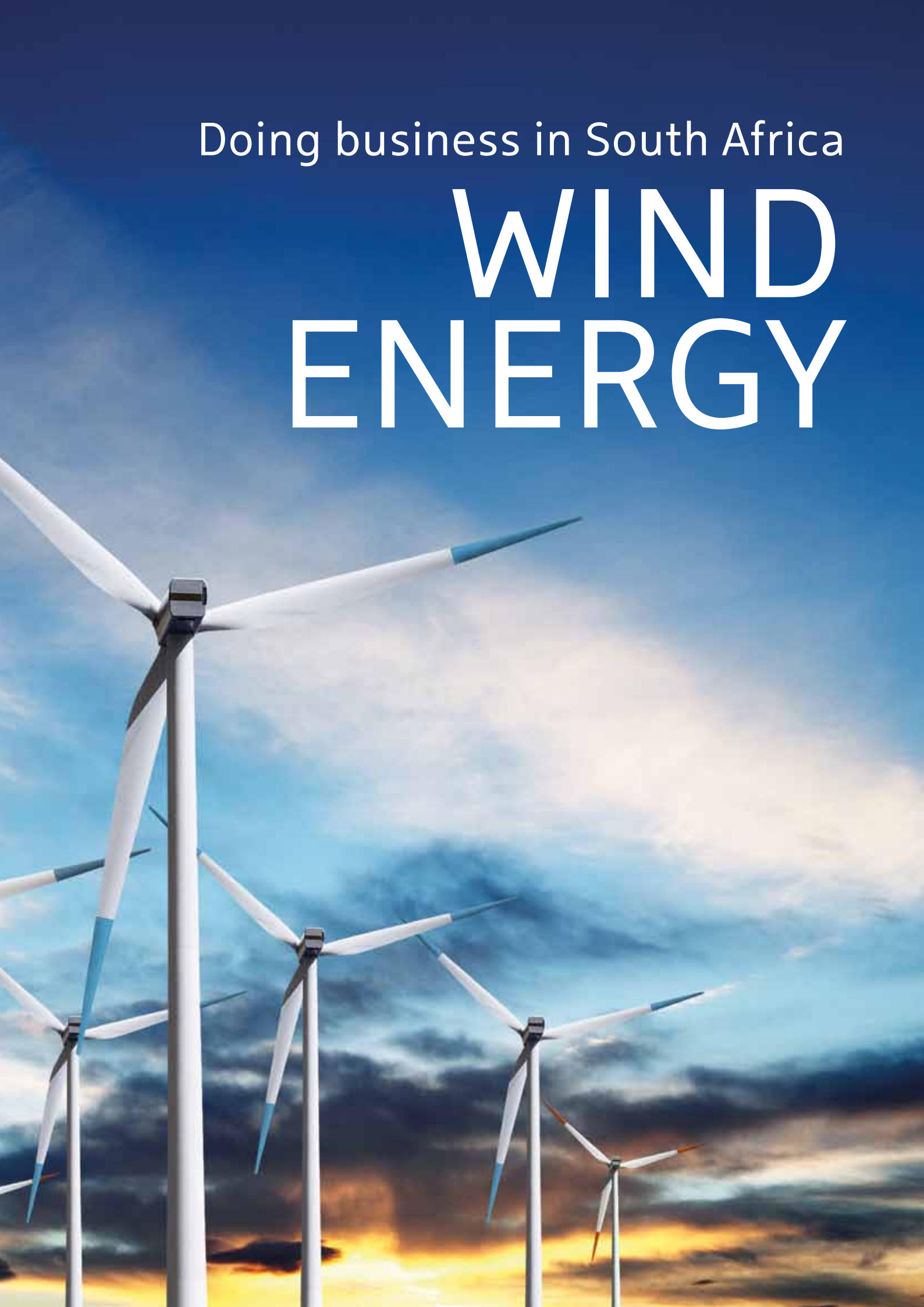
Doing business in South Africa

WIND ENERGY



GL Garrad Hassan

GARRAD HASSAN AND PARTNERS LTD
St Vincent's Works, Silverthorne Lane, Bristol BS2 0QD, UK Tel: +44 (0)117 972 9900.
Registered in England 1878456

AUTHOR Ioannis Papadopoulos
CHECKED BY David Williams, Greg vander Toorn
APPROVED BY David Williams

FREELANCE GRAPHIC DESIGNER: Carien Rooseboom (info@carienrooseboom.com)

FOREWORD

This market entry study provides an overview of the South African Wind Energy market. The study is one of four aimed at informing the entrepreneurs in the Netherlands about the South African renewable energy market with a special focus on Green Buildings, Waste-to-Energy, Biomass-to-Energy and Wind energy.

The South African demand for energy is growing and renewable energy is part and parcel of government policy. This offers interesting market opportunities for the Netherlands. The Embassy of the Kingdom of the Netherlands welcomes this development and sees potential for bilateral cooperation to strengthen the renewable energy sector in South Africa with active participation of the Dutch private sector. The Dutch renewable energy and energy efficiency industry has significant expertise in several fields of clean energy, with a high degree of knowledge, reputable research institutes and innovative industry players. The Embassy believes that cooperation between South Africa and the Netherlands could benefit both countries, as it will allow for technology and knowledge transfer and exploring new market segments.

The Embassy in Pretoria and the Consulate General in Cape Town – in cooperation with Agency NL the implementing agency of the ministry of Economic Affairs- offer support to Dutch companies that are already active or want to become active in South Africa. For more information about doing business in South Africa, our services and financial support please visit: zuidafrika.nlambassade.org or www.agentschapnl.nl.

We hope this study will assist you in exploring South Africa or expand your activities in this interesting and beautiful country. If based on this information you would like to further discuss then please contact us through pre-ea@minbuza.nl

June, 2013
André Haspels
AMBASSADOR
of the Kingdom of
the Netherlands
to South Africa.

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ACRONYMS

AfDB	African Development Bank
B-BBEE	Broad-Based Black Economic Empowerment
DBSA	Development Bank of Southern Africa
DoE	Department of Energy
EPC	Engineering, Procurement and Construction
FMO	Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden N.V.
GL GH	Germanischer Lloyd Garrad Hassan
IDC	Industrial Development Corporation
IEP	Integrated Energy Plan
IFC	International Finance Corporation
IPP	Independent Power Producer
IRP	Integrated Resource Plan
JSE	Johannesburg Stock Exchange
NERSA	National Energy Regulator of South Africa
PIC	Public Investment Corporation
PPA	Power Purchase Agreement
REIPPPP	Renewable Energy Independent Power Producers Procurement Programme
RfP	Request for Qualification and Proposals
SABS	South African Bureau of Standards
SAREC	South African Renewable Energy Council
SAWEP	South Africa Wind Energy Programme
Statcom	Static synchronous compensator
WB	World Bank Group

1 RATIONALE OF STUDY

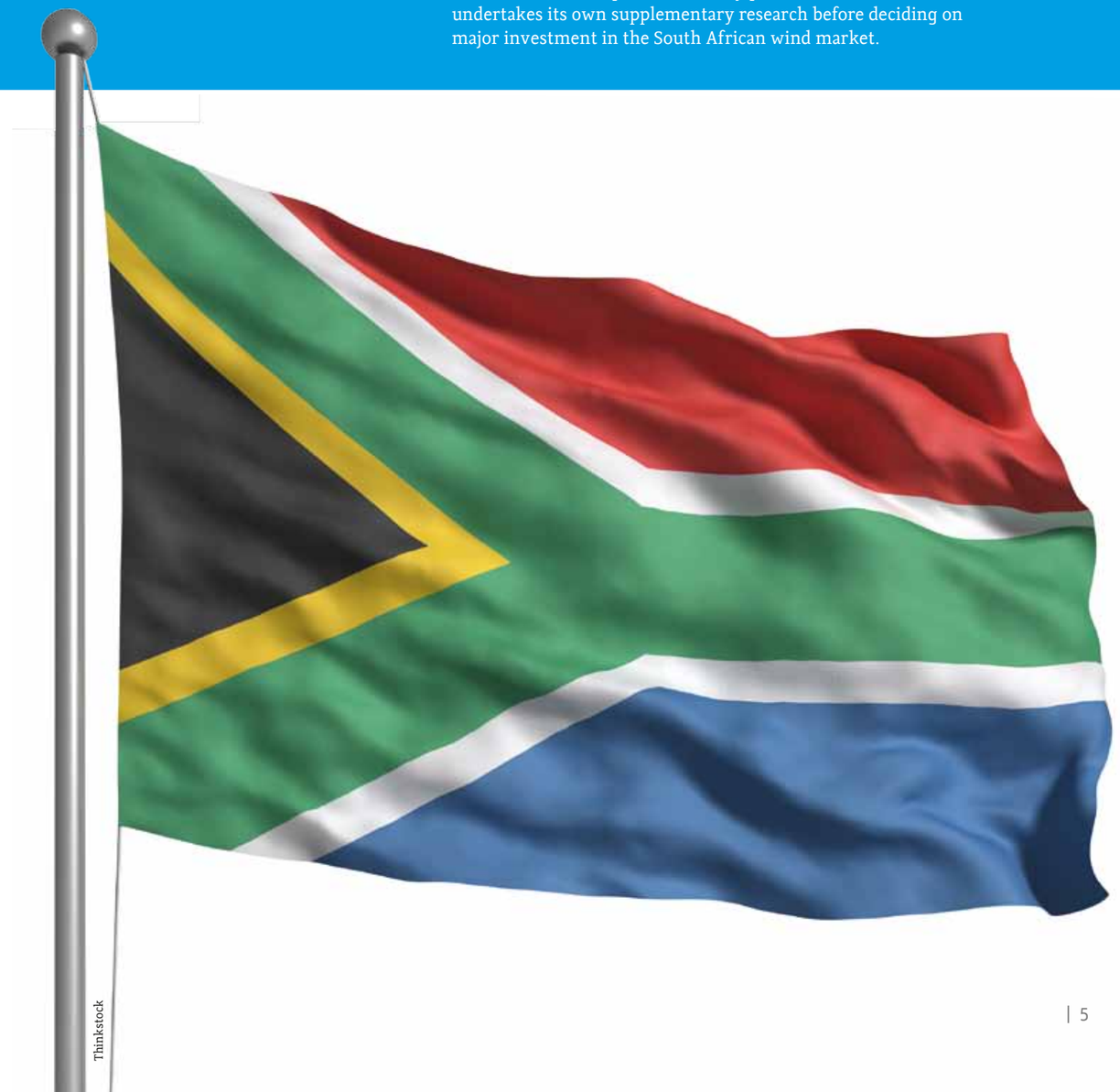
1.1 Introduction

The last decade has seen significant changes in the sources of energy being utilised globally, at local and national level, to provide power to drive economies and cover the world's energy needs. Technology to derive energy from renewable sources has steadily grown from its modest beginnings in niche applications to become a mainstay in the energy mixes of many modern and developing countries. This rise of renewable energy is now also being witnessed in South Africa. The country has set itself ambitious emission reduction and renewable energy targets and is embracing a wide range of renewable energy sources including wind power. The South African Government is looking to address some of the long-standing issues that the country faces, such as the scarcity of electricity which is stymieing national growth, but also tackle other more wide-ranging issues, such as the need for market liberalisation. Meeting the country's sustainability target is also seen as a means of dealing with economic and social inequality, through the promotion of the renewable energy sector. The country is aided in this cause by an abundant natural renewable energy resource, including a strong wind regime. As a result, wind power is expected to play a significant role in the country's future energy mix.

The South African Government has put in place a variety of policies to promote the uptake of renewable energy, something which has generated significant interest from the private sector, both in South Africa and abroad. At a time when challenges are being faced in the sector's more mature traditional homes of Europe and North America, these developments have created interesting opportunities for non-South African companies to diversify into a new market.

This report aims to provide an introduction and overview of the South African wind power sector for Dutch companies interested in entering this active market. The work provides background information on the development and growth of the sector as well as high-level projections of likely future development pathways for wind power in the country. Most importantly, the work provides an overview of the South African wind power value chain, highlighting relevant issues to new market entrants such as rules and regulations, major stakeholders in the wind sector and information on the opportunities and threats which should be considered.

While every attempt has been made to ensure that the information provided in this report is correct and up-to-date, fast growing markets such as that in South Africa can be subject to significant and abrupt changes in policy, support, regulations etc. As such, it is important that any potential market entrant undertakes its own supplementary research before deciding on major investment in the South African wind market.



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2 THE SOUTH AFRICAN **WIND SECTOR**

2.1 Brief history of wind power in South Africa

The wind energy sector in South Africa is a nascent market. While wind power has been used for a long time in water pumping applications throughout the country, the application of its potential for electricity generation is a recent phenomenon, by the standards of the wind industry internationally.

The foundations of the South African wind energy sector were laid in 2002 when the state-owned energy utility, Eskom, erected three wind turbines over a 6-month period, at the small-scale experimental Klipheuwel Wind Farm in the Western Cape. The wind farm has a total capacity of 3.2MW and consists of two Vestas turbines of 660kW and 1 750kW capacity respectively; and a Jeumont J48 turbine of 750kW capacity. The stated purpose of the facility was to research the potential of wind energy and evaluate different technologies and their economic viability. Additionally, the facility was used as research test-bed to explore the potential of battery storage technologies. The wind farm is currently supplying electricity directly to the local regional grid.[1]

In order to further promote wind power and to further familiarise Eskom with its characteristics, the South African Government launched the South Africa Wind Energy Programme (SAWEP), which was originally planned as a 5 year project, with the first phase being implemented between February 2008 and December 2010. The main objective of the first phase was the development of an initial 5.2MW wind farm facility near Darling as a national demonstration project and to prepare the ground in general for the deployment of a further 45MW of wind power from Independent Power Producers (IPPs). The Darling Wind Farm, located 70 km north of Cape Town, comprises of four 1.3MW Fuhrländer turbines and was developed by the local Oelsner Group together with AN Windenergie GmbH[2] using money from the Danish Government, the Development Bank of Southern Africa and the Central Energy Fund. Although the wind farm is still under development, with an additional 6-10 turbines planned, at its inauguration it was hailed as an example

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of future public-private partnerships, also marking the first private involvement in wind farm development in the country. The Darling Wind Farm is operated by the Darling Independent Power Producer and is currently supplying electricity to the Cape Town area.[3]

The first fully commercial wind farm in South Africa was the Coega Wind Farm, developed by the Belgian renewable energy developer, Electrawinds. Located approximately 20km northeast of the town of Port Elizabeth in the Eastern Cape, the wind farm comprised of a single Vestas V90 1.8MW turbine, and was situated in the Coega Industrial Development Zone (IDZ), an area earmarked for development of heavy, medium and light industries, adjacent to one of South Africa's major deep-water ports. The turbine was erected in time for the hosting of the 2010 World Cup Games in Port Elizabeth, featuring in the reporting of the Games as an indication of the country's commitment to clean energy projects. Since then there have been plans for further wind power developments in the area.

A final notable case in the development of South African wind farms is the Sere Wind Farm, located in the Western Cape. In this case, Eskom has sole responsibility for the development on the wind farm. The wind farm is planned to be 100MW[4] in size and although there have been delays in implementation, construction is planned to start in the second quarter of 2013.

In general however, the growth of wind energy in South Africa has been unremarkable until recently, when the South African Government finally indicated its strong commitment to renewable energy through the introduction of firm policies promoting its uptake.

1. "KLIPHEUWEL WIND ENERGY FACILITY", Eskom Fact sheet, available at http://www.eskom.co.za/content/RW_0002KliphWindfRev5-2.pdf
2. Darling Wind Power (Pty) Ltd, http://www.darlingwindfarm.co.za/
3. "Wind-Power", Eskom, http://www.energy.gov.za/files/esources/renewables/r_wind.html
4. "Renewable Energy: Sere Wind Farm", Eskom COP17 fact sheet, available http://www.eskom.co.za/content/Sere%20Wind.pdf

3 SOUTH AFRICAN **WIND POLICY**

3.1 Policy framework for renewable energy in South Africa

The first indications of support for the development of renewable energy in South Africa can be seen in the Government's White Paper on Energy Policy, published in 1998, which outlined the South African Government's official policy on energy supply and consumption over the following 10 year period. The two main pillars of the White Paper that were of direct relevance to the renewable energy sector, were on the one hand, the stated goal of energy security through diversification of supply sources and, on the other hand, the recognition that a significant role could be played by an IPP and not just by the state electricity generation monopoly, Eskom. The White Paper also highlighted further strategic areas that would need to be addressed in order to foster the growth of renewable energy in the country's energy mix.

The introduction of renewable energy was further promoted by the publication of the White Paper on Renewable Energy in 2003, which set a target of 10.000GWh of generation from renewables by 2013. Further to this target, in 2008 the Government enacted an Energy Act, which aimed to ensure sustainable, affordable energy from a diverse range of sources. One of the provisions of this act was the creation of an Integrated Energy Plan (IEP) which further advocated the inclusion of renewables in the South African energy mix. The most important component of the IEP for wind power development is the Integrated Resource Plan (IRP) which represents a national electricity plan.

3.1.1 Integrated Resource Plan

THE IRP INCORPORATED THE FOLLOWING CRITERIA IN ITS DETERMINATION AND ALLOCATIONS:

- **Reducing carbon emissions;**
- **New technology uncertainties;**
- **Water usage;**
- **Localisation and job creation;**
- **Southern African regional development and integration; and**
- **Security of supply.**

As a result of the Energy Act published in 2008, the Department of Energy (DoE) undertook to produce an IRP which provides an indication of the required electrical generation which is forecast to be added to the South African electricity supply system between 2010 and 2030. The current plan (IRP 2010-2030) was finalised in May 2011, following an extensive public consultation process and it is envisioned that the IRP shall be revised every two years. It is noted that at the time of writing, the 2013 first revision of the IRP was yet to be released.

The various aforementioned drivers naturally resulted in overlapping and often contradictory requirements, so a public consultation was undertaken which ended in October 2010 and resulted in the Revised Balance Scenario IRP, that sought to balance the cost-optimal solution for new power plants against other measures such as job creation. This revised IRP was also put out to consultation and after the end of this consultation process in December 2010, a Policy-Adjusted IRP was finalised which took into account the various Government objectives and aimed to balance the competing requirements.

The outcome of the IRP 2010-2030 indicated strong support for renewable energy, with 33% of the new capacity allocated to renewable energy. This included an allocation of 9.200MW to wind generation up to 2030, as shown in Figure 3.1. Annual installations of all renewables (excluding hydro imports, and pumped storage capacity) are shown in Figure 3.2, and cumulatively in Figure 3.3

FIGURE 3.1: WIND CAPACITY GROWTH FROM POLICY-ADJUSTED IRP

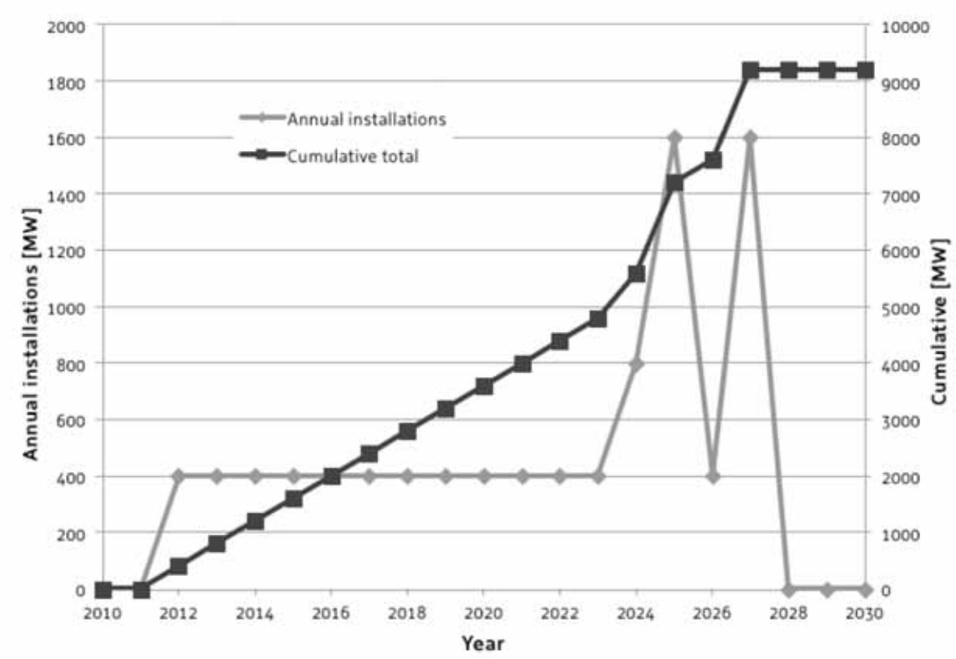


FIGURE 3.2: ALL RENEWABLES, CAPACITY GROWTH FROM POLICY-ADJUSTED IRP (ANNUAL INSTALLATIONS)

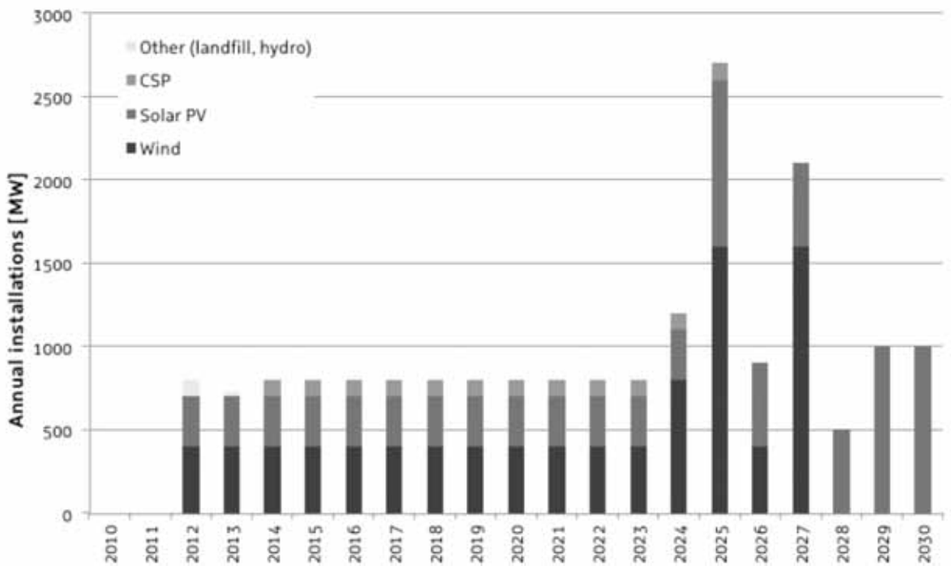
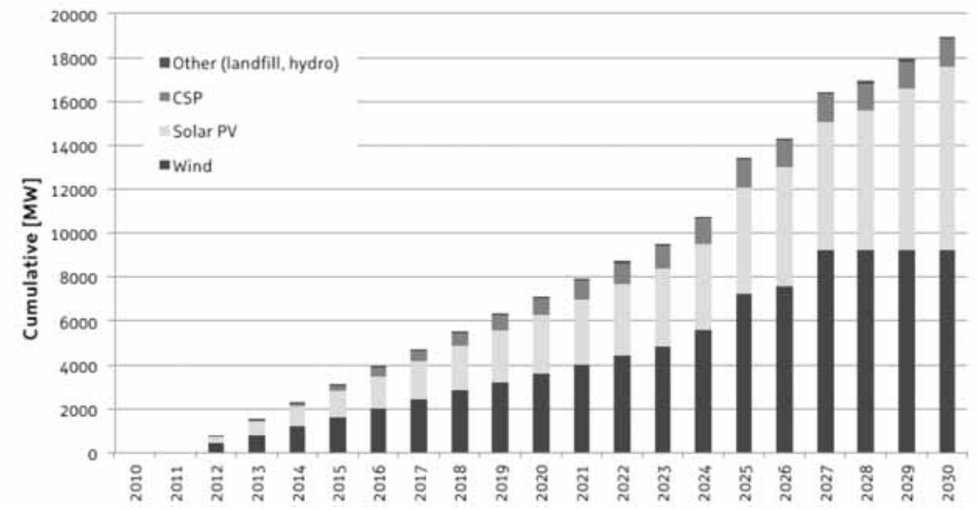


FIGURE 3.3: CAPACITY GROWTH, FOR ALL RENEWABLES, FROM POLICY-ADJUSTED IRP (CUMULATIVE)



One of the main requirements of the IRP has been the creation of a programme to initiate the uptake of renewable energy in South Africa, through the market entry of IPPs who would then seek to fulfil the installed capacity requirements, as defined by the DoE. This is being pursued through the Renewable Energy IPP Procurement Programme (REIPPPP).

3.1.2 Renewable Energy IPP Procurement Programme

Originally the Government committed to the installation of 3.725MW of renewable energy by the end of 2016 when the DoE announced the REIPPPP in 2011. This 3.725MW is broadly in accordance with the capacity allocated to renewable energy generation in the IRP 2010-2030.

However, one of the main barriers restricting the deployment of renewable energy in South Africa has been the low price of electricity and the absence of any financial incentives to counterbalance the high up-front costs of renewable energy. After a period of experimentation with a Feed-In Tariff approach (dubbed the REFIT), the South African Government finally proceeded with the introduction of a competitive bidding process in July 2011, which was in turn, dubbed "REBID". This programme is a competitive bid process (i.e. competition on price) together with extensive economic development requirements including elements of job creation, local content, ownership, management control, preferential procurement, enterprise development and socio-economic development issues which are in line with Government policies and strategy.

The incentives for the introduction of wind power by 2016 are limited to an allocation of 1.850MW out of the 3.725MW available under the REIPPPP. The remainder of the MW allocation is for other renewables, with Solar PV, which has been allocated 1.450MW, the major contributor other than wind. The DoE has subsequently announced that it will be extending the REIPPPP with a rolling procurement programme which would seek to procure and build an additional 3.2GW of additional renewable energy by 2020. Approximately 1.47GW of the new capacity will be allocated to wind power, as announced in October 2012.[5] The remainder of the renewable allocation under the IRP 2010-2030 is not allocated and will require an extension of the current REIPPPP commitment, or some other government mechanism. However, given the green economy is central to current government policy and job creation strategy, there is room for optimism.

The REIPPPP is currently predicted to be implemented in up to a maximum of 5 distinct bid Rounds, during which potential suppliers can submit their bids for producing grid-connected electricity supplies from renewable sources. To date two rounds of bidding have been conducted. The results of the 'Round 1' and 'Round 2' process are summarised in the following section.

5. "South Africa approves 1.4GW of extra wind capacity", Wind Power Monthly, 31 October 2012, available at http://www.windpowermonthly.com/article/ 1157284/South-Africa-approves-14GW-extra-wind-capacity

3.2 Characteristics of current wind projects

3.2.1 Large scale wind

TABLE 3.1: ROUND 1 PROJECTS

CAPACITY [MW]	PROJECT
26.19	Dassiesklip Wind Energy Facility
26.19	MetroWind Van Stadens Wind Farm
65.40	Hopefield Wind Farm
72.75	Noblesfontein
77.60	Red Cap Kouga Wind Farm – Oyster Bay
97.00	Dorper Wind Farm
133.86	Jeffreys Bay
135.00	Cookhouse Wind Farm
633.99	TOTAL

The first two bid rounds have been completed and the third round submission is officially scheduled for 2013. The Round 1 projects approved so far are shown in Table 3.1.

All of the projects listed above for Round 1, have reached financial close in late 2012/ early-2013 and are currently entering the construction phase. The projects are all relatively large, in the range 25 to 135MW. GL GH considers this is due to the onerous requirements of the bidding process: small projects require very similar development effort and incur the same risks as larger projects, with less return. It is noted that an upper limit of 140MW was set for wind farm capacity by the tendering process in order to limit congestion for grid connections.

The Round 2 projects announced in May 2012 are shown in Table 3.2. The project sizes are similar to Round 1. It should be noted that the DoE restricted the total capacity allocations for this round to ensure that there was still some capacity allocation available for future bid rounds. This limiting of the MW allocation was also undertaken to allow for a more manageable financing environment and workload by the various parties involved and to ensure greater competition in price and higher localisation targets for future bid rounds.

In September 2012, the DoE made it known through the circulation of Briefing Note 14 to Bidders, that the deadline for Round 3 submissions of the renewable power tenders was being delayed until 19 August 2013.[6] This was subsequently confirmed on the official website for the REIPPPP, where it was also announced that an update to the tender's terms was being undertaken. This proved to be the third postponement of the original deadline of October 2012 but was deemed necessary to allow for the incorporation of any lessons learned from Rounds 1 and 2, and result in an update of guidelines for subsequent tenders.

TABLE 3.2: ROUND 2 PROJECTS

CAPACITY [MW]	PROJECT
135.20	Gouda Wind Facility
137.90	Amakhala Emoyeni (Phase 1) Eastern Cape
94.80	Tsitsikamma Community Wind Farm
90.80	West Coast 1
23.40	Waainek
59.80	Grassridge
20.60	Chaba
562.50	TOTAL

TABLE 3.3: ALLOCATION OF CAPACITY BY TENDER ROUND

In summary, onshore wind allocation under the REIPPPP to date has been:

Round 1	633.99 MW
Round 2	562.50 MW
Round 3	653.51 MW available

3.2.2 Small scale wind

Small scale (<1MW) wind power has not featured so far in the South African Government's plans to promote renewable energy. Specifically, the REIPPPP is only applicable to wind installations with a size greater or equal to 1MW and supplying electricity directly to the grid. It is important to note however that provisions have been made for smaller projects defined as projects with a generation capacity greater than 1MW but less than 5MW. In principle, the DoE has earmarked 100MW of the 3,725MW to be procured through the REIPPPP, for such small scale projects. Based upon the principles of the REIPPPP, the Department has indicated its intention to introduce a separate "Small Projects Renewable Energy Independent Power Producer Procurement Programme" ("Small Projects REIPPPP).

In June 2012, the South African DoE put out draft guidelines for this programme and requested feedback by July that year. Based on the draft guidelines, it is envisaged that the 100MW will be procured in 4 Rounds of 25MW each, covering all applicable technologies. If after the end of the final round, the target figure of 100MW has not been achieved, the DoE reserves the right to undertake further tendering rounds. The procurement process is based on two stages, mirroring the approach taken for the large scale projects.

As with the REIPPPP for larger renewable energy projects, the small scale projects will have to comply with a list of technical, financial, environmental and social requirements to be eligible for the bidding process. It is noted that the final bids submitted as part of Stage 2 are then expected to be evaluated against the main criteria: bid price and plans for Economic Developments.

At the time of writing, the DoE had yet to finalise the arrangements for the Small Projects REIPPPP. There have been however indications that the DoE will be looking to engage potential developers for this programme by the end of 2013.[7] Any developments will be announced on the DoE's Small Projects REIPPPP main webpage at: http://www.ipp-smallprojects.co.za

6. "SAPVIA commends DoE for Round 3 Bid Submission date delay", South African Photovoltaic Industry Association, available at http://www.sapvia.co.za/sapvia-commends-doe-for-round-3-bid-submission-date-delay/
7. "DoE to approach small power producers for REIPPPP before year-end", available at http://www.engineeringnews.co.za/article/doe-to-approach-small-power-producers-for-reipppp-before-year-end-2013-04-09?utm_source=Creamer+Media+FDE+service&utm_medium=email&utm_campaign =EngineeringNews%3A+Gautrain+2012+ridership+up+60%25%2C+placing+%27severe+strain%27+on+capacity&utm_term=http%3A%2F%2Fwww.engineeringnews.co.za%2Farticle%2Fdoe-to-approach-small-power-producers-for-reipppp-before-year-end-2013-04-09

3.3 Issues surrounding policies

By far the greatest factor affecting the potential growth of the wind industry in South Africa is the firmness of the commitment by the Government to purchase renewable energy over the long term. Currently there is a firm commitment only until the end of 2017; with the IRP 2010-2030 being subject to review every two years and there is no guarantee that it will not change over time. The extension of the REIPPPP up to 2020 has not yet been fully formalised and is currently only confirmed in press releases.

Stakeholders in the wind industry must therefore proceed in the knowledge that there is substantial uncertainty about both the timescale and total volume of wind capacity construction in the medium to longer- term. Secondary factors affecting growth relate to local content requirements, skills shortages and skills development, and transmission grid infrastructure and access issues.

3.4 Wind Energy for other applications

SELF-GENERATION ON-SITE AND "WHEELING" FOR INDUSTRIAL APPLICATIONS

Apart from utility scale wind farms producing electricity for the national electricity grid, wind power has been investigated as a means for "heavy" electricity users to reduce their dependence on Eskom. The South African economy is highly dependent on its heavy industries, in the form of mining, metal smelters/ fabricators, manufacturing and petrochemical industries. All these industries demonstrate high levels of electricity-intensity, with the mining and metal production sectors having the largest operational expenditures on electricity. Data has indicated that industry and mining were responsible for approximately 59% of all electricity consumption in South Africa, during the period 2010-2011.[8]

South Africa has significant interests in various mining activities including coal, ferrous and rare earth metals and importantly gold extraction, one of the most electricity-hungry sectors of the South African mining industry. Other industrial sectors that are heavy electricity users include the steel foundries and automotive component manufacturers, while the agricultural sector (especially in areas where livestock farming is widespread) is also electricity dependent. Currently all these sectors, including other smaller electricity users such as the retail sector, are almost completely dependent on Eskom, to supply their electricity needs from the national transmission and distribution grid. This also makes their operations completely subject to price hikes and power outages, as those experienced throughout the country in 2008.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Until recently none of these industrial sectors were seriously considering establishing their own renewable energy plant as a viable alternative due to the high costs and risks involved with "self-generation". To date, wind power in this context has not been economically competitive with the subsidised electricity from the national grid. This attitude however could change in the future, as the energy security and climate change mitigation has risen up the agenda of most major companies, and as cost of wind energy comes down while grid supplied electricity is expected to rise as subsidies are gradually removed. Companies in the mining sector in particular are leading the charge, with major players considering wind and solar installations to supply their own electricity requirements. An example of this trend is the move to construct a 1MW hybrid PV-Diesel plant to supply a chrome mine near Thabazimbi, in Limpopo.[9]

The ability of wind power however to meet these demands is debatable as there is a direct requirement for an adequate wind resource in the vicinity of the facility-electricity user. Indicatively, the vast majority of mines in South Africa are located in north, central and eastern regions of the country, while the areas with highest wind potential are located in the South and East of the country. Additionally, the need for firm generation will also mean that wind power will most likely have to be combined with conventional generation or with a electricity storage facility. Some mining companies have investigated a concept known as "wheeling", whereby an electricity user establishes an electricity production installation far from the site of electricity consumption but uses the national grid to transport the electricity from the production site to the location of end-use. This approach has been used in other countries, and is notably popular in India (where users are also permitted to 'bank' electricity over given time periods with the local grid operator in order to balance the variable load), but its use in South Africa has not been possible so far due to the lack of legislation, regulations and technical expertise within industry and government to permit such an undertaking. Given these issues, the use of wind power to cover at least a proportion of the electricity needs is a possibility especially in the cases of facilities located remotely without good access to grid but adequate wind resource. Overall however, under present market conditions and those expected in the foreseeable future, this will remain a niche market for wind power.

8. "Cape Town 2011, State of Energy and Energy Futures Report", City of Cape Town, available at http://www.capetown.gov.za/en/EnvironmentalResourceManagement/publications/Documents/State_of_Energy_+_Energy_Futures_Report_2011_revised_2012-01.pdf
9. "1 MW PV plant to be built at Limpopo mine - South Africa", available at http://saaea.blogspot.co.uk/2012/08/1-mw-pv-plant-to-be-built-at-limpopo.html

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OTHER RURAL AND OFF-GRID APPLICATIONS

The requirement for electricity by remote facilities, outside of heavy industry, is also another potential market for wind power. Access to electricity is a major aim of the South African Government, and as such, significant effort has been expended to connect large proportions of the population. The Integrated National Electrification Programme (INEP) has been the main vehicle for this change, and has focused predominantly on providing access to grid-connection with off-grid solutions only considered where no other options are available. It is reported that in 2009, 88% of urban and 55% of rural populations had access to electricity, resulting in an overall level of 75% of all households. In 1993, the same figure stood at 30%. However, in 2007, electrification rates across the country varied noticeably with the Eastern Cape achieving only 60% as opposed to 85% in the Western Cape.[10]

Historically, off-grid electrification schemes have not been particularly successful. Until recently, these schemes were implemented by private sector companies who had to get special permission from the DoE to undertake the construction and commissioning of home systems, usually employing solar power systems. In general such off-grid electrification initiatives made slow progress for a variety of reasons including lack of clarity on definition of off-grid areas, non-payment of bills by consumers, and lack of maintenance. One of the main issues however has been the South African Government's approach which has focused almost completely on the extension of existing grid infrastructure, rather than the promotion of off-grid solutions including renewable energy sources. This approach can be traced back to a range of political and social reasons, but this focus, combined with the fact that renewables and wind energy in particular are still seen as more expensive than grid-supplied electricity, has meant that there has not been any impetus for their adoption as an alternative to grid extension. Additionally, the current setup which allows municipalities to purchase electricity from Eskom at low prices so that they can sell it on to electricity-users in their region at a marked-up price, is not conducive to allowing independent forms of electricity generation to infiltrate the market.

Given the current lack of support to the issue of rural and off-grid electrification it is not expected that this market segment will offer a substantial potential market for new wind power developments in the near-term. The recent signs of interest from the South African Government, however, in smaller renewable energy developments (1MW-5MW) can be seen as step in the right direction.

10. "COMPARATIVE STUDY ON RURAL ELECTRIFICATION POLICIES IN EMERGING ECONOMIES", International Energy Agency, available at http://www.iea.org/publications/freepublications/publication/rural_elect.pdf

4 OUTLOOK ON THE SOUTH AFRICAN WIND MARKET

Due to the fast pace of development in the South African market, forecasts for future growth are inherently difficult to undertake. As stated previously, the South African Government has a plan for 9.200MW of wind power to be installed by 2030. More recently the DoE has announced that a further 3.200MW of energy will be procured by 2020 under the REIPPPP, in addition to the 3.725MW already required by the end of 2016. It has confirmed that this translates to an additional 1.470MW of wind power by 2020. It is noted that the delay in the Round 3 deadlines can also be partially attributed to this increase in the renewable energy targets. An overview of the targets, as set out by the Government, can be seen below:

TABLE 4.1: GOVERNMENT'S RENEWABLE ENERGY TARGETS

MILESTONE	2016	2020	2030
Renewables Capacity [MW]	3.725	6.925*	17.800
Wind Installed Capacity [MW]	1.850	3.320*	9.200
PERCENTAGE OF TOTAL CAPACITY	50%	48%	52%

* Note: values for 2020 have not been officially confirmed yet

At the same time, Eskom has estimated that the country is in need of 40.000MW of additional new generating capacity by 2025.[11] Against this backdrop the South African Wind Energy Association (SAWEA) has claimed that, with the right policy framework, wind power could provide as much as 20% of the country's total energy demand by 2025. This, it is claimed, would translate into 30.000MW of installed wind capacity.[11]

4.1 GL GH forecasts for wind power

4.1.1 Large scale wind

GL GH has undertaken some high-level modelling to produce growth scenarios for the South African wind market. Specifically, the wind turbine capacity installed annually to 2030 has been estimated. In order to capture the many uncertainties involved with this type of work, estimates have been provided for Central, High and Low cases. The High and Low cases are intended to represent the 'credible maximum' and 'credible minimum' growth potential, implying therefore that, in the absence of a major disruption, it is unlikely that the eventual results will lie outside these limits.

The results are shown in Figure 4.1 (annual capacity installed) and Figure 4.2 (cumulative capacity).

11. "Global Wind Energy Outlook 2012", Global Wind Energy Council and Greenpeace, published November 2012

FIGURE 4.1: FORECAST OF WIND CAPACITY INSTALLED EACH YEAR

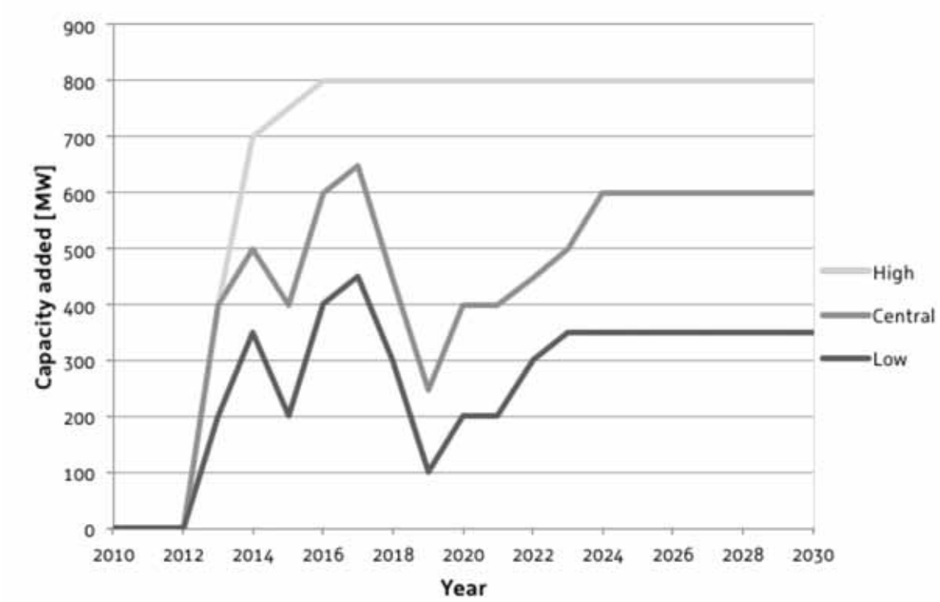
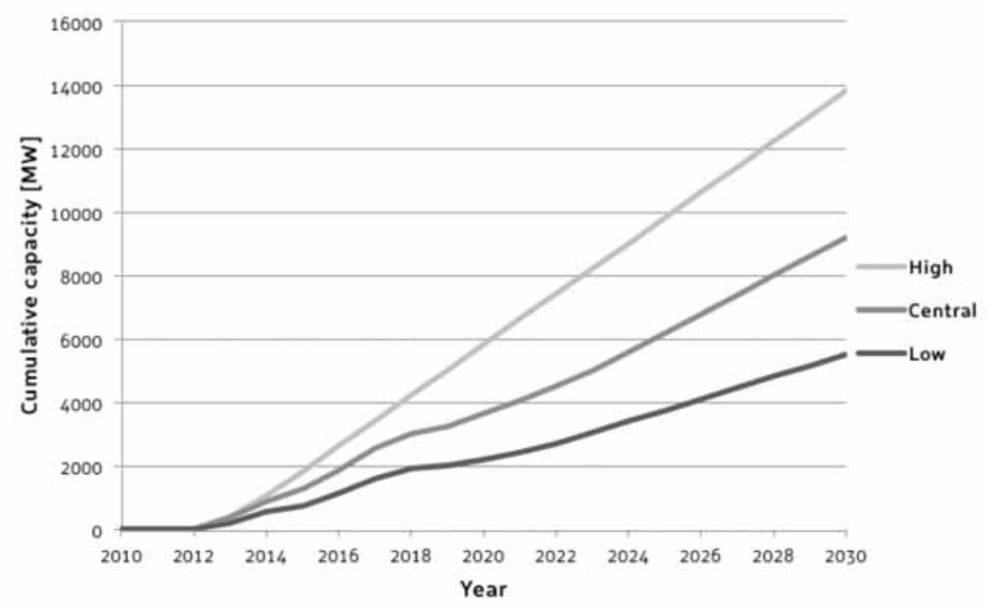


FIGURE 4.2: FORECAST OF CUMULATIVE WIND TURBINE CAPACITY



In the interest of simplicity, as the wind capacity currently (end of 2012) installed is small, it has not been included in this analysis.

CENTRAL ESTIMATE

The central estimate is based on the IRP produced by the DoE, modified in the period to 2020 to include an estimate of progress with the 3.320 MW of wind, intended to be built under the REIPPPP and subsequent announcements. In order to achieve the 2030 target it has been assumed that the DoE will be required to initiate two further rounds (Rounds 4 and 5) in addition to the two rounds already completed and the third round which is currently being initiated. The deadline for commencement of operation for the Round 3 projects has been set as end of 2017, as stipulated by the current Request for Qualifications and Proposals (RfP) guidelines, while commissioning of operations for Rounds 4 and 5 have been assumed to occur from mid-2018 and 2019 onwards respectively, (based on an average of the timings of commissioning seen for the first two rounds and the announcement that any subsequent rounds will mirror the schedule for Round 3). Using these assumed tender timings will result in the 2020 wind energy target being met by the end of 2019.

TABLE 4.2: TIMINGS OF DIFFERENT REIPPPP ROUNDS

STAGES	ROUND 1	ROUND 2	ROUND 3	ROUND 4	ROUND 5
Bid Submission Date	04 Nov 11	05 Mar 12	19 Aug 13	Aug 14	Aug 15
Selection of Preferred Bidders	25 Nov 11	21 May 12	29 Oct 13	n/a	n/a
PPA and Financial Close no later than	19 Jun 12	13 Dec 12	30 Jul 13	Jul 15	Jul 16
Required to begin commercial operation by	30 Jun 14	31 Dec 16	Dec 17	May 18	May 19

Note: numbers in blue indicate approximate dates assumed for this assessment and are hypothetical.

With regards to the allocations for each of the 3 rounds yet to be completed (Rounds 3, 4 and 5), it has been assumed that the remaining 653.5MW from the current 1.850MW will be installed in Round 3 (as recently confirmed by the DoE in their updated RfP guidelines), while the announced additional 1.470MW are assumed to be evenly split between Rounds 4 and 5 (i.e. 685MW per round). It should be highlighted that it is assumed throughout that the 100MW Sere Wind Farm, developed by Eskom outside the REIPPPP process, is assumed to be included within the 2020 and 2030 targets.

It also needs to be pointed out that all projected installed capacities past 2017 are still subject to considerable uncertainty, as there has yet to be any firm, legal, commitment from the Government. This should be taken into account when considering the implications of the projections presented here.

ANALYTICALLY, IN THIS (CENTRAL) SCENARIO IT HAS BEEN ASSUMED THAT:

- **In 2013, 300MW of REIPPPP Round 1 projects are assumed to be built, and the 100MW Eskom Sere project is assumed to come on-line.**
- **In 2014, the majority of the remaining Round 1 projects are assumed to be built, by the end of the year. Additionally the first 1/3 of the Round 2 allocation begin to be installed.**
- **In 2015 the second 1/3 of the remaining allocation from Round 2 and the first 1/3 of the initial 1.850MW (i.e. 653.5MW) allocated to Round 3, is also installed.**
- **2016 sees the installation of the majority of the remaining capacity allocated to Round 2, the second 1/3 for Round 3, and the first 1/3 of the Round 4 allocation of 685MW is commissioned.**
- **In 2017, the second 1/3 of Round 4 and the first 1/3 of Round 5 are assumed to be commissioned.**
- **In 2018 the final 1/3 of the Round 4 allocation is commissioned while the second third of Round 5 is also put into operation.**
- **This pattern is repeated for 2019 with the final 1/3 of the remaining 685MW being commissioned by the middle of that year. For 2020, an installation rate higher than that in 2019 has been assumed, in-line with the DoE's predicted build rate for that year.**

HIGH ESTIMATE
The high estimate is produced as follows:

- **In the short term (2013-2014), build rates are limited by pragmatic assessment of the rate at which the South African wind industry could realistically grow its capabilities, from the current position.**
- **From 2015-2016 onwards, the build rate assumes an aggressive but plausible development schedule supporting a stable and robust wind industry.**

LOW ESTIMATE
The low estimate is produced as follows:

- **In the short term and up until 2020, it is assumed that projects under the REIPPPP proceed more slowly than anticipated, and some fail to be built, or at least are not built within the REIPPPP timescales.**
- **In the longer term, it is assumed there is a minimum annual capacity addition, sufficient to maintain a wind industry in South Africa. Lower build rates would probably lead to much of the capacity being built by developers and contractors based outside South Africa, and it is assumed here that this is politically undesirable.**

Towards the end of the period studied, the IRP shows very high build rates: 800MW in 2024, 1600MW in 2025 and a further 1600MW in 2027, and then zero thereafter. GL GH believes these high build rates are unlikely to be achieved in single years, and large cost reductions would be achieved by spreading out the construction of this capacity in the period to 2030. Therefore the installation of this capacity has been spread more evenly across the years to 2030, with the total installed capacity at 2030 being unchanged.

Figure 4.1 shows peaks in the wind turbine installation rate in 2014 and 2016, followed by a dip in 2019-20 as previously discussed. In reality, this is very likely to be 'smoothed' to some extent by project developers, due to pressures for better resource utilisation.

The high estimate post-2016 is very uncertain, as it is highly dependent on political will. Clearly the resource available would allow higher growth, but this is tempered by considerations of potential competition from solar power, and other competition for public money.

As for the Central estimate, there are peaks in the installation rate in 2014 and 2016 and a dip in 2020, which in reality is likely to be smoothed to some extent.

4.1.2 Small scale wind

In June 2012, the DoE put out draft guidelines for the Small Projects Programme which aims at enabling the uptake of renewable energy generation projects between 1MW - 5MW and envisages that the 100MW will be procured in 4 Rounds of 25MW each, covering all applicable technologies (including onshore wind). No clear distinction has been made as to the expected technology make-up of the final 100MW. It is noted that small scale wind is subject to many of the requirements that are relevant to larger projects, such as the provision of energy assessments and environmental permits, and as noted previously will be required to meet certain qualification criteria in order to bid for contracts. Although recent announcements from the DoE have indicated that the South African Government appears to be sincere in pursuing this programme,[12] given the above conditions and the relatively unambitious targets set out at the time of writing, it is not expected that small scale wind projects will feature heavily in the energy mix for the foreseeable future. As such no forecasts are provided on small scale wind development.

12. "DoE to approach small power producers for REIPPPP before year-end", available at http://www.engineeringnews.co.za/article/doe-to-approach-small-power-producers-for-reipppp-before-year-end-2013-04-09? utm_source=Creamer+Media+FDE+service&utm_medium=email&utm_campaign =EngineeringNews%3A+Gautrain+2012+ridership+up+60%25%2C+placing+%27severe+strain%27+on+capacity&utm_term=http%3A%2F%2Fwww.engineeringnews.co.za%2Farticle%2Fdoe-to-approach-small-power-producers-for-reipppp-before-year-end-2013-04-09

4.1.3 Offshore wind

It has been noted by some commentators that South Africa does have noteworthy wind resources in the waters off the Eastern and Western Capes,[13] as a result of the geographical features of the land mass and the sea currents that prevail around South Africa. To date, however there has been no interest to explore the potential of offshore wind in the country and, due to the still developing market in onshore wind, and the relative maturity and cost of the technologies worldwide, it is not expected that there will be any significant offshore wind developments in the foreseeable future.

4.1.4 Characteristics of future projects

It is believed that project sizes in the near and medium term (i.e. to around 2020) will continue to be mainly in the region of 50 to 150MW, largely because of the development process. These projects will use turbines no larger than the 2-3.5MW size which is believed to be the likely optimum for onshore wind turbines elsewhere in the world. The upper end of this size range is particularly affected by road and rail transport restrictions, which apply equally in South Africa.

It is possible that maximum project size may increase in future, if the requirements of the bidding process change. If suitable sites are available, larger projects will typically offer economies of scale. This general rule is affected by electricity system issues: larger projects are more likely to require large-scale grid reinforcement, which can add significant cost and may introduce long delays.

It is possible that an additional market will emerge for very small projects, i.e. a single turbine or a small cluster, and possibly using smaller turbines, of 500kW or below. However, the economics of such projects are generally poorer than for larger projects, and so unless there is a change in policy and support measures, the total capacity installed will be very small. For timescales beyond 2020, it is not possible to forecast wind turbine and wind farm sizes and characteristics with any certainty.

13. "Development of Wind Energy in Africa", Alli Dimple Mukasa, Emelly Mutambatsere, Yannis Arvanitis and Thouraya Triki,m African Development Bank, available at http://www.afdb.org/fileadmin/uploads/afdb/Documents/Knowledge/AEC%202012%20-%20Wind%20Energy%20Development%20in%20Africa.pdf

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4.2 Financial volume of South African wind sector

4.2.1 Large scale wind

The estimation of the financial volume of any developing industry is a difficult undertaking and the wind sector in South Africa is no different. Anecdotal evidence has indicated that in the first year, the South African wind energy sector has attracted approximately R47 billion (Euro 4 billion) in infrastructural investment.[14] This figure however is likely to include capital committed, in effect, to lay the foundations of the wind industry in the country, so this level of investment annually is highly unlikely to continue in the future.

Using the forecasts for the South African wind market shown previously, in combination with the average project and turbine size, it is possible to generate general estimates of the levels of investment to be made in the onshore wind value chain to achieve the capacity installations. It should be noted that predictions on the volume of the market have been conducted only for the period up until 2020. This reflects the fact that there is no firm commitment by the Government past this date. Currently, there is only very limited data available on the costs of products and services related to the wind sector in the country. Additionally, as the South African market is still in its infancy, it is likely that any values currently available are not fully representative of the whole market or likely future costs. As a result the predictions presented here are based mainly upon typical costs currently observed in the mature Western European markets, with some adjustments to the Operational Expenditure (OPEX) values to take into account the dispersed locations of proposed sites and the resulting issues regarding access for maintenance.

It should be noted that this table is not intended to provide a forecast of future cost developments accounting for market developments such as supply chain dynamics, economic growth levels, etc., but rather to demonstrate the order of magnitude of investment which could be associated with investment in the South African wind industry over the coming years. Investment is broken down into development expenditure (DEVEX), capital expenditure (CAPEX) and operational expenditure (OPEX).

Table 4.3 indicates that, in today's terms, by 2020, an average of approximately 564 million Euros per annum in expenditure may be invested in the South African wind sector. This represents an attractive market for companies involved in the supply chain, while it is also possible that South Africa could act as potential export hub should the wind sectors in surrounding countries (Namibia, Mozambique, Lesotho etc.) start to develop as well.

14. Statement by Peter Venn, Windlab Managing Director, available at http://www.windlab.com/node/601

TABLE 4.3: INDICATIVE EXPENDITURE ON ONSHORE WIND INSTALLATIONS IN SOUTH AFRICA 2013 – 2020

	COST PER MW ASSUMPTION	2013	2014	2015	2016	2017	2018	2019	2020
New Installations [MW]		400	500	400	600	650	450	250	400
Cumulative Installations [MW]		400	900	1.300	1.900	2.550	3.000	3.250	3.650
DEVEX [Euro M][2]	0.04[3]	15	20	15	25	25	20	10	15
CAPEX [Euro M][2]	1.02[3]	410	510	410	615	665	460	255	410
OPEX [Euro M][2]	0.04[1, 3]	15	35	50	70	95	110	120	135
TOTAL[2]		440	565	475	710	785	590	385	560

Note 1: Due the size of the market and varying project characteristics, OPEX are expected to vary considerably between projects in South Africa.
Note 2: Figures rounded to nearest "5" to avoid unjustified implied accuracy.
Note 3: Figures rounded to 2 significant figures to avoid unjustified implied accuracy.
Note 4: Figures are in 2013 Euros and do not account for inflation.

4.2.2 Small scale wind

Using the definition currently employed by the DoE for small scale renewable projects (i.e. with a capacity 1MW to 5MW), it is possible to provide a very approximate estimate of the likely size of this particular wind market segment. Specifically, assuming the current even distribution of the allocated 100MW over four Rounds of bidding and that half of each round's allocation is likely to be for wind projects, it is possible to estimate the financial volume of the sector, using estimates for the DEVEX, CAPEX and OPEX from equivalent project sizes in western markets.

From table 4.4 it can be assumed that the small (1MW-5MW) wind market is likely to be worth, on average, approximately 25 million Euros per Round. It is important to note that the modelling of this market segment is even more inherently uncertain than that of the large scale wind due to on-going policy formation.

TABLE 4.4: INDICATIVE EXPENDITURE ON SMALL SCALE WIND INSTALLATIONS IN SOUTH AFRICA OVER FOUR ROUNDS

	COST PER MW ASSUMPTION	Round 1	Round 2	Round 3	Round 4
New Installations [MW]		13	13	13	13
Cumulative Installations [MW]		13	25	38	50
DEVEX [Euro M]	0.29[3]	4	4	4	4
CAPEX [Euro M]	1.58[3]	20	20	20	20
OPEX [Euro M]	0.06[3]	1	1	2	3
TOTAL[3]		24	25	26	26

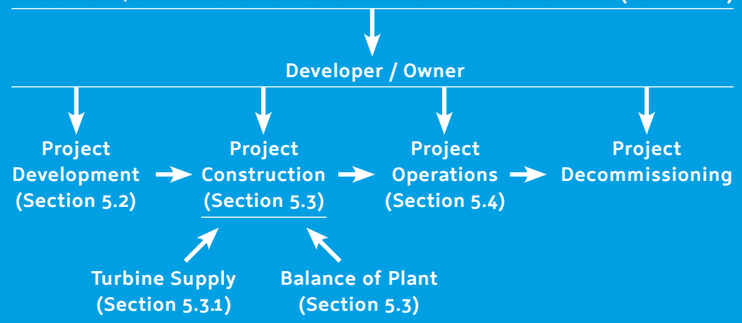
Note 3: The numbers presented have been rounded to the nearest 2 significant figures to avoid unjustified implied accuracy. All other numbers in the table have been rounded to no significant figures.

5 SOUTH AFRICAN **WIND VALUE CHAIN**

5.1 General overview of the South Africa Value Chain

The figure below provides a high-level overview of the different primary activities of the wind energy value chain from project design to decommissioning of a wind farm.

FIGURE 5.1: OVERVIEW OF THE VALUE CHAIN



5.1.1 Contracting arrangements

The current typical strategy during the construction is to utilise a single Engineering, Procurement and Construction (EPC)[15] contract for the provision of a fully functional wind farm on a turnkey basis. Consequently, the contract includes the provision of the wind turbine components together with the electrical and civil balance of plant together with the wind farm substation works. The EPC contract, commonly undertaken by the turbine supplier, utilises several main sub-contractors to undertake the turbine supply, balance of plant and electrical substation works. There is a premium associated with utilising an EPC contract structure although this minimises risk to the owner and more importantly to any associated lenders and investors. Alternatively, wind farms can be constructed using multiple smaller contracts. Again, there is a perception that this will minimise capital costs but increase all of the aforementioned risks.

5.2 Project development

The stage of project development usually employs a wide selection of companies from different backgrounds. The following list provides generalised categories of the principal participants in the supply chain during the development phase.

5.2.1 Developers

PROJECT DESIGN AND FEASIBILITY WORK TYPICALLY CONSISTS OF THE FOLLOWING PRINCIPAL ACTIVITIES:

- **Site screening, selection and land lease;**
- **Wind resource assessment and site studies;**
- **Turbine selection and project design;**
- **Electrical connection feasibility and off-taker arrangements;**
- **Obtaining necessary permits including environmental assessments;**
- **Project management.**

15. EPC is a common contracting arrangement in infrastructure projects where a contractor agrees to design the project, procure required material and construct it (possibly with further subcontractors), for a fixed price.

In order to provide an overview of the industry, it is useful to understand who the principal contracting partners for a project developer are during the development, construction and operating phases of a wind farm's life, and what activities they may be involved in providing.

5.2.2 Consultants

THE FOLLOWING LIST PROVIDES GENERALISED CATEGORIES OF THE PRINCIPAL PARTICIPANTS IN THE SUPPLY CHAIN DURING THE DEVELOPMENT PHASE WHICH MAY BE CONTRACTED BY A PROJECT DEVELOPER.

- **ENGINEERING CONSULTANTS may be responsible for a number of activities including energy production analyses, site layout design, balance of plant (BoP) design and grid connection feasibility studies. They may also act as project managers, subcontracting some work to environmental consultants and other specialised firms. In addition to acting on behalf of the project developers (so called Owner's Engineers), consultancies also have a role in independent advise and verification, as required by the REIPPPP guidelines. A large number of consultancies have been involved in the South African wind market.**
- **ENVIRONMENTAL CONSULTANTS responsible for conducting environmental impact assessment (EIA) including visual and noise impact assessments, as well as field surveys and archaeology.**
- **FINANCIAL CONSULTANTS are responsible for assisting with fund-raising and financial planning, and for providing market pricing advice. This category in South Africa is dominated by private banks and large financial institutions.**
- **LAWYERS provide necessary legal advice regarding land lease negotiations and all of the project contracts (turbine supply, balance of plant construction, financing, power purchase, interconnection, and service).**

5.3 Project construction

WHILE DEPENDENT ON THE CONTRACTING STRUCTURE UTILISED BY A PARTICULAR DEVELOPER, PARTICIPANTS IN THE UPPER TIERS OF THE ONSHORE WIND SUPPLY CHAIN DURING THE CONSTRUCTION PHASE FOR SOUTH AFRICAN PROJECTS CAN GENERALLY BE CATEGORIZED INTO TWO MAIN CATEGORIES, NAMELY:

- **WIND TURBINE GENERATOR (WTG) ORIGINAL EQUIPMENT MANUFACTURERS (OEM), responsible for supply of the wind turbine technology, with a broader scope of work in some instances.**
- **BALANCE OF PLANT CONTRACTORS, responsible for the civil works, electrical works, turbine erection and completion. Often the balance of plant contractor is also responsible for the engineering design and project management. Depending on the provincial regulation, the electrical works may include only the works to the high-voltage side of the substation or include all the work required to the transmission interconnect. The BOP contractor will frequently sub-contract elements to other players. It is noted that for almost Round 1 and 2 projects, the WTG OEM's have acted as their own EPC contractors, subcontracting out certain aspects.**

5.3.1 International WTG manufacturers

The utility-scale wind turbines available today are highly complex pieces of machinery that have been developed over many years by major engineering companies. During the early years of wind power's development arc, the wind turbine market was dominated by specialist manufacturers originating in Western Europe. Over time these pioneers, including names such as Vestas, Enercon and Gamesa, were joined by large engineering conglomerates such as Siemens and General Electric (who entered the market through acquisition of existing players). These players have since been joined by major industrial contenders from India and the Far East.

To date, the South African wind energy market has seen the involvement of several of these major players, with companies such as Vestas Wind Systems and Nordex leading the ways, followed by Acciona Windpower, Siemens Wind Power, Suzlon Energy Limited and Sinovel Wind Group Co. Ltd. Apart from these companies, potential new entrants to the market include European manufacturers such as Alstrom and Gamesa as well as Chinese manufacturers United Power and Goldwind. As certain projects have not yet been fully finalised, it is possible that the above names could be subject to change, as projects choose their wind turbine supplier or switch to different ones prior to completion.

5.3.2 Local WTG manufacturers

There are a few local, small-scale, manufacturers in South Africa. So far they have focused on small-scale designs, and none of them have a significant market share in the wider South African wind turbine market.

5.3.3 Civil and Mechanical works contractors

The vast majority of project construction in South Africa has so far, been allocated to local companies. It is important to note that Round 1 projects are only just beginning to break ground, so it is possible that the list of construction companies involved in the market is likely to expand over time.

5.3.4 Electrical works contractors and suppliers

As in the case of the mechanical and civil constructors, there is a variety of companies acting as electrical contractors that are active in the South African renewables market. Once again it is likely the number of companies involved could expand as more projects start construction.

5.4 Operations and Maintenance

POTENTIAL TURBINE O&M SERVICE PROVIDERS INCLUDE:

- **Wind Turbine Suppliers: Typically offer warranty terms between two (2) and five (5) years (some suppliers are offering up to 10 years or longer in the South Africa market), as well as an operations and maintenance package in association with the wind turbine supply contract. Extension options are commonly offered, and their terms have become more favourable since the industry moved into a buyer's market, so it could be expected that the OEMs operate the wind turbines for the first 10 years of their operating life.**
- **In-house O&M by owners**
- **Independent O&M providers**

The operations and maintenance (O&M) of turbines typically includes scheduled turbine maintenance (annual or semi-annual), unscheduled turbine maintenance and repair, major overhauls and/or retrofits, spare parts sourcing and handling, remote monitoring and operational reporting. Further O&M is required for substation maintenance and balance of plant maintenance.

As noted, upon expiration of the initial turbine warranty, many OEMs will offer an extended service package, which would be subscribed to at the time of signature of the original turbine supply contract. This contract may be a Full Service Contract, a Limited Service Contract or a Service Only Contract.

A Full Service Contract will continue to provide the same level of cover as a Warranty, Operations and Maintenance (WOM) Agreement. There is a contractual difference between the liability for defects being covered by a fixed price agreement in this arrangement as opposed to a warranty under the WOM Agreement, however there is no practical difference in repair risk cover to the wind farm. An Availability Warranty would be included in the scope of a Full Service Contract. The price of this contract is likely to vary considerably from project to project depending on the project characteristics and time of offer for this contract type (e.g. operational experience to date).

A Limited Service Contract may also be offered, in which the liability for all Unscheduled Repair is included in the scope of work, but excluded from the fixed contract fee. Such a contract would typically include all other scope items covered by the Full Service Contract scope, such as monitoring and addressing minor resets and faults. An Availability Warranty is also likely to be offered with this contract type. The main difference between a Full Service Contract and a Limited Service Contract is that the latter will have a lower fixed fee, but the Project Owner assumes the risk of pricing variability with all repair work undertaken after the initial warranty period. These contracts may be offered by the OEM or by an Independent Service Provider (ISP).

A Service Only Contract may be put in place whereby the Project Owner or a Contracted Manager performs the day-to-day operational management of the wind farm, and schedules the Routine Service

work with either the original OEM or an ISP on a periodic basis. In this situation, all repair work would also be arranged on an as-needed basis from the original OEM, from the Component Supplier or other specialist company. No specific performance warranties would be included under this type of contract.

5.5 Current involvement of companies from the Netherlands

The Netherlands have historically been strong in the field of renewable energy, and wind energy in particular. The country was among the European front-runners of wind power while the utilisation of wind for industrial purposes has a long history in the Netherlands.

Areas of strength for the Dutch wind sector include wind turbine design support, financing and wind consultancy (technical due diligence, environmental studies etc.), while the country has utilities that are active internationally. The involvement of Dutch companies in the South African wind market has however been very limited to date.

5.6 Level of current technology in market

THE WIND TURBINES KNOWN TO BE AVAILABLE FOR THESE PROJECTS FALL INTO TWO CLASSES:

- **Around 1.5MW, mostly from Chinese suppliers;**
- **Around 2-3MW, from North American, European and some Chinese suppliers**

GL GH believes that there is a difference in turbine size between these classes only because some Chinese manufacturers do not yet have larger turbines in their product range with sufficient track record. The turbines supplied to the South African market have to conform to a high standard and are required to hold a valid design certificate from an internationally recognised certification body. As such, the wind turbine technology being promoted in the South African wind market is of the same standard as that present in more developed and mature wind markets worldwide.

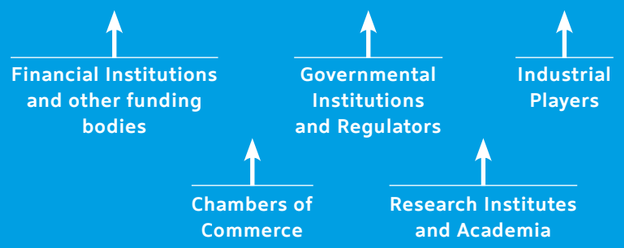
With regards to the level of technology utilised in other aspects of wind farm development, it is important to note that South Africa is in the process of aligning itself with international standards and best practise, as required by its participation in the World Trade Organisation. As a result it should be expected that any components or installations currently being used in South Africa will also have corresponding minimum levels of quality assurance.

A list providing a non-exhaustive overview of the major companies involved in the South African Wind market can be obtained through the Embassy in Pretoria, South Africa.

6 STAKEHOLDERS IN THE SOUTH AFRICAN WIND SECTOR

This section provides a brief overview of the major stakeholders that directly influence the development and operation of the renewable energy sector in South Africa. The figure below gives a broad outline of the various participants that make up the framework that surrounds the sector, divided by broad function. It should be noted that there can be overlaps between the different groups, which are not depicted here for simplicity.

FIGURE 6.1: MAJOR STAKEHOLDERS IN THE SOUTH AFRICAN RENEWABLE ENERGY SECTOR



6.1 Financial institutions and funding bodies

The following sections describe financial stakeholders, divided into major development banks/institutions and private banks, in alphabetical order.

6.1.1 Major development banks

African Development Bank (AfDB)
The African Development Bank has been involved with the South African renewable energy sector through the provision of assistance and funding to Eskom. Specifically the AfDB, in conjunction with the World Bank's Clean Technology Fund) had provided total value of USD365 million to Eskom, to enable the deployment of the first large-scale renewable wind and solar projects. The Bank has a history of involvement with Eskom as it has previously approved and signed a first loan of US500 million in 2008, and also provided further funds (EUR1.86 billion) in 2009 for Eskom's Mendupi coal fired power plant project.[16]
The Bank's aim is to play a leading role in introduction of the latest technologies for high-impact climate change mitigation, particularly to reduce coal dependence.[17] The Bank has also been involved in providing financing (as part of a consortium) for a concentrated solar power project in the country.
More information is available at: www.afdb.org/en/countries/southern-africa/south-africa

Development Bank of Southern Africa (DBSA)
The DBSA is a State-owned Development Finance Institution which focuses on large infrastructure projects within the public and private sector. The main objectives are the promotion of economic development and growth, human resource development, institutional capacity building, and the support of development projects in the region. The DBSA has undertaken a multitude of roles in the area of project financing.[18] The DBSA has been involved in the first round of the REIPPPP, by approving funding for 10 solar projects and one wind energy project, the Jeffrey's Bay Wind Farm, amounting to R6.2 billion.[19] The DBSA also said it approved R27.5 billion in infrastructure projects, mainly in South Africa.[20]
More information is available at: www.dbsa.org

Industrial Development Corporation (IDC)
The IDC is South Africa's national development finance institution. Established in 1940, its remit is to promote economic growth and industrial development in South Africa but also in the rest of Africa. The institution is an instrument of the South African Government. The IDC's primary objective is to enable sustainable economic growth in South Africa by creating competitive industries and enterprises.[21] The IDC has been active in both rounds of the REIPPPP. For Round 1, the IDC committed R5.2 billion to consortia awarded successful bid status while in the second bidding round, the IDC further committed R2.3 billion to seven projects awarded successful bid status.[22]
The IDC has also set aside approximately R25 billion towards the development of green industries over the next five years.[23]
It has also been reported that the IDC has provided a R5 billion private placement with the Public Investment Corporation (PIC) to create a 'green bond'. The purpose of this bond is to facilitate funding for businesses looking to invest in clean-energy infrastructure developments. The duration of the bond is 14 years to be issued in tranches depending on the project pipeline

16. "AfDB, Eskom Sign USD365M Renewable Energy Loans", AfDB, available at http://www.afdb.org/en/news-and-events/article/afdb-eskom-sign-usd365m-renewable-energy-loans-8385/
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19. "DBSA backs 11 renewables projects with funding of R6.2bn", Engineering News, 13 December 2012, http://m.engineeringnews.co.za/article/dbsa-backs-11-renewables-projects-with-funding-of-r62bn-2012-12-13
20. "Energy features strongly in 2012 DBSA disbursements", Natasha Odendaal, 08 October 2012 http://www.engineeringnews.co.za/article/energy-features-strongly-in-2012-dbsa-disbursements-2012-10-08
21. "About the IDC", Industrial Development Corporation, available at http://idc.co.za/about-the-idc/overview
22. "IDC concludes R5bn 'green bond' with PIC", Engineering News, published 07 November 2012, http://www.engineeringnews.co.za/article/idc-concludes-r5bn-green-bond-with-pic-2012-11-07
23. Strong results posted by IDC", Industrial Development Corporation, http://idc.co.za/media-room/articles/261-strong-results-posted-by-idc

and uptake, with R500 million assigned for the initial tranche[22].
In October 2012, the IDC and the German Development Bank (KfW) launched a R500 million (€41.9m) Green Energy Efficiency Fund (GEEF), for the purpose of promoting investment in energy efficiency and renewable energy in South Africa.[24]
More information is available at: www.idc.co.za

International Finance Corporation (IFC)
The IFC is a member of the World Bank Group and is the largest global development institution focused exclusively on the private sector. Its main aim is to work with developing countries to achieve sustainable growth by financing investment, mobilizing capital in international financial markets, and providing advisory services to businesses and governments. The IFC has providing funding for South Africa's development both through setting up funds to promote business and renewable energy schemes (such as the Clean Technology Fund) and directly for renewable energy projects. Specifically the IFC is investing approximately $143 million (R1.25 billion) in direct financing, and coordinating approximately $264 million in parallel loans to support the construction of two solar power (CSP) projects in South Africa.[25] The IFC has also been considering its involvement in funding wind energy, through proposed long-term financing arrangements to the Amakhala Wind Farm.[26] The IFC has also provided funding and financial guidance to local South African banks in a bid to promote the creation of financial activities that can underpin the growth of the renewable energy sector in general.[27]
More information is available at: www1.ifc.org/wps/wcm/connect/region__ext_content/regions/sub-saharan+africa

Nederlandse Financierings-Maatschappij voor Ontwikkelingslanden N.V. (FMO)
The FMO is a Dutch development bank which finances projects and companies in developing markets. The bank provides a range of services including project financing, equity, loans and guarantees as well as expertise in planning and business practices. The bank was founded in 1970 and is a public-private partnership between the Dutch Government and other private sector bodies (commercial banks, trade unions etc.).[28] The FMO's main contribution to the South African REIPPP process has come in the form of providing funds to various projects, including but not limited to the Bokpoort Concentrated Solar Power (CSP) project (together with DEG and Lereko Metier Sustainable Capital Fund (LMSCF), The Khi Solar CSP project, the Cookhouse Wind Farm project and others. The LMSC is an equity fund that will target investments in the renewable energy, energy efficiency, water and waste sectors in South and Southern Africa.[29] The bank also provides funding to companies or joint-ventures in developing markets, discussed further in Section 8.3 of this report.
More information is available at www.fmo.nl/energy

24. "Green Energy Fund Launched by IDC and German Development Bank", Tsholofelo Mothibi, available at http://thenetworks.co.za/2012/10/green-energy-fund-launched-by-idc-and-german-development-bank/
25. "IFC Invests in Sub-Saharan Africa's First Concentrating Solar Power Plants", International Finance Corporation, http://www.ifc.org/IFCExt/Pressroom/IFCPressRoom.nsf/0/5423D144CCE0745A42257AB40057227A
26. "Summary of investment information: Amakhala Wind, International Finance Corporation, http://www.ifc.org/ifcext/spiwebsite1.nsf/651aeb16abd09c1f8525797d006976ba/829882578d9e6a0685257b0c00631a3e?OpenDocument
27. "IFC and Sasfin Announce Partnership to Develop Energy Efficiency and Renewable Energy Projects", http://www1.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/cb_home/news/feature_sasfin_nov2012
28. "Profile", FMO, available at http://www.fmo.nl/about-us/profile
29. "PIC, FMO AND DEG INVEST IN LEREKO METIER SUSTAINABLE CAPITAL FUND", FMO, available at http://www.fmo.nl/k/n114/news/view/1562/538/PIC-FMO-and-DEG-invest-in-Lereko-Metier-Sustainable-Capital-Fund.html
30. "About Us", Public Investment Corporation, http://www.pic.gov.za/?page_id=4
31. "PIC set to 'participate directly' in renewable energy projects ",Siseko Njobeni, 28 November 2012 , http://www.bdlive.co.za/business/energy/2012/11/28/pic-set-to-participate-directly-in-renewable-energy-projects
32. "What we do", World Bank Group, available at http://web.worldbank.org/WBSITE/EXTERNAL/EXTABOUTUS/0,,contentMDK:20103838-menuPK:1696997-pagePK:51123644-piPK:329829-theSitePK:29708,00.html
33. "Eskom Power Investment Support Project Fact Sheet", The World Bank, available at http://siteresources.worldbank.org/INTAFRICA/Resources/257994-1342195607215/Eskom_Power_Investment_Support_Project_Fact_Sheet.pdf

Public Investment Corporation (PIC)
The Public Investment Corporation Limited was established in 1911 and is one of the largest investment managers in Africa, managing assets of over R1.17 trillion. The PIC is a financial services provider and like the International Development Corporation, is wholly-owned by the South African Government. The PIC's mandate is to invest funds on behalf of public sector entities, based on their investment mandates.[30] The PIC has already been involved in the financing of solar projects (with a stake in two projects and as part of a joint venture in another) as part of the REIPPPP. PIC is reported to be looking to participate directly and more widely in future renewable energy projects while it is reported to have set aside R12 billion for environmentally sustainable investments, with the majority of that earmarked for renewable energy projects. [31]
More information is available at www.pic.gov.za

The World Bank Group (WB)
The WB is made up of 5 organisations: The International Bank for Reconstruction and Development, the International Development Association, the International Finance Corporation, the Multilateral Investment Guarantee Agency and the International Centre for Settlement of Investment Disputes. The Bank's mandate is to reduce poverty and support development worldwide. This is achieved through the provision of low-interest loans, interest-free credits, and grants to developing countries as well as providing policy advice, research and analysis and technical assistance.[32] The World Bank has been involved in the South African Renewable Energy market, both through its subsidiary the International Finance Corporation (see below), and directly, through the Eskom Investment Support Project. The latter aims to enable Eskom "to enhance power supply and energy security in an efficient and sustainable manner to support economic growth objectives and accelerate South Africa's long-term carbon mitigation strategy". To achieve this aim, the WB is providing US $3.7 billion (2.8 billion Euros) to finance renewable energy and energy efficiency projects, which include US $260 million (199 million Euros) for Eskom's wind and solar power projects.[33]
More information is available at www.worldbank.org/en/country/southafrica


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6.1.2 Private banks

Absa
Absa Group Limited (Absa or the Group), listed on the JSE Limited is one of South Africa's largest financial services groups. Absa is a subsidiary of Barclays Bank PLC (Barclays), which owns 55.5%. Absa is currently underwriting around R10.1 billion of renewable energy projects in South Africa as part of the REIPPPP. The Absa supported projects represent 488MW of the about 1.415MW of power procured in the first round of the REIPPPP.[34] In addition, Absa has partnered with French development finance institution Agence Français de Developpement (AFD) to offer R400m worth of loan financing to companies for clean energy or energy efficiency projects.
More information is available at www.absa.co.za/Absacoza/Commercial/Financing

Investec
Investec is an international specialist bank and asset manager that provides financial products and services in three principal markets, the United Kingdom, South Africa and Australia as well as certain other countries. The group was established in 1974. In July 2002 the Investec group implemented a dual listed company structure with listings on the London and Johannesburg Stock Exchange (JSE).
The combined group's current market capitalisation is approximately GBP3.6 billion. Investec is involved at both the equity investment level as well as debt provider to projects in the REIPPPP.
In late 2011, Investec and the European Investment Bank (EIB) contributed €100m to a renewable energy funding facility in South Africa to promote clean energy generation and energy efficiency.
More information is available atwww.investec.co.za/products-and-services.html

Nedbank
Nedbank Group Ltd is a bank holding company and one of the four largest banking groups in South Africa. Nedbank Ltd., the principle banking subsidiary, has been listed on JSE Ltd since 1969 and on the Namibian Stock Exchange since 2007 and has a market capitalisation of R95,4 billion at 31 December 2012. Old Mutual plc is the majority shareholder, owning 52% of the group. Nedbank has been actively involved in the funding of renewable energy projects as part of South Africa's REIPPPP. To date, the bank has been mandated to provide approximately R6 billion of funding to 11 projects in the first phase of the Renewable Energy IPP Programme.[35] Nedbank Ltd. is also reported to have provided investment to no fewer than 39% of the successful Round II REIPPPP bids by allocated capacity.[36]
More information is available at www.nedbank.co.za/website/content/home/index.asp

Rand Merchant Bank (RMB)
RAND Merchant Bank (RMB), part of FirstRand Group (which includes First National Bank), has already committed more than R10 billion to finance renewable energy projects in South Africa.[37] These funds relate to the closing of five projects (including wind, concentrated solar and PV) in Round One of the REIPPPP totalling almost 400MW of installed capacity. RMB is also acting as lead arranger on several Round 2 projects.
More information is available at www.rmb.co.za

34. "http://www.engineeringnews.co.za/article/financial-services-firm-supports-first-round-bidders-2012-12-14"
35. "Knowledge is capital", Nedbank Capital, available at http://www.nedbank.co.za/website/uploads/files/NedbankCapitalGradBrochure.pdf
36. "Diverse benefits of renewable energy now becoming a reality in SA", Nedbank, published 21 May 2012, available at http://www.nedbank.co.za/website/content/mediakit/media_content.asp?page=top&article=current&prID=1391
37. "http://www.rmb.co.za/PDFs/our-DealsTop05/RMBRenewableEnergyAd.pdf"
38. "Clean energy & energy efficiency", Standard Bank Group, available at http://sustainability.standardbank.com/environment-overview/climate-finance-carbon-trading/clean-energy-and-energy-efficiency/
39. "Thinking differently – facilitating change", Karin Ireton, Standard Bank Group, available at http://www.jse.co.za/Libraries/JSE_Showcase_-_SRI_23082012/Standard_Bank.sflb.ashx

Standard Bank
Standard Bank Group, one of the 4 main South African Banks, has emerged as one of the major financers of the REIPPPP.
Standard Bank is headquartered in Johannesburg and is approximately 53% South African owned, with operations in 18 African countries.[38]
The Bank has total assets in the region of R1,500 Billion (in 2012) and has made promotion of sustainability and renewable energy a central theme of its strategy. As part of this drive, the bank has been involved in the Clean Development Mechanism and has been developing a Programmatic CDM registration ("PoA") around various small and large scale renewable energy projects in South Africa.[38,39] By aggregating the different projects, this allows a portfolio to use one registration to gain carbon credits, potentially making the registration process quicker, the verification process cheaper and allowing dissemination of acquired knowledge throughout the project members.[38] The bank has also been heavily involved in the financing of projects for Round 1 and 2 of the REIPPP process. Specifically for Round 1, Standard Bank supported 22 projects in total, out of which 13 winning renewable project bids totalling 605MWs were supported by the bank's debt financing and represented an underwrite value of around R8 billion. This represented 58% of the wind power to be installed in that Round. Standard Bank has also been active in Round 2 of the REIPPPP, supporting approximately 138MW of onshore wind projects.[38,39]
More information is available at corporateandinvestment.standardbank.co.za

6.2 Governmental institutions

Department of Energy (Republic of South Africa)
The DoE was established in 2009, following the reorganisation of the Department of Minerals and Energy. The DoE is responsible for the management of the country's energy resources and has been key in the formulation and promotion of energy policy in South Africa.[40] As such, the DoE is responsible for energy procurement programmes and has been in charge of managing the REIPPPP.
More information is available at at www.energy.gov.za

Eskom Holdings SOC Ltd (Eskom)
Eskom is South Africa's state-owned electricity utility and is responsible for approximately 95% of all electricity generation in the country.[41] Eskom was established in 1923 and is the largest electricity producer in Africa and among the largest utilities in the world. The company comprises of Generation, Transmission and Distribution divisions and until the advent of the Independent Power Producer (IPP) initiatives, was the only source of electricity generation, managing all the country's conventional power plants.

40. "About Us", Department of Energy Republic of South Africa, available at http://www.energy.gov.za/files/au_frame.html
41. "Company Information", Eskom, available at http://www.eskom.co.za/c/40/company-information/

Prior to the REIPPPP, Eskom has made some attempts to diversify its supply away from conventional generation, by undertaking the development of the Sere Wind Farm. This project, however, is still under development at the time of writing. Eskom is also the legal entity required by South African legislation, to provide the Power Purchase Agreements (PPAs) and in effect acquire the power to be produced by the IPPs, following the construction of plants that have been awarded contracts through the REIPPPP.
More information is available at www.eskom.co.za/c/article/552/home

Department of Trade and Industry (DTI)
The DTI is responsible for South Africa's industrial development, trade, export and investment activities as well as employment and regulatory frameworks. Under its auspices, various groups have been established to deal with specific aspects of the economy. Some groups of direct interest to the wind sector are:

- **SOUTH AFRICAN BUREAU OF STANDARDS (SABS)**
  The SABS is the country's official body for developing, promoting, and maintaining the South African National Standards, with regards to commodities, products and services.[42] The Bureau is responsible for aligning South Africa's standards with international norms, as dictated by the country's membership to the World Trade Organisation.
  More information is available at www.sabs.co.za

- **COMPANIES AND INTELLECTUAL PROPERTY COMMISSION (CIPC)**
  The Companies and Intellectual Property Commission was created after the merging of Office of Companies and Intellectual Property Enforcement (OCIPE) and the Companies and Intellectual Property Registration Office (CIPRO). Based in Pretoria, the Commission's remit is to register companies and intellectual property rights and ensure compliance with a variety of financial, regulatory and legislative standards with regards to intellectual property law.[43]
  More information is available at www.cipc.co.za

National Energy Regulator of South Africa (NERSA)
NERSA is South Africa's regulator in charge of, among other energy industries, the electricity industry. The Electricity Division is divided into four departments, each of which is responsible for a different facet of the industry. The departments cover the issuing of all licenses for generation, transmission and distribution; setting the tariff guidelines and rates, as well as defining the pricing frameworks used by the industry; undertaking electricity infrastructure planning which includes promoting renewable energy; and overseeing regulatory reform.[44] As part of its remit, NERSA also has the power to approve operational aspects of the electricity grid such as the connection code for renewable plants, and has a direct influence on the prices that the state-utility Eskom can charge for the electricity it supplies to customers.
More information is available at www.nersa.org.za

6.3 Industrial players and associations

South African Renewable Energy Council (SAREC)
SAREC is an umbrella body for industry bodies in renewable energy, founded in late 2011. Its founding participants were the Sustainable Energy Society of Southern Africa (SESSA), the South African Solar Thermal Industry Association (SASTELA), the South African Photovoltaic Industry Association (SAPVIA) and the South African Wind Energy Association (SAWEA).[45] The organization's goal is 'to act as a collective custodian and voice for the renewable energy in South Africa'. It seeks to do this by optimizing regulatory and policy frameworks for renewables, removing barriers to entry, informing energy policy development, liaising with international agencies, and facilitating public and private sector coordination.

SAWEA
A not-for-profit industry organization representing companies active in the wind energy supply chain in South Africa.
SAWEA has a number of goals: promoting wind energy in SA; streamlining the South African policy/regulatory framework; facilitating synergies between the growth of the industry and the achievement of Government's broader socio-economic aims; sharing information; and acting as a platform for wind energy discussion for diverse stakeholders. Although it was set up in 1998, SAWEA operated on a voluntary base with limited funds until mid-2010; since then it has increased its influence.
Today it has 10 working groups, spanning technical and logistical issues to policy and PR.[46]
More information is available at www.sawea.org.za

South African National Energy Development Institute (SANEDI)
SANEDI was formed in 2012, replacing two previous bodies, the South African National Energy Research Institute (SANERI), and the National Energy Efficiency Agency (NEEA). SANEDI's primary focus is the increase of awareness and uptake of green energy in South Africa. Although it maintains strong ties with the DoE it is making moves to establish itself as an independent research, monitoring and evaluation organisation. The organisation comprises of various "portfolios" which in turn encompass six research centres, including the recently established Renewable Energy Centre Of Research and Development (RECORD).
Within SANEDI's structure, RECORD is responsible for energy technology development and its mandate includes co-ordinating renewable energy research in South Africa, facilitating renewable energy research collaboration, contributing to renewable energy skills development, supporting renewable energy business development, renewable energy awareness creation and standards development & technology evaluation
More information is available at www.sanedi.org.za

42. "Giving the quality edge", SABS, available at https://www.sabs.co.za/About-SABS/index.asp
43. "The dti agencies", available at http://www.thedti.gov.za/agencies/cipc.jsp
44. "Electricity Overview", National Energy Regulator of South Africa, available at http://www.nersa.org.za/
45. "Submission to NERSA: Eskom MYPD 3 application", SAREC/Johan van den Berg, Jan 2013, available at http://www.nersa.org.za/Admin/Document/Editor/file/Consultations/Electricity/Presentations/South%20African%20Renewable%20Energy%20Council.pdf
46. "About SAWEA", South African Wind Energy Association homepage, available at http://www.sawea.org.za/

6.4 Research bodies and academic institutions

Centre for Renewable and Sustainable Energy Studies (CRSES) at the University of Stellenbosch
CRSES established a Postgraduate Programme in Renewable and Sustainable Energy Studies in 2006 to train scientists and engineers in renewable energy.[47] The Centre undertakes academic research into a variety of subjects related to renewable energy including electromechanical aspects of wind turbines. Specifically, the CRSES has been investigating permanent magnet generators and power electronics for wind turbines. It has worked together with groups from the University of Cape Town and in 2011 a spin-off company was formed to commercialise resulting designs. The CRSES is also cooperating with Northwest University on wind turbine blade design and manufacturing.[48]
More information is available at www.crses.sun.ac.za

Council for Scientific and Industrial Research (CSIR)
The CSIR is a leading scientific and technology research, development and implementation organisation in South Africa. Founded in 1954 and headquartered in Pretoria, but with offices and centres throughout South Africa, it undertakes directed research and development for socio-economic growth.[49] Most notably, the CSIR has been actively involved in the creation of a Wind Atlas of South Africa (WASA). WASA is a twinning programme between South Africa and Denmark's Risø DTU which aims to develop methods and data for a South African wind map, as well as improving capacity within South Africa to enable planning of large-scale roll-out of wind power. WASA receives financial support from the Royal Danish Embassy (RDE) and the Global Environment Facility (GDF).[50] This funding is delivered via the DoE's South African Wind Energy Project (SAWEP). Noted that in 2008 the CSIR signed a Memorandum of Understanding with the Netherlands Organisation for Applied Scientific Research (TNO) and Delft University of Technology (TU Delft), with a view to exploring opportunities for cooperation.[51]
More information is available at www.csir.co.za

University of Cape Town (UCT)
UCT is a member of the WASA consortium. Its Climate System Analysis Group (CSAG) and multi-disciplinary Energy Research Centre (ERC) not only conduct research relevant to wind energy, but also engage in capacity building programmes.[52,53] The ERC specifically has published work on a variety of subjects, including South African renewable energy policy and costing of renewable electricity.
More information is available at www.erc.uct.ac.za/ and http://www.csag.uct.ac.za

Technology Innovation Agency (TIA)
The TIA was established in 2008 and aims to support technological innovation across all sectors of the economy, including energy. This is accomplished by supporting the development and commercialisation of research outputs from Higher Education Institutions, Science Councils, Public Entities, and private research institutions and bringing them to market.[54] A variety of financial and non-financial support mechanisms are available to this end, including the provision of funds to companies looking to develop and commercialise technologies of interest.
More information is available at www.tia.org.za

47. "About Us", Centre for Renewable and Sustainable Energy Studies, available at http://www.crses.sun.ac.za/
48. "Current Research" http://www.crses.sun.ac.za/research-current-research-wind.php
49. "About Us", Council for Scientific and Industrial Research, available at http://www.csir.co.za/about_us.html
50. "About Wind Atlas for South Africa", available at http://www.wasaproject.info/about_wind_energy.html
51. "Building and construction research boosted by agreement with leading Dutch centre available at "http://www.csir.co.za/enews/2008_mar/be_04.html
52. "About CSAG services", available at http://www.csag.uct.ac.za/about-services/.
53. "About ERC", available at http://www.erc.uct.ac.za/about_erc.htm
54. "The Technology Innovation Agency (TIA or the Agency)", available at http://www.tia.org.za/about-us

6.5 Business Organisations

South African Chamber of Commerce and Industry (SACCI)
SACCI is the largest Chamber in South Africa and is made up of 50 constituent chambers with a combined membership of approximately 20,000 businesses. SACCI has official representation on a number of government bodies, which allows it to act as an active voice for South African business. SACCI has also signed co-operation agreements with many national chambers of commerce and industry worldwide.[55]
More information is available at www.sacci.org.za

South African – Netherlands Chamber of Commerce (SANEC)
SANEC is an intermediary agency for companies and organizations doing business in – or seeking to do business in – and across the Netherlands, South Africa, the Benelux and the Southern African region. The Chamber has offices in The Hague, as well as in Johannesburg and Cape Town. It offers a range of services for its 400 members – spanning networking, business matchmaking events, market entry advice, and enabling the development of closer economic ties via special events.[56]
For companies looking to enter new markets, SANEC offers a range of tailored services, including introductory overview of sectors, market research as well as organising trade missions and "matchmaking" with local South Africa companies.
More information is available at www.sanec.org

55. Chamber homepage, available at http://www.sacci.org.za/index.php?option=com_content&view=article&id=2&Itemid=3
56. "About SANEC", available at http://www.sanec.org/about-sanec

7 ASSESSMENT OF THE SOUTH AFRICAN WIND MARKET

This section analyses identified strengths, weaknesses, opportunities and threats (SWOT) that exist in the emerging South African wind industry as can be identified thus far. The SWOT analysis relates both directly to the industry and also to drivers and barriers identified in the wider environment which the industry operates in.

7.1 Strengths

- **Wind resource:** Many regions in South Africa offer a very good wind resource. Moreover, South Africa has vast spaces and a low population density, as opposed to markets in e.g. Western and Central Europe. This can be a strong advantage in the planning and permitting process for wind farms and regarding possible limitations on the application of technology (noise levels, rotor heights, visual impact, and interference with other activities such as air travel or military use).

- **Awareness and public support:** There is general awareness in South Africa of the advantages of wind power, in particular in relation to green job creation and empowerment of previously disadvantaged peoples. The South African Government and various agencies have also been actively supporting the raising of levels of awareness in the country, through the creation of bodies to promote renewable energy and energy efficiency (e.g. SANEDI) and through campaigns to raise the profile of the sector in the public sphere.

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- **Community involvement:** There has been a strong focus on both community partnering / ownership and empowerment, which is hoped will lead to continued support and development of the renewables sector.

- **Industrial Basis:** South Africa in general has a strong industrial base. Existence of skilled labour and engineering know-how is an important factor in investment decisions, even if these skills are not currently considered available, at the required level, within the local labour market (see Weaknesses).

- **Business climate and infrastructure:** South Africa is one of the most industrialised countries on the African continent and among the most advanced developing economies worldwide. At the same time, it still enjoys a comparative labour cost advantage over Western Europe. Furthermore, transport and communication infrastructure is generally well developed in most locations in South Africa, while its political and financial stability compared to most neighbouring countries, combined with a large potential workforce, make it in general an attractive investment proposition and definitely among the best in Africa.

- **Economic climate:** As opposed to some other wind power markets, South Africa has a stable economic and financial system, as noted above. The South African wind sector has also benefitted greatly from the willingness and ability of the local banking system to get involved in the financing of projects. Although South Africa has been affected by the global financial crisis, the effects have definitely been less acute than elsewhere. This is an important prerequisite to providing the investment climate needed for wind energy.

7.2 Weaknesses

- **Maturing industry:** Despite strong growth over the last couple of years, the South African market is still very much in a nascent stage of development. The local manufacturing of components is still rather limited (from an international perspective) and limited competition in some areas has not yet led to full exploitation of cost reduction potentials. Despite some companies setting up manufacturing facilities to serve the solar PV sector and facilities to manufacture wind turbine towers, there has not been much development of a local wind/renewable –specific industrial base.

- **Skills:** There is currently a disconnect between the available South Africa workforce skills sets and those required by the renewables sector. Additionally it is believed that the quite strongly regulated immigration laws are preventing skilled people from outside the country filling the particular skills areas which are required for the growth of interest.

- **Climate and complex terrain:** In the future, the often complex terrain could pose a challenge to wind farm development due to higher logistical costs and technical requirements, as the more accessible sites are developed. Therefore, developments in some areas are likely to be economically less attractive and more difficult to interconnect.

- **Policy environment:** Due to the maturing nature of the industry, there is still a need for strong governmental support, in order for the industry to develop to its full potential. Despite the support of wind power development has had so far, currently the lack of a concrete commitment past 2017, means that there is still some uncertainty about the long-term prospects of the industry.

- **Lack of diversification:** As noted throughout the report, to date, there has been almost no uptake in the area of "small renewables" (<5MW), while generation at even smaller scales (<1MW) has received no incentive at all. This focus on large-scale generation and the subsequent lack of support and interest in other market segments limits the potential benefits of having a broader size-diversified renewables base.

- **Infrastructure in remote locations:** While the overall standard of infrastructure in the country is high, even by comparison to Western economies, the levels of investment in certain areas where wind power is likely to be located can be considered low. This is evident in the case of electricity grid infrastructure and road surface quality which may pose a problem for players in certain sub-sectors (e.g. transportation).

- **Permits and licenses:** While the REIPPPP has proven successful at promoting the renewables industry in South Africa by providing a steady framework and set of guidelines, it has been argued that the process is still highly bureaucratic. The issue of bureaucratic complications can be especially pronounced at more local levels, where the issuance of permits and adherence to regulations may be deemed overly burdensome.

7.3 Opportunities

- **Supply Chain development through partnerships:** An opportunity could lie in establishing partnerships between Dutch players in the wind industry and traditional South African industry players interested in entering the supply chain (e.g. from the construction, manufacturing or services industry). This strategy would most likely take the form of Dutch specialist companies providing their specialist knowledge to bolster the abilities and credentials of South African firms, which in turn can offer their established presence in the market and possibly also help with meeting some of the social and financial criteria of the REIPPPP (specifically B-BBEE and local content requirements).

- **Manufacturing base:** As noted in previous sections, the potentially large, relatively low-cost, workforce available in South Africa, a strong history of construction and manufacturing, and the availability of raw materials, could provide Dutch companies with a strong manufacturing base. This could then provide for, both for the South African market, as well as those of neighbouring countries and in general the rest of Africa and the Middle East.

- **Industry leadership:** Dutch companies may be able to exploit some of the South African market characteristics to gain leadership in certain segments or niches. Examples of this might be by providing specialist EIA consultancy services focusing on social programmes, or finding ways to address the skills shortages and general lack of specialised training opportunities, through the provision of skills and training programmes. The latter is considered a particularly pertinent area for development, as the skills gap is seen as potentially one of the largest stumbling blocks in the establishment of the wind industry in South Africa.

- **Wind development services:** Despite the fact that certain players (international and local) have already gained a strong foothold in the South African wind market, the potential number of developments should mean that there will be substantial opportunities for Dutch companies involved in project development and/or consultancy, to acquire market share.

- **Integration of wind power:** As wind power is developed further and becomes a staple of the South Africa energy mix, there will also be a growing demand for better wind forecasting and electrical integration services. So far these services have not been developed as the South Africa electricity system can still cope with the small amounts of wind power to be installed. In the future however larger amounts of wind power, combined with old and inflexible generating facilities, will mean that there will be a need for technologies and approaches to ensure continued reliable balancing of supply and demand.


GL Garrad Hassan

- **O&M Market:** In the future, as a number of wind farms approach the end of their warranty period, this may open up opportunities for 3rd party service providers in the South African market. This is a trend that is beginning to emerge in more mature wind energy markets so it can be expected that this may also occur in South Africa.

- **Small scale wind:** The provision made in the REIPPPP for smaller scale projects (1-5MW) could create a new market segment in the wind market. This market segment would offer a comparatively more open market for new entrants and smaller players.

7.4 Threats

- **Established international players:** As the DoE has already held two Rounds of tendering, with a third one on-going, it is fair to say there are private stakeholders that already have a market share. It is conceivable therefore that should the market fail to enlargen adequately, it will be hard to dislodge these established players from their current market dominance.

- **Upcoming local companies:** As above, and given the strong engineering heritage in the country combined with potential measures that could be seen as protectionist, there is the potential that local companies could develop to the extent that they dominate certain market segments and make it hard for external companies to break in. This however is more likely in areas of the wind market with relatively low barriers to entry (basic manufacturing e.g. turbine towers, or civil construction works) than it is for high-end specialised turbines or services (wind turbine equipment or wind-specific technical consultancy).

- **Local content and B-BBEE regulation:** There is a small likelihood that the Government might set its policies in such a way as to discourage external participation from other countries (e.g. through high thresholds for local content of services or South African engagement. This is considered unlikely however based on the evidence so far, which indicates that foreign companies are establishing a strong local presence, potentially with local partners, in order to be able to compete in the market.

- **Limitation in transmission capacity:** As in other countries, with growing amounts of wind power generation, in the mid to long-term limitation in transmission capacity is likely to become the main threat to further expansion in (certain) South African provinces. This is increasingly likely given the age of Eskom's infrastructure and the lack of investment in strengthening the grid.

- **Planning procedures:** The DoE is in the process of undertaking a Strategic Environmental Assessment (SEA) process which aims to identify suitable areas for development, taking into account the country's electrical grid. While this process will also allow for the coordination between the various Government Departments leading to a more streamlined authorisation procedure, this could potentially have a major impact on which projects will be awarded Preferred Bidder status in future. The earmarking of only certain areas for development could lead to increased competition for the diminishing available project areas, and make it hard for new entrants to break into the market.

- **Alternative energy sources:** South Africa, historically, has relied heavily on coal-fired generation and even now, Eskom has a number of large conventional generation power plants in the pipeline. Eskom has also been investigating the possibility of developing nuclear power as an alternative to coal-fired power stations, but with limited success so far. Finally, the potential of shale-gas to meet the growing requirements of the economy has also become a consideration in South Africa. Extensive use of indigenous coal reserves or the development of other sources such as nuclear or shale gas has the potential to reduce the demand for alternative generation types such as wind depending on relative cost of generation and levels of state support.

- **Currency:** A weak South African Rand can threaten possible imports required by the wind industry.

8 NEW MARKET ENTRANT INFORMATION

8.1 South African tendering procedures for the wind REIPPPP

The guidelines for participating in the South African REIPPPP are analytically laid out in the appropriate documents published by the DoE and available for a fee. Specifically, in order to access the documentation pertaining to the REIPPPP, each prospective bidder has to pay a non-refundable sum of R15,000 (approximately 1,250 Euros) and fill in a registration form. Upon payment of the fee, the supplied RfP documentation covers all the relevant aspects of the process and is the main reference point for all the procedures and requirements.

The REIPPPP is open to worldwide bidders and not restricted only to local entities. As noted earlier however, only companies specifically set up with the sole purpose of bidding, constructing and operating any wind farm project are allowed to participate in the programme. For the purposes of submitting a Bid Response, a Bidder may be either a single corporate entity or a consortium. A consortium however must be converted into an incorporated single purpose company, with the various consortium members becoming members of that company. It is also stipulated in the requirements of the RfP that any entity or any Member of a Bidder which is not domiciled within the Republic of South Africa, or does not have an existing, formal association with a South African firm or organisation, shall indicate this fact clearly in its bid. Of particular interest to contractors is the clause that states that any entity may be involved in more than one bid, without any special permission from the South African Government, as it is expected that the bidders will manage any potential conflicts of interest that might arise. As part of the bid submission, it is necessary to disclose key subcontracts and information on the contracts that the developer will enter into. In addition, there is a need to submit forms about land acquisition, environmental compliance and authorisation, permissions from various bodies (CAA) and national heritage sites.

8.1.1 Procedure overview

The REIPPPP is set up as a competitive tendering process where the Government award electricity contracts to a certain number of bidders, at the end of a qualification and selection process. The submitted bids will be assessed on the basis of compliance with the Qualification Criteria, Price and Economic Development objectives. The evaluation of bids will be undertaken in two stages. As part of the first stage, bidders are invited to submit their tenders, which are then assessed against a set of qualification criteria, to see whether they are compliant. The compliant bids are then assessed against a set of evaluation criteria which relate only to the Price and Economic Development aspects, and are ranked, per Technology, on a comparative basis. The bidders are scored (evaluated) based on price (70%) and economic development (30%).

The successful companies from this second stage are then awarded “Preferred Bidder” status. The transmission operator, Eskom, is then obliged to offer a PPA to the Preferred Bidders. An important aspect of the RfP process is that the bidders fully accept all the terms of the programme including the conditions of the RfP, the PPA or any other agreements offered by the governmental bodies involved, as there is no scope for renegotiations of any of the contractual terms. Before the actual submission of a bid, it is expected that the Bidder will have undertaken an appropriate level of due diligence on all technical, legal, financial, environmental, site planning, heritage and other matters relevant to the Project in respect of which it is submitting its Bid Response.

The qualification and evaluation criteria are laid out analytically in the RfP documents (mainly in Parts B and C of the documentation), while the other volumes that make up the supplied documents cover all aspects of the programme requirements. A brief overview of some of the most salient points are presented in this section, but it is important that companies interested in participating in the REIPPPP should make themselves familiar with all the relevant documentation. It is noted that all submissions must be in English, while all costs in the submitted documents must be in South Africa Rand.

As part of the general requirements for participation, all companies involved in a bid must submit a declaration stating that they are fully familiar with all relevant national and regional laws in relation to the procurement and the subject matter of the IPP Procurement Programme, and that they will comply with such laws. Particularly for companies outside of South Africa, a declaration stating that suitable South African legal counsel has been employed by them is required. In order to participate in the process each Bidder is required to provide the DoE with a guarantee of the amount equal to R100.000 (roughly 8.300 Euros) per MW of the nameplate capacity of the proposed facility to be developed, issued by a bank that is licensed to conduct business in South Africa and has an adequate credit rating. An absence of a guarantee will lead to disqualification. Should the Bidder

pass qualification and be awarded Preferred status, the Bidder will be required to provide a new guarantee equal to R200.000 (approximately 16,600 Euros) per MW of nameplate capacity. In either case however, the original Bid Guarantee will be returned to the Bidder.

It is noted that the Preferred Bidder will also be expected to pay the DoE a Development Fee equal to 1% of the total project costs once certain agreements have been signed. The Development Fee is reportedly used by the DoE to cover the costs incurred by the Department as part of running the REIPPPP.

With regards to the second stage of the submission process (Bid evaluation), it is important to note the emphasis placed on the social and economic development aspects of the proposed projects. As part of the Evaluation process, the Economic Development proposal included in any bid, will be assessed against the Department's requirements and thresholds. There are seven socio-economic factors considered by the tender process which, with the exception of the local content rule, are also directly linked and guided by the B-BEE guidelines and principles. These elements are shown in the table 8.1. These factors align with the social and economic policy of the Government.

Each factor has a 'threshold' and 'target' value. The threshold is the minimum requirement and the target is the desired level. The threshold and target values are increasing over time with each successive bid round.

Job creation is seen a major component of the assessment criteria and one that is closely aligned with the Government's policy to tackle poverty and inequality. As a result bidders are required to indicate certain statistics such as the percentage of South African nationals, Black citizens and people from local communities employed in the project company. The breakdown of statistics is also required for the stages of construction, operation and maintenance.

One of the other ways the Government is pursuing the job creation agenda is through the requirement of increased local manufacture. Localisation in thus defined with respect to the capital costs and costs of services procured for the construction of the Facility excluding finance charges, land and mobilisation fees of the Contractor undertaking Operations. Local content requirements account for 25% of the 30 points (i.e. 7.5% of the whole bid score). Local content is defined as the local spend as a proportion of the project value and is expected to raise with each successive REIPPPP round. The threshold and targets for local content are shown in the table 8.2, based on current published guidelines.

TABLE 8.1: NON-PRICE FACTOR WEIGHTINGS

WEIGHTING	ECONOMIC DEVELOPMENT ELEMENTS
25%	Job Creation
25%	Local Content
15%	Ownership
	Management
5%	Control
	Preferential
10%	Procurement
	Enterprise
5%	Development
	Socio-Economic
15%	Development
100%	TOTAL
30 points	TOTAL POINTS

TABLE 8.2: LOCAL CONTENT REQUIREMENT BY SUBMISSION DATE

FIRST BID SUBMISSION DATE		SECOND BID SUBMISSION DATE		THIRD BID SUBMISSION DATE	
Threshold	Target	Threshold	Target	Threshold	Target
25%	45%	25%	60%	40%	65%

As part of the "ownership" criterion, the REIPPPP requires a Bidder to have a South African Entity Participation of 40% as well as setting certain thresholds on the actual level of certification of the local partners. In parallel, Bidders are required to indicate the percentage of equity owned by Black individuals, Black Enterprises and Local Communities, in relation to the total equity in the Bidder. Bidders are also required to identify needs of the communities surrounding the project site and formulate strategies to meet these needs by utilising the Socio Economic Development Contributions from the project's revenue stream. These contributions are to be made available by setting up Community Trusts.

8.1.2 Other RfP requirements

The REIPPPP has a variety of stipulations that are linked to the technical aspects of the bid. These stipulations are either referred to directly in the RfP documents or else references are provided as to the documents that should be referenced (i.e. National Electricity Grid codes etc). Although a review of all these issues is beyond the scope of this report, certain high-level points are presented here for further information.

One of the main criteria which has, in many ways, formed the nature of the bids submitted to the REIPPPP is the requirement that all projects must have an installed capacity between 1MW and 140MW at any single grid connection point, in order to limit congestion on the grid connections to the Transmission or Distribution System. To date, and as presented in previous sections, no successful projects have been below 20MW in capacity, while there has been a tendency towards larger projects, with a few coming in over 130MW. It can be argued that this trend can be traced back to a combination of economies of scales interacting with the REIPPPP minimum and maximum project sizes. As noted previously, there has been no uptake as yet of REIPPPP small scale generation programme, so no developments have yet been developed in the 1MW-5MW.

Another aspect of the REIPPPP is the requirements placed on wind turbine models that are considered. The RfP has placed a requirement that all turbines used in the projects have to provide evidence of certification in accordance with international

guidelines, IEC 61400. Alternatively, the proposed wind turbine models must have completed the design evaluation component of a type certification program and have the relevant certificate or compliance statement as issued by one of the following bodies: Det Norske Veritas, Germanischer Lloyd; TÜV, DEWI-OCC, China Certification Society or China General Certification Centre.

Additionally, the Bidder must provide independently certified predictions of energy production, as well as a letter signed by the Bidder, the EPC Contractor, or the key electrical contractor that states that the Project is able to comply with the applicable Codes. There are also other requirements to provide information on issues during construction and operations such as expected water consumption and how these demands will be met.

Finally, for companies that intend to act as Independent Engineers, it is required that they have suitable insurance in place with a "reputable" insurance provider, carrying on business in South Africa, and who is acceptable to the PPA Parties. However, details are not available as to the exact criteria used to classify insurance provision so this matter should be looked into in more detail.

8.2 Broad Based Black Economic Empowerment Requirements

In order to redress the social inequalities of the Apartheid-era governance and to develop the under-utilised potential of previously marginalised social groups (namely the "African, Indian and Coloured" populations), the South African Government has set up Black Economic Empowerment (BEE) initiatives. The main objectives of these BEE initiatives can be summarised as an aim to empower more black people to own and manage enterprises, achieve a change in the racial composition of ownership and management of companies, promote finance for black economic empowerment, ensure that black-owned enterprises benefit from the government's preferential procurement policies and in general promote the opportunities for black people in a variety of social and economic spheres. These initiatives have culminated in the enactment of the Broad-Based Black Economic Empowerment (B-BBEE) Act in 2003, (with an amendment in 2011) which now governs many of the working aspects of the South African economy.

In order to further enhance this empowerment drive, in 2007, BEE Codes of Good Practise were developed to allow for the objective measurement of BEE achievements across all sectors of the economy. These codes in effect require that all companies operating in South Africa make a contribution towards the aims of BEE and require that all state bodies and public companies consider the Codes when making decisions on issues such as procurement, licensing/concessions, partnerships and sale of state-owned assets. Significantly, all private companies must satisfy the requirements set out in the Codes if they wish to do business with the Government or its affiliated bodies (as in the case of the REIPPPP). As such, companies in South Africa that deal with the governmental or semi-governmental institutions must meet the B-BBEE requirements according to the Preferential Procurement Act. In turn, these companies may require their suppliers also be B-BBEE "empowered" to improve their rating against government criteria. This process has been incorporated into the REIPPPP as part of the basic qualifying criteria for bidders (as mentioned in Section 8.1.1).

FURTHER INFORMATION ON B-BBEE:

- **The dti's page on B-BBEE: www.thedti.gov.za/economic_empowerment/bee.jsp**
- **The B1SA Opportunity Network's information on the legal requirements of B-BBEE: bee.b1sa.co.za/**

It is important to note that foreign companies seeking to do business in South Africa are also required to observe the BEE Codes of Good Practise. It has been recognised however that it would be impractical, and in many cases impossible, for foreign companies to meet these requirements so special provisions have been made for these instances. These provisions allow for foreign companies to make contributions (known as Equity Equivalent (EE)) to the B-BBBE requirements in lieu of a direct sale of an equity stake of their company. The value of these EE contributions may be defined using 25% of the value of the foreign company's South African operations or may be measured against 4% of the Total Revenue from its South African operations annually, over the period of continued measurement.[57]

As foreign companies will most likely be expected to contribute towards the B-BBEE goals, in some form, a thorough understanding of the relevant regulations is an important aspect of any business plan for Dutch companies looking to enter the South African wind market.

8.3 Funding opportunities

The funding opportunities available to private sector enterprises seeking to enter the South African market can be divided between those provided by Development Banks and those available from local private banks.

57. "Equity Equivalent Programmes for Multinationals", the dti, available at http://www.thedti.gov.za/economic_empowerment/equity.jsp

8.3.1 Funds from Development Banks

The FMO, the Netherlands Development Finance company, has a variety of funding options that might be applicable to Dutch companies looking to expand into the South African wind energy market. The FMO provides funds to support high risk projects that promise a higher level developmental impact. The funds are managed by the FMO on behalf of the Dutch Government, and include the Access to Energy Fund (AEF) and the Infrastructure Development Fund (IDF).

- **ACCESS TO ENERGY FUND: This fund is aimed at private sector projects to provide sustainable access to energy services in developing countries. The fund can be applied to renewable energy projects and also covers new initiatives as well as the rehabilitation of existing facilities. The fund can be used to provide equity or subordinated debt/senior loans up to 20 million Euros or 75% of the total transaction (whichever is lowest). The fund can also provide direct grants for project developments. Although the fund can be used to finance all aspects of power projects (generation, transmission and distribution) the fund favours distribution projects and in general aims to enable long-term access to energy for at least 50.000 people per project.**[58]

- **INFRASTRUCTURE DEVELOPMENT FUND: The purpose of the IDF is to provide longer-term (up to 20 years) funding for infrastructure projects in low-income countries. The fund aims to promote investment by private players in private or private- public infrastructure including energy projects and can provide loans up to 15.5 million Euros. The fund can also be used to acquire minority shares in equity investments (up to 7.75 million Euros)**[59]

- **FUND EMERGING MARKETS (FMO – "FONDS OPKOMENDE MARKTEN"): The FOM is a joint initiative of the Dutch and the FMO and aims to facilitate investments by Dutch companies in emerging markets. The FOM provides medium and longer term loans to companies or joint ventures between Dutch companies and local enterprises that are majority-owned or controlled by Dutch companies. These loans can take the form of unsecured or subordinated loans which should then permit these enterprises to attract additional capital from local banks in the target countries. The exact terms available to companies depend on whether they are looking to enter an emerging market and/or a developing market, but for companies looking to enter the South African markets, the FOM can provide between 500.000 and 10 million Euros, while annually the fund make 35 million Euros available with a variety of maturity periods. The fund is applicable to companies that have a link with Dutch companies, either as shareholders or through a strong and long term trade link with a Dutch company. Such companies should have a consolidated turn-over of at least 10 million Euros. All sectors, accept for financial services and real estate, are in principle eligible for FOM.**[60]

8.3.2 Other notable Development bank funds

The DBSA has programmes aimed at providing project financing for bids submitted to the REIPPPP. The funding options however are only available to Black Enterprises which would be forming part of any given Project Company, and as such this option is of limited interest to external stakeholders looking to access funds. Likewise, the IDC also has a Green Energy Efficiency Fund (GEEF) which is aimed at supporting energy efficiency and renewable energy for self-consumption. These funds however are aimed at South African companies.

8.3.3 Financing from Private Banks

Funding in this category is most likely to come in the form of targeted finance, negotiated on a case-by-case basis and cannot therefore be analytically listed. An indication of the main banks involved to date in the South African wind sector has already been provided in Section 6.1, so what follows is a brief overview of the financing options provided by these major private banks that are likely to be of relevance to renewable energy companies. It should be noted, however, there are likely to be other banks, both in South Africa and abroad, that can offer similar or additional services and products. In addition to the more usual Term Loans and provision of Working Capital, certain banks offer additional services:

BANK	PRODUCTS
Investec	Acquisition Finance, Leveraged Buyouts, BEE Transactions, Project Finance
Nedbank	Infrastructure, Energy and Telecommunications Financing, Acquisition Leveraged Financing, Carbon Financing, Project Finance
Standard Bank	Mergers & Acquisition (M&A), Debt Advisory, Equity Capital Markets (ECM), Debt Capital Markets (DCM), Acquisition finance, Structured trade and commodity finance, Mezzanine debt, hybrid financing, Bridging finance, Foreign exchange and interest rate hedging, Trading of carbon credits and carbon-linked finance, Project Finance
ABSA	Acquisition and Leveraged Finance, Structured Trade and Commodity Finance, Balance Sheet Advisory and Preferential shares, Project Finance

58. Energy for Growth", FMO Entrepreneurial Development Bank, available at www.fmo.nl/access-toenergy
59. "Infrastructure Development Fund", FMO Entrepreneurial Development Bank, available at www.fmo.nl/infrastructurefund
60. "Fund emerging markets for Dutch enterprises", FMO Entrepreneurial Development Bank, available at www.fmo.nl/fom

8.4 Incentives

The DTI offer a variety of incentive schemes to promote business[61] although some are aimed specifically at South African businesses and therefore might not be applicable to Dutch companies entering the market. Additionally the applicability of all the schemes to wind power should be verified. A selection of the most relevant ones is provided below:

Manufacturing Investment Programme (MIP)
The MIP is a reimbursable cash grant for local and foreign-owned manufactures who wish to establish new production facilities or expand existing ones. It should be noted that for foreign investors there is an additional Foreign Investment Grant (FIG). This scheme compensates qualifying foreign investors for costs incurred in moving qualifying new machinery and equipment (excluding vehicles) from abroad to South Africa.[62]

Capital Projects Feasibility Programme (CPFP)
The CPFP is a cost-sharing grant that contributes to the cost of feasibility studies that could lead to projects that will increase local exports and stimulate the market for South African capital goods and services. The eligibility for the programme is restricted to South African registered legal entities, or foreign entities partnered with a South African registered entity.

Critical Infrastructure Programme (CIP)
The CIP is a cost-sharing grant for projects designed to improve critical infrastructure in South Africa. The grant can cover development costs from a minimum of 10% to a maximum of 30% of the total development costs of qualifying infrastructure.
As clarification, it is stated that infrastructure for which funds are required is deemed to be 'critical' if the investment would not take place without the said infrastructure or the said investment would not operate optimally.

Enterprise Investment Programme (EIP)
The EIP, aimed at small industry, works in a similar fashion to the CIP, by providing targeted grants to promote investment, Black empowerment and job creation in the manufacturing sector. It provides grants for between 15-30% of qualifying investments.[63]

Technology and Human Resources in Industry Programme (THRIP)
The THRIP supports research and technology development, and aims to enhance the numbers of appropriately-skilled people, thus helping the South African industry. The programme provides a 50:50 cost-sharing grant, to a maximum of R8m per annum, across any number of projects, and is available to all companies undertaking science, engineering and technology (SET) research, in collaboration with educational institutions.
It is not clear however whether this applies only to locally registered enterprises.

61. "Trade, Exports & Investment", the dti, http://www.thedti.gov.za/trade_investment/export_incentives.jsp?subthemeid=26
62. "Capital Expenditure: Foreign Investment Grant", Government Investment Incentives, available at http://www.investmentincentives.co.za/expenditure-capital/foreign-investment-grant
63. Capital Expenditure: Small Industry", Government Investment Incentives, available at http://www.investmentincentives.co.za/expenditure-capital/small-industry

8.5 Regulations, standards and certification issues relevant to the South African wind sector

The wind power sector in South Africa is still a developing market and as such many of the regulatory aspects governing it are still in the process of being defined. There are however certain aspects that have been codified while there is a reasonable expectation that other outstanding issues regarding the sector will be addressed in the near future.

South Africa is a member of the World Trade Organisation and this fact has influenced the country's regulatory framework. Whereas originally the country had its own sets of standards, moves are actively being made to align the country's requirements in this area with international norms.

The overarching body in charge of accreditation is the South African National Accreditations System (SANAS) that formally recognises and authorises all the country's Certification, Inspection, Proficiency Testing and Laboratory systems. SANAS has a wide range of applications, ranging from the accreditation of medical facilities to B-BBEE verifications bodies. Quality assurance and certification of products and services from third parties is handled, in turn, by the South African Bureau of Standards (SABS). As the national standardisation authority for South Africa, SABS is responsible for maintaining South Africa's national standards database, as well as developing new standards and revising, amending or withdrawing existing standards as required. In general, SABS is in the process of aligning the South African national standards with the IEC standards. However it is expected that there will be deviations from this approach to take into account country-specific issues.

In many areas it is also to be expected that South Africa-specific requirements will be crucial (for example transportation, electrical systems, grid connections etc.). It is advisable that all relevant regulations and standards are investigated and considered as appropriate.

8.5.1 Key agencies and useful websites

South Africa Bureau of Standards (SABS) - www.sabs.co.za
National Regulator for Compulsory Specifications - www.nrcs.org.za
Department of Energy - www.energy.gov.za
Department of Labour - www.labour.gov.za

9 OPPORTUNITIES FOR MARKET ENTRY

The SWOT analysis undertaken in Section 7 of this report has highlighted certain areas of opportunity, including those that could be classed as Business-to-Business prospects, in the South African wind market for foreign companies, including those from the Netherlands. The opportunities can be grouped in the following general categories:

Partnering with local companies and creation of local facilities: So far, the vast majority of successful wind project developments in South Africa have involved the partnering of international companies with local entities, rather than local companies proceeding on their own. This pattern has also been repeated in other sub-sectors of the wind power market, where local manufacturers have set up some form of understanding with foreign firms to produce components or whole machines under license, in partnership etc. (for example the South African manufacturers I-WEC and DCD Wind Energy, both licensing designs from German engineering companies). At the same time, there is also a strong "pull" from the South African market towards foreign companies willing to establish facilities in the country. When this drive is combined with the fact that most manufactured goods (including heavy machinery and transportation equipment) in South Africa are actually imported, it establishes a clear signal that there is considerable scope for foreign involvement in the country's manufacturing and construction sector.

As in the case of the manufacturer I-WEC, it is likely that there are other South African design and engineering firms seeking support and expertise from foreign companies. This trend of local companies seeking external partners is also likely to increase as South Africa's local content rules provide local players with added incentive to become involved in the country's burgeoning wind market. At the same time, the establishment of facilities by international players is also something which the South African Government is actively promoting. It is also noted that other fields, that are crucial to the wind sector, such as the manufacture of major electrical components, are also lacking in South Africa.

The need for design and engineering experience fits well with Dutch expertise in the sector and could provide a fruitful avenue for further development.

Wind development/ consultancy: As noted above, a very large percentage of wind developments in South Africa have been spearheaded by foreign companies. Given the early stages of the wind market development in the country, there is arguably scope for additional players to enter the market in the fields of wind farm development and its related consultancy fields. The Netherlands has historically been strong in these fields, with companies that have long experience in the wind sector. In particular, there is scope for the provision of specialist consultancy services to the South African market, given the particular environmental and social requirements set out in the REIPPPP guidelines. So far the field has been dominated by a small number of companies, but as with wind farm development in general, Dutch companies may be well placed to infiltrate the market.

Skills training provision: There is a clear skills gap in the South African workforce and this has been highlighted as a potential future bottleneck in the development of the wind sector. Currently a Skills-Development Working Group from SAWEA, Greencape Capital and the German development agency, GIZ, are spearheading the training of wind turbine service technicians and other required support staff, through the creation of a South African Renewable Energy Training programme and Centre. Given the above initiative, it is likely that the creation and provision of a separate training scheme could also be a possibility, for Dutch companies with the right expertise and motivation. It is possible that developments in this field might soon merit the attention of both the South African Government and international Development Banks, therefore attracting noticeable levels of investment.

Provision of wind farm O&M: As noted throughout the report, due the early stages of development of the wind sector, all O&M activities are expected to be covered by WTG manufacturers and/ or turnkey project construction firms for the near term. Looking further into the future however, it is likely that a market for independent O&M provision could be created, once the initial warranties on wind farms constructed during Rounds 1 and 2, expire. Given however that the time-span between project construction and end-of-warranty might favour the development of indigenous skill-sets to service this need (as is hoped by the South African Government), it might be advisable for foreign firms to consider finding or developing a local presence, in order to be well placed to address this future need as it begins to become prevalent.

Small scale wind: The South African Government's apparent commitment to develop a separate market for small-scale (1-5MW) developments could potentially offer fresh ground for new market entrants, as well as local companies. This segment of the market is unlikely to appeal to the larger established players tendering for the large-scale REIPPPP Rounds, and should therefore provide a fertile ground for other players, including Dutch companies, interested in this scale of wind developments. As noted in an earlier point, the existence of local manufacturers seeking to capitalise on their local experience and credentials, would also offer potentially beneficial partnering opportunities for Dutch companies.


GL Garrad Hassan