPP in South Africa signed an off-take agreement with the Dihlabeng municipality in 2009 (Pringle, 2009). However, even though municipalities are allowed to purchase electricity from IPPs, there is no obligation. This uncertainty of off-take is a definite barrier to risk averse, small IPPs, and even more so to community projects.

Furthermore, even though selling to a municipality is theoretically possible, it is inherently risky as South African municipalities are known for their inability to pay and their poor credit ratings. Although there are existing IPPs who are selling to municipalities, they were alternatively financed. The current feeling amongst the banking sector is that these alternative PPAs will need to be financed through other means than project finance because of the uncertainty of guarantees in a municipal PPA. Recourse finance such as corporate finance may be able to enable this, however, communities in South Africa do not have the balance sheets to obtain corporate finance projects and neither do they have the spare capital that the first world communities have (Seekings & Natrass, 2005) .

2. Sale to private enterprises

The second option for possible off-takers is the sale to private enterprises, however, this also has barriers. The PPAs signed by third parties under the willing buyer/willing seller model would have to be a long-term agreement and it is unlikely that these off-takers would be willing to sign 20 year agreements. The commercial banks' response illustrates the difficulty with bilateral agreements *"I don't want to take a view on an Anglo bilateral, I cannot take a twenty year loan. It depends on different entities and each bank's credit rating of that entity. You may have a different view of platinum than I have, you know?... In my portfolio, platinum is 10% but for the next guy it's 30%, it really depends but on average, guys, I would think, you would not easily take a longer term deal than eight to twelve years. So if you build that into your construction it doesn't leave you with a very long tenure."* 8-12 years seems to be the average length of private PPA potential with 15 and 20 years being exceptional.

Apart from financing difficulties, the tariffs at which private organisations are willing to sign will most likely be lower, or the same as what they are currently paying for electricity. The lack of a guaranteed, underwritten and long-term PPA will generally mean that developers (community or otherwise) will not be able to secure project finance.

3. Sale to community members directly

This model (consumer cooperative) would be viable if the generated power was only used for private use and did not have to be wheeled. Off-grid applications would be an example of such. Again financing such projects will be tricky. Community projects overseas were financed through member equity but because most of South Africa's rural population has very little capital these projects will find great difficulty in getting off the ground. This will be especially difficult in urban areas where space and proximity is an issue. Off-grid applications or a communally owned solar plant on a block of flats would be a good example of such a model that is currently possible.

4. Sale indirectly to members through an off-take agreement from the distribution utility

This fourth option (aggregate net-metering) emerged overseas in order to overcome urban proximity issue. Swedish communities have negotiated a service agreement with the municipality to allow the distribution of their self generated electricity through the distribution grid. It is unlikely that South African municipalities would allow such a model to be utilised as it would entail the loss of customers and revenue. Electricity is their biggest source of revenue and such an agreement would be in conflict to their operation. This is further elaborated in the next section.

Grid connection barriers

In order to enable alternative off-take agreements, there needs to be a coherent process that the IPP will go through to gain acceptance to feed or wheel power through the grid. Wheeling would involve a willing buyer/willing seller, where the seller would export power through the grid to a buyer in another location.

The simplest model that has the least regulatory barriers would be the consumer cooperative model. If the electricity is generated in proximity to its end use (without involving connection to any national/local distribution/transmission grid) then grid interconnection issues should not be problematic. This research suggests that such an example in South Africa would be a community PV plant on a block of flats or an off-grid system for a rural community or informal settlement.

For all other community renewables models, regulatory requirements and grid connection issues become more complicated. If the energy source happens to be some distance from the end-use, this would trigger the need for a 'wheeling' agreement between Eskom/local distributer in order to transmit electricity through its distribution/transmission grid. Generators have, according to the Transmission Grid Code and the Distribution Network Code, the same non-discriminatory rights of access to the network as a load (ESKOM, 2012a). Non-Eskom generators (NEGs) and Eskom generators are treated equally regarding access, however generators have to be licensed to generate and trade before access can be provided. Furthermore, any generation capacity larger than 10 MW that will be wheeled through the grid needs the consent of the Minister of Energy. A Government respondent interprets this as a demonstration of non-support of the willing seller/willing buyer model from the Department of Energy. *"The way they've structured the new generation regulations the minister has full rights to decide who buys and who builds. The regulator can only license generators if it's in accordance with IRP...They have got a valid reason why they don't support the winning buyer winning seller concept. Reason: BHP Billiton. One customer probably buys 25% of the country's electricity needs. Tomorrow that company decides I am going to build a 5000 megawatts coal power station and I own the coal because I have coal rights."*

Government's hesitation towards bilateral agreements is due to the risk that occurs when large-scale consumers are involved. If large-scale users decided to purchase electricity from NEGs then there would be a major loss in the subsidies embedded in the retail tariff. With this sentiment in place at the top levels, there is little time and effort given to enable and promote small-scale bilaterals.

Another Government respondent's response echos this - "*If you look at the electricity pricing policy of 2009 it does say that NERSA must approve some wheeling, so that's why we did approve one. But if you look at that you also as a country would be worried that if we allow these things*

then someone would go to Richards Bay and say there's discard coal here and say I am going to supply this. Will you be orderly then in the way that you develop? So there is that worry from the government side...there is that resistance from government side about being free and coming out clearly that bilaterals are allowed."

Even though wheeling through the Eskom grid may theoretically be possible, the costs are high and in some cases will add 10-15c/kWh onto the tariff (ESKOM, 2012b:11) which starts making it prohibitive. Furthermore, Eskom is a corporate monopoly entity that needs to generate profit. The wheeling arrangements are enabled on a cost-recovery principle, meaning that Eskom do not make a profit and would be working to enable competition, thus providing further reasons why they are more resistant to the process.

The size and location of community renewables mean that they would most likely need to connect to a distribution grid (except off-grid communities). Most of the urban centres have distribution grids that are owned and controlled by the municipalities. Wheeling through a municipal grid poses other challenges. 40-60% of municipal revenue comes from the sale of electricity and hence small IPPs and community projects would therefore act in direct competition to municipal revenue. There is nothing stopping behind the meter generation but when the necessary agreements are needed to use their distribution network, they are completely unwilling. The response from the City of Cape Town's electricity department summarises their view on not-for-profit project wheeling power to a community group- *"I regret to advise that the wheeling of electricity as proposed is not considered administratively practical nor economically viable."* Unless the municipalities are mandated to enable community ownership, the only model that would work in urban areas would be the self generation type, behind the meter.

System barriers

Community renewables in the European case studies were enabled in electricity markets that were relatively liberalised. As South Africa introduces the REIPPPP, it does so within what Gratwick and Eberhard (2008:3958) call the hybrid model. Wholesale competition is not being introduced, with IPPs merely selling power to Eskom through a side procurement. Neither is there retail competition with the only choice of power supply to the consumer being self-generation or Eskom. A more liberalised electricity market is needed in order to introduce the types of community models that were successful in Denmark and Sweden. However, this liberalisation needs to occur with a social mandate in place. The UK's form of market liberalisation which utilised the NFFO bid mechanism to promote renewables (similar to South Africa's REIPPPP) resulted in poor community renewables subscription (Pollit, 2010). Liberalisation that occurs in a strictly neoliberal policy backdrop will not result in enabling community renewables. How this will work requires further detailed research.

4.3.2 Financing and investment barriers

Cost of renewable energy electricity and lack of subsidies

The researcher's experience in the renewable energy industry has informed the discovery that the phases of renewable energy development between the feasibility phase and the construction phase require huge amounts of upfront capital in order to succeed. It has been found that the feasibility phase is usually done at risk, requiring investors with sizable bank accounts and experience in order to fund it. If the project is commercially and technically

feasible then a large amount of capital is required for construction. This phase is usually less risky. These capital requirements can be prohibitive especially for individual and community investors. Furthermore, without subsidies or preferential treatment for community investors, renewable energy development will be reserved for the REIPPPP programme.

The cost of electricity is a barrier to certain renewable energy technologies. An example of this is Sweden's levelised electricity cost of wind generation which was lowered through upfront subsidies (Helby, 1998d:5) that allowed for a competitive cost of electricity. The community owned generators could then retail electricity at tariffs that were financially attractive to customers in Sweden. There are no subsidies available to South African IPPs or communities which means that they need to compete directly with the current retail price of electricity. With the price of electricity increasing and the cost of renewables decreasing, this is becoming more feasible. Community groups overseas were also highly incentivised to develop community plants through alternative incentives such as tax subsidies. This form of promoting community ownership may not work as effectively as it did in Europe which is a highly taxed, high income society. Further research on this suggestion is required.

Capital finance

The majority of the case studies investigated utilised member equity finance. These members have either used personal savings or in some cases bonded or mortgaged some of their assets in order to contribute the required capital. The socio-economic status of these populations are high income earners. This form of finance that enabled community ownership in Europe would be best suited to the minority population of South Africa's elite who have savings, spare capital and access to loans. Informal interviews with the working class population and farming groups of South Africa suggest some level of interest. Self-funding from the majority of South Africa's marginalised would be unlikely (Seekings & Natrass, 2005:300-339).

Attractive personal loans would also be unlikely to work because of the low wages and unsteady incomes that most South Africans earn. Furthermore, the mortgage loans that were used to fund many of the European community projects would not be accessible to South Africans who have few land and capital assets. In order to promote community renewables in the South African context, attractive, non-recourse loans need to be offered to communities. This research suggests that similar financing options that are available to the community trusts under the REIPPPP should be made available for community renewables projects.

4.3.3 Consumer and community barriers

Technological Barrier

Brent and Rogers (2009) detail the sustainability of an off-grid, rural, renewable energy generating plant, that was installed in the Lucingwini Village in the Eastern Cape. The plant was a pilot study for rural electrification as well as the economic beneficiation from the technological intervention as expected by the community. Further benefits were expected by the lead implementing agency through the community ownership of the technological system. Brent and Rodgers (2009:5) note that "from an economic and institutional perspective the community expected that they would receive a similar service, and performance, as provided by the national electricity grid. However, the capacity and reliability of the technological system proved insufficient to meet these expectations". Due to uncontrolled connections, the system

stopped operating within one year of commissioning. This resulted in a breakdown in trust between local traditional structures and government structures.

This is a common problem faced by the lack of education about the technological limits to self generation. The technical sustainability of this project would have found success if the plant was backed up by the grid. This would have prevented the uncontrolled connections by the community and would not have resulted in system overload and failure. Grid connection however is not an option for many rural communities and in order to make a success of such projects, strict attention needs to be paid to community participation whereby an inclusive, educated, bottom-up approach is to be followed in order to ensure sustainability.

Because the wind stops blowing and the sun stops shining at certain times in the day, there are certain technological solutions to the technological barrier of renewable energy. These solutions come in the form of battery back-ups, thermal and water storage mechanisms, but all mostly add to the cost price of electricity, thus further exacerbating the barrier of the cost of renewable electricity.

Cultural barriers

The cultural dynamics of community groups are an important factor in determining social cohesion. The middle class communities of South Africa live in large well maintained suburbs with high walls and securitised electric fences. Private security companies patrol the streets and there is very little street activity (Seekings & Natrass, 2005). These communities live individualised lifestyles with very few people knowing their neighbours, let alone being part of any form of community organisation. Without such cohesion, community organisation will be difficult.

The marginalised poor are separated through previous apartheid style segregation of communities with lots of social cohesion problems caused by large-scale urban migration. Xenophobic killings, homosexual attacks, high rape and crime cases plague these less privileged communities resulting in very low forms of social capital. Even with such characteristics, these communities are often self-organised with various committees overseeing community issues. This cultural barrier will require further research to understand the likelihood of community participation if community renewables were enabled by government. This state of affairs should also be viewed as a driver for community renewables if the government is interested in decreasing social problems in South Africa.

Other cultural barriers identified in the interviews were South Africa's obsession with state-centric support. There is very little sense of helping oneself, thus resulting in large barriers to alternatives. An example is that a lot of residents in informal settlements will continue to live in shacks for decades because the Government has promised RDP houses in the future. They would rather wait for this promise than help themselves. This reliance on Government may result in a barrier to community renewables that requires alternative service delivery options. This notion needs further investigation.

Resource barriers

The quality of the renewable energy resource is a major factor in the feasibility of a project. South Africa is blessed with abundant sunshine, making solar power a feasible option in most of

the country. Solar is currently the most expensive form of renewable generation and some communities wanting to make use of another cheaper technology such as wind power, may not be able to due to the lack of resource. Furthermore, producer cooperative community groups who may want to sell power through the grid, may have to compete with other community groups with better renewable resources.

4.3.4 Systemic and institutional barriers

Land rights

Hendricks and Ntsebeza (2011:224) demonstrate that one of the reasons for the failure of the promise of 30% of land re-distribution by 2013 has been the policies that are in place to protect private property whereby, the "...very constitution that guarantees formal equality before the law, also entrenches material inequality especially in the distribution of land ownership."

As a result, the majority of the nation does not own the required land that is necessary to develop renewable energy projects. There are some options for communities to lease land from white farmers but this would have to be for a fee and the farmers with the best sites and renewable resources will inevitably lease the land to the highest bidder/most experienced bidder. Thus giving the corporates the most clout to secure the best sites. This is a major barrier not only to renewables but is also the cause of many other social problems in the country. It is possible that some renewable energy projects will find success but in order to promote community renewables on a large scale, national and local government need to put in place a strict social mandate. This mandate would need to provide priority to community projects whilst protecting the people from exploitation from the land owners.

Education

In order to support large-scale community owned renewable energy adoption, a significant amount of technical expertise would be required. This would be needed to educate communities on the importance of energy efficiency, various technical and engineering related roles, entrepreneurship, operation and maintenance and other project management tasks. The interviews performed demonstrated that currently, in the private sector, these roles are performed by consulting companies that have a wealth of experience and private developers have the resources to employ such skill. Community members in Europe often volunteer their skills but these services will usually be procured out of the budget of community organisations (Ribbing, 2012). This barrier can be viewed as a financial barrier to communities and emphasises the lack of technical expertise offered by the government to communities. If the Government was to promote such programmes, it would require large amounts of technical resources that would need to be seconded from the private sector or it would have to train community members themselves.

4.4 Models showing potential for South Africa

The models discussed above have been assessed for their potential feasibility in the South African context. Through the interviews and an assessment of the barriers to enabling such models the likeliness of their success is established. The details of such are shown in Table 18 with discussion on each of the following:

Table 18: Community ownership models and barriers for South Africa

			Barriers	**Technical & Regulatory**		**Finance**		**Consumer and cultural barrier**			**Institutional and Systemic**	
Off-taker	**Model**	**Legal entity in SA**	**Currently Feasible?**	**Lack of Off-take Agreements**	**Grid Connection barriers**	**Cost of RE**	**Capital finance**	**Technological**	**Cultural**	**Resource**	**Land Rights**	**Education**
	Consumer cooperative	Cooperative	Yes	n/a	n/a	x	x	x	x	x	x	x
Sale to Members	Aggregate net-metering	Cooperative	No	n/a	x	x	x		x	x	x	x
Sale to Private Off-taker	Multiple owners selling to third party	Limited liability company (Pty) Ltd	Yes	x	x	x	x			x	x	x
	Aggregate net-metering	Cooperative in legal partnership with distribution utility	No	x	x	x	x		x	x	x	x
	Producer cooperative	Cooperative	No	x	x	x	x		x	x	x	x
Sale to utility	Multiple owners selling to third party	Limited liability company (Pty) Ltd	No	x	x	x	x			x		

4.4.1 Consumer cooperative selling to members

This model would look slightly different in the South African context. The Danish example of this consumer cooperative model provides basic services to its members on a voluntary basis. This is unfamiliar territory in South Africa whereby the only service provider is the Government. In established municipalities it would not be possible to set up alternative distribution lines for customers. A consumer cooperative in distribution areas would have to seek feasibility on the aggregate net-metering model. Because of the possibility of the behind the meter options, it is this model that is the only community ownership model available to South Africa. Two examples are utilised to illustrate potential use in South Africa:

Communal ownership in a block of flats: High density apartments have the potential to split the ownership of an onsite generator. Interested parties pool their resources together and purchase the generator. This generator will produce electricity and feed it directly into the building's electricity supply. This would decrease the electricity consumed by a measured amount which is then split equally between all members pro-rata to their investment. Each member will then experience a saving on their monthly electricity bill which would translate into a "return on investment". The biggest technical barrier to this model would be the electricity price and the price of renewable generation. Because of the lack of subsidies available, the cost of generation would need to be far less than the community's current purchase price in order for the investment to make economic sense. With electricity prices going up and technology costs coming down, this option will become most feasible in the coming years. Some of the potential barriers to this model are listed in Table 19.

Table 19: Potential barriers to consumer cooperatives in block of flats

Potential drivers	Potential barriers
• Increasing price of electricity makes renewable energy options feasible • Real Estate owners having access to finance • High density residences easy to connect • Infrastructure in place • Management system in place • Existing sense of community • Government mistrust and dissatisfaction	• High initial capital costs • Lack of education and desire • Lack of land/resource

Communal ownership in Informal Settlements and rural off-grid communities: Informal settlements and rural communities across South African are faced with the problem of no access to any electricity supply. A local consumer cooperative could pool money together in order to purchase a generator. The cooperative could offer a savings scheme that would allow those without the capital to save money over a number of months in order to buy a share. The consumer cooperative then manages and runs the facility on behalf of the members metering and billing members directly. The largest barrier to this will be the financial barrier and land tenure barrier. To enable this, grants and government support would be vital. Technological education and close monitoring of the system will be vital in order to protect it.

Table 20: Potential barriers to consumer cooperatives in informal settlements and off-grid

Potential drivers	Potential barriers
• Lack of access to electricity • Increasing price of electricity makes renewable energy options feasible • Community organisation in place • Community savings schemes in place • Sense of community • Government mistrust and dissatisfaction	• High initial capital costs • Lack of education and misbelief in renewables • Sense of entitlement to government services • Illegal connections • Lack of sense of community • Temporary residence, either migrant or waiting RDP house • No land tenure

4.4.2 Aggregate net-metering

The aggregate net-metering models, whether requiring an off-take agreement with the distribution utility or simply an agreement with the municipality to provide services and consolidate distribution, are not currently feasible. The largest barrier to this model is the fact that these cooperatives would be in direct competition with the distributor. If self-generation is behind the meter, there is nothing the municipality can do to stop it (see consumer cooperative selling to members model) but if the cooperative requires grid access, the municipality would most likely stop this. In order to enable such models, the government would have to mandate municipalities to enable such. Clear, risk free mechanisms around grid access will need to be in place as well as fair treatment to all cooperatives.

Table 21: Potential barriers to aggregate net-metering

Potential drivers	Potential barriers
• Lack of municipal capacity from Eskom drives distributors to seek alternative sources of electricity • Increasing price of electricity makes alternative sources of energy more attractive to consumers • Technology costs decreasing make renewable energy financially feasible	• Direct competition with municipal sales • High development costs • High initial capital costs • No formalised government processes • Potential licensing barriers • Lack of financing options • No grid obligations for cooperatives

4.4.3 Producer cooperative

This model made Denmark industry leaders in wind power. In order to successfully promote such a model, the Government would need to actively promote community owned renewables by providing a social mandate. This model is not currently feasible and is not likely to succeed without government intervention. The enablers for this model are guaranteed off-take agreements and feed-in tariffs, education programmes and financing subsidies. A producer cooperative set up in South Africa would have the option to either sell electricity to Eskom or a municipal distribution utility such as City Power in Johannesburg.

Currently, no IPPs are allowed to sell electricity to Eskom unless it has been awarded a PPA through REIPPPP. The small projects REIPPPP that will be released in 2013 would be the perfect enabler of this with preference given to community owned and developed projects over

large private IPPs. Less emphasis would need to be place on price, with all price competition being removed initially.

The other avenue to enable producer cooperatives to supply electricity to municipal distribution could also be done through the small projects REIPPPP (The Department of Energy, 2013) but would require a different design. Whether this procurement is performed on a national or local level, the required government process that would promote such a model would need to be in place in order to promote this. Furthermore, this process would need to take on a strictly social stance.

Table 22: Potential barriers to the producer cooperative

Potential drivers	Potential barriers
• Lack of municipal capacity from Eskom drives distributors to seek alternative sources of electricity • Increasing price of electricity makes alternative off-takers more attractive to municipalities • Business opportunity for members	• High development costs • High initial capital costs • Risk perception in municipality off-take agreements and inability to pay • No formalised government processes • No programmes and off-take agreements promoted by Eskom • Potential licensing barriers • Lack of financing options • No off-take offers/obligations for cooperatives

4.4.4 Multiple local owners selling to third party off-taker

The REIPPPP programme specifically promotes local community ownership in a top-down approach. The fact that the trusts are not democratic entities, and do not have any control of the project is contradictory to climate justice principles. Furthermore, the likeliness of cash-flows accruing to communities in the short term is unlikely.

Other off-take agreements would be found in the private PPA market. This model assumes that there is a local community in the same area that is a large consumer of electricity. The locals join together and form a collective body that builds, owns and operates a renewable energy generator that sells electricity to the user. This model is possible in the short term in South Africa because there is no need for government legislation on feed-in laws and interconnection agreements. A community group would need to make a business proposal to the user of electricity with the user in return guaranteeing a long-term off-take. Informal interviews with farmers suggest that this was attempted but grid access was required as the possible off-taker was not located next to the generator.

If the community group is located some distance from the off-taker it would need to wheel the electricity through the Eskom or the municipal grid. Eskom wheeling is expensive but faces less barriers than municipal wheeling. Without long-term bankable PPAs, these projects would be unlikely to achieve any success. With all these barriers facing this model, it is unlikely to make any significant headway.

Table 23: Potential barriers to the multiple local owners selling to third party model

Potential drivers	Potential barriers
• Lack of municipal capacity from Eskom drives distributors to seek alternative sources of electricity • Increasing price of electricity makes alternative off-takers more attractive to municipalities • Business opportunity for members	• High development costs • Risk perception in municipality off-take agreements and inability to pay • No formalised government processes • No programmes and off-take agreements promoted by Eskom • Potential licensing barriers

4.5 Conclusions - Hegemony in the renewable energy sector

The Government representatives' views of REFIT (and the originally intended nature of the IPPs) suggest that the character of players and beneficiaries would have been largely the same, i.e. a mix of national and transnational corporations and capital. It is irrelevant that with REFIT, there was the possibility for a more powerful local developer and local capital to be deployed. This research suggests that Government was decided on putting the risk of the sector in private hands and would rely on market dynamics to identify the emerging winners. The fact that REFIT has the potential to promote small IPPs and community renewables was not the reason for its initial choice. The sector was always going to be financed through project finance and adhere to the requirements imposed by the banking sector on projects. This was in an attempt to de-risk their exposure. Drawing in Treasury and its marriage to the neoliberal agenda meant abiding by the notions of 'value for money' and lowest cost to consumer, triggering the need for a competitive bid. It was not good enough for Government to control the price of electricity, it had to be done by the private market. The energy production structure therefore now sees a dramatic shift from electricity generation capacity, solely owned by the state, to one shared and in competition with the private sector. A neo-Gramscian analysis, therefore, concludes that this change in the production structure has led to the emergence of new collective actors, i.e. transnational social forces of capital and labour (Bieler, 2000:18-52). The neoliberal interventions in the energy sector, which happened over a decade ago, are now reaping massive rewards for private industry.

Satgar (2013) describes Gramsci's passive revolution taking place in the broader political sphere. There are facts that this research has uncovered which link to this construction. The nature of the renewables procurement and the developmental aspects of it take on a strictly top-down approach. It is controlled by technocrats, developers and banks. One of the aspects of the passive revolution is to limit mass initiative and subaltern hegemony, allowing bourgeoisie hegemony to be established. This leads to the development of economic structures to take place on these lines. The REIPPPP attempts to provide some socio-economic benefit within a market driven mechanism. It would be unsatisfactory for Government to hold a bid based on stronger free-market principles because there would then be the risk of creating no local benefits with an industry that purely imports technology and exports electricity revenues. Government has sought to foster and sustain social unity through the SED requirements of the bid. It has also attempted to prescribe local ownership of the IPPs through provision of powerful BEE companies. Job creation is a major requirement and so is localisation. Cox (1993:51) describes these as concessions that the ruling class gives to "subordinate classes in return for acquiescence in bourgeois leadership. These concessions could lead ultimately to forms of social democracy which preserve capitalism while making it more acceptable to workers and the petty bourgeois." Government respondents illustrated that these "concessions" are all taking place

with a fine balance of not "scaring away" foreign investors as well as not imposing requirements that are too major. There is risk that the tariff's that come back would be too high, thereby hampering the goal of creating a 'sustainable' industry. Where a sustainable industry would be one that can compete on price with other non-renewable energy sources.

An example of what could be perhaps described as Gramsci's *trasformismo* is illustrated by the response of Government representatives. Although they were vocally anti-private sector profits, the Government representatives interviewed, cannot envisage a procurement that is not market driven. The neoliberal agenda, even though it favours the private sector, has won by co-opting Government representatives through the notions of value for money for the customer that can only occur within a competitive bid. The customer, to the Government representative, is the marginalised poor as opposed the MEC, and only through competition can the tariffs to the poor be protected. Any other consequence to energy sector seems to be less important. 'Market dynamics' that are ineffectual to the nation or the policy maker, as long as they provide cheap electricity they are innocent. Cox (1993:55) notes "By extension, *trasformismo* can serve as a strategy of assimilating and domesticating potentially dangerous ideas by adjusting them to the policies of the dominant coalition and can thereby obstruct the formation of class-based organised opposition to established social and political power."

The legitimacy of REBID and its associated class project is further strengthened by the support it has gained from the industry. The response from the industry players (with the exception of the smaller developers who are unable to compete) have vastly changed from original doubts about REBID to a common view of this procurement being 'world class' (Creamer, 2012b). Secondly, the response from civil society in the informal interviews also favours the competitive element. How can the man on the street complain about the massive injection of renewables into the power grid, especially when Government is being responsible by ensuring 'value for money' and 'affordable access to electricity'? It is inconceivable that anyone would favour a procurement (REFIT) that resulted in one paying a higher price for electricity than if it were another procurement (REBID). This simplistic reasoning results in all forms of society favouring competition that would lead to lower price.

In terms of community ownership (defined by the REIPPPP), some interesting projects with high ownership (+25%) may emerge from the REIPPPP programme, but these will be primarily bound by the interests of winning contracts and only secondarily in the interests of the communities and local industries. Participation in the projects will remain at arm's length with community leaders, making any community benefits mere hand outs with very little true empowerment. Projects will therefore run the risk of vandalism and complete rejection from communities unless tangible benefits are found. With pay-back of community investment loans being in 10+ years (Pickering, 2012:14), this risk is ever more real.

By keeping the procurement in the hands of the ruling class, there remains little room for alternatives such as community renewables to emerge. Although the largest barrier is the REIPPPP itself, there are other barriers that are hindering the uptake of certain community renewables models that do not require PPAs. The limitation of this research is that the views from community groups themselves were not directly researched and therefore the barriers identified are more high level and technical in nature and lack input from the ground level. However, they do serve as a starting point for understanding the nature of the sector and what the prospects are for counter-hegemony.

CHAPTER 5 CONCLUSIONS AND RECOMMENDATIONS

> *"...the emergence of mass demands on the policy elites...with the end view of relegitimating the political system by giving people an authentic share in shaping their own lives and destinies. [It also implies the] recasting of the political structure itself, the curbing of the power of 'technocratic' elites both official and private to overwhelm the lives of the non-elites and at some point coming to terms with the need to remould the political economy along the lines of more genuinely participatory lines."* (Orr (1979:1045) cites Walter Dean Burnham[6].)

5.1 Introduction

In line with the final objective of this study, this chapter concludes the study as well as attempting to make certain recommendations. The first section covers the neo-Gramscian theoretical implications of the REIPPPP and the social forces operating in the renewable energy sector. The second section concludes with the prospects for counter- hegemony in the renewables sector. Finally, recommendations are made that would enable community renewables in the South Africa.

5.2 The elite imposed renewable energy society

Following the neo-Gramscian analysis, this research attempted to identify the social forces operating in the renewable energy sector in South Africa. Chapter 4 investigated the reasons behind the move from REFIT to REBID with the presumption that there was a group of beneficiaries that enforced the change. However, the research found no particular group. What it did discover was that the procurement has been strictly determined by the neoliberal policies that were implemented in the energy sector more than a decade ago.

Satgar (2013:9) reminds us that "for neo-Gramscians, global restructuring of capitalism led by transnational capital has been linked to neoliberalism and explains how transnational capital rules the current world order." Chapter 2 demonstrated how the neoliberal policies adopted by South Africa in the late 90's were linked to furthering the interests of transnational capital. This neoliberal project continues to determine energy policy outcomes today, with Government representatives often unaware of its power. Responses from the interviews highlight this with extremely convincing arguments in favour of competition; with Government officials often exonerating themselves as developmental champions by delivering affordable electricity to the nation. The fact that Government representatives were against potential private sector profiteering in a REFIT system confirms their naivety to the brute strength of the neoliberal project. Private sector profits could be easily contained under a REFIT programme with the tariff being controlled. A competitive bid that guarantees that the renewable sector answers to transnational capital would result in more severe profiteering by the private sector. Their naivety can perhaps be attributed to the fact that R100mil[7] was spent on international consultants to put together REBID and draw up the procurement documents. These consultants as well as the rigid market position of policy and National Treasury have convinced the industry that there is no other option. Government further responded to the move to REBID by stating that they need to create a 'sustainable industry'. The payments for this multi billion rand procurement are set to be recovered from the electricity user, therefore the choice to go for

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[6] Citation could not be sourced. Cited in (Orr, 1979: 1045) as "Walter Dean Burnham, "Reflections", 8"

[7] This is an estimate given by a Government respondent

REBID would be non-negotiable. REFIT in a neoliberal context would stand less chance of survival. By observing the recent protest to electricity price increases[8] a REFIT procurement may be rejected entirely. In order to legitimise a REFIT tariff, it would therefore need to be financed through alternative means and not through the neoliberal principles of cost reflectivity or cost recovery, which places price pressure on the consumer.

The choice and the move to REBID cannot therefore be attributed directly to certain beneficiaries these being what Gill and Law (1998) refers to as, the 'direct power' of capital. Instead, the move to REBID in the interests of transnational capital is attributed to Gill and Law's (1998) neo-Gramscian description of 'structural power'. The policy and investment 'climates' within this frame are geared towards capital over democratic imperatives. Furthermore, Gill's (2001) view of neoliberalism is characterised as a new disciplinary constitutionalism which aims to ensure that state functions are changed to meet the requirements of transnational capital. To ensure success, this constitutionalism requires that neoliberal projects such as the REIPPPP remain hidden and away from of public light. This provides insulation from mass scrutiny and democratic accountability. Linking to this, Mosse (2004:663) explains how "The 'public transcripts' of development are sustained by the powerful and the subordinate, both of whose interests lead them to 'tactically conspire to misrepresent". This insulation is strongly illustrated with the REIPPPP which is a programme that is hardly known or understood in the public sphere in South Africa. Furthermore, the way that Government changed the procurements so swiftly behind closed doors and by not inviting any public participation was not contested at all. Chapter 2 noted that civil society and environmental organisations, who should have been vocal in this change over, are incredibly weak. Without resistance it is not surprising that Government is able to operate in such an undemocratic, non-participatory fashion.

By answering to transnational capital the South African energy sector is set to reproduce a form of class rule. By choosing the competitive bidding route which has found little success overseas, has to date successfully been implemented in South Africa. With REBID looking so 'successful', we can start predicting the future makeup of the sector. The interviews that were conducted and the analysis of the results of the first two rounds of the REIPPPP contributed to this prediction. In order to allow the globalised market to drive the price of electricity down, the following characteristics will quickly materialise:

- **Fewer developers through the merging of conglomerate developers controlling the market and eventually the price.**
- **The formation of large IPPs owned and owned by large institutional investors, corporates and private equity firms.**

[8] COSATU responded to the recent increases in the electricity tariff application in the following way (COSATU, 2012); *"[Eskom] wants to improve its "standalone" credit rating within the MYPD 3 period. It is clear that Eskom increasingly wants to operate like a private company whose main objective is to make more profit. This is why in this MYPD 3 it wants its return on assets to increase from 0.9% to 7.8% over MYPD 3 period. This represents a massive 767% over this period. COSATU repeats its call that Eskom must operate according to developmental objectives of the country and not like a profit thirsty monster it has become."*

- **Finance for renewable projects being controlled by the banks and private equity, with lending only being available to large dominant players.**
- **A weak manufacturing industry that at best manufactures specific components locally with the engineering and design expertise remaining outside of the country.**
- **The slow demise of any attempts to create local technology expertise.**
- **Insignificant empowerment and knowledge transfer.**
- **Increasingly larger scale renewable energy projects being awarded.**
- **A decrease in the specific job creation per project.**
- **No community-led and developed projects.**

These characteristics do not bode well for the potentially major socio-economic development prospects from renewable energy. It is clear from the literature that the attempts of DoE to provide 'accessible, affordable and reliable energy, especially for the poor', through a neoliberal framework, have failed. Furthermore, drawing links to Gramsci's passive revolution, the SED elements of REBID are performed in a strictly BEE, top-down, elite controlled approach. Thus, we should not expect any socio-economic differences to the previous decade of failure within the mining sector (Leon, 2012). As noted in Chapter 2, some of the principles that were followed in the National Climate Change Response White Paper touched on the various climate justice principles. Yet, whether these actually translate into effective implementation mechanisms is at best doubtful. It should also be noted that the vagueness of climate justice principles implies that they can easily be adopted through neoliberal policies and that they can also make similar claims of participation, social capital etc. This vagueness allows the faltering hegemonic project to continue to legitimise and renew itself.

South Africa is quickly running down the road towards what Orr (1979:1046) describes as an "authoritarian or an elite imposed solar energy society" with very little prospects for climate justice. However, it is not REBID that should be targeted as the enemy to climate justice. REBID is merely an extension of the greater policy framework that birthed it. As long as the main neoliberal elements exist in policy and financing frameworks, there will be no hope for any form of climate justice. Even though a REFIT procurement may theoretically be more favourable to socio-economic development, there is also the risk that within a neoliberal policy framework the entire sector would still be controlled by transnational capital. The perception of a higher pricing REFIT model could also de-legitimise renewable energy in the country.

In order to attempt to address the energy inequality crisis in South Africa, neo-Gramscian interpretations can be drawn upon. Cox (1981) maintains that neoliberal approaches to policy mechanisms are merely problem-solving techniques that aim to fix and maintain the existing order. Cox's (1981) interpretations of neoliberalism tie in quite succinctly with Orr's (1971) characterisations of energy policy. It is the supply perspective to energy policy that South Africa continues to pursue, with technocrats, corporates and capital largely dominating the policy debate. Unless this power and control is democratised and inclusive of broader participation, the sector will remain in crisis. It can be seen, from the praise (Creamer, 2012b:online) given to

the REIPPPP (especially by the beneficiaries), that the neoliberal mechanism of REBID and future procurements will remain in their hands. By keeping the procurement hidden from the citizens the Government will continue to erode socio-economic development opportunities and create an energy system that is far removed from its users.

5.3 Climate justice and counter hegemony, movement in the renewable electricity sector from below?

This research produced very little indication that climate justice is materialising in South Africa. Its poor success can be attributed to three observations. Firstly the MEC has been successfully reproducing itself in the fossils industry. This is seen in the construction of the Medupi and Kusile coal power plants as well as pro-government support for the expansion of a nuclear fleet and hydraulic fracturing for gas in the Karoo. Secondly, the renewables industry that is taking shape is occurring within a strict neoliberal mandate in the interests of transnational capital. This research showed that the victors of the REIPPPP will be; the local and international commercial and development banks, international IPPs, local and international consulting firms, local and international legal firms, local and international private equity, international technology providers and the construction industry. The dominance held by these players will only get stronger in the future, entrenching and legitimising their existence. To challenge their power base we draw on Gramsci's observation that change in prospects of the established order would only be possible with "some fundamental change in social relations and in the national political orders which correspond to national structures of social relations" (Cox, 1993:64). This observation leads to the identification of the third reason why South Africa is not realising climate justice. The counter-hegemonic group that should be contesting power, calling for rights-based approaches to climate justice, is incredibly weak.

Chapter 2 identified this group and discussed the fact that large environmental NGOs such as WWF and Greenpeace work to legitimise the solutions of the United Nations Climate Regime (UNCR). Such solutions being the market-based Clean Development Mechanism (CDM) and other forms of carbon trading. Stephan (2011:13) describes in detail how the passive revolution of the emissions trading scheme took place through the co-opting of European elites and environmental NGO's by the historical bloc originating in the U.S. This can be viewed as a hegemonic project that has taken a global transformative character. Furthermore, these NGOs answer to their donor companies who are often linked to transnational capital. As a result, such NGOs are in support of renewables but not necessarily outspoken against corporate and transnational ownership and finance. Instead, they support Government's articulations and promotion of the 'Green Economy' which follows market-based solutions to climate change. The identified players that may offer some counter-hegemonic action within the energy space are various civil society organisations such as the Soweto Electricity Crisis Committee (SECC). NGOs working in environmental justice network including; Earthlife Africa, the Coalition Against Nuclear Energy (CANE), Treasure the Karoo Action Group (TKAG) and the 1 Million Climate Jobs Campaign . The National Union of Metal Workers South Africa (NUMSA) is the only body to have articulated its disapproval against REBID, calling for a very powerful alternative - a socially owned renewable energy sector. Thus it will be up to these organisations to stand together as a counter-hegemonic force calling for climate justice.

Linking climate justice to neo-Gramscian theory renewable energy is identified as a powerful counter-hegemonic tool, and even more powerful in the form of community renewables. Even

corporately owned renewable energy has seen a push back on the global dominance of fossil fuels. However, placing the renewable energy sector into the rights-based climate justice debate demonstrates that corporate ownership is not enough to ensure justice for the historically marginalised. Renewable energy outside of the climate justice debate runs the risk of being another market-based tool. This leads to continued accumulation; losing sight of the potential that renewables have to restructure the global energy system and its associated importance in global hegemony. Community renewables can offer such counter-hegemonic potential. By keeping community renewables within the climate justice debate, it highlights that the various models identified each contribute in different ways to these climate justice goals. Chapter 3 demonstrates that the most powerful principle to be followed is that of developing renewables for the 'common good'. Community renewable projects set up for profit making and investment purposes bring such projects closer to the character of corporately owned renewables and hence further away from climate justice principles.

Chapter 3 also illustrated that the use of community renewables has found success in the social-democratic countries of Europe, mainly due to their experience in community participation and a historically strong civil society. This research presented community renewables case studies from the late 1990s in the UK, illustrating how community renewables found great resistance from the neoliberal machines that dominated energy policy in the country. Drawing from this experience and relating it to political economy of South Africa, one can quickly observe that the renewable energy sector is characteristically supply-based, neoliberal in nature, serving the large industry and the MEC. It is therefore not a great feat to predict the resistance and elite block to alternatives such as community renewables in South Africa.

The above mentioned counter-hegemonic group has many challenges ahead of itself. It will need to gather strength by linking with all those who share similar interests in challenging the elite bloc in the renewable energy sector. An obvious choice would be to link with the renewable energy labour sector and working class that are historically oppressed. However, it is unlikely that this counter-hegemonic group will find effective support solely from the sector's working class. Because renewable energy projects are fundamentally not labour intensive (requiring minimal operating personnel), it is quite unlikely that this group has the power to pressure government into relinquishing its elite control. The separation of the energy sector from the working class and the citizens of South Africa give the elite an inherent protection. Furthermore, the experience of the recent labour strikes in the mining sector has resulted in no major sector restructuring. The workers themselves are placated by wage increases and their desire to contest power and ownership is weak. To challenge this power is even more difficult, with the Marikana massacre illustrating the increased militarisation of the state. Going forward the labour movement will face even tougher challenges as the recent election of the billionaire Cyril Ramaphosa as deputy president of the ANC (De Waal, 2012) will only further entrench the states' prioritised protection of capital. The second challenge facing the labour sector is climate justices' call for a just transition to a low carbon economy. This would require the replacement of fossil fuel generators with renewables resulting in large job losses in the fossil energy sector. These workers, and unions, need to understand and help forge the transition so that they don't stand in opposition. Progressive labour unions such as NUMSA, would be a key ally to the counter-hegemonic group.

In acknowledging the inherent weakness of this counter-hegemonic group there are two actions working in the background that need to be drawn upon. The first action is South African

citizens' rejection of poor service delivery. Protests by civil society have marked the South African landscape for years. This counter-hegemonic group will need to spend many hours linking the groups' electricity struggles together as well as providing vast amounts of political education. By linking the struggles in the electricity sector to the neoliberal policies that have created them, then only will communities be able to understand the power dynamics at play. When these groups gain enough momentum they will be able to contest power and force the government to reconsider the inclusion of citizens in the energy economy. Forcing Government to address the need for a social mandate will work towards addressing some of the barriers to community owned energy systems. There are many obstacles that are effectively challenging the current energy sector dominance. This research illustrated not only some of the barriers to community renewables but also the extent of the energy sector's dominance. Not only is the South African economy fundamentally reliant on the fossil fuels industry but energy policy itself favours transnational capital.

The second action that could result in some counter-hegemonic action may be unintentionally caused by the same neoliberal framework that aims to maintain control of the energy sector. The recent MYPD price application from Eskom aims to increase electricity prices in order to reach investment grade by 2017. Although the regulator rejected the recent Eskom application to increase electricity prices by 16%, it did grant Eskom a tariff increase of 8% (Paton, 2013). Compounding this on previous electricity price increases, the resulting high electricity price may result in businesses and citizens seeking alternative sources of energy. This, linked to the recent decreases of renewable technology costs, serves to change history by legitimising renewable energy economically. However, it will only be those that can afford solar panels and wind turbines that will be able to alleviate some of the tariff burden from their monthly accounts. This would then as a side effect, contribute towards climate change mitigation. Such work, even though offering counter-hegemonic activity will not work towards achieving climate justice goals because it will be the poor that is being increasingly marginalised. Even though climate justice may not be initially realised, the counter-hegemonic activities bring society closer to the energy sector by forcing participation. To further reduce costs of self-generation, some groups may consider collectively owned energy systems that bring economies of scale and other technical benefits. With the acceptance of renewable energy in society as a superior energy source, and enough community pressure, the distribution utilities, may be forced to enable other models of community ownership as well as including options for the poor. However, until there is a social mandate that will enable these models, the prospects of community ownership remain on the fringe of an elite controlled solar society.

Community renewables are by no means the saviour of the sector and in order for community renewables to truly work towards this change, it would need to form part of a bouquet of alternatives that could all work together to forge a new historic bloc that will only gain strength in the long-term. Community renewables would fit into a larger conceptualisation such as that of a socially owned renewable energy sector being pushed by NUMSA. For NUMSA, a socially-owned renewable energy sector refers to a mix of different forms of collective ownership. The mix includes energy parastatals, cooperatives, municipal-owned entities and other forms of community energy enterprises. Practical examples of such ownership would be worker owned factories that manufacture certain items for the sector or worker cooperatives providing energy sector support. Such examples are vital to the creation of new historic blocs but the process is a long-term, laborious effort. Along the way many marginals, not acting in the interests of their

community, are co-opted by the ruling elites or fall victim to corruption so prevalent in South African society.

5.4 Recommendations

The following recommendations serve to identify areas of further research as well as some recommendations that would allow some degree of social prioritising for the energy sector.

5.4.1 Recommendations for the REIPPPP

The following recommendations serve to address some of the challenges facing community ownership and SED in the REIPPPP:

1. **Price stabilisation and REFIT implementation**

   If the REBID goal of driving down the price of renewables in the next few years proves successful then perhaps Government would view the situation as being in a 'safer' environment to implement REFIT. Only once the government can prove that renewable energy tariffs are stable and predictable and ensure the consumer that the price they are paying for renewable power is the true cost of generation, would it be able to move to a socially more inclusive REFIT mechanism.

2. **Less reliance on consultants and the banking sector**

   Many respondents criticised the procurement office due to its reliance on local and international consultants who have spent over R100 million on preparing the procurement. These costs will be recovered out of the electricity tariffs as the IPPs are required to pay the DoE a 1% development fee (The Department of Energy, 2011d:82). Furthermore, the consultants are doing the work of Government and there appears to be little knowledge being passed down to its representatives, making the programme itself consultant-run.

   Another criticism of the bid is that it relies too heavily on the banking sector to perform the due diligence on projects. In order to bid, a project has to have full financial backing which includes bank loan support. There is the idea that if the banks are willing to finance a project then it should qualify for a PPA. Placing so much reliance on the banking sector results in the banks controlling which projects acquire bids or not. Because the banks are so stretched on the one hand and driven by profitability on the other they tend to favour the largest projects with the least risk. The banks are granting non-recourse project finance loans which are deemed higher risk. In order to de-risk projects, developers are forced to comply with their requirements. These requirements mostly require developers to use very expensive consultants and lawyers. All these costs get built into the bidding price. The banking fraternity is extremely risk averse and favours projects that partner with large international partners and the use of 'bankable' technology. This means that only the top law firms and consultants are used and local technology manufacturers who don't have the track record are not viewed as bankable and don't qualify.

   In order to correct this, the procurement procedures would need to be reviewed. Under a REBID, it would be harder to award PPAs without a view that the project would be financed. This is due to the fact that there is a risk that the required determination does not get filled with some projects failing to raise the required finance. Therefore, there would need to be at least some indication from the banks that projects that are bid would be financed. Perhaps

less stress on this process is required so that full due diligences are not required before bid with a lot of this work (and some of the risk) being taken by Government.

3. Monitoring and review of socio-economic development requirements

A review of the SED requirements of REIPPPP should be performed in order to investigate the material benefits of REBID to the country's economy. The negative impact of REBID driving down job creation and the introduction of transnational corporations to the sector needs to be weighed up against the benefits of a bidding mechanism in bringing down the price of renewable energy and its impact on the electricity tariff. Further investigation and modelling of the impact of the SED requirements of REBID on the tariff bid need to be investigated. The results of this may impact on the 70/30 (The Department of Energy, 2011d:56) weighting of the price bid, or a complete overhaul of the bid. Stricter attention needs to be paid to technology dumping as well as bidders not fulfilling SED requirements

4. Urgent intervention in the community ownership aspect of the REIPPPP

There is urgent need for Government to intervene and correct some problems identified with the current community ownership mechanism in the bid. Some of the problems identified, listed in Section 4.2.5, are:

a) Voices of the community members themselves are not being heard highlighting the need for a platform for community groups to be represented.

b) Potential lack of transparency to the communities which illustrates the need for a monitoring and review process in order to check transparency and governance issues of trusts.

c) There is a need for the management of expectations in communities where projects are not awarded preferred PPAs, as well as managing the timing and phased approach to development in renewable projects. Linked to this is the suggestion that the development strategy and setting up of the community ownership should not occur pre-bid and that these interventions should be managed collaboratively after the award of preferred bidder.

d) There is urgent need to re-evaluate the financing terms of the community ownership shares in order to bring the timing of funding flows to communities forward. IDC and DBSA are the two main funders and need to ensure that community benefits accrue earlier.

e) The need for collaboration amongst projects that are in the same area in order to align development spending in areas with more than one RE project.

f) There is a need to address issues of uneven revenue distribution, perhaps ensuring that community development spent is not clustered but benefits are spread regionally.

g) There is doubt that the top-down approach to community ownership will actually result in the empowerment of communities with the dividend shares remaining as community hand-outs. There is therefore a strong case to re-evaluate the community trust ownership model that is being promoted in the REIPPPP in order to create a more democratic structure within the community.

In order to create such an environment it is suggested that regional bodies or associations are introduced in order to oversee projects in broader areas. This body would enable collaboration and streamlined processes, oversight and more efficient spending of revenues.

5. **Community ownership and local technology used in the small projects REIPPPP procurement**

   The small projects REIPPPP, because of its allocation, being only 100 MW, should be used as the programme that eliminates all the barriers to small IPPs and community projects. This programme is relatively too small to have been given the appropriate attention by the industry and furthermore it runs the risk being a mini clone of the main REIPPPP procurement. The size of the projects are simply too small to be project financed in the same way and are too small to carry the development risk that the larger projects do. By removing the bidding barriers as well as de-emphasising tariff competition and placing more emphasis on local technology procurement and community ownership, there is still a chance to begin to include the historically marginalised. In order to be truly successful this procurement should seriously consider a REFIT mechanism for the procurement.

6. **Placement of the small projects procurement in Distribution's mandate**

   The small projects allocation is small enough to be removed from National Department hands and be placed in the municipal and distributor's mandate. Therefore, small-scale projects, embedded within distribution, must be funded and contracted at the distribution level. These distributors could then take full responsibility and accountability of it. This will not only begin to enable localised projects but also solve the problem of the deemed energy payment. The respondents noted the problem faced when an IPP in the REIPPPP connects to a distribution grid. Because the municipalities are not financially accountable, potential network problems that interrupt the IPP supply will not be a priority to the distributor. This could potentially result in a massive loss for Government who has to then pay the IPP due to distributor fault even when the IPP is in a position to generate. The same REIPPPP Government backing would still be required because municipal credit ratings will be a threat to financing the projects.

5.4.2 Recommendations to enable community renewables in South Africa

The following list of recommendations serve towards enabling community renewables in the electricity sector. Some of these recommendations are general and serve to address some of the technical barriers to community renewables. Other recommendations are for the public and civil society to become more participative in the energy sector. They will serve as grounds for some of the demands that need to be brought to policy makers.

1. **Restructuring of the electricity sector on the basis of a social mandate**

   There have been various attempts to restructure the industry in favour of the unbundling of Eskom, the establishment of REDs, and now recently the promulgation of the ISMO. The establishment of an electricity market that is democratically accountable and one in which community ownership would prosper. This would only be in an electricity market that is more liberalised but with a social mandate. This would be a social mandate whereby support is offered to small IPPs, community owned projects, parastatals and municipal owned renewable generation who are all able to produce electricity. These would be free

from elite control and industry dominance by monopolies and international IPPs and utilities.

Part of this restructuring would be to relook the unbundling of Eskom and simultaneously, to change its mandate from profitability to one of service provision. In this unbundling there would need to be a change to the existing forms of accountability. There is a strong need for significant representation of energy consumers, communities, and energy producers on a new and legislatively-empowered governing councils. When considering the ownership of the newly established entities, strong consideration should be given to their accountability and their desire to delink energy from elite and monopoly control, serving the MEC. These entities must relate to each other and be integrated in a way that builds a national sector as a coherent whole.

The roadmap to achieving these goals and overcoming obstacles, barriers and feasibility, through the exploration of electricity policy, the ISMO and electricity sector restructuring was out of the scope of this research. It is therefore highly recommended for future research.

2. Alternative financing of the renewable energy industry

The fact that the REBID was chosen to 'protect consumers' by bringing in low prices of renewable electricity, it is being done at the same time as the MYPD which aims at increasing electricity tariffs in order to increase Eskom's stand-alone investment grade. As NUMSA stated in a press release on the latest MYPD3 (National Union of Metalworkers South Africa, 2013a:4) *"As a state-owned entity, Eskom should not be pursuing financial autonomy nor generating a return for our government at the expense of our economy and South Africans, especially the poor."* The MYPD and restructuring of Eskom's financial standing should be rejected so that there are minimal electricity price increases. With more favourable electricity pricing, other renewables procurement programmes, such as a true REFIT, with greater social imperative as opposed to strict financial drivers may find greater public acceptance.

As discussed, the neoliberal policy framework has been identified in energy policy and pricing mechanisms that forced the REBID procurement mechanism of renewable energy. Placing more price pressure on the consumer is potentially dangerous and hence the justification of a competitive bid. There are a number of other financing mechanisms that should be used to build a sustainable renewable energy industry in the country without placing price pressure on the consumer. Alternatives that need to be considered are for example, the environmental levy in the electricity tariff that currently gets put into the fiscas or the proposed carbon taxation. There may be others, and these should all be considered in further research. If alternative financing was used to build the renewable energy industry then a REFIT programme which isn't financed from electricity tariffs could find more justification.

3. Banking sector geared towards community finance

Apart from the institutional and policy barriers in South Africa, the next biggest barrier is community groups' lack of access to capital finance. In order to enable community renewables in South Africa, there not only needs to be buy-in from the top, through the

social mandate but also from the banking sector. The research confirmed that the commercial banks are unlikely to support small-scale projects unless properly incentivised. The development banks are more answerable to Government and it may have to be these banks that finance communities.

4. Municipal mandate

Municipalities, because of their neoliberal structuring (Rudin, 2011), use electricity profits to generate the majority of their finance. Because of this structure, municipalities are opposed to wheeling and competition. Wheeling of electricity from IPPs to third party consumers and community groups are viewed as competition which make them reluctant to support IPPs or community renewables. In order to establish the consumer cooperative model and aggregate net-metering models, municipal buy-in at the distribution level is essential. Part of the social mandate described in Point 1 above would consider enabling grid access to and wheeling across the distribution networks, enabling these consumer cooperatives. Furthermore, a simple mandate that municipalities are required to purchase a set amount of electricity from producer cooperatives would further enable those models.

5. Supporting NUMSA's call for a socially-owned renewable energy sector

As discussed, community renewables fit as an alternative in a larger vision of a socially-owned renewable energy sector. NUMSA (National Union of Metal Workers South Africa, 2011) has suggested strategies to support the call. Some of their strategies include:

a) Setting up 'REBID Watch' that will monitor and report on the REIPPPP

b) Education initiatives which include a rigorous critique of the renewables sector as well as education programmes to educate communities about the value of their resources. Training of renewables specialists will also be necessary. There is a need to build strong links to relevant research and training centres, including university engineering departments. A dynamic link must be established with our Sector Education & Training Authorities (SETAs). Building links with international organisations that are experienced in more progressive ownership structures in the renewable energy space.

c) Organising workers in all branches of the renewables and energy sector

d) Developing alternative approaches to Funding a socially-owned renewables sector which include:

   i. Exploring possibilities for using workers pension funds to build a socially-owned sector.

   ii. Exploring how fossil fuel revenues can be harnessed to fund renewables.

   iii. Insisting on government to set aside public investments for renewables.

6. Policy development for renewable energy and climate justice

It is clearly understood that the principles of climate justice have not been considered in any of South Africa's energy policy documents. Climate justice principles are evidently more progressive than any of the policy drivers and principles that have been identified and if

incorporated into policy frameworks would have a vast impact on the way that South Africa conducts business. Part of the social mandate and energy sector restructuring needs to incorporate climate justice principles into energy policy as far as possible.

7. Extend this research to the ground

This research specifically, which proposes greater use of community renewables to promote climate justice, neither covered nor took into account the views of the people on the ground. The views of small businesses, local manufacturers, entrepreneurs, civil society, the working class, the fossil fuel industry, rural and agricultural society and the unemployed all need to be considered. In order to complete the neo-Gramscian method of historical and contemporary research, this research should be extended to "incorporate, as much as possible, a consideration of the mentalities and ideologies of subaltern classes, their active as well as passive affiliation to dominant social forms of political association, and thus their involvement in formations that might conserve dissent or maintain control" (Bieler & Morton, 2003:online). This work will be essential for the counter-hegemonic group to establish its understanding and strategy to push back on the energy sector. This research could also work in conjunction with renewable energy and right-based climate justice education programmes.

8. Develop and build a successful pilot demonstration plant

Although the barriers to establishing a healthy community renewables industry are great, there are a few models that are currently feasible. Section 4.4 outlines some of these models with the consumer cooperative being the easiest to implement. Although these models may emerge organically, the lack of education around renewables and cooperative structures will limit this possibility. It is vital that the counter hegemonic group or any organisation interested in realising community renewables in the country uses a pilot project to prove the concept. This would involve linking with a local community who is interested in developing such a project and assisting them with education as well as finance for the project. This project should be used as the basis for future research and will serve as an alternative demonstration that builds strength and a solid basis for challenging current policy.

9. The establishment of an independent community renewables organisation/body

The ERC workshop (Energy Research Centre, 2013) identified the need to establish an "industry representative platform or a joint working group", that would "coordinate the renewable energy sector to start collectively addressing these issues through a representative industry working group." This research also recognises the need for such a group to be established that would most likely join the industry representatives, SAWEA, SAPVIA and SASTELA as the base to communicate issues and provide policy feedback to Government on the REIPPPP.

However, in order to challenge elite imposed renewable energy hegemony and to make space for community renewables to prosper, an independent organisation would need to be established with the sole agenda of enabling community renewables in South Africa. Such an entity will not only work towards challenging the barriers to community renewables but continue to perform research and facilitate education workshops with communities that are

interested in initiating projects. It will be the role of this entity to challenge policy that hinders the establishments of community renewables as well as challenging the legal legitimacy of cooperative entities in the eyes of Government, the banking sector and society at large.

5.5 Conclusion

Using the neo-Gramscian theoretical framework adopted in this research, community renewables were proposed as a counter-hegemonic alternative to the current procurement of renewable energy in South Africa. In order to establish the potential success of community renewables and their prospects as a counter-hegemonic force, the backgrounds and the effect that community renewables had in each country, need to be investigated in greater detail.

By comparing the South African situation to the European case studies, a number of practical barriers to community renewables were identified. However, by using the neo-Gramscian framework, a deeper understanding of social forces and system barriers were identified. The analysis revealed that it is not simply practical barriers that need to be addressed in order to realise community renewables (such as grid connectivity issues). Instead, it is the energy sector's marriage to transnational capital, the MEC and neoliberal mechanisms so deeply entrenched in energy policy, that act as the greatest barrier.

The strength of these social forces has resulted in South African energy planning demonstrating little attempt to investigate the views of stakeholders outside the ruling class' group of technocrats and local and transnational corporations and financiers. This research therefore revealed the need for greater public participation in energy planning and implementation of energy policy. This lack of participation, means that there are very little prospects for rights-based climate justice in the energy sector. South Africa has a strong basis to collectively and democratically plan an industrial conversion process away from purely fossil based electricity serving the MEC, to an energy system that is largely renewable, serving the majority. Experience has shown that the policy makers are not interested in democratising the energy planning process. It will therefore be necessary to hold them accountable and force the inclusion of all those affected by energy planning and policy making.

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GLOSSARY

Anthropogenic climate change: Climate change is a significant and lasting change in the statistical distribution of weather patterns over periods ranging from decades to millions of years. Anthropogenic climate change implies that the impact on the global warming causing climate change is human induced.

Bilateral agreement: A PPA signed between two private parties where one party guarantees power generation and the other reimburses the generator for such power.

Communities of interest: A group of individuals living in many different communities of locality that nevertheless share a common interest. Their motives may be ethical, such as in a nationwide environmental organisation, or purely financial, such as an investment group, or any mixture of these.

Communities of locality: A group of people living in a certain geographical area, be it a small hamlet, village, town, county, or a densely populated city.

Concentrating Solar Power: Power plants that use mirrors or lenses to concentrate a large area of sunlight, or solar thermal energy, onto a small area. Electrical power is produced when the concentrated light is converted to heat, which drives a heat engine (usually a steam turbine) connected to an electrical power generator or powers an, experimental as of 2013, thermochemical reaction.

GigaWatt: unit of power which equals 1 thousand Megawatts.

Grid Parity: Grid parity occurs when an alternative energy source can generate electricity at a levelised cost that is less than or equal to the price of purchasing power from the electricity grid.

Kilowatt hour: Unit of energy equal to 1000 watt hours. The kilowatt hour is most commonly known as a billing unit for energy delivered to consumers by electric utilities.

Megawatt: Unit of power which equals 1 million watts. This measure is used to rate the capacity of electric generating plants. For example when a light bulb with a power rating of 100W is turned on for one hour, the energy used is 100 watt hours (W·h), 0.1 kilowatt hour. This same amount of energy would light a 40-watt bulb for 2.5 hours, or a 10-watt low-energy bulb for 10 hours. A power station would be rated in multiples of watts, but its annual energy sales would be in multiples of watt hours. A kilowatt hour is the amount of energy equivalent to a steady power of 1 kilowatt running for 1 hour. One megawatt is equal to one million watts, so for one instant, one megawatt can power an estimated 1000 homes.

Neoliberalism: Neoliberalism is a political philosophy whose advocates support economic liberalisation, free trade and open markets, privatisation, deregulation, and decreasing the size of the public sector while increasing the role of the private sector in modern society.

Photovoltaics: Photovoltaics is a method of generating electrical power by converting solar radiation into direct current electricity using semiconductors that exhibit the photovoltaic effect. Photovoltaic power generation employs solar panels composed of a number of solar cells containing a photovoltaic material.

Power Purchase Agreement/Off-take agreement: A contract between two parties, one who generates electricity for the purpose of sale (the seller) and one who is looking to purchase electricity (the buyer).

Renewable Energy Feed-in Tariff: REFIT is a policy mechanism designed to accelerate investment in renewable energy technologies. It achieves this by offering long-term contracts to renewable energy producers, typically based on the cost of generation of each technology.

Renewable Energy: Energy that comes from resources which are continually replenished such as sunlight, wind, rain, tides, waves and geothermal heat.

Self-generation: When an individual, group or organisation generates electricity for its own use behind the meter.

Tradable Green Certificate/Tradable Renewable Energy Certificate: A tradable commodity proving that certain electricity is generated using renewable energy sources. Typically one certificate represents generation of 1 Megawatt hour of electricity.

Wheeling: Wheeling would involve a willing buyer/willing seller where the seller would export power through the grid and 'wheel' it to a buyer in another location.

APPENDIX

Table 24: REIPP Socio-Economic development criteria (The Department of Energy, 2011e)

No.	Group	Description	Threshold	Target
1.	Job creation	100-SR-01 RSA-Based Employees who are Citizens	50.00%	80.00%
		100-SR-02 RSA-Based Employees who are Black Citizens	30.00%	50.00%
		100-SR-03 Skilled Employees who are Skilled Black Citizens	18.00%	30.00%
		100-SR-04 RSA-Based Employees that are Citizens from Local Communities	12.00%	20.00%
2.	Local Content	200-SR-01 Value of Local Content Spend	35.00%	50.00%
3.	Ownership	300-PC-01 Shareholding by Black People in the Project Company	12.00%	30.00%
		300-CC-01 Shareholding by Black People in the Contractor responsible for Construction	8.00%	20.00%
		300-OM-01 Shareholding by Black People in the Operations Contractor	8.00%	20.00%
		300-PC-02 Shareholding by Local Communities in the Project Company	2.50%	5.00%
4.	Management control	400-SR-01 Black Top Management		40.00%
5.	Preferential Procurement	500-SR-01 BBBEE Procurement Spend		60.00%
		500-SR-02 QSEs and EMEs Procurement		10.00%
		500-SR-03 Women Owned Vendors Procurement		5.00%
6.	Enterprise Development	600-SR-01 Enterprise Development Contributions		0.60%
		600-SR-02 Adjusted Enterprise Development Contributions		0.60%
7.	Socio-Economic Development	700-SR-0 Socio-Economic Development Contributions	1.00%	1.50%
		700-SR-02 Adjusted Socio-Economic Development Contributions	1.00%	1.50%