A comparative analysis of Eskom’s new power generation stations and IPPs in South Africa

MBA MODULAR 2013/2014: RESEARCH REPORT

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By

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08 December 2014
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ABSTRACT

The South African Government has taken considerable strides in ensuring the introduction of Independent Power Producers (IPPs) in the Country’s energy sector. The government initiated Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) is currently being rolled out and is in the third window of the competitive bidding system. The first two bid windows have so far resulted in the signing of 49 Power Purchase Agreements (PPAs) with Eskom, a 100% government owned power utility. The government has appointed Eskom to be the single buyer from the IPPs and thus the signatory of the PPAs. The Eskom State Owned Enterprise (SOE) that has enjoyed the monopoly status in the power sector, has not fulfilled its appointed role as the appointed buyer, but is also actively participating in the new build programme. Eskom is on the verge of finishing the Sere Wind Farm (100 MW) and is looking as well at developing a 100 MW Concentrated Solar Plant (CSP).

Beside renewable energy IPPs, the government through the Department of Energy (DOE) have been actively pursuing the development of peaking power plants through the so called “DOE Peakers” project and has since procured Suez Dedisa and Avon OCGT peaking plants. Eskom have its own peaking power plants, namely, Ankerlig and Gourikwa Open Cycle Gas Turbines developed alongside those initiated by DOE.

There are notable differences in the build programmes of the private sector to that of a government state owned enterprise. This study aimed at understanding such fundamentally differences between the two sides by a way of a comparative analysis of key project areas in the build program, and these include, (i) Procurement strategies and processes; (ii) Financing; (iii) Contracting; (iv) Price outcomes; (v) Time to COD (Commercial Date of Operation).

The findings in the report have shown a considerably advantage of the Private Sector over the SOE in many areas on the renewable built program. Most of these apparent differences between the two players stem from the stakeholder management policies with regard to the built program. The stringent conditions in the private sector, mostly profit driven, have a direct effect on their performance. The project managers in the IPPs are under immense pressure to perform as their performance bonuses are tied to the key performance indicators set and monitored by its stakeholders. This does indicate that some form of accountability and monitoring by a third party may be the necessary tool lacking in the state utility to ensure increased efficiency and competency of its management.
The competitive bidding in the REIPPPP programme is an important catalyst for price reduction, and hence potential of the renewable IPPs to beat Eskom on lower tariffs from the 3rd bid round onwards. Also, the IPPs bring in some additional source of funds and thus spare Eskom from using its dwindling fund reserves. Most importantly project risks for IPPs are incurred by the responsible contractors, and hence the push by the contractors to deliver on time and on budget to avoid those risks associated costs.

Finally, the participation of Eskom in the new generation power plants build programme is not welcomed by the private sector, as currently it is resembles some conflict of interest, with Eskom being the appointed buyer at the same time. This calls for the urgent establishment of the single buyer office that will be independent from Eskom, and after which Eskom can compete fairly and in a transparent manner with the IPPs under the same REIPPPP programme requirements.

**Keywords:** Renewable Energy, Independent Power Producers, REIPPPP, Power Purchase Agreements, Private Sector, State Owned Enterprise
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LIST OF ABBREVIATIONS

BBBEE: Broad-Based Black Economic Empowerment
COD: Commercial Date of Operation
DFI: Development Finance Institution
DoE: Department of Energy
EPC: Engineering, Procurement and Construction
FDI: Foreign Direct Investment
FITs: Feed-in tariffs
IPP: Independent Power Producer
ISO: Independent System Operator
IRP: Integrated Resource Plan
kW: kilo Watt
NERSA: South African National Energy Regulator
MYPD: Multi-Year Price Determination
MW: Mega Watt
OCGT: Open Cycle Gas Turbines
PFMA: Public Finance Management Act
PPA: Power Purchase Agreement
PPPFA: Preferential Procurement Policy Framework
RE: Renewable Energy
REFIT: Renewable Energy Feed-in Tariffs
REIPPPP: Renewable Energy Independent Power Producer Procurement Program
RFP: Request for Proposals
SBO: Single Buyer’s Office
SOE: State Owned Enterprise
1. INTRODUCTION

1.1 Research Area

The Department of Energy (DOE) has been involved in finding the solution to the country’s electricity crisis, and this has culminated in the development of the national Integrated Energy Plan (IEP). The IEP developed in terms of the National Energy Act, 2008 (Act No.34 of 2008) provides a framework of future energy mix planning from 2010 to 2030.

The South African government further advocates for the introduction of Independent Power Producers (IPPs) as one of its strategic goals in ensuring sustainably energy supply and fostering participation of the private sector.

The DOE has since initiated a Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) in support of the IEP goal of bringing 3 725 MW onto the national grid from renewable energy sources. The state owned utility, Eskom have been chosen to be the designated buyer of the IPP power in terms of section 34(1)(4) and (d) of the Electricity Regulations Act, 2006 (Act No.4 of 2006).

Eskom is not only a buyer from the IPPs but is also actively participating in the renewable energy programs alongside the private sector IPPs. As shown in Appendix 1, Eskom is in the process of commercial building a 100MW sere wind farm, and is further looking at building a concentrated solar plant by end of 2016. This Eskom participation in the renewable energy projects places it in direct competition with the private sector. In as much as Eskom is highly involved with the new built of larger power plants, it may serve the company well to leave the small renewable energy entirely to the private sector. Thus, the capability of the private sector to deliver on its mandate needs to be assessed and decisions drawn on if Eskom should withdraw from these renewable energy projects in case of unsuccessful competition with the private sector.

Eskom as a 100% State Owned Enterprise is required in terms of the National Treasury to comply with the PFMA requirements in its contracting and procurement programmes. Such requirements and their impact on the built project can be better understood by observing the contracting and procurement requirements of the private sector. This analysis is further necessitated by the apparent setbacks experienced by Eskom in its build program for large power stations, namely Medupi and Kusile Power Stations. Eskom experienced various setbacks that resulted in much penalizing project delays and subsequent costs escalations.
1.2 Research Problem Statement

What are the fundamental differences and outcomes between Eskom building new power generation plants and private sector IPPs in South Africa?

Sub-Questions:

1) How does Eskom’s Sere Wind Farm compare to Wind Farms procured under the REIPPPP: what are the differences in:
   a) Procurement strategies and processes
   b) Financing
   c) Contracting
   d) Price outcomes
   e) Time to COD (Commercial Date of Operation)

2) What procurement and contracting strategies and processes were adopted for Eskom’s Ankerlig/ Gourikwa and how do these compare with the Suez Dedisa/ Avon IPPs procured by DOE.

1.3 Purpose and Significance of the Research

The South African renewable energy industry is purported to grow at a faster rate, with the successful competitive earlier bids, the government is looking at increasing the renewable energy stake in subsequent bids, up to fifth bid window. The notably tremendous interest in the South African renewable sector warranties the need for further research on the introduction of the renewables energy programmes in the South African energy sector. This work would thus contribute to the knowledge in the still young renewable energy industry with promising huge potential. Kings (2013) acknowledge the huge growth currently experienced by South Africa amidst growing levels of uncertainty surrounding both domestic and global markets as unprecedented.

The comparative analysis of Eskom built processes to those of private IPPs will help to create a platform where the private and public sector can learn from each other and possibly inform on future allocation of build programs.

Abdullah (2006) alludes to the fact that project success is conventionally measured against time, cost and quality, so termed triple objectives. Raz (2002) states that “In times of
increased competition and globalisation, project success becomes even more critical to business performance, and yet many projects still suffer delays, overruns and even failure”. Thus, this study aims to understand the magnitude of the potential projects hurdles by comparing the experience of the private sector to that of the public or state owned enterprise.

1.4 Limitations and Assumptions

The fact that South Africa just came aboard now with regard to energy mixing that entails the introduction of renewable energy and other IPPs, there is considerably little information and data available in this field. The commercial operation of IPPs from the first REIPPPP bid window only commenced in November 2011. The time frame available for this study meant that only few selected IPPs could be studied, those of similar size and technology to the Eskom new built.

Also to note is the uneasiness on which the participants had been unwilling to share information as the competitive bidding process is currently ongoing and thus certain information is still considered confidentially and not available for public consumption. Thus, the desired sample size and access to confidential information had been noted as limitations to this study.

An assumption made was that all the Renewable Energy IPPs procured under the ambitious REIPPPP programme followed the criteria stipulated in the Request for Proposal (RFP) issued by the DoE for the bidding process. These criteria on bid submission were not negotiable, and so a general assumption was made that all the RE IPPs that had subsequently been selected in the three bid windows all adhere to the criteria in the RFP.

The detailed tender documents for most of the requirements in the RFP are not publicly available, except to the people who are registered with the IPP website for some fee (R15 000). Thus, most of the information here had to be sourced from secondary sources.
2. LITERATURE REVIEW

2.1 Introduction

A global trend towards deregulation of the electricity generation sector in order to allow private sector participation is gaining momentum; a move that is seen necessary in fostering competition with resultant affordable energy prices.

In Africa, the participation of the private sector in electricity generation has seen the emergence of hybrid power markets, where the state owned national utilities still retain their dominant position. The private owned Independent Power Producers (IPPs) are introduced on the fringes (Eberhard, 2011). In most cases the national utility continues to be involved in the new power generation and thus not give enough space for the private sector participation to grow. This monopoly by State Owned Enterprises (SOEs) in electricity generation is said to be the major cause of the poor performance of these SOEs as they try to be everywhere and this often leads to negative outcomes such as high product price, underproduction and waste of resources (Hanmin, 2011) as they cannot keep up to the demand.

The managers in private firms are generally believed to have different goals to those of the SOEs. The Agency theory allege that managers in SOEs have selfish ambitions, that of maximising their own benefits instead of those of the state or firm. This is attributable to agency problems and a lack of outside monitoring. There is no threat of bankruptcy and liquidations for SOEs as it is with the private firms (Nguyen, 2006).

There is a growing recognition of the need to promote more foreign funding by encouraging the formation of the private enterprise sector. Humphreys (2007) attributes the China’s economic sharp rise to their dramatically reduction of SOEs while growing their private enterprise sector. He further notes that the private Chinese companies will soon surpass the “bureaucratic” SOEs in the global economy.

Although it may seem that the benefits of privatisation are far too good not to be considered by developing economies, a study by Yu (2013) points to the mixed views on the relationship between state ownership and firm performance as observed in findings of various key studies on this matter. There are studies suggesting that enhanced performance is fostered by
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government political support and business connections as found in most state enterprises. This is contrary to the popular belief that the private sector will always outperform the public enterprises.

There is another caution against undergoing a full blown privatization by developing economies. A study by Marcelin (2014) do acknowledge that privatization allows firms to achieve improved performance, however the study suggest that partial privatization as opposed to full privatization, may work better for countries with weak institutions, poor regulatory and legal frameworks. In the African economies with largely weak institutions, the hybrid power markets, where most control is still with the State can be interpreted as some form of partial liberation of the energy sector. This may work better until such time where the regulations are of good standard and thus good basis for a thriving private sector.

Nolan (1999) partly refutes the earlier notion of poor performance of all SOEs and suggests that the size of the enterprise also determines its performance. The author argues that what is widely hailed as have led to growing success of China’s firms, namely privatization may not be the same for “large” SOEs. China’s large SOEs are experimentally developing new institutional reforms through a combination of central policy, local initiative and interaction with international investment. Thus, the monopoly seen in the larger African SOEs may be the best way with Government offering the needed support in encouraging institutional reforms and formulation of better policies. This notion promotes calls for government support in growing powerful, autonomous big businesses that can compete globally.

2.2 South African Electricity Market Structure

South Africa has moved from a stable energy supply to declining supply that does not match the Country’s growing energy demand. The country is experiencing severe power shortages, starting from the 2008 infamous electricity load shedding. The situation has not yet improved, especially with the Eskom new builds taking longer than anticipated to connect to the national grid. The country is currently operating in a very tight margin, far less that the 19% reserve margin recommended by the Energy Security Master Plan (ESMP) of 2007 for the electricity generation capacity. The situation is further exacerbated by the fact that about 60% of the power plants at Eskom are old and in need of frequent maintenance. Eskom had
been trying to postpone the scheduled maintenance of these plants so as to preserve the availability margins, but this has led to unpleasant consequences of plant breakdowns, such as the recent incident with the silos at Majuba power station.

Currently, about 95% of electricity in South Africa is supplied by Eskom. The utility has a net maximum generating capacity of approximately 44 GW (see Appendix 1). Its forecast is for 17 GW of new generation by 2018, of which 6 GW has already been commissioned. The remaining 11 GW will be delivered as per the current planned capacity expansion plan shown in Appendix 1. A significant portion, about 85% of the 42 GW generated electricity comes from coal fired stations. Other sources of electricity, hydro, pumped storage, nuclear and gas contributes the remaining 15% as of the end of 2012, see Appendix 2.

2.3 The Introduction of IPPs in South Africa

The Independent Power Producer as defined by NERSA means, “undertaking by any person or entity which the government of South Africa does not hold a controlling ownership interest (whether direct or indirect), of new generation capacity at a generation facility following a determination made by the Minister of Energy in terms of section 34(1) of the Act”. Long-term Power Purchase Agreements are entered into by the designated buyer and the individual IPPs.

The introduction of IPPs in the South African energy sector is commendably in two ways in that, it helps Eskom fulfil one of its executive strategic pillars, namely, that of pursuing private sector participation and it also encourages competition within the energy markets as deemed necessary in stimulating economic development in the revised 2012 IEP. This will have various other positive spin-offs such as the introduction of other forms of energy supply, a diversification from the coal fired station that has dominated the industry. Mostly importantly the introduction of private sector in energy generation would greatly relieve the Government from funding burden and Eskom borrowing requirements.
2.3.1 The DOE Renewable Energy Programme

The South African Government in the form of Department of Energy has initiated a renewable energy acquisition programme under the auspices of Renewable Energy Independent Power Producer Procurement Program (REIPPPP).

The REIPPPP involves a bidding process for renewable energy generation. Since its inception, Eskom has signed 47 PPAs in first and second rounds of bid submissions for 1 416 MW and 1 044 MW, respectively. The preferred bidders for the third window of bid submission have been allocated 1 473 MW electricity. The REIPPPP bidding process has been largely hailed a success and has attracted international developers and funders. The huge turn-out in all the bidding windows somewhat proved that the investors were clear of what is expected of them and thus were able to align their bids in accordance with the requirements in the Request for Proposals (RFPs). Malgas (2011) alludes to the fact that clarity, transparency and consistency in procurement policies and practices are important consideration for contracting IPPs who needs security of their investments.

Considering the first three bid windows, Eskom would have purchased a total of 3 916 MW renewable energy from 64 power purchase agreements by the end of 2014. The allocation of the renewable energy under the REIPPPP project is illustrated in a Table 1, and wind technology is the major player.
Table 1: The renewable technology allocation under the DOE REIPPPP programme.

<table>
<thead>
<tr>
<th>Technology type</th>
<th>Allocated Amount</th>
<th>Percentage Allocation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Onshore wind</td>
<td>1850 MW</td>
<td>49.7 %</td>
</tr>
<tr>
<td>Solar Photovoltaic</td>
<td>1450 MW</td>
<td>38.9 %</td>
</tr>
<tr>
<td>Concentrated Solar Power</td>
<td>200 MW</td>
<td>5.3 %</td>
</tr>
<tr>
<td>Biomass</td>
<td>12.5 MW</td>
<td>0.3 %</td>
</tr>
<tr>
<td>Biogas</td>
<td>12.5 MW</td>
<td>0.3 %</td>
</tr>
<tr>
<td>Landfill gas</td>
<td>25 MW</td>
<td>0.7%</td>
</tr>
<tr>
<td>Small Hydro (&lt;10 MW)</td>
<td>75 MW</td>
<td>2 %</td>
</tr>
<tr>
<td>Small Projects IPP</td>
<td>Total threshold of 100 MW</td>
<td>2.8 %</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>3 725 MW</strong></td>
<td></td>
</tr>
</tbody>
</table>

Source: Department of Energy

Although the Power Purchase Agreement signing was the responsibility of Eskom, the DOE continues to provide assurance to the investors in the form of an Implementation Agreement that forms a contract between Government and the IPP. The contractual arrangement between the three parties in the REIPPPP procurement project is depicted in Figure 1.
respective parties as illustrated in Figure 1. The conditions within these agreements are not negotiable as they are deemed to be sufficient having undergone an extensive review with the private sector allowed to provide some input.

2.3.2 The Peaking Gas Turbines

The open gas cycle turbines (OCGT) are normal build for provision of electricity during peak hours, a contingency for when the demand outweighs the available output.

A South African cabinet decision of 2004 ordered the then Department of Minerals and Energy (DME) to procure about 1000 MW of OCGTs through a competitive tendering process. The cabinet also ordered an Eskom investment in a 1000 MW of OCGT peaking plant. Thus, the government wanted to have in total 2000 MW for commissioning in about 2008.

The OCGT are rather expensive to run due to high price of fuel/diesel. The consumers pay a price of about R6.91/kWh for electricity generated in these peaking plants. But, nevertheless, OCGT are needed to cater for peak period or emergencies in the accidental unavailability or unscheduled outage of the normal plants.

2.4 New Power Plants Building

This study is aimed at analysis of the construction and subsequent operation considerations for new generation power plants under the following headings;

a) Financing
b) Time to COD
c) Contracting
d) Procurement strategies and processes
e) Price outcomes

There are other costs associated with building a New Power Station, and one of these, is land acquisition. The REIPPPP bidding process expected the developers to identify the sites and pay for early site development costs.
2.4.1 Financing an Energy Generation Power Plant Project

In most of IPPs in the developing countries, foreign funding is the major source of funds. The reason for this foreign domination in the funding structure is given by Eberhard (2011), in that this is to be expected due to limited capital availability in developing countries such as observed in Sub-Saharan Africa. The drawback to foreign funding is the net exposure of IPPs to foreign-exchange fluctuations.

Pegels (2010) identifies the economics of renewable energy technologies to be a major barrier to their introduction. Such economic features are divided into costs and risk factors, the two main factors in investment planning. The renewable energy projects are often characterised by high R&D costs, long-term planning and high investment risks (Lee, 2011). Also, there are some unknown potential technological challenges as the renewable energy market is still young. This makes the funding much more expensive as the financial institution factors in all the associated risks.

2.4.1.1 Renewable Energy Technologies policies

Wiser (1998) study findings highlights the importance of carefully designed policies for renewable energy technologies that often leads to dramatically reduced renewable energy costs; which in turn, lead to reduced financing risks premiums.

The National Treasury, working with DOE, supports the procurement of renewable energy by giving direct and indirect support as well as technical advisory support through the Public-Private Partnership programme. This support has culminated in the establishment of the renewable energy fund to ensure affordability and sustainability of the renewable energy plants. The objective of the fund is to leverage private sector investment with the more affordable funding, such as from climate change donors and concessionary funding under the guide and supervision of the National Treasury.

Further attest to the huge acceptance of the government initiated bidding process; the first three REIPPPP bids attracted a large base of domestic and international project developers, sponsors and equity shareholders. This apparent success somehow demonstrates the transparency and adequacy of the policies developed towards the introduction of IPPs in the South African energy sector.
2.4.1.2 Project and corporate financing

Project financing and corporate financing are primarily the two ways of financing a power plant. The primary difference between these two financing structures is on debt structuring.

**Corporate financing:**

Corporate financing is done through what is referred to as “balance-sheet financing”. The lenders to the corporations will first scrutinize the entire corporate balance sheet to assess the riskiness of the business. The lenders will often restrict the corporations from excessive borrowing by putting a limit to total company debt. In doing this, the lenders are guarding against the over-indebtedness of the corporation and hence its inability to pay interest on existing debt. Wiser (1998) predicts that the use of corporate financing will become much more frequent in the independent power markets.

**Project financing:**

In project financing, individually projects are financed outside of their parent company, so called non-recourse or limited recourse loans. Thus, the project would be immune to the bad creditworthiness of the parent company. Lenders under project financing look at the cash flow and assets of the specific projects for repayments.

The reduced market risks and non-recourse nature of the debt allows for higher debt-equity rations that in turn, can result in reduced financing costs, (Wiser, 1998).

Conversely, (Wiser, 1998) cite (Brown, 1994) who has identified a number of negative aspects associated with project financing in comparison with corporate financing and these include the following:

- Need for strong purchase commitments – guarantee for loan repayments is given by long-term power purchase agreement (PPA). The guaranteed revenue stream from these long-term PPA is necessary, especially for high-capital cost technologies such as renewable energy.
- Large transactions costs of arranging the various contracts
- High legal fees
- Higher debt costs – the desire to maximize debt leverage exposes the project to risks of large debt servicing. Wiser (1998) attribute this exceptionally preference to
debtfunding to Brealey (1991)’s findings that debt is frequently less costly than equity.

- Greater range of restrictive loan conditions.

Project finance has been cited to be the most dominant financing structure used in the REIPPPP programme, with the exception of the third bidding round where a third of the projects relied on corporate financing models. According to Eberhard (2014) a total of 56 out of the 64 projects in the three bid windows have been project financed, six projects in the third bid window are corporate financed by an Italian utility.

A debt of approximately ZAR 90 billion has since been raised with the majority (~64 %) from commercial banks, and the balance from Development Finance Institutes (DFIs) (~31 %), and Pension and Insurance funds (~5%), (Eberhard, 2014). A big chunk of the debt (~86 %) has been raised within South Africa and so the is limited exposure to exchange rate fluctuations. One of the qualification requirements under the REIPPPP bid process is a 40/60 split between the local and foreign based funding (Eberhard, 2014).

The big appetite by the commercial banks to finance renewable energy is noted as with the recent announcement by the South African bank Absa’s Corporate & Investment Banking, a member of the Barclays group, that it would provide R10.8 billion of debt funding for six projects in the third round of the REIPPPP (Whyte, 2014). The Absa CIB head of resource and project finance Theuns Ehlers is quoted as saying “This represent a significant commitment from the bank to establish a renewable energy sector in South Africa”, Whyte (2014). Two South African banks namely ABSA and Nedbank Capital won the Euromoney Project Finance Africa Power Deal of the Year 2013 for their role as lead arrangers in the IPP OCGT Avon and Dedisa peaking projects and Dorper wind farm, respectively. The awards recognizes innovation, best practice value for money, deal repeatability, best practice, risk mitigation, problem solving and the speed of delivery of the financing structure (Nedbank, 2013) and (Absa, 2013).

The DFIs such as Industrial Development Corporation (IDC) and Development Bank of South Africa (DBSA) are mandated by the Government to provide finance to the private
sector for projects that promote development. The DFIs are involved in most of the RE IPPs as either lenders or as equity investors.

Although it might seems that Eskom is in a better financial position than IPPs as the utility has better access to cheaper source of funding through its Government backing as compared to private sector that mainly access funding at commercial terms which are relatively costly, Eskom is currently underfunded. The 2014 Eskom financial statement stipulates that Eskom needs to raise ZAR 300 billion in order to meet the intended extension of its electricity infrastructure. Due to this underfunding of Eskom, (Pegels, 2010) advises that it may not be ideal for Eskom to invest public money in what seems to be comparatively expensive and risky renewable energy projects and on this he strongly suggests the promotion of private sector participation. Wiser (1996) findings is that the cost of wind farm projects is extremely sensitive to the financing terms, and this he found by switching to an internally financed project by the public utility, the costs are reduced by over 40%.

In the past where most state-owned power utilities had monopoly over electricity generation, the tendency was to plan conservatively by building more capacity that needed. This in most cases contributed to the utilities financial woes with high investment costs and lower tariffs that are insufficient to fund the new investment. Malgas (2011), thus conclude that the reason majority of utilities in Africa are under-investing is that they no longer have sufficient financial resources. This has pave way to power reforms which encourages the private sector participation.

But then the government is concerned about the viability of implementing large numbers of small projects that are individually financed, through private financing (McDaid, 2014); and such a concern may later lead to a future reduction of IPPs.

Some other considerations on the funding of IPPs:
The 4th Annual RE finance forum (Project Update, 2002) reports on the opportunities as well as risks associated with financing RE projects. The Fortis Bank which had six years’ experience in financing renewables, showed some of the key questions that it considers
before giving out a loan to a wind project in the 4th Annual RE finance forum presentation and these include:

- Will the wind blow where the project is sited?
- Warranty on the technology. Will the technology work?
- Can the project be built on time and on budget?
- Can the project be operated and maintained on budget for a minimum of 10 to 15 years?
- Who will buy the power?

Another banker within the same forum (Project Update, 2002) sets out NIB Capital Bank key characteristics for renewable energy project financing and these include:

- Securing of non-recourse financing to optimise leverage by using the cash flow of the project to finance the loan.
- Limit sponsor risk through the creation of special purpose companies
- Allocating risk among contracted parties through structured agreements
- The projects should at least be Euro20 million because of the relatively high transaction costs per megawatt of electricity generated.

In mitigation of risks in financing renewable energy projects, NIB Capital Bank strategies include:

- Payment of equity upfront or on a pro rata basis and satisfactorily secured
- The use of turn-key, fixed price construction agreements to limit cost overruns
- Reviewing the local regulatory framework and reliability of local government
- Appointment of a knowledgeable operator.

In all it appeared that the financing of renewable energy projects is becoming more interesting whilst it still remains complex, a sentiment alluded to by representative of Tridos Bank U.K in the 4th Annual RE finance forum. He further noted that “Tax Incentives” are a proven way of attracting investors into RE projects.

Another source of funds for RE projects is Carbon finance. A senior representative of International Division, for Energy for Sustainable Development (ESD) gave an estimate of an average 10 percent addition to the project’s internal rate of return (Project Update, 2002).
The an interview questions that were drawn from the literature review on financing were;

a) What financing structure has been adopted?

b) Was there any potential savings from the use of “Green funds” and/or Carbon finance?

c) Was or will there be any cost overruns? If so, what mitigating strategies have been adopted to limit potential of cost overruns?

d) What are possible regulatory risks and assessment of their impact on the project cost?

e) In that the REIPPPP bidding process expected the developers to identify the sites and pay for early development costs at their own risk, was this financial draining and expensive exercise?... the initial high transaction costs.

2.4.2 Time to Commercial Operation Date

The EPC contractor is expected to deliver the project as per agreed timelines, and should as well ensure that the project is commissioned and operational by the planned Commercial Operation Date (COD). The COD is the day when the project is ready to evacuate generated power into the national grid; such COD is agreed on in the Power Purchase Agreement. Also, the DOE RFP has as one of its criteria in the bidding process the allocated timeframes for COD.

Most projects experience inherent project delays, and such delays can affect a single activity in isolation or results in subsequent delays in a group of activities (Hampton, 2012). Delays often bring with them increased costs while trying to remedy the situation by both accelerating the project and increasing input resources to bring the project back on schedule (Hassanein, 2005). In acknowledging that delay-inspired costs can be substantial, Ahmed (2003) suggests that such delay-inspired costs need to be identified and mitigated upon to reduce stakeholders’ financial exposure. Le-Hoai (2008) gives an extensive list of project related factors that can cause delays and the associated costs overruns, and these are mainly, project complexity, size, scope and location. Lowsley (2006) suggests other factors, such as changing weather conditions, unforeseen ground conditions, resource availability and incomplete or late design information.
In accordance with the PPA signed between the seller (IPP) and the buyer (Eskom), clause 4.6 of the PPA stipulate that for every day the COD is delayed beyond the scheduled COD, the Operating Period will be reduced by a day and the expiry date to be brought forward by one day. This means that the seller will lose 2 days for day that the COD is delayed beyond that scheduled. In the case of the EPC contractor, a guaranteed completion date is agreed upon, and the contractor is mostly liable for Delay Liquidated Damages (DLDs) to the project company in case of a delay to meet the COD.

Thus an interview questions to ask in assessing the project on time delivery or delay with respect to the agreed upon COD will be:

a) Will the project be built on time and what mitigating strategies to limit project delays?

b) What are some of the hurdles the project experienced in its application for a generation licence and their impact on the project timelines?

c) If there are any notable hurdles, which one do you think Eskom would have an advantage of over RE IPP, and why?

d) Please elaborate on any other problems encountered by the project that might have resulted in project delay or would have resulted in project delay, if so what mitigation measures were considered?

2.4.3 Contracting

Most IPPs would not build power plants themselves, but prefer turnkey contracting for the construction, installation, and commissioning of the plant (Phadke, 2009).

An EPC contractor is normal appointed by the project owner to build and deliver the completed project in an agreed upon handover date. Chan (2000) cited in Pham (2014) highlighted a substantial number of advantages in the EPC projects, and these include, conformance to the basic design, better build ability, single point responsibility, direct communication, less demanding documentation, time saving, and opportunity to benefit from contractor’s expertise in the construction.

Despite the numerous advantages of EPC projects, various authors (Alsakini, 2004; Ogunlana, 1996; Kaming, 1997; and Kumaraswamy, 1996) have identified some problems associate with EPC contracting. Such issues include, inadequate procurement system, lack of
resources, discrepancies between design and construction, lack of project management practices, variation orders, communication lapses, cultural issues, and different interest of the participants, poor labour productivity and lack of contractors.

Pham (2014) distinguish between two forms of EPC contracts, Foreign and Local EPC contractors, with the advantages of each as experienced in Vietnam. As means of reducing costs, he notes that the construction part is subcontracted to the local EPC contractors whereby skilled and cheap labourers provide a clear advantage. The engineering and procurement work on the other side are assigned to the foreign EPC contractors who have vast capability in engineering work, and exposure to international practices. As is the case with many developing countries (including South Africa), the EPC project contracting thus provide an added advantage of using the best international EPC contractors with vast experience. Pham (2014) also note that some useful input data into the engineering work such as, policy and legislation, weather and other natural conditions in the construction site is sourced from local contractors.

Consequently, as part of the RFP, bidders are required to submit a detailed heads of the contracts terms that they would have with their contractors, equipment suppliers and other subcontractors. In most cases such contracting terms are comprised of the EPC and Operating and Maintenance (O&M) contract. The O&M agreement is basically a long-term agreement with an operator for the operation and maintenance of the facility for an agreed period. In most cases the operator will the project owner/ sponsor and the terms of the O&M agreement will match those of the PPA. In some cases the lenders requires the project company to operate the facility itself.

DLA Piper (2012) gives an illustration of a typical basic contractual structure for a project financed renewable energy project using and EPC, see Figure 2.
Figure 2: A typical contractual structure for a project financed renewable energy programme.

The 64 projects signed in the first three rounds of REIPPP have involved forty-nine Engineering Procurement Construction (EPC) contractors. The use of foreign EPC contractors provides a good chance of obtaining international experience as well as other sources of funding from foreign investors who have greater confidence in the contractors. Another bigger advantage of the EPC contracts is the guarantees contained within, that is, the fixed contract price, fixed completion date and performance guarantees. Both the Delay Liquidated Damages (DLDs) and Performance Liquidated Damages (PLDs) payable by the contractor under EPC contract provide some kind of relief to the project company in case of delay or substandard performance, respectively. An example of such a performance guarantee is the guaranteed power curve that is given in a wind farm project. The payment rate of liquidated damages is pre-agreed between the contractors and the project company and will in most instances be capped at an agreed percentage of the contract price.

There are many other conditions placed in an EPC contract, mostly intended to shift the risk from the project company to the contractors, and these include, reserved rights of the project.
company to order variations and/or agree to variations suggested by the contractor, defects liability, intellectually property and performance specification.

Although there are various advantages of an EPC contract, there are as well numerous disadvantages as mentioned earlier on. Additional the risk sharing with the EPC contractor would likely results in higher capital costs than with ordinary contractual structures. Thus EPC contract would factor in project risks due to unforeseeable events and the project sponsor has to decide if they rather pay for those contingencies included in the contract price or alternatively carry the risk themselves and thus pay lower risk premium.

The scarcity of EPC contractors is another factor mentioned by DLA Piper (2012) that can results in higher contract prices. Another noticeable disadvantage of an EPC contract is the limited role or inability of the project company to have early interference and thus correct project wrongs on time before completion. There is a risk in interference with the contractor’s work, that it makes it easier for contractors to refuse claims on defective work or liquidated damages, and blames it on the interference by the project company. Thus, the use of EPC contracts as done with most of the RE IPPs may not provide an ideal solution, especially if care has not been taken in selecting an experienced and knowledgeable contractor.

Eskom on the other hand gives out multiple contracts that it manages and plays an oversight role. This enables Eskom to manage risks on its own, with resultant lower capital costs compared with those of the Private Sector. The poor management of these contracts is often cited to be the overwhelming reason for the delays in the recent Eskom major projects, namely, Kusile and Medupi power plants.

This study thus aims to look at the contractual arrangements for RE IPPs as done with the private sector and compare with those of Eskom, noting the advantages and disadvantages of each sector as noted above.

The interview questions asked in assessing the project contracting structure were;

f) What type of construction agreements was agreed on, and what motivated the choice?
g) What is the role of the project company (Eskom or IPPs) in the project development that is stipulated in the EPC (and O&M) agreement?

c) Do the capital costs include all project risks and hence will be shouldered by the EPC contractor or the project company intends absorbing some of the risks with resultant lower risk premiums in the overall costs?

d) Can you please indicate in your experience with the EPC contractors what were some of the key highlights or learnings in areas such as, the procurement system, resources, alignment between design and construction, project management practices, handling of variation orders, communication practices, cultural adjustment (if foreign contractor), and different interest of the participants, labour productivity and availability of contractors?

e) Can you divulge on some of the conditions placed in the EPC contract, mostly intended to shift the risk away from the project company to the contractors, for example,

   i) Is there a cap on the Delay Liquidated Damages (DLDs) and Performance Liquidated Damages (PLDs) payable by the contractor under EPC?

   ii) What guarantees are contained within the EPC contract, for example, the fixed contract price, fixed completion date and performance guarantee?

   iii) What other rights does the project company has for better control of the project, that is, does the project company reserved right to order variations and agree to variations suggested by the contractor, defects liability, intellectually property and performance specification?

2.4.4 Procurement Strategies and Processes

Eskom as a state-owned enterprise is governed by the Public Finance Management Act (PFMA) which requires Eskom to have in place a procurement system that is fair, equitable, transparent, competitive and cost-effective. Also, a governance structure is in place for a proactive and in-process audit that provide assurance to the governance structures on that the transaction had been done in accordance with PFMA (Public Finance Management Act, 1 of 1999, as amended by Act 29 of 1999). The PFMA act seeks amongst other objectives to prevent irregular and wasteful expenditure.
Eskom have since developed its own guiding document, the Eskom Procurement and Supply Management Procedure (Eskom, 2014). This Eskom document state unequivocally that, “Notwithstanding any of the aforementioned considerations, formal open competitive tendering is Eskom’s preferred and standard sourcing mechanism, and any deviations from this must be Supported by an approved strategy and approved by a procurement / tender committee.’”

The bidding process had some requirements under the title “economic development requirements” designed solely to encourage:

a) Job growth  
b) Domestic industrialization  
c) Community development  
d) Black economic empowerment (BEE).

Eberhard (2014) make note of what appears to be a fundamental shift to the requirement on local content under the South African existing policies such as, Preferential Procurement Policy Framework Act (PPPFA) of 2000 or the Broad-Based Black Economic Empowerment (BBBEE) Act of 2003. The price versus local content ratio under PPPFA and/ or BBBEE is 90/10 split, and a bit higher local content for small contracts (80/20). Conversely, in the REIPPPP’s bid, the price versus local content split is 70/30, which spells out a more emphasis on localisation. The percentage allocations to different elements under “economic development requirements” are shown in Figure 3 below.
Figure 3: The local content target under the REIPPPP economic development objectives (Eberhard, 2014).

In bid windows 1 to 3, there has been a good adherence by the potential bidders to the REIPPPP localisation requirements, and an increasing local content percentage from a local content scoring requirement of about 25% in the first bid window, 35% and 40% in subsequent bids (Eberhard, 2014).

The interview questions on procurement strategies and process were based on the following:

a) How well the project performed against the localisation targets under the REIPPPP economic development requirements (see Appendix B)?

b) Was there any additional premium paid in order to meet the required localisation targets, for instance, educating the local citizens?

c) What are the prospects of the local manufacturing of wind turbine blades and towers, which are one of the components earmarked by the government for manufacturing in South Africa?

d) Please give any other hurdles experienced whilst trying to meet the economic development requirements, e.g. Socio-economic development plans (for communities within 50 km radius), availability of local advisory services (e.g. legal and financial firms).
2.4.5 Pricing

Phadke (2009) warns that if the policy of promoting private sector participation has no clear regulation and focus on promoting competition, the Independent Power Producers are likely to overstate their capital costs which then significantly influence their pricing. The risk due to not clear regulations is factored in the price.

The earlier planned pricing considered for the private sector renewable energy was a Feed-in tariffs (FITs). The FITs was meant to give investors basis for their long-term planning, by fixing the tariffs for power for a substantial long-term period. Such tariffs determination also takes into account as well the cost of production associated with each renewable energy technology. This FITs pricing system was later abandoned in 2011 in favour of competitive bidding. The first round of bids started in August 2011 under the Renewable Energy Independent Power Producer Procurement Programme (REIPP), and there have been very significant price drops with successive round two and three bid windows, see Table 1.

Table 2: REIPPPP Average Bid Prices and Bid Caps, 2011 SA c/kW

<table>
<thead>
<tr>
<th></th>
<th>Bid Cap (SA c/kWh)</th>
<th>Round 1 Average (SA c/kWh)</th>
<th>Round 2 Average (SA c/kWh)</th>
<th>Round 3 Average (SA c/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wind</td>
<td>115</td>
<td>114.3</td>
<td>89.7</td>
<td>65.6</td>
</tr>
<tr>
<td>Solar PV</td>
<td>285</td>
<td>275.8</td>
<td>164.5</td>
<td>88.1</td>
</tr>
<tr>
<td>Concentrated Solar</td>
<td>285</td>
<td>268.6</td>
<td>251.2</td>
<td>146.0</td>
</tr>
<tr>
<td>Small hydro</td>
<td>103</td>
<td>-</td>
<td>103</td>
<td>-</td>
</tr>
<tr>
<td>Biomass</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>125</td>
</tr>
<tr>
<td>Landfill gas</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>84</td>
</tr>
</tbody>
</table>

3 Source: Department of Energy, 2013b

The impressive price reduction in bid prices further attest to the fact that potential investors have growing trust in the REIPPPP bid process. But, Smith (1999) and Mochtar (2001) points to the danger of under-pricing in a competitive environment. The prices are first compiled from the estimated actual project costs, and these prices are then adjusted with a commercial view and such price estimation normal excludes project risks. Thus, the final bidding prices
are lower than what they should be to enhance competition; in what can be seen as market penetration in anticipation of future bids. Yiu (2005) warns that the under-pricing in competitive bids is unsustainable. World Bank (2005) notes that projects in developing countries normally incur additional cost and thus under-pricing may even be more punishing than in developed countries.

In order to prevent under-pricing, the REIPPPP bidding requested that potential bidders should be fully underwritten with debt, and this was to discourage the tendency of competitive bidders to incentivise under-bidding.

It may not be conducible situation that Eskom is set to compete with the IPPs whereby the enterprise also acts as a single buyer of electricity. This potential conflict of interest has been noted by the government with the announcement made in the 2010 State of the Nation (Son, 2010) that an Independent System Operator (ISO) is to be established separately from Eskom. Once formed, the ISO would then be the sole buyer of electricity from the IPPs.

The electricity price is determined by the South African National Energy Regulator (NERSA) which in turn considers many factors in setting up the prices such as the low affordability potential of the Country. Thus, Eskom is forced to sell electricity cheaper than it would like for the company to realise profit. A point in case is the refusal of NERSA to grant Eskom a 16% tariff that they applied for due to the company’s strong desire to move to a cost reflective tariff and thus ensure the company’s sustainability.

The interview questions on procurement strategies and process were thus based on the following;

a) What are some of the risks considered and have an influence in the pricing

b) How clear are the regulations in the government policy aimed at enhancing private sector participation? Did they seem to promote or stifle the competition?

c) What do you think are the reasons to the price reduction seen in successive rounds of 1, 2 and 3 bid windows? Is such a decreasing trend sustainably?

The last question is aimed at assessing if incentivised under-bidding (so called “low-balling”) is the cause of the successive price reduction or is due to other factors like, increased corporate balance sheet funding, better negotiated EPC contracts or cost-effective sourcing of components.
2.5 Discussion

In the literature there are opposite views on the performance of the private sector participation compared to that of SOEs. The Government support of “large” SOEs and them undergoing the necessary institutional reforms and establishment of good regulations can place them in a position where they can compete in the global market.

The other side of the researchers argue that the monopoly currently enjoyed by SOEs create some form of complacency that often lead to poor performance. The private sector is then seen as the more efficient one due to them being driven by such things as the strong focus of their management to maximisation of shareholder profit.
3. RESEARCH METHODOLOGY

The research focussed on the policies and procedures governing the building of new power stations by Eskom. The policies and procedures guiding Eskom as a public sector are compared to those of the private sector owned IPPs in the same category. The differences between the Eskom (public) and private processes are highlighted and their implications to the built programme assessed under variables such as project timeframes, total project costs, and time to commercial operation.

3.1 Research Approach and Strategy

The research is descriptive and explorative in nature. It seeks to understand the similarities and differences if they exist, between private and public companies hence the need to collect data that is hugely qualitative in nature.

Because there were few companies available to be explored, information gathering approach had been predominantly qualitative and inductive in nature. Primary data was collected by conducting in-depth personal interviews with plant managers or representatives of the selected private companies and Eskom. A quantitative approach was not going to give conclusive information due to the fact that the renewable energy industry is relatively new, and some managers might be reluctant to give out information with the bidding process still on.

The research questions of this study were rather exploratory in nature as they attempt to provide insight into a new industry, and this favours qualitative methods than quantitative which tend to be narrow focussed with well-defined variables (Yin, 1994). The qualitative methods are typically unrestrictive, flexible and seem to encourage spontaneous engagement (Mack, 2011). According to SEEP-AIMS (2000) the qualitative approach is more suitable for smaller number of responded, open-ended question and a limited time frame.

The interview questions were be based on five broad categories that are essential in the planning and construction of new power plants, and these are mainly,

a. Financing
b. Time to COD.
The interview questions were kept as brief and concise as possible and were conducted in a non-threatening professional manner that encouraged open ended discussion (Roter, 1992). In as much as qualitative approach heavily relies on true and honest engagement from participants, Loseke (2013) suggests that, “adequate questions are a central component of high quality research”. Face-to-face semi-structured interviews were conducted whenever possible as the preferred method, otherwise telephonically or email was utilised when the former was not possible. Marshall (2013) gives credit to face-to-face interviews as the most fundamental and highly important method in qualitative enquiry.

Added to this, a considerable large amount of secondary data had been sought from the World Bank and other financial institutions, in as much as possible. This information was mostly readily available due to the part funding of the IPP project from the public purse. Other secondary data for IPPs was sought from the World Wide Web. One of the disadvantages of using secondary data is that the authenticity of the data and source is not certain and hence one may need to assess quality of the data and the method used in initial data gathering, (Adams, 2007). Most of the secondary information and data used here was sought from developing company’s own websites, the World Bank site and other credible sites such as the South African Engineering news.

### 3.2 Population and Sampling Methods

The size of the renewable energy sector in South Africa is still relatively small hence the decision on qualitative approach as suggested in the section above. Miles (2013) notes that qualitative samples are often theory driven, purposive rather than random, and can be decided upfront or progressively as in a grounded theory mode. SEEP-AIMS (2000) indicates that qualitative inquiry is aimed at illustrating a particular issue in depth, which is a reason that its sampling frames are rather more directed and purposeful than those in quantitative inquiry. He further suggest that the size of the sample is dependent on various factors such as the
purpose of the inquiry, what information will be useful and credible and what the researcher can accomplish with available time and resources.

There are currently 64 power purchase agreements signed by Eskom with the IPPs for renewable energy. The research was done by comparison of the only available Eskom wind farm to a private sector owned renewable wind farm. This study was supplemented by a comparative study of the Eskom and private sector owned OCGT turbines.

The limited number of selected renewable IPPs was also informed by the time required to collect data from the companies. This informed the decision to use non-probability convenience sampling in this work. Even though it was convenience sampling, there were some minimal criteria in the selection of the IPPs for comparison and that is they should be of equal capacity. The IPPs must as well be either fully constructed or nearing their completion date as to be able to determine the time to COD and other construction details required in this work.

Whilst the comparison of the companies selected here enabled the establishment of similarities and gaps between models used by Eskom and those of the selected IPPs, the exclusion of the other renewable energy projects makes the findings here to be limited to the IPPs that were considered. For example, if 4 other companies were to be selected from the remaining companies, the findings might be otherwise. This limits the reliability of the convenience sampling method considered here. However, the objective of the research, that of exploring the differences, similarities, advantages and disadvantages between the policies governing selected private sector against Eskom, a public energy sector when building new power stations, had been achieved. Furthermore, comparison was also done for the Eskom and DOE procured OGCT peaking plants.

### 3.3 Data Analysis Methods

Whilst there had been minimum quantitative analysis in the form of tables, the qualitative data collected was used in identifying emerging themes. Inferences to the collected data had been made and deductions extracted.
Direct comparison of key components of the build programs had been done in the form of tables with key project characteristics, and deductions from such comparison considered a holistic view.

3.4 Informed Consent and Research Ethics

The University policy requires that an approval be obtained from the GSB research Ethics Committee for any research work that engages human subjects. Such approval was obtained prior to commencement of information and data collection.

The research was conducted in a transparent and ethical manner. The potential participants were informed of the purpose of the study and their consent was requested prior to the start of the interview process.

A consent letter from Eskom that allows the use of Eskom information for research purpose had been obtained (see Appendix E). Confidentiality of the participant’s details and information provided was strictly ensured. The draft interviewee transcripts were given to the participants to correct any misinformation that might have been captured by the researcher and the participants were informed that they can be given a copy of the final report upon request, an important attribute noted by Bell (2010) to contribute to transparency and ethics of the work conducted.
4. RENEWABLE ENERGY TECHNOLOGIES IN SOUTH AFRICA

This work intends to look at the renewable energy programs in the Country as currently being constructed or planned under the DOE renewable energy programme. Such renewable energy IPPs include, the Eskom’s Sere Wind Farm, Ankerlig/ Gourikwa and those procured by DOE from the private sector, namely, Dorper Wind Farm, Suez Dedisa/ Avon ..

4.1 Wind Farm Projects

The wind energy has progressed reputable well after the first bid window, and so far there are five (5) wind farms in full operation and another 22 large scale wind farms still under construction (Cloete, 2014). The South African Wind Energy Association (SAWEA) boasts about the apparent success of the wind farm projects, claiming that these farms are being built on time and on budget and carry no risks to the tax payer of cost over runs or delays. Such risks are carried on by the Independent Power Producer.

The major component of a wind farm include the wind turbines, a substation, cabling required to connect to the grid, wind monitoring equipment, temporary and permanent access tracks (DLA Piper, 2012). The wind technology has been allocated a greater share under the REIPPPP project as shown in Table 1 (see section 2.3). The wind turbine blades and towers are one of the components earmarked by the government for manufacturing in South Africa in the RE programme (Eberhard, 2014).

The wind farms need to be located on sites with strong winds that are consistent throughout the year. As such, the amount of power that can be generated is largely dependent on wind availability and speed.

In the subsequent sub-sections, information and data is given on the privately owned Dorper wind farm as selected in this study for comparative analysis of its build program to that of the Eskom built Sere wind farm. A summary of the key findings in the subsequent section is given in Table 3 below;
Table 3: Summary of the Wind Farm projects development

<table>
<thead>
<tr>
<th></th>
<th>Eskom Sere Wind Farm</th>
<th>Dorper Wind farm</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capacity</strong></td>
<td>100 MW</td>
<td>100 MW</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Cost</td>
<td>R2.4 billion</td>
<td>R2.2 billion</td>
</tr>
<tr>
<td>Overnight cost</td>
<td>$2516/kWh$</td>
<td>$2182/kWh</td>
</tr>
<tr>
<td>Investment Cost</td>
<td>R24 /kW</td>
<td>R22 /kW</td>
</tr>
<tr>
<td>Price</td>
<td>77c/kWh</td>
<td>114c/kWh</td>
</tr>
<tr>
<td><strong>Time to COD</strong></td>
<td>30 Months (World Bank, 20110</td>
<td></td>
</tr>
<tr>
<td>Commissioned COD</td>
<td>December 2014 (expected)</td>
<td>March 215 (expected)</td>
</tr>
<tr>
<td><strong>Delays</strong></td>
<td>~ 17 Months</td>
<td>On time</td>
</tr>
<tr>
<td>Initial expectation</td>
<td>COD: October 2013</td>
<td>(18 months)</td>
</tr>
<tr>
<td><strong>Procurement</strong></td>
<td>International competitive bid for EPC and O&amp;M contracts – followed World Bank guidelines on procurement</td>
<td>Preferred bidder in REIPPPP bid window 1</td>
</tr>
<tr>
<td><strong>Contracting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project company</td>
<td>Eskom</td>
<td>Cennergi IPP</td>
</tr>
<tr>
<td>Contractor</td>
<td>Siemens Wind Power A/S</td>
<td>Nordex</td>
</tr>
<tr>
<td>Operation</td>
<td>5 year O&amp;M contract with Siemens Includes electrical &amp; civil BOP</td>
<td>20 year PPA signed with Eskom in November 2012</td>
</tr>
<tr>
<td><strong>Ownership</strong></td>
<td>Eskom</td>
<td>Sumitomo Corporation (60%)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rainmaker Energy Company – 15% BEE consortium (25%)</td>
</tr>
<tr>
<td><strong>Financing</strong></td>
<td>World Bank Loan (32.4%)</td>
<td>(40/ 60 split between local and foreign funding)</td>
</tr>
<tr>
<td></td>
<td>AfD (36.7%)</td>
<td>70% debt financed</td>
</tr>
<tr>
<td></td>
<td>AfDB (26.8%)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Development cost (Eskom)</td>
<td></td>
</tr>
<tr>
<td><strong>Turbine type</strong></td>
<td>46 x Type SWT-2.3-108 turbines (2.3 MW turbines)</td>
<td>40 x Nordex 2.5 MW turbines</td>
</tr>
<tr>
<td><strong>Capacity Factor</strong></td>
<td>26 %</td>
<td>32.8%</td>
</tr>
</tbody>
</table>

1Note, there is considerable price decrease in subsequent bid windows, 66c/kWh in the 3rd round.
2Source (SANews, 2013).
Other important variable for consideration was the socio-economic benefits of the projects. The REIPPPP have requirements on socio-economic development goals expected from the IPPs and need to be agreed on in the IP agreement.

By contrast Eskom does not have any socio-economic agreement signed with its funders, namely, the World Bank and thus, does not get monitored on its socio-economic development. Eskom as well has another added advantage in that it can always request a waiver in the application of some of the PFMA requirements such as the Preferential Procurement Regulations.

4.1.1 The Eskom’s Sere wind farm

Introduction
The Sere wind farm situated in Vredendal, Western Cape is the first commercial scale wind energy project to be developed by Eskom in its plan to demonstrate commitment to reducing its carbon footprint. The Sere wind farm has a total capacity of 100 MW and the initial expectation was for commercial operation in October 2013, a year later after a projected starting of project construction in 2012.

Financing
The Eskom COP17 fact sheet reports that the project has multiple funders, namely, World Bank, the African Development Bank (AfD), French Development Agency (Agence Françoise de Development(AfDB)), and the Clean Technology Fund (CTF). The total cost of the project is currently R2.4 billion. The renewable energy funding from the World Bank is a portion of the US$3.75 –billion Eskom Investment Support Project, approved in 2010 to support the Medupi coal-fired station. The World Bank allocated US$ 260 million (~R2.6 billion) for renewable energy, that is, for the Sere 100MW wind farm and a planned 100MW concentrated solar power. In essence one of the considerations used by the World Bank in approving the loan was that Eskom promised to invest alongside coal plants in renewable energy (World Bank, 2012).

The cost of the Sere wind farm project includes the construction of a new substation and a 132 kV distribution line.
The funding split for the Sere wind farm is as follows; World Bank (32.4%), AfD (36.7%), AfDB (26.8%) and the development costs are carried by Eskom (Creamer, 2013). Considering the contracting structure adopted for this project as agreed with the World Bank, the Eskom responsibility is reduced to basic services such as fencing, security, canteen, accommodation, temp supply, furniture, and others (World Bank, 2011). Thus, one can safely assume that owner’s cost is less than 10% of the total project cost, and thus has little impact on the investment cost.

The proposed loan terms following the World Bank lending processes state that the loan should be US dollar base and has a 40 years maturity, 5-year disbursement period, 10 years grace with a service charge of 0.25 percent per annum and a one-time management fee of 0.25 percent.

Eskom still has access to more of the renewable energy funds; see Appendix C which shows a total of about 1.5 billion US dollars (~ R15 billion rands) that has been secured by Eskom for its renewable energy projects.

**Time to Commercial Operation Date**

Eskom has recently announced that the first seven wind generators of the Sere wind farm have been synchronised to the grid and the project is on track for full commercial operations by end March 2015 (Eskom, 2014). The target date for the completion of construction is now December 2014, that will be the complete integration of 46 wind turbines into the grid. The 2015 COD signify a delay of almost 17 Months from the initial expected October 2013 operation date stated in the Eskom COP17 fact sheet.

Project construction official started in April 2013 with site preparatory activities. The excavation for foundations of the wind turbines only started in July 2013 and the first wind turbine was erected in December 2013. By the September 2014, thirty seven (37) of the 46 wind turbine blades have been erected, and turbine foundations for the remaining turbines have been cast. Thus, it remains feasible that the project will reach COD on the projected March 2015 date.

The Eskom renewable energy general manager claimed that the generation licence approval by NERSA had been one of the causes of the project delay (Blaine, 2014). According to
NERSA (2013) the licence application was submitted by Eskom on 31 July 2012, with information and costs that was only 80% accurate. Eskom then had to amend the generation licence application of which it was resubmitted on 07 December 2012. The licence was only approved in May 2013, and thus the planned commercial operation date of 2013 was not going to be met.

It was the second time that Eskom was applying for the generation licence application for the Sere wind farm; the first application was done in November 2007 and was subsequently withdrawn by Eskom before NERSA approval, pending a revised business case. World Bank (2011) notes that this earlier withdrawal was due to Eskom lack of financing at that time. Nevertheless, Eskom gained some valuable experience in that first round. A public hearing was held in that first application and additional information was then requested from Eskom following such hearings. Thus, in the second time Eskom was in a better position from lessons learnt in the first public hearing. That the information submitted in the second licence application was only 80% accurate even after the lessons learnt in the first application, can be blamed to Eskom’s not adhering to requirements or inadequacy of NERSA’s generation licence application guidelines.

In the public hearings held by NERSA on the 13 February 2013 with regard to the second time Eskom licence application, no objections were received from the public.

There were still other technical non-conformances in the information provided by Eskom to NERSA, and these might have also contributed to the apparent delay in NERSA granting of the generation licence. According to NERSA (2013), these non-conformances were the following:

1. The application was for 105.8 MW (46 wind turbines each rated at 2.3 MW), and this was more than the 100 MW allocated in IRP2010 for the Sere wind farm
2. The turbine specifications did not comply with what was approved in the Environmental Assessment (EA). In this Eskom had to apply for amendment of the EA Record of Decision (RoD)
Contracting

The Sere wind farm is constructed in partnership with the international energy technology group, Siemens Wind Power A/S and will consist of forty six type SWT-2.3-108 wind turbines. According to Eskom (2013b), a turnkey contract was awarded to Siemens for the supply, construction, commissioning, operation and servicing of the wind farm for a period of five-years after commissioning. Thus, Eskom has further entered into an O&M contract with Siemens (NERSA, 2013) in a deal that also includes full electrical and civil balance of the plant (Nemaxwi, 2013).

Creamer (2013) notes the contract split, where the turbine contract comprises the bulk, about 65% of the project’s total capital expenditure, and the remaining capital is for the other main contract for the supply, installation and commissioning of a 132 kV transmission line and a substation. The contractors for the four phases of the Sere wind farm project are shown in Table 4.

Procurement Strategies and Processes

As stipulated in the financing conditions, the procurement for the Plant Design Supply & Installation, Construction Contracts and Consultancies for the power plants had to be carried out in accordance with the World Bank’s Guidelines. The procurement for the Sere wind farm followed an international competitive bid for supply and installation, as well as for the balance of plant. The Procurement strategy included three procurement packages and one consultancy for the Owner's Engineer, see Table 4. Eskom is responsible for the other logistics such as fencing, security, canteen, accommodation, temp supply, furniture, and others (World Bank, 2011).
Table 4: Procurement packages for the Sere Wind Farm

<table>
<thead>
<tr>
<th>Contract</th>
<th>Procurement Method</th>
<th>Preferred company</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Design, Manufacture, Supply, Transport, Erection and commissioning of Wind Turbine Generators including WTG foundations, interlinking roads, crane pads design and construction. 33kV Collection system from the WTG to Substation.</td>
<td>International Competitive Bidding (ICB) - Supply and Install (S&amp;I).</td>
</tr>
<tr>
<td>2</td>
<td>Civils package- supply &amp; construction of main access road, substation building, other earthworks, visitors centre and O&amp;M buildings</td>
<td>ICB – Works</td>
</tr>
<tr>
<td>3</td>
<td>Substation (Switchgear and switching yard) Supply &amp; installation of a 132kV distribution line to Juno S/S. Long Lead items (temporary supply, TRFS, 33kV breakers, pylons)</td>
<td>ICB – S&amp;I</td>
</tr>
<tr>
<td>4</td>
<td>Consulting Services- (Architect consulting party/ Project Management)</td>
<td>Quality &amp; Cost Based Selection (QCBS)</td>
</tr>
</tbody>
</table>


An EPC contract was subsequently awarded to Siemens with a total value of R1.8 billion. The contract with Siemens included a 5 year O&M contract as well as electrical & civil BOP.

Pricing

The expected cost per kilowatt (c/kWh) to consumers is 77c, far below the 114.3 c/kWh achieved in the first REIPPPP bid window, and comparable to the 89 c/kWh in the second bid window, but higher to the 66 c/kWh of the third bid window (Blaine, 2014).
Social, enterprise and economic development
The Sere wind farm project has created 580 jobs during peak construction and will employ about 10 people during the operation and maintenance phase.

4.1.2 Private Dorper Wind Farm IPP

Introduction
The Dorper wind farm is a privately owned 100 MW wind energy plant situated between Molteno and Sterkstroom, Eastern Cape. This wind farm was selected as a preferred bidder in the first window of the REIPPPP bids run by DOE. The Power Purchase Agreement has since been signed between the IPP and Eskom in November 2012, and the wind farm commenced commercial operation in July 2014.

In the NERSA public hearing presentation it was reported that the Dorper wind farm project obtained environmental authorisations without any objections, and this is attributed to local community ownership and full support given to the project. The developer for the project, Rainmaker Energy has environmental approval for over 500MW of wind power, and the Dorper Wind Farm constitutes the first 100MW phase of the five phases considered in the so called ‘Stormberg’ wind project (Business Chamber, NMB).

Financing
The project cost was R2.2 billion, and 70% (~R1.6 billion) of it had been debt financed. The financial debt was arranged through local banks, namely, ABSA Capital and Nedbank Capital; and international bank Sumitomo Mitsui Banking Corporation Europe. The project equity is provided by a Japan private company Sumitomo Corporation (60%), and two local players, Dorper Wind Development (Pty) Ltd (a Rainmaker Energy Company - 15%) and a BEE consortium (25%) comprised of broad and narrow based black economic empowerment investors. Rainmaker Energy is a South African wholly owned company and has been involved with the development of the Dorper project since 2009. The Rainmaker Energy has set up the Dorper Wind Development (Pty) Ltd Company to develop this wind farm. The 40/60 split between the local and foreign based funding is consistent with the qualification requirements under the REIPPPP bid process (Eberhard, 2014).
The investment costs which is given by the ratio of the capital cost (R2.2 billion) over the Maximum capacity (100 MW) amounts to R22 /kW. This is comparable to the IEA (International Energy Agency) and NERSA’s approved 2009 REFIT rates. The after tax real Internal Rate of Return (IRR) for the project is 16.04%, a little less than the 17% benchmark in the REIPPPP bid programme, but good enough to provide an attractive financial investment option.

**Time to Commercial Operation Date**
The Dorper wind farm reached the COD on the expected date of July 2014. The study found out that all the IPPs in round 1 (that is, those that have been completed), have all been built within the allocated and agreed upon 18 Months period. The reasons for the on-time delivery of these IPPs by the private sector are alluded to various reasons, that are based in that the contractors/ or developers are duly responsible and will carry any cost overruns.

**Contracting**
The Cennergi independent power producer awarded three turnkey projects to Nordex for the Dorper wind farm (100 MW), Koega wind farm (80 MW) and Amakhala Emoyeni wind farm (134.4 MW) in the Eastern Cape. These EPC contracts include long-term service and maintenance agreements after project completion. Nordex is an experience supplier and has more than 5,300 turbines in operation worldwide with a net capacity of about 8,600 MW (ESI-Africa, 2013).
The Dorper wind farm consists of 40 x Nordex 2.5 MW Turbines and has a 20 years generation life. Subsequently, the Dorper wind farm project had signed a 20 year PPA agreement with Eskom in November 2012.

**Procurement Strategies and Processes**
The Dorper wind farm has been selected as the preferred bidder in the first round of the REIPPPP bidding program. There requirements under the RFP in the REIPPPP programme were met by all the IPPs. The required localization split of 70/30, foreign versus local industry was met and exceeded in bid
windows 2 and 3. The local content in the RFP requirements had been increasing with each subsequent bid window from a local content scoring requirement of about 25% in the first bid window, 35% and 40 % in subsequent bids.

Other requirements such as procuring from BEE and women owned businesses were also met. In the quarterly reports expected from the IPPs, the first interview participants noted that at times they could not meet the preferential procurement from women owned businesses, and they will be penalized by DOE. But then the termination points given to them by DOE as penalty would be met and overpassed by the credits gained in the next quarter. In all the IPPs currently in operation phase or still in developing, not even one has obtained more than 9 termination points in a consecutive 12 month period that will warranty the cancellation of the IP contract.

**Pricing**

The tariff for the Doppler Wind Farm is R1.14/kWh and is the same as the ceiling tariff in the REIPPPP bid program. The have been a significant drop in prices with the consecutive bid windows, with the 3rd bid window tariff at R0.66/kWh. There are further speculations of further decrease in tariffs with the 4th bid window.

**Social, enterprise and economic development**

The local communities in the 50km radius of the wind farm are represented by the Molteno and Sterkstroom Community Development Trust that has been setup the Dorper Wind Farm. The trust has got an 80% stake in the Dorper Wind Farm BBBEE Holdings (Pty) Ltd, and this works out to 10.2% equity stake in the wind farm project. The Trust has a variety of initiatives whose aim is to address social, enterprise and economic development and these are to be funded by income derived from its ownership stake in the project (Business Chamber, 2013). Furthermore, the IPPs are mandated by the IA agreement signed with DOE to contribute 1.5% of its revenue towards socio economic development initiatives.

The Dorper wind farm project is said to have created 118 employment opportunities during the construction phase. In the 20 years operation phase, it will create permanent jobs for 6 people.
4.2 Peaking Power Generation Build Projects

The decision by the South African cabinet on procurement of OCGT peaking plants both by then Department of Mineral and Energy (DME) and Eskom came at almost the same time in 2004. A summary of the findings on key project determinants is given in Table 5 below.

Table 5: Comparative data on the Eskom and IPP owned OCGTs

<table>
<thead>
<tr>
<th></th>
<th>Eskom OCGTs</th>
<th>DOE Peakers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ankerlig</td>
<td>Gourikwa</td>
</tr>
<tr>
<td><strong>Capacity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Phase 1: 4 Units</td>
<td>3 Units</td>
</tr>
<tr>
<td></td>
<td>Phase 2: 5 Units</td>
<td>2 Units</td>
</tr>
<tr>
<td><strong>Capacity / Station</strong></td>
<td>1332 MW</td>
<td>740 MW</td>
</tr>
<tr>
<td><strong>Costs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project Cost</td>
<td>Phase 1: R3.5 billion</td>
<td>Phase 2: R4.2 billion</td>
</tr>
<tr>
<td><strong>Investment cost</strong></td>
<td>R3716/kW</td>
<td>R10 845/kW</td>
</tr>
<tr>
<td><strong>Cost overruns</strong></td>
<td></td>
<td>R2.9 billion (Initial cost R8 billion in 2011)</td>
</tr>
<tr>
<td><strong>Time to COD</strong></td>
<td>18 Months/ phase for both stations</td>
<td><strong>30.5 Months</strong> (Avon)</td>
</tr>
<tr>
<td><strong>Procurement</strong></td>
<td>Issue EPC contract</td>
<td>International competitive bid led by DOE – failed (EPC contract terminated)</td>
</tr>
<tr>
<td></td>
<td>(three-way bidding contest)</td>
<td></td>
</tr>
<tr>
<td><strong>Contracting</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Project company</td>
<td>Eskom</td>
<td>GDF-Suez Consortium</td>
</tr>
<tr>
<td>Contractor</td>
<td>Siemens</td>
<td>Ansado Energia and Fata (Italy)</td>
</tr>
<tr>
<td>Owner’s engineer</td>
<td>Eskom</td>
<td>Merz and McLeLLan engineers</td>
</tr>
<tr>
<td>Operation</td>
<td></td>
<td>15 year PPA signed with Eskom</td>
</tr>
</tbody>
</table>

¹The price and time to COD expected at the 2005 announcement of the five bidders for the peaking plant was R6 billion and 18 Months, respectively (South Africa.info, 2005).
4.2.1 The Eskom Ankerlig/ Gourikwa Peaking Power Plants

The Ankerlig and Gourikwa Power Stations, both situated in the Western Cape, are Open Cycle Gas Turbines (OCGT) types that are fired by diesel. These OCGTs plants are mainly used by Eskom to supply electricity to the grid during peak hours and emergency situations. Both of these plants have been built in two phases of approximately 18 Months each.

Financing

The total cost for Phase 1 of Ankerlig and Gourikwa Power Stations was R3.5 billion and R4.2 billion for Phase 2. In taking the total capacity of the two Eskom peaking plants, the investment cost amounts to R3 716/kW.

Contracting

The contract for the design, manufacture, supply, delivery, installation, commissioning and testing of both Ankerlig and Gourikwa OCGT units was given to Siemens, a Germany based multinational company after a three-way bidding contest. Siemens was subsequently appointed to be the head contracting company of the three-way split project between two sites in the Western Cape, and these are Mossel Bay and Atlantis sites (Naidoo, 2006).

The overall OCGT project management was done by Eskom, and this included civil engineering and construction. The other main contractors for both Ankerlig and Gourikwa power peaking plants are given in Table 6 below.

<table>
<thead>
<tr>
<th>Siemens</th>
<th>Power Island</th>
</tr>
</thead>
<tbody>
<tr>
<td>Roshcon</td>
<td>Civil design, works and buildings</td>
</tr>
<tr>
<td></td>
<td>Electrical cabling, lighting, construction supply and electric fence</td>
</tr>
<tr>
<td>Lesedi</td>
<td>Mechanical balance of plant including fire protection, fuel unloading</td>
</tr>
<tr>
<td></td>
<td>and forwarding, compressed air</td>
</tr>
<tr>
<td>Interns, Diesel Electric, and VWS Envig</td>
<td>Fuel and water tanks, Emergency diesels, and Water treatment plant</td>
</tr>
<tr>
<td>Sawren and Ikaneng</td>
<td>Ankerlig and Gourikwa HV Yard civil works</td>
</tr>
<tr>
<td>Alstom</td>
<td>400 kV circuit breakers and isolators</td>
</tr>
</tbody>
</table>

Source: Eskom website (Eskom, 1b).
Time to COD

The time to commercial operation for both of the Eskom peaking power plants was 18 Months and this has been achieved without any delays.

Construction of the first phases of both Gourikwa and Ankerlig peaking power plants commenced in January 2006 and were handed over for commercial operation by June 2007. The second phase of Gourikwa was handed over for commercial operation in November 2008, and second phase of Ankerlig power plant reached commercial operation in February 2009.

On completion of the first phase for the two plants, the then Eskom CEO declared in the media that, “we completed the project in record time. This is an important achievement for Eskom’s capacity expansion programme”, Hill (2007).

It is reported in the Eskom Fact sheet (Eskom, 1b), that the major component of the two power stations was their integration with the electricity grid. It required the construction of new substations and a 400 kV distribution line. The substations were built on record time of 8.5 months as opposed to the norm of 13 to 16 months.

Procurement Strategies and Processes

In trying to meet the ever increasing energy demand, the South African cabinet in 2004 decided on the Eskom procurement of OCGTs through competitive bidding. There were about six contractors selected through competitive bidding process, see Table 6, and Siemens was appointed to be the lead contractor. Eskom had to abide by the 90/10 foreign versus local procurement warranted in the PFMA.
4.2.2 The Suez Dedisa/ Avon Open Cycle Gas Turbine IPPs – DOE

The two OCGT facilities were procured under the Department of Energy’s Peaking Power Generation Project (the so called “DOE Peakers” project). The two peaking power plants were developed and are privately owned by an international company, IPR – GDF SUEZ. The company has subsequently established two companies, namely, AVON Peaking Power (Pty) Ltd and DEDISA Peaking Power (PTY) LTD for the sole purpose of project management and ownership. The two peaking plants, DEDISA and AVON are situated in the Eastern Cape Province and Kwa-Zulu Natal Province, respectively.

The Avon power plant comprises of four units of 167.5 MW each, and thus a total capacity of 670MW, whilst the Dedisa power plant has half the number of units, with a total capacity of 335 MW.

Financing

The combined total cost of the two OCGTs is about €780-million (~ R10, 920 billion ZAR, exchange rate of 14 ZAR/€), Creamer (2013).

The project shareholding structure is 38% by IPR – GDF SUEZ, 25% by Mitsui & Co Ltd, and the balance 37% is local BEE & BBBEE partners. The 37% by local BEE and BBBEE partners is comprised of 27% owned by Legend Power Solutions and 10% by The Peaker Trust.

The funding for these IPP peaking plants has been facilitated by mandated lead arrangers (MLAs) Nedbank, Investec, Absa and the DBSA, and MLAs Rand Merchant Bank and Sanlam, who negotiated and developed the project finance documentation. Nedbank Capital was the biggest contributor in the consortium responsible for underwriting R2-billion of the project’s senior debt (Creamer, 2013). The projects reached financial close in August 2012, and construction started in September 2012.

The price and time to COD expected in the first announcement of the five bidders for the peaking plant in 2005 was R6 billion and 18 Months, respectively (South Africa.info, 2005). Later on the mail & guardian reported a figure of R8 billion in 2011, and thus the final cost of approximately R11 billion given by Donnelly (2011) implies a cost overrun of more than 35% from the 2008 figure.
A comparative analysis of Eskom’s new power stations and IPPs

Research Report – 2013/2014 MBA Modular

Contracting

Both of the projects were built under **build, own and operate (BOO)** agreement with GDF SUEZ consortium comprising of GDF SUEZ (38%), Legend Power Solutions of South Africa (27%), Mitsui of Japan (25%) and The Peaker Trust that represents BEE and community interest (10%), (Creamer, 2013).

The consortium had then signed a 15 year PPA with Eskom in June 2012. The owner’s engineer for the two OCGT’s is a South African engineering firm Merz and McLellan, and is responsible for engineering and construction monitoring services. The turnkey EPC contractors are Ansado Energia and Fata of Italy. Ansada Energia will supply the six AE94.2 gas turbines, associated generators and auxiliary systems of the two peaking plants. Fata is responsible for the mechanical and electric systems, substation construction and the interface with the grid, fuel storage and distribution and a water treatment plant (Cremer, 2013).

Time to COD

The construction duration or time to COD had been initially projected to be 30.5 Months and 24 Months for the AVON and DEDISA facilities, respectively (IPR – GDF SUEZ, 2011). Commercial operation for Dedisa is now expected in 2015 and for Avon in 2016 which signify some considerably delay from the initial planned time to COD.

The delay experienced by both of these OCGT plants is said to be largely attributed to DOE changing of an earlier selected AES-led consortium (terminated in April 2008) to the current GDF Suez consortium.

The questions to ask is what might have caused a further delay after GDF Suez consortium took over, note that the project only reached financial close in August and September 2012. According to Williams (2014), the construction of Dedisa started in September 2012.

Procurement Strategies and Processes

The South African cabinet decided on procurement of OCGTs in 2004 through competitive bidding. Subsequently in 2005, the DME announced there were five consortia that qualified for the rights to build, own and operate (BOO) two OCGT peaking plants. The five applicants were AES, comprising black-owned Tiso Energy and Lereko Energy; Inkanyezi, which
included French company Suez Energy and Mvelaphanda Holdings; Tata-J&J Consortium; the Malaysian YTL-led consortium; and the International Power Consortium (South Africa.info, 2005). According to the statement by DME, the preferred bidders were to be announced in June 2006, and construction to commence in the first quarter of 2007.

An article in the Mail&Guardian (Donnelly, 2011) reported that only two applicants submitted bids at the start of the bid process in 2008. One of the applicant AES Khanya was subsequently selected as the preferred bidder after the other applicant GDF Suez bid was judged con-compliant. But then negotiations with AES Khanya broke down and DME then entered into direct negotiations with the GDF Suez consortium that was later to be given the contract (Pickering, 2011). The reason given by DME for deviation from an open-tender process was the urgency to rescue the critical state of the country’s power grid that was under severe pressure (Donnelly, 2011). The then energy minister and Nersa granted the generation license to these OCGT plants even though it was clear that the procurement was not done in a fair and equitable tender process as required under section 34 of the energy regulation act.
5. RESEARCH FINDINGS, ANALYSIS AND DISCUSSION

The findings in this work, both from qualitative interviews and secondary information obtained from the World Bank and other articles on renewable energy, points to comparatively advantages of the public and the private sector with new build of power generation plants. The findings are discussed below under the various topics, namely, financing, contracting, time to COD, procurement strategies and processes, and pricing.

5.1 Wind Farm Projects

5.1.1 Financing

The Eskom financing of the Sere wind farm is cheaper than that of the privately owned Dorper wind farm due to the low interest rates offered by the World Bank. About a third of the Eskom loan is financed through the World Bank.

The investment costs in the Sere wind farm project is likely higher than one for the Dorper wind farm project and this may be attributable to the contracting nature used by Eskom. The project cost of the Sere wind farm project includes the construction of a new substation and a 132 kV distribution line.

The investment costs of the two wind farm projects are comparable to the IEA (International Energy Agency) and NERSA’s approved 2009 REFIT rates, see Table 6.

| Table 7: The tariffs for the Eskom Sere and Dorper wind farms |
|---------------------------------|------------------|-----------------|-------------------|
| IEA Study                       | NERSA REFIT 2009 | Sere Wind Farm  | Dorper Wind Farm  |
| (1.901 – 2.745) US$/kW          | 2.255 US$/kW     | R2/kW           | 2.682 US$/kW 1    |

1Exchange rate used US$1 = R8 (Source: NERSA (b)).

i) What are potential advantages between project and corporate financing?

The state utility has access to cheaper form of corporate finance than with the private utilities. But then such kind of balance sheet financing needs government guarantee, and at most time the use of public funds in the forms of Tax and Pensions.
The incapability of Eskom to build on time has led to excessive cost overruns in the past and current build programmes, and this has to be paid by the public in the form of increased tariffs and taxes.

In that the local commercial banks and some foreign funding of IPPs had been greatly involved in the funding of the IPPs should be a great benefit and save government to the huge costs overruns such as that experienced with the Medupi and Kusile coal stations.

In the IPPs, costs overruns are paid for by the project company, and the public (through Eskom Power Purchase Agreement) only pays for the electricity used. Thus, the introduction of the private sector in energy generation greatly relieves the Government from funding obligations and Eskom borrowing requirements.

Interview participant 2 does emphasise this great benefit of IPPs by declaring;

“But, of more notable, is the huge savings with IPPs, where cost overruns are incurred by the concerned IPP. “Eskom pays only for the electricity, at an agreed price with an agreed escalation rate, for a twenty year period”, in accordance with the PPA agreement”

ii) Is the government fear of the riskiness’s of having many small projects financed by individual project financing justifiable?

Although it was not possible to have this question answered by someone from DOE, one can deduce that such fears by the government sprang from the notion that they would lose their control of the country’s electricity sector. Another draw back from IPPs dependence on foreign funding is that of the net exposure to foreign-exchange fluctuations which is outside government control. A weakening local currency may lead to IPPs not able to service their debts, and thus subsequently fail on delivering on their promise under PPAs, unless initial tariffs agreed on electricity prices are revised and raised. The higher debt costs of the IPPs, driven by their desire to maximize debt leverage exposes the projects to risks of large debt servicing as noted by Wiser (1998) as one of the negatives of project financing.

In the South African REIPPPP programme, various steps have been taken to limit the exposure of IPPs to currency fluctuations. One of the qualification requirements under the REIPPPP bid process is that of a 40/60 split between the local and foreign based funding (Eberhard, 2014). A big chunk of the debt (~86 %) for the first three bid windows has been raised
within South Africa and so the is limited exposure to exchange rate fluctuations. But on this interview participant 2 noted a worrying trend where initial local investors in the IPPs are reselling their shares to foreign investors, in the quest to free up their money for investing in future projects. This changes the 40/60 initial split in funding, with foreign funding taking a bigger share and thus leaving the IPPs exposed to foreign-exchange fluctuations.

Another foreseeable reason for government reluctance of full deployment of IPPs, is the poor track record of private firms in fulfilling their social responsibilities. One particular example noted by interview participant 2, is that workers unions like SACP are wary of jobs losses and poor social developments that normal characterize the private sector firms in South Africa. The is general a mistrust of the private sector in their dealing with social problems, and the unfortunate Marikana incidents further fuelled this air of mistrust.

But, still this concern does get addressed under the requirements of the RFPs in the REIPPPP programme, where IPPs have committed to set targets on localisation and social development, including job creation. The projects are required to report on a quarterly basis, and there breach of such agreements on social development gets penalized. So, what is required is the regulation and enforcement of the agreed upon commitments under the DOE IP agreement.

5.1.2 Time to COD

i) What are the significant reasons that most IPPs are built on time while Eskom experiences significant delays?

The Dorper wind farm has been completed within the 18 Months period agreed to in the PPA agreements. On the other hand the Eskom Sere wind farm project has experienced about 17 Months delay from the initial planned date of COD. The Eskom project delay is largely blamed to inefficiencies within Eskom in their application for a generation licence with NERSA. Eskom submitted inaccurate information and costs that that was only 80% accurate. Secondly, there were technical non-conformances identified, with inconsistent information to that given during Environmental Assessment process. As the were no such problems experienced with the IPPs in the first REIPPPP bid window, one can conclude that there are significant project management skills deficiencies at Eskom.
The other possible reason for the on-time delivery of the renewable energy projects by the private sector is the realisation that the contractors/ or developers are duly responsible and will have to carry cost overruns. Furthermore, the project company is accountable to the private financial institutions, the PPA agreements and to other various stakeholders to deliver the project on time, and will have to compensate for any project delays. The contractors have to build the plant at a fixed pre-agreed upon costs and they bear the risks of any cost-overruns. The project managers are under utmost pressure from investors who wants to see return on their investments.

As alluded to in the literature review section, the managers in private firms seems to have different goals to those of the SOEs. The repetitive project delays with no actions taken against the responsible managers points to serious lack of accountability in the SOEs. As Nguyen (2006) puts it, there is no threat of bankruptcy and liquidations for SOEs as it is with the private firms and that together with the lack of outside monitoring might be the lead cause in the apparent failures of Eskom to deliver projects on time. Such a trend is evident in all Eskom new builds, and that include the Medupi and Kusile coal fired stations, whose completion date is constantly shifted and the projects are some few years past their initial intended COD date, and there is still no end in sight.

**ii) What seems to be the major constraints holding back Eskom from delivering projects on time**

The two interview participants from IPPs, agreed that there seems to be poor contract management at Eskom. The long delays with Medupi and most of Eskom new builds is a serious concern that signify some serious skills shortage and incapability to manage new build programmes.

Another potential reason identified by interview participant 2 is the fact that in big utilities, the long lines of approvals and/or authorization can as well lead to project delays.

Eskom long delays to COD would have on its own accumulated enough termination points to be cancelled should the Sere wind farm project had been subjected to the same conditions in the RFP under the REIPPPP programme.
5.1.3 Contracting

Both Eskom and the IPPs make use of foreign EPCs for all design and engineering work, while for the balance of plant the local EPCs are utilised. The lenders in IPPs prefer wrapped contracts but in round 1 and 2 IPPs, the lenders agreed to consider split contracts, and this according to the first interview participant, was made possible by the lenders’ trust in the experience and good track record of the project developers. The success and timely delivery of the first round of IPP power plants points to the capabilities of the IPPs project company in managing split contracts, a skill that seems to be lacking at Eskom. The Medupi and Kusile project delays and subsequent cost overruns are most attributed to the Eskom poor management and oversight role on its contractors.

The EPC for both the Sere wind farm and Dorper wind farm projects include long-term service and maintenance agreements after project completion.

5.1.4 Procurement strategies and processes

The Eskom procurement had to follow the World Bank rules on procurement and these do not necessarily stipulate on the localisation content, leaving to the company to decide. The first REIPPPP bid window required a localization split of 70/30 and the local content requirement has been increasing, 35% and 40% in subsequent bids. Thus, there is a strong drive for the IPPs to contribute to the local industry development. There IPPs are subjected to other preferential procurement requirements similar to those in the PFMA.

Eskom as a state utility is subjected to the PFMA procurement requirements, which do not explicitly state the localisation content required. In the Sere wind farm there have not been any localisation attempts, as to the manufacturing of the turbines or other associated small components. Thus, one can conclude that the IPPs can better meet the local industry requirements objectives of the government through competitive bids, and higher emphasize in the bids evaluation placed on localisation.

5.1.5 Pricing

The tariff for Eskom owned Sere Wind Farm is lower at 67% that of the Dorper wind farm, but is higher than that attained in the 3rd REIPPPP bid window. The decreasing trend in tariff
with each successive bid does indicate some form of confidence by investors in the REIPPPP programme and hence there is less risk costing. The now lower price of the Sere wind farm will be higher in comparison to the prices of the selected bids in offshore wind of the 3rd REIPPPP bid window, see Table 8.

Table 8: Tariff analysis and comparison

<table>
<thead>
<tr>
<th>Refit 2009 (R/kWh)</th>
<th>REIPPPP Bid Cap (R/kWh)</th>
<th>Sere Wind Farm (R/kWh)</th>
<th>Dorper Wind farm (Round 1 Average) (R/kWh)</th>
<th>Round 2 Average (R/kWh)</th>
<th>Round 3 Average (R/kWh)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.25</td>
<td>1.150</td>
<td>0.77</td>
<td>1.14</td>
<td>0.897</td>
<td>0.656</td>
</tr>
</tbody>
</table>

The competitive bidding in the REIPPPP is an important catalyst for price reduction, and hence potential to beat Eskom on lower tariffs.

5.1.6 Social, enterprise and economic development

Eskom has no set target on its social and economic development of the immediate community to the plant, as with IPPs who are required to demonstrate their commitments and report feedback on quarterly bases as per IA agreement signed with DOE.

The commitment to social and economic development is something most welcomed by the community, and this makes the projects to be easily acceptable as the community have some sense of ownership. This is demonstrated by the approval of the Environmental Assessment with no rejection for the Dorper wind farm.

Table 9: Data on the Sere and Dorper social developmental contributions

<table>
<thead>
<tr>
<th></th>
<th>Eskom Sere wind farm</th>
<th>Dorper wind farm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peak Construction</td>
<td>580</td>
<td>118</td>
</tr>
<tr>
<td>(Temporary jobs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operation phase</td>
<td>10</td>
<td>6</td>
</tr>
<tr>
<td>(Permanent jobs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other social benefits</td>
<td>No community stake in the project or revenue. Wholly owned by Eskom</td>
<td>10.2% equity stake by the local community &amp; 1.5% revenue share.</td>
</tr>
</tbody>
</table>
One might argue that Eskom is in a better position to re-train and keep its huge peak construction temporary workers employed in other areas of the business. But with Eskom currently in the news with proposal of staff reductions, it is unlikely that the temporary employees will be absorbed in the system after the Sere wind farm completion. Thus, the IPPs are better at serving the needs of local community, especially with the part project ownership by the community.

The study by McDain (2014) that identifies the apparent failure of IPPs in meeting their social developmental goals calls for more control and monitoring by the government. The first interviewee participant attributes such failure to the fact that the foreign EPC contractors have little knowledge of the local environment and community needs. The DOE does not seem to have a good measure of the IPP’s actions adopted in trying to meet the social development targets.

Eskom on the other side might have better chances of attending to the social needs of immediate community (the REIPPPP stipulates a set radius of 50km from the plant) through its well-developed Corporate Social Responsibility (CSR) programme and better knowledge of local community needs. But the lack of ownership of the Eskom project by the local community places the IPPs above Eskom in getting community approval.

5.1.7 General Comments

As Eskom gets mandate from government, with the DOE taken over the responsibility of electricity planning. The new builds by Eskom is in essence a plan by the South African government. In addition to the reasons already alluded to here, that is, fear of losing control with many IPPs privately funded, concerns of job losses and other social issues, there might be other ambitions by the government to grow the utility into a powerful, autonomous big businesses that can compete globally. According to Nolan (1999) this is the strategy by Chinese utilities in the quest to be international players. Eskom is currently exporting some of its electricity, and so there might be ambitious goals of making Eskom a regional leader in electricity supply.

The first interview responded in this study gave his own version from that of a government trying to maintain the monopoly of power generation by Eskom. He refers to what look like a
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**Figure 4:** The trends in the new build program as planned by the DOE (Pickering, 2013).

This notion of the government shifting of new builds from public to private sector is further strengthened by the DOE apparent plans to issue an RFP for “Coal Baseload” IPP. According to Creamer (2014) the bid submission date is likely to be in the first quarter of 2015. Such a Coal baseload would signify a major change and reduction of Eskom monopoly in the energy sector.

**Further comments on Eskom involvement in the build program**

Some interesting answers given by Doug Kuni, the then managing director of the South African Independent Power Producers Association (SAIPPA) in an interview by Chris Yelland, managing director of EE Publishers (Yelland, 2009) are given below;
“Do you believe that Eskom can be an honest broker as a generation project specifier, evaluator, adjudicator, power purchaser and competitor of IPPs, or is the conflict of interest a big problem?”

There were two parts to the answer given by Doug Kuni to this question:

a) In order to ensure an efficient supply-side industry, which this country now desperately needs, there should be competition in generation – fair competition, on level playing fields – which should include the Eskom generating plant.

b) If Eskom is going to compete in generation, there is obviously a conflict of interest. This is not a good signal to IPPs. IPPs are wary of a procurement process which is run by Eskom because of the conflict of interest. The procurement of IPP power should be done by an independent and neutral entity.

“Should Eskom involve itself in wind, concentrating solar, photo-voltaic solar, small hydro and other renewable energy projects, or should this be left to IPPs?”

Renewable energy projects should be left to IPPs. The high capital costs of these projects should be project financed, and Eskom should concentrate on its own base-load programme. Eskom has enough problems to deal with, rather than putting resources into renewable energy projects.

Further support for IPPs is the existence of a risk mitigation strategy that guarantees the project success, and this is given in a presentation done by Eberhard (214b).
### Table 10: Summary table for the risks and mitigation factors for IPPs

<table>
<thead>
<tr>
<th>Phase</th>
<th>Risk</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Construction</td>
<td>• Reduced output</td>
<td>• Turnkey, lump sum, date certain contract</td>
</tr>
<tr>
<td></td>
<td>• Late completion</td>
<td>• Liquidated damages for performance failure</td>
</tr>
<tr>
<td></td>
<td>• Inefficient (high heat rate)</td>
<td></td>
</tr>
<tr>
<td>Operational</td>
<td>• Low availability</td>
<td>• Fixed fee contract with performance bonuses</td>
</tr>
<tr>
<td></td>
<td>• High operating cost</td>
<td>• Operational guidelines and penalties/ termination for performance failure</td>
</tr>
<tr>
<td>Fuel Supply</td>
<td>• Reliable fuel supply to specification</td>
<td>• Proven reserves – fixed price</td>
</tr>
<tr>
<td></td>
<td>• Adequate resources for life of project (PPA)</td>
<td>• Alternative supply obligation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Liquidated damages for delivery failure</td>
</tr>
<tr>
<td>Revenue</td>
<td>• Creditworthiness of power purchaser</td>
<td>• Long term power purchase agreements (fixed)</td>
</tr>
<tr>
<td></td>
<td>• Demand for electricity</td>
<td>• Escrow accounts</td>
</tr>
<tr>
<td>Force Majeure</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Force Majeure for unforeseen circumstances</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Usually insurable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Strikes and labour disputes usually contentious issue</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Parties to receive payments from power purchaser under Force Majeure</td>
<td></td>
</tr>
</tbody>
</table>

Source: Unpublished presentation by Eberhard on IPPs and PPAs (Eberhard, 2014b).

### 5.2 Peaking Power Generation Build Projects

The DOE peakers incurred serious cost overruns (about R3 billion) and took longer to reach COD (more than 6 years) compared to the Eskom build OCGT peaking plants. The procurement process of the DOE peakers did not follow the open tender process and this ended up with the selection of an EPC contractor that was initially judged as non-compliant. This somewhat shows that the procurement process control of Eskom works far better than DOE, as no procurement problems were experienced as well as with the tender process for the Sere wind farm.
6. CONCLUSION

The overwhelming interest shown in the first three bid windows under REIPPPP programme signifies a greater acknowledgement of the DOE led bidding programme.

On what this study aimed to find out, that is, the involvement of the state utility in the new generation build programs, there are different views in the literature, with one side against Eskom participation in the built program and another supporting active participation by the state utility. Those in support of active participation includes the findings by Nolan (1999) that stronger national utilities that can compete globally needs to be established and supported. The other camp that denounces Eskom participation in the built program includes the study findings by Pegels (2010) who advise that it may not be ideal for Eskom to invest public money in what seems to be comparatively expensive and risky renewable energy projects.

This study has found many compelling reasons on why Eskom should not participate in the renewable energy built programs, and the bases for such reasons is the notable current cost overruns with almost all Eskom new builds. The project delays to reach COD do suggest some serious lack of project management skills in the utility in setting up proper contracting terms with the contractors and in management of these contractors. Such Eskom incompetence’s is what set them apart from IPPs, who have demonstrated their capabilities in delivering projects on time and budget. Some form of accountability and monitoring by a third party may be the necessary tool lacking in the state utility that is needed to ensure increased efficiency and competency of the utility.

The competitive bidding in the procurement of the new plants under the REIPPPP programme helps in many ways and these include price reduction and attraction of other sources of funding. The government will be spared from all the project risks associated with cost overruns as these will be absorbed by the independent contractors who have better control and ability to mitigate against.

It seems that with the Sere wind farm, Eskom realised its incompetence in project management and hence the partnering with Gas Natural Fenosa, a Spanish utility and engineering company.
In the OCGT peaking plant project, Eskom appeared to have done better compared to the DOE peakers. But, then it is important to note here that the DOE open tender process for the procurement of the OCGTs remain questionable. The failure of the first tender process by DOE for OCGT highlights the DOE lack of experience in management of the competitive bidding process. The DOE has since partnered with the Treasurer and together with a panel of strong and well experienced professionals in carrying out the 1st, 2nd and 3rd REIPPPP bid process that have been widely accepted and acknowledged by both the public and the private sector.

Thus, the recommendation in this work is that all future new build procurement should be done through a similar bid process to the REIPPPP programme, and this should be transparent as possible to build private sector confidence in the bid process.

The government establishment of a single buyer different from Eskom should be considered as a matter of urgency and Eskom can participate and have its bid subjected to similar evaluation as done for the IPP bids, thus ensuring fair and equitable competition.

This will reduce the Eskom monopoly in the Country's power sector and might have other potential positive spin-offs such as the tariffs reduction and better Eskom management of future project.

It may be interesting to understand and analyse some of the reasons for the apparent hold back by the government in full deployment of the IPPs, even though they have successfully proven their competence in the renewable energy field.

Such fears by the government in having more private sector involvement, that is increasing IPP share in the national energy sector, would do a lot more harm, especially with the localisation goals that were foreseen at the start of the first bid window. The size of the market determines the profitability and gives confidence to manufacturing firms. The government need to allow greater participation of the private sector while insisting that these IPPs abide by the requirements set forth in the requests for proposals (RFPs) issued for REIPPPP tendering. Local industry development is crucial to the success of these projects and that will lead to reduced project costs and tariffs.
7. REFERENCES


A comparative analysis of Eskom’s new power stations and IPPs

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25. Eskom (1a). Renewable Energy – Sere Wind Farm Project. Eskom website:
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APPENDIX A: The existing and planned national generation capacity

A1: The existing generation capacity by Eskom and other Non-Eskom

<table>
<thead>
<tr>
<th>Project</th>
<th>Type</th>
<th>Capacity (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eskom</td>
<td>40635</td>
<td></td>
</tr>
<tr>
<td>Camden</td>
<td>Coal</td>
<td>1520</td>
</tr>
<tr>
<td>Grootvlei</td>
<td>Coal</td>
<td>372</td>
</tr>
<tr>
<td>Komati</td>
<td>Coal</td>
<td>202</td>
</tr>
<tr>
<td>Arnott</td>
<td>Coal</td>
<td>2280</td>
</tr>
<tr>
<td>Hendrina</td>
<td>Coal</td>
<td>1870</td>
</tr>
<tr>
<td>Kriel</td>
<td>Coal</td>
<td>2850</td>
</tr>
<tr>
<td>Duvha</td>
<td>Coal</td>
<td>3450</td>
</tr>
<tr>
<td>Matla</td>
<td>Coal</td>
<td>3450</td>
</tr>
<tr>
<td>Kendal</td>
<td>Coal</td>
<td>3840</td>
</tr>
<tr>
<td>Lethabo</td>
<td>Coal</td>
<td>3558</td>
</tr>
<tr>
<td>Matimba</td>
<td>Coal</td>
<td>3690</td>
</tr>
<tr>
<td>Tutuka</td>
<td>Coal</td>
<td>3510</td>
</tr>
<tr>
<td>Majuba</td>
<td>Coal</td>
<td>3843</td>
</tr>
<tr>
<td>Koeberg</td>
<td>Nuclear</td>
<td>1800</td>
</tr>
<tr>
<td>Gariep</td>
<td>Hydro</td>
<td>360</td>
</tr>
<tr>
<td>VanderKloof</td>
<td>Hydro</td>
<td>240</td>
</tr>
<tr>
<td>Drakensberg</td>
<td>Pumped Storage</td>
<td>1000</td>
</tr>
<tr>
<td>Palmiet</td>
<td>Pumped Storage</td>
<td>400</td>
</tr>
<tr>
<td>Acacia</td>
<td>Diesel</td>
<td>342</td>
</tr>
<tr>
<td>Ankerlig</td>
<td>Diesel</td>
<td>1322</td>
</tr>
<tr>
<td>Gourikwa</td>
<td>Diesel</td>
<td>735</td>
</tr>
<tr>
<td>Non-Eskom</td>
<td>3260</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>43895</td>
<td></td>
</tr>
</tbody>
</table>

A2: The planned Eskom generation capacity from 2014 to 2019

<table>
<thead>
<tr>
<th>Project</th>
<th>Planned Capacity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grootvlei (return to service)</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Komati (return to service)</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Medupi (coal)</td>
<td>1588</td>
<td>1588</td>
</tr>
<tr>
<td>Kusile (coal)</td>
<td>800</td>
<td>800</td>
</tr>
<tr>
<td>Ingula (pumped storage)</td>
<td>1332</td>
<td></td>
</tr>
<tr>
<td>Sere wind farm</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Concentrated solar plant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>TOTAL (MW)</td>
<td>130</td>
<td>3820</td>
</tr>
</tbody>
</table>
APPENDIX B: Targets and threshold set in the REIPP procurement program.

<table>
<thead>
<tr>
<th>Element</th>
<th>Weights</th>
<th>Measurement</th>
<th>Threshold</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Job creation</td>
<td>25%</td>
<td>SA-based employees who are citizens/ number of SA-based employees</td>
<td>50%</td>
<td>80%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SA-based employees who are black citizens/ number of SA-based employees</td>
<td>30%</td>
<td>50%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Skilled employees who are black citizens/ number of SA-based employees</td>
<td>18%</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>SA-based employees who are citizens from local communities/ no. of SA-based</td>
<td>12%</td>
<td>20%</td>
</tr>
<tr>
<td>2. Local content</td>
<td>25%</td>
<td>Value of local content expenditure/ total project value</td>
<td>25%</td>
<td>45%</td>
</tr>
<tr>
<td>3. Ownership</td>
<td>15%</td>
<td>Shareholding by black people in the project company/ total shareholding</td>
<td>12%</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shareholding by black people in the construction contractor/ total shareholding</td>
<td>8%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shareholding by black people in the operations contractor/ total shareholding</td>
<td>8%</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Shareholding by local communities in the project company/ total shareholding</td>
<td>2.5%</td>
<td>5%</td>
</tr>
<tr>
<td>4. Management control</td>
<td>5%</td>
<td>Black top management/ total size of top management</td>
<td>--</td>
<td>40%</td>
</tr>
<tr>
<td>5. Preferential procurement</td>
<td>10%</td>
<td>BBBEE procurement spend/ total procurement spend</td>
<td>--</td>
<td>60%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Qualifying SMME procurement spend/ total procurement spend</td>
<td>--</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Women-owned vendor procurement spend/ total procurement spend</td>
<td>--</td>
<td>5%</td>
</tr>
<tr>
<td>6. Enterprise development</td>
<td>5%</td>
<td>Enterprise development contributions/ revenue</td>
<td>--</td>
<td>0.6%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adjusted enterprise development contributions/ revenue</td>
<td>--</td>
<td>0.6%</td>
</tr>
<tr>
<td>7. Socio-economic Development</td>
<td>15%</td>
<td>Socio-economic development contributions/ revenue</td>
<td>1%</td>
<td>1.5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Adjusted socio-economic development contributions/ revenue</td>
<td>1%</td>
<td>1.5%</td>
</tr>
</tbody>
</table>

APPENDIX C: Eskom funding for renewable energy

SOUTH AFRICA

ESKOM RENEWABLES SUPPORT PROJECT

PROJECT APPRAISAL DOCUMENT

AFRICA

AFTEG

Date: September 22, 2011
Country Director: Ruth Kagia
Sector Manager/Director: Lucio Monari/ Jamal Saghir
Project ID: P122339
Lending Instrument: CTF Loan

Team Leader: Reynold Duncan
Sectors: Power (100%)
Themes: Climate change (100%)
Environmental category: Full Assessment (A)
Joint IFC: No
Joint Level: N/A

Project Financing Data

[X] Loan [ ] Credit [ ] Grant [ ] Guarantee
[ ] Other:

For Loans/Credits/Others:
Total CTF financing (US$ million): 250.00
Proposed terms: A US Dollar Loan for a maturity of 40 years, 5-year disbursement period, 10 years Grace with a service charge of 0.25 percent per annum on disbursed amounts and a one-time management fee 0.25 percent of the Loan Amount.

<table>
<thead>
<tr>
<th>Source</th>
<th>Local</th>
<th>Foreign</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Borrower</td>
<td>41.78</td>
<td>0.00</td>
<td>41.78</td>
</tr>
<tr>
<td>International Bank for Reconstruction and</td>
<td>143.00</td>
<td>117.00</td>
<td>260.00</td>
</tr>
<tr>
<td>Development</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Clean Technology Fund (IBRD)</td>
<td>137.50</td>
<td>112.50</td>
<td>250.00</td>
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<td>Other Bilateral and Commercial Lenders</td>
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<td>Total:</td>
<td>527.28</td>
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Guarantor:
The National Treasury and the Department of Public Enterprises, Government of South Africa
1090 Infotech Building, Arcadia Street, Hatfield, Pretoria, South Africa
Fax: +27 12 323 3263

Borrower:
Eskom Holdings SOC Limited
Megawatt Park, Midwell Drive, Sunninghill, Sandton, South Africa
Email: eskom.funding@eskom.co.za
Tel: +27 11 800 2901

Projected Disbursements

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<th>FY12</th>
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<th>FY14</th>
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<td>Annual (US$ million)</td>
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<td>70.0</td>
<td>105.0</td>
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<td>Cumulative (US$ million)</td>
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<td>42.0</td>
<td>112.0</td>
<td>217.0</td>
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APPENDIX D: Research Outline and Research Protocol

D1: Research Outline

Research Title: A comparative analysis of Eskom’s new power generation stations and IPPs in South Africa

Vuyani Xulubana – MBA student, UCT (2013/2014)

Research study for a thesis required as part of the Master of Business Administration (MBA) degree at the Graduate School of Business, University of Cape Town

Background

The South African government advocates for the introduction of Independent Power Producers (IPPs) as one of its strategic goals in ensuring sustainably energy supply and fostering participation of the private sector. In retrospective the Department of energy (DOE) has since developed the national Integrated Energy Plan (IEP) in terms of the National Energy Act, 2008 (Act No.34 of 2008). The IEP provides a framework of future energy mix planning from 2010 to 2030.

The DOE has also initiated a Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) in support of the IEP goal of bringing 3 725 MW onto the national grid from renewable energy sources. The state owned utility, Eskom has been chosen to be the designated buyer of the IPP power in terms of section 34(1)(4) and (d) of the Electricity Regulations Act, 2006 (Act No.4 of 2006).

The bidding process conducted by DOE has resulted in the total of 64 Power Purchase Agreements signed by Eskom and the private sector IPPs from the first, second and third bid windows. Eskom is not only a buyer from the IPPs but is also actively participating in the renewable energy programs alongside the private sector IPPs.

Objectives

The purpose of this study to understand the fundamentally differences between Eskom build programmes and those of the private sector. This will be done by comparing the Procurement strategies and processes, Contracting, Price outcomes, Time to COD (Commercial Date of Operation) and Financing of the two sectors.

Finding and outcomes availability

The availability of the thesis and hence the research findings will be controlled by the library of the Graduate School of Business, University of Cape Town.
D2: Interview Protocol

Research Title: A comparative analysis of Eskom’s new power generation stations and IPPs in South Africa

Student: Vuyani Xulubana – MBA student, University of Cape Town (2013/2014)

Supervisor: Prof. Anton Eberhard, Graduate School of Business, UCT (anton.eberhard@gsb.uct.ac.za)

This study is done in partly fulfilment of the requirements of the Master of Business Administration at UCT Graduate School of Business.

The purpose of this study to understand the fundamentally differences between Eskom build programmes and those of the private sector. This will be done by comparing the Procurement strategies and processes, Contracting, Price outcomes, Time to COD (Commercial Date of Operation) and Financing of the two sectors.

Thus, information gathering would involve key management people through personal interviews or emails. Confidentiality will be held in high regard, and the names of the responded will not be identified in anyway.

The following are the main topics and typical questions that will be asked in the interview;

a. Financing
   - What financing structure has been adopted?
   - What are potential savings from the use of “Green funds” and/or Carbon finance?
   - Was or will there be any cost overruns? If so, what mitigating strategies have been adopted to limit potential of cost overruns?
   - What are possible regulatory risks and assessment of their impact on the project cost?
   - In that the REIPPPP bidding process expected the developers to identify the sites and pay for early development costs at their own risk, was this financial draining and expensive exercise?... the initial high transaction costs.

b. Time to COD (Commercial Operation Date)
   - Will the project be built on time and what mitigating strategies to limit project delays
What are some of the hurdles the project experienced in its application for a generation licence and their impact on the project timelines?

If there are any notable hurdles, which one do you think Eskom would have an advantage over the private sector RE IPP, and why?

Please elaborate on any other problems encountered by the project that might have resulted in project delay or would have resulted in project delay, if so what mitigation measures were considered?

c. Contracting

What type of construction agreements was agreed on, and what motivated the choice?

What is the role of the project company in the project?

Do the capital costs include all project risks or did the project company absorb some of the risks?

Please indicate some of the key highlights/learning points in areas such as, the procurement system, resources, alignment between design and construction, project management practices, handling of variation orders, communication practices, cultural adjustment (if foreign contractor), and different interest of the participants, labour productivity and availability of contractors?

Can you divulge on some of the conditions placed in the EPC contract, mostly intended to shift the risk from the project company to the contractors, for example,

- Is there a cap on the Delay Liquidated Damages (DLDs) and Performance Liquidated Damages (PLDs) payable by the contractor under EPC?
- What guarantees are contained within the EPC contract, that is, the fixed contract price, fixed completion date and performance guarantees?
- What other rights does the project company have for better control of the project, like, does the project company reserved right to order variations and agree to variations suggested by the contractor, defects liability, intellectually property and performance specification?

d. Procurement strategies and processes

How well the project performed against on the localisation targets under the REIPPPP economic development requirements (see Appendix B)?
Was there any additional premium paid in order to meet the required localisation targets, for instance, educating the local citizens?

What are the prospects of the local manufacturing of wind turbine blades and towers, which are one of the components earmarked by the government for manufacturing in South Africa?

e) Please give any other hurdles experienced whilst trying to meet the economic development requirements, e.g. Socio-economic development plans (for communities within 50 km radius), availability of local advisory services (e.g. legal and financial firms).

e. Price outcomes

What are some of the risks considered and have an influence in the pricing

How clear are the regulations in the government policy aimed at enhancing private sector participation? Did they seem to promote or stifle the competition?

What do you think are the reasons to the price reduction seen in successive bids of 1, 2 and 3 bid windows? Is such a decreasing trend sustainably?

I would like to thank you in advance for your time, the willingness to share information and hence assist in my research that will build to the still small knowledge on renewable energy in South Africa.
APPENDIX E: Eskom Consent Letter (Ethics)

Eskom

Date:
07 August 2014

Enquiries:
Mr David Lowton
Telephone:
+27 11 550-4712

To: The Registrar
University of Cape Town (Graduate School of Business)

ETHICS CLEARANCE: CONFIRMATION OF ESKOM INTELLECTUAL PROPERTY RIGHTS AND SECURITY CLEARANCE FOR MASTERS RESEARCH – MR. VUYANI XULUBANA

This memorandum serves as an ethics clearance; confirmation of Eskom intellectual property rights and security clearance for the continuation of Masters level research and write-up by Mr. V. Xulubana. The research topic is "A comparative analysis of Eskom’s new power generation stations and IPPs in South Africa".

Mr. Xulubana has followed due internal processes in terms of gaining permission for this research.

It must be noted that this general clearance is for a limited period only, which will be for the rest of the financial year 2014 till end 2016, and in no way waives Eskom’s Intellectual Property Rights.

Yours sincerely

[Signature]

David Lowton
Corporate Specialist – Nuclear Licensing
Nuclear Support
APPENDIX F: List of Contacted People (Interviewees)

<table>
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<tr>
<th>Name</th>
<th>Position</th>
<th>Company</th>
<th>Expertise/ Type</th>
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<tr>
<td><strong>Non- Eskom Personnel</strong></td>
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<td></td>
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</tr>
<tr>
<td>Johan Van den Berg</td>
<td>Board member</td>
<td>Wind energy Assoc.</td>
<td>Wind Farm</td>
</tr>
<tr>
<td>Mark Pickering</td>
<td>Owner &amp; Operator</td>
<td>Jeffrey’s bay and solar park</td>
<td>Wind &amp; Solar</td>
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<tr>
<td>Gavin James</td>
<td>Developer</td>
<td>Dorper Wind Farm</td>
<td>Renewable Energy</td>
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<tr>
<td>Douglas Jenman</td>
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<td></td>
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</tr>
<tr>
<td>021 685 5411/</td>
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<tr>
<td><a href="mailto:doug@rainmakerenergy.co.za">doug@rainmakerenergy.co.za</a></td>
<td></td>
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<tr>
<td>Not interviewed due to time constraints</td>
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<tr>
<td>Daniel Modise</td>
<td>Financing</td>
<td>Department of Energy</td>
<td>Renewable Energy Finance and Subsidy Office (REFSO)</td>
</tr>
<tr>
<td>(012) 317 8711</td>
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<tr>
<td>Not contacted due to time constraints</td>
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<tr>
<td>Thandiwe Maimane</td>
<td>DOE Spokesperson</td>
<td>Department of Energy</td>
<td>Open Cycle Gas Turbines (OCGT) types</td>
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<td>Respondent refused and even her referrals refused.</td>
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<td><strong>Eskom Personnel</strong></td>
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<tr>
<td>Luchen Reddy</td>
<td>Plant Manager</td>
<td>Sere wind farm</td>
<td>Renewable Energy</td>
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<td>Interview refused citing Eskom current public image, but gave some public available info.</td>
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<tr>
<td>Rodney Booth</td>
<td>Plant Manager</td>
<td>Ankerlig</td>
<td>Open Cycle Gas Turbines (OCGT) types</td>
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<td>Interview refused</td>
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APPENDIX G: Participants Interview Responses

Participant 1

Please indicate the organizational type and projects undertaken under the following headings,

a) Project developer, contractor or other? Owner/Operator
b) Wind, OCGT, or other? Wind & Solar
c) Government utility or private sector? Private

Please discuss and share your experience under the selected topics;

1) Project Financing
   a) What financing structure has been adopted?
      Project Finance

   b) What are potential savings from the use of “Green funds” and/or Carbon finance?
      Not asked

   c) Was or will there be any cost overruns? If so, what mitigating strategies have been adopted to limit potential of cost overruns?
      Split EPC contract
      Risks are split on such a way that in is managed by the party with relevant control

   d) What are possible regulatory risks and assessment of their impact on the project cost?
      In total there are 35 permits required, and 22 during the tender process should have been obtained.

   e) In that the REIPPPP bidding process expected the developers to identify the sites and pay for early development costs at their own risk, was this financial draining and expensive exercise?... the initial high transaction costs.
      Not asked
2) **Time to Commercial Operation Date**

   a) Will the project be built on time and what mitigating strategies to limit project delays

   *The wind farm project was built in 18 Months as scheduled under the PPA*
   *The owner was compensated for 2 days delay in project handover for the solar projects*

   b) What are some of the hurdles the project experienced in its application for a generation licence and their impact on the project timelines?

   *Not asked*

   c) If there are any notable hurdles, which one do you think Eskom would have an advantage over the private sector RE IPP, and why?

   *No advantages; on social issues – both parties (Eskom & IPPs) will go through similar experience due to the fact that renewables are rather new technology, and new communities/areas*

   d) Please elaborate on any other problems encountered by the project that might have resulted in project delay or would have resulted in project delay, if so what mitigation measures were considered?

   *Not asked*

3) **Contracting**

   a) What type of construction agreements was agreed on, and what motivated the choice?

   *Split contract*

   - *Lenders through REIPPPP prefers Wrapped contracts*
   - *The turbine suppliers prefer to act independently, and not to partner with another contractor. As such, turbine suppliers, for instance, prefer not to take risks associated with local conditions, e.g. varying ground or hydrological conditions*
   - *Initial a problem, but lenders did agree to split contract proposed on the justification on reliability and good track record of the developer*
b) What is the role of the project company in the project?

*Not asked*

c) Do the capital costs include all project risks or did the project company absorb some of the risks?

*As alluded above, risks were spread out to all the parties, as to who can have better control and management of the risk*

d) Please indicate some of the key highlights/learning points in areas such as, the procurement system, resources, alignment between design and construction, project management practices, handling of variation orders, communication practices, cultural adjustment (if foreign contractor), and different interest of the participants, labor productivity and availability of contractors?

- *The project met all the procurement requirements, except in two cases where it could not meet the preferential procurement from women owned businesses.*
- *Termination points received in 2 quarters were subsequently squared off by higher credits gained in later year quarters. (Note: the project is required to produce Quarterly reports). The wind farm project was finished with about R70 million worth credits due by DOE. But as per RFP for REIPPPP, the IPPs cannot claim such credits nor use them in the next bid window*

e) Can you divulge on some of the conditions placed in the EPC contract, mostly intended to shift the risk from the project company to the contractors, for example,

i) Is there a cap on the Delay Liquidated Damages (DLDs) and Performance Liquidated Damages (PLDs) payable by the contractor under EPC?

*Risks are split on such a way that it is managed by the party with relevant control, for example, the turbine supplier carries the risks of efficiency and on this the supplier will give the performance guarantee*
i) What guarantees are contained within the EPC contract, for example, the fixed contract price, fixed completion date and performance guarantee?

See above

ii) What other rights does the project company have for better control of the project, like, does the project company reserve right to order variations and agree to variations suggested by the contractor, defects liability, intellectual property and performance specification?

Not asked

4) **Procurement strategies and processes**

a) How well the project performed against the localisation targets under the REIPPPP economic development requirements (see Appendix B)?

On its quarterly reporting the company uses auditing firms such as KPMG to audit and confirm on the goals met, on both social development and localisation targets.

b) Was there any additional premium paid in order to meet the required localisation targets, for instance, educating the local citizens?

Firstly, there is a difference between localisation and social development issues, like education.

A study by McDaid (2014) concluded that IPPs are not doing well in meeting social development goals.

The participant notes that this is understandably in that the international developers (foreign companies) have little experience in that area. Also, in their overseas experience, there is no social development requirements added to the contracts.

c) What are the prospects of the local manufacturing of wind turbine blades and towers, which are one of the components earmarked by the government for manufacturing in South Africa?

Not asked
d) Please give any other hurdles experienced whilst trying to meet the economic development requirements, e.g. Socio-economic development plans (for communities within 50 km radius), availability of local advisory services (e.g legal and financial firms).

*Not asked*

5) **Price outcomes**

a) What are some of the risks considered and have an influence in the pricing?

*Risks divided in accordance to who can better manage it*

b) How clear are the regulations in the government policy aimed at enhancing private sector participation? Did they seem to promote or stifle the competition?

*Not asked*

c) What do you think are the reasons to the price reduction seen in successive bids of 1, 2 and 3 bid windows? Is such a decreasing trend sustainably?

*Under-bidding by IPPs ("low-balling") in anticipation of future contracts – the responded strongly believes there is no such. No contractor/ investor would agree to undertake a contract on a loss.*

*Yes, there is still a potential for another lower price in the fourth bid window*

**Further discussions outside the prepared interview questions:**

What do you think might be the reason for Eskom to decide on participating by building own Renewable energy plants, risk being seen as contradicting its selected role of being a single buyer.

- *First, Eskom does not decide on its own, but is told or should get a mandate from government on what to build and when*

- *Government in the form of DOE has taken over the national energy planning from Eskom*
As part of the World Bank loan for Medupi, fraction of it had to go into renewable investment.

There is nothing wrong with Eskom developing own renewable plants, except that the company do not have a good record with new builds.

Although the responded still thinks that there is a greater need for a state owned energy utility, but there is an apparent lack of trust by the government on Eskom, and this can be seen from an apparent shift of new builds to private sector. This might be justifiable noting the delays encountered with Medupi and Kusile... and now the recent incident with Majuba power station (see Figure below- obtained from internet search on presentations made in the past by the responded).

The participant warned against looking at the IPPs and Eskom as competing against each other, but then raised some important questions that one should ask further, namely;

- The 100 MW Eskom Sere wind farm was started in 2006, and today (9 years later) is still not finished, whilst the Private sector built 138 MW wind farm was finished in just 18 Months; is the reason for the delay given by Eskom sufficient to justify the 9 years since project inception?

- If Eskom is able to source funds cheaply compared to IPPs, why the price (LCOE) of Eskom is higher (0.77c/kWh) that that obtained in the 3rd RE-IPPPP bid window (0.66 c/kWh)?.. Noting specifically that both IPPs and Eskom contracts the same turbine suppliers.

- The capacity factor for the Eskom Sere wind farm is 27% far less that the 40% attained by global wind farms and those bided under REIPPPPs. Why will Eskom with all the resources and government support on its disposal, chose a site with far less than the desired wind speeds?
Participant 2

Please indicate the organizational type and projects undertaken under the following headings,

a) **Project developer, contractor or other?** Renewable energy organization (Board member)

b) **Wind, OCGT, or other?** Wind

c) **Government utility or private sector?** Private

Please discuss and share your experience under the selected topics;

1) **Project Financing**

   a) What financing structure has been adopted?

   *Project financing for most of round 1 & 2 bids*

   b) What are potential savings from the use of “Green funds” and/or Carbon finance?

   *The respondent is currently the director of carbon finance (http://www.sawea.org.za/ceo-blog.html). Although some other renewable project companies have claimed the carbon finance, but it is extremely low values to make any significant difference. Maybe after the introduction of carbon tax, the will be noticeable benefits*

   c) Was or will there be any cost overruns? If so, what mitigating strategies have been adopted to limit potential of cost overruns?

   *Most project have been built on time and on budget*

   d) What are possible regulatory risks and assessment of their impact on the project cost?

   *Regulatory issues/ permits present a big challenge before financial close... that is normally the cause of the long delay from project inception to financial close. During the REIPPPP bidding time, the project would have reached financial close and thus the regulatory issues should not have a notable influence on the time to COD*
e) In that the REIPPPP bidding process expected the developers to identify the sites and pay for early development costs at their own risk, was this financial draining and expensive exercise?... the initial high transaction costs.

The responded could not answer some of the project finer details as he was only involved on the peripherals of the project; but he gave some information on site selection. In selecting a site, there are some site characteristics that are important, and influence the site selection decision, and these include, good winds, low risk of EIA rejection and proximity to substations. The project sites may not necessarily have all these qualities, but even one or two may suffice to ensure an acceptable capacity factor. Like Hopefield have an advantage of being close to a good substation, but that cannot be said about the wind speeds of the chosen site.

2) Time to Commercial Operation Date
   a) Will the project be built on time and what mitigating strategies to limit project delays
   Most projects were built on time, 18 months after financial close in accordance with the REIPPPP request for proposal conditions.

   b) What are some of the hurdles the project experienced in its application for a generation licence and their impact on the project timelines?
   The NERSA permits and other permits are obtainable before the project financial close. So as alluded to above, it is only a challenge early in the project

   c) If there are any notable hurdles, which one do you think Eskom would have an advantage over the private sector RE IPP, and why?
   Balance sheet financing should be an advantage for Eskom, in that there are less or fewer contractual agreements to be signed before reaching financial close. In the IPPs there are many financial agreements to be signed with the different financial institutions and might take more time to agree on terms and conditions.
   The assertion above does take note of the World bank loan and the required Eskom commitment to be agreed with the financier, even that should take less time for Eskom.
d) Please elaborate on any other problems encountered by the project that might have resulted in project delay or would have resulted in project delay, if so what mitigation measures were considered?

The responded would not give an answer on this one, as he was not directly involved in any project development, however, he highlighted some other advantage and disadvantage of Eskom over IPPs and these are:

**Advantage**: IPPs are not involved on the build program or involved in the energy sector as a day-to-day job unlike with Eskom.

**Disadvantage**: Eskom as a big organization will more likely experience some delays due to organizational hierarchy or cumbersome long reporting lines of approval.

3) **Contracting**

a) What type of construction agreements was agreed on, and what motivated the choice?

EPCM split contract - projects in the first round of REIPPPP bid window

b) What is the role of the project company in the project?

The responded warned that one need to be careful and not confuse the owner to the project company.

The owner changes hands depending on who have more shares and thus control, for instance, the initial owners may later sell and have little role on the project development.

The project company also have limited role, and this may be more on re-assurance on project progress. Remember the project company have an agreement and is accountable under PPA to deliver the project on time.

c) Do the capital costs include all project risks or did the project company absorb some of the risks?

The project risks are spread across all parties, in a way that the risk is allocated to the relevant party that understand and can manage the risk better.
d) Please indicate some of the key highlights/learning points in areas such as, the procurement system, resources, alignment between design and construction, project management practices, handling of variation orders, communication practices, cultural adjustment (if foreign contractor), and different interest of the participants, labor productivity and availability of contractors?

The South African REIPPPP programme has shown the importance of transparency in the bidding programme for a successful introduction of IPPs.

In the IPPs the public only pay for the electricity used, but with Eskom. The public have to pay for the initial costs of building the plant. With increasing public awareness on how the pension and tax money is used, the IPPs present a transparent transaction.

Even though there are notable advantages by IPPs over Eskom, there are parties that still want Eskom to retain the monopoly, based on various reasons, as for instance, the SACP may have unsubstantiated believes that IPPs will results in job loses or fewer jobs that the public utility may provide.


The points highlighted on this website are;

- The actually extremely high costs that the public pays (through increase Tax or higher tariffs) for Eskom’s failure to build on time, as exemplified by Medupi
- The savings that can be if Eskom focussed on small plants like Sere wind farm, where failures to deliver on time will have less detrimental effect on the public purse
- But, of more notable, is the huge savings with IPPs, where cost overruns are incurred by the concerned IPP. “Eskom pays only for the electricity, at an agreed price with an agreed escalation, for a twenty year period”, as per PPS agreement.
- The writer also gives an advice that will see further reduction of Government risk in the 20 years PPAs entered with the IPPs, by facilitating PPAs directly between IPPs and large energy consumers.
- Lastly, the writer warns against locking our limited resources on mega-projects in a continuously changing world, with technology advancement. It may be difficult to pull out
of such mega projects, and we might have to leave with any technological errors encountered later on.

e) Can you divulge on some of the conditions placed in the EPC contract, mostly intended to shift the risk from the project company to the contractors, for example,

i) Is there a cap on the Delay Liquidated Damages (DLDs) and Performance Liquidated Damages (PLDs) payable by the contractor under EPC?

*The project risks are spread across all parties, in a way that the risk is allocated to the relevant party that understand and can manage the risk better.*

ii) What guarantees are contained within the EPC contract, for example, the fixed contract price, fixed completion date and performance guarantee?

*The responded was not directly involved in the projects developments, but he knows there are such guarantees given*

iii) What other rights does the project company has for better control of the project, like, does the project company reserved right to order variations and agree to variations suggested by the contractor, defects liability, intellectually property and performance specification?

*Not asked, as a similar answer was to be expected to the one immediately above*

4) **Procurement strategies and processes**

a) How well the project performed against on the localisation targets under the REIPPPP economic development requirements (see Appendix B)?

*On localisation targets, the is a report currently in draft (the responded organised a copy of the draft)*

*Eskom would probably score more on the Balance of Plant, say approximately 56%; the balance of plants for IPPs constitutes around 45%.*
b) Was there any additional premium paid in order to meet the required localisation targets, for instance, educating the local citizens?

*Need to look at the draft document on localisation*

c) What are the prospects of the local manufacturing of wind turbine blades and towers, which are one of the components earmarked by the government for manufacturing in South Africa?

*Not asked, but the draft document on localisation may give more information.*

d) Please give any other hurdles experienced whilst trying to meet the economic development requirements, e.g. Socio-economic development plans (for communities within 50 km radius), availability of local advisory services (e.g. legal and financial firms).

*There is 11 billion rands (ZAR) committed in the first three bid windows for socio-economic developments, and this excludes the almost 1% to 2.5% revenue sharing with the community agreed upon in the Implementation Strategy with DOE. In the 11 billion ZAR, about ZAR 5 billion will come from wind energy programs.*

5) **Price outcomes**

a) What are some of the risks considered and have an influence in the pricing?

*No asked*

b) How clear are the regulations in the government policy aimed at enhancing private sector participation? Did they seem to promote or stifle the competition?

*Not asked*

c) What do you think are the reasons to the price reduction seen in successive bids of 1, 2 and 3 bid windows? Is such a decreasing trend sustainably?

*The responded does not believe on the notion of under-bidding, in that there are no sensible investors who will invest in projects with a loss even with the promise of acquiring future contracts.*
The lower prices will at some stage drive away potential investors as the projects will not be profitable, thus there continues decrease on price might catch with us some day.

Further discussions outside the prepared interview questions:

The participant is worried that the IPPs are becoming more foreign dominated. He had local friends who had invested in the early bids but later sold their shares to foreign investors, to invest in upcoming bids or elsewhere. He could not convince the friends to keep their shares.

The 2014 REIPPP review report (McDaid, 2014) alludes to the biasness towards foreign funding as one of the challenges that need to be addressed to ensure the success of the REIPPPP programme.