

at a glance



The first wind turbines in the Province, alongside the traditional windmill

REIPPPP focus on Western Cape

March | 2015

(including Bid Window 4 preferred bidders)

The IPPPP partnership between



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA



national treasury

Department:
National Treasury
REPUBLIC OF SOUTH AFRICA



DBSA

Development Bank
of Southern Africa

Purpose and outline of this report

The purpose of this report is to provide a high level “at a glance” overview of the Independent Power Producer Procurement (IPPP) Programme with the focus on the renewable energy (RE) programme component (REIPPPP) and the **Western Cape** Province in particular.

The REIPPPP Programme is located within the overall South African policy framework, notably:

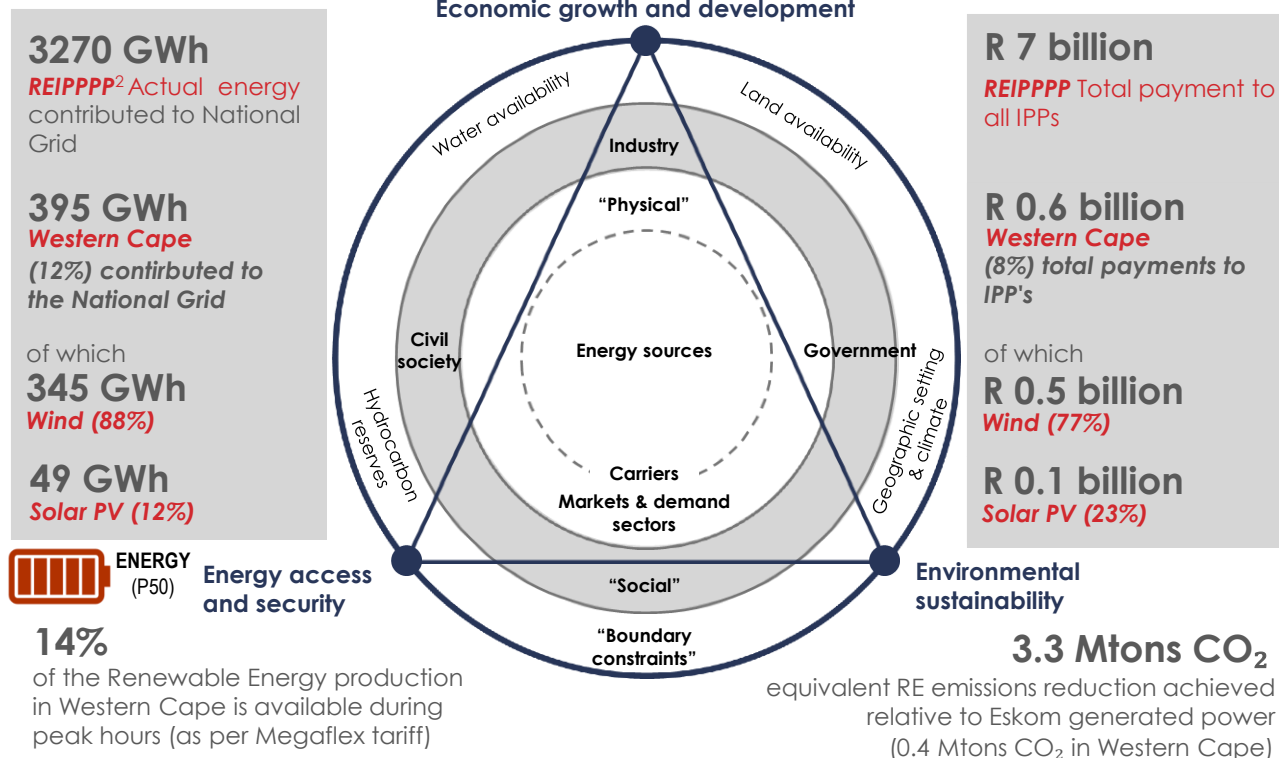
- Respective White Papers on Energy Policy (1998) and Renewable Energy (2003);
- The South African National Development Plan (NDP);
- The Integrated Energy Plan (IEP); and
- The Integrated Resource Plan (IRP) for Electricity;

The REIPPPP incorporates the different RE technologies identified in the IRP 2010 including onshore wind, solar PV, solar CSP, biomass, biogas, landfill gas, and small hydro.

This report provides highlights of the IPP project portfolio procured under the REIPPPP’s Bid Windows 1 and 2 (signed) and Bid Window 3 and 3.5 (procured and in the process of finalising financial close) and Bid Window 4 (BW 4 procured but not yet signed) in the Western Cape. The report aims to provide an overview of the expected contribution and commitments from the REIPPPP Programme in the Province.

The first section of the report briefly focuses on highlights of IPP commitments and contributions that are already being realised in the Province (**as at March 2015**). The second section provides a brief overview of economic status and socio-economic features of the Western Cape relevant to the REIPPPP Programme, the third section contextualises the energy capacity and the economic contribution of the REIPPPP Programme in the Western Cape relative to the total programme, and the fourth section gives more information on the municipal level where REIPPPP Programme projects are located. The final section contains relevant notes and observations, definitions and an index of symbols.

Key REIPPPP Energy Triangle¹ Facts: Western Cape (for period 11/2013 – 03/2015)



Note 1. Source: World Economic Forum – Global Energy Architecture Performance Index Report (2013). **Note 2.** Energy production (as per contracts) with a 50% probability (P50) of being achieved (refer to explanatory notes at end of this report).

Highlights for the WC

Key statistics | major achievements of the REIPPPP in the WC as at March 2015¹



26% more direct employment opportunities reported (1 990 vs 1 575 job years^{3, 4}) during construction than originally projected by developers



local content reported as percentage of Total Project Value³ achieved during construction

Delivering

146

megawatts

generation capacity
operational in the
year since Q1 | 2014

39%

of procured capacity
(BW 1 + 2)

and RE generated

395

gigawatt hours

36%

of annual energy
projected (P50)

Reduced **carbon emissions⁵** as a result of energy generated from RE sources (vs national grid) towards the global climate change imperative

0.4

Mton CO₂



Note 1. Corresponding with DOE reporting Q4. **Note 2.** For actual achievements only BW 1 and 2 data is reported – BW 3, 3.5 and 4 projects not yet in construction. **Note 3.** Refer Appendix A for applicable definitions and terminology. **Note 4.** Employment / Job creation measured in job years (equivalent of a full time employment opportunity for one person for one year). **Note 5.** Carbon accounting for South Africa, UCT, Energy Research Centre (ND)




THE LARGEST CPV PLANT IN THE WESTERN WORLD

4

36 MW

of solar power capacity
from **1500** high
efficiency CPV systems

 Touwsrivier Solar Park
Western Cape

79
GWh
produced
annually^{1,2}



CPV = CONCENTRATED PHOTOVOLTAIC

Powering more than
27 000
South African homes¹



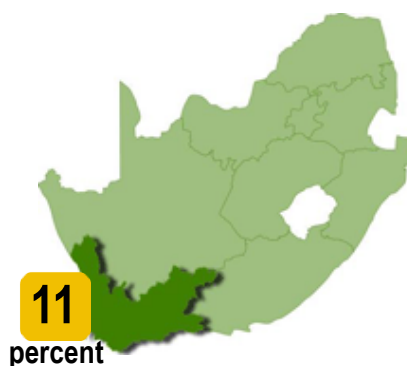
A **R1 billion bond** was raised for
the project – the first-ever listed project
bond issued to finance a South African
solar power plant based on CPV
technology



Photo credit: Sourced from IPP. Source: <http://www.soitec.com/en/investors/financial-press-releases/soitec-completes-zar-1-000-000-000-inaugural-solar-financing-bond-transaction-in-south-africa-1275/>
Note 1. May power 27 390 average households (~3 319 kWh/a/hh). Note 2. P50 energy projection.

Western Cape

Renewable energy gaining momentum



11 percent

of the surface area of the country

Key provincial attributes

The Western Cape, has the 4th largest **geographic footprint** among the 9 South African Provinces (after the Northern Cape, Eastern Cape and Free State), covering 10.6% of the country's surface area. The Province is home to 5.9 million of the total 52.9 million South African **population**. This translates into an average **population density** of 46 people per km², which is slightly above the national average of 43 people per km².

11.2 of every 100 South Africans live in the Western Cape



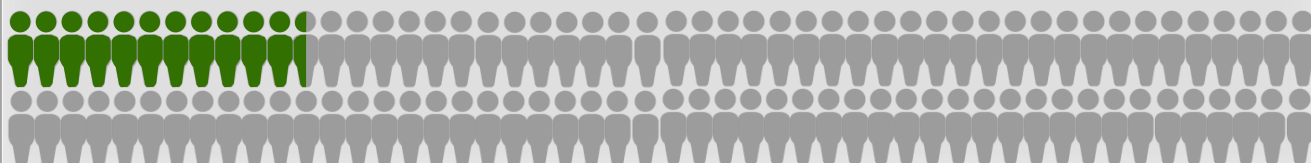
46 people per km²

vs

national average

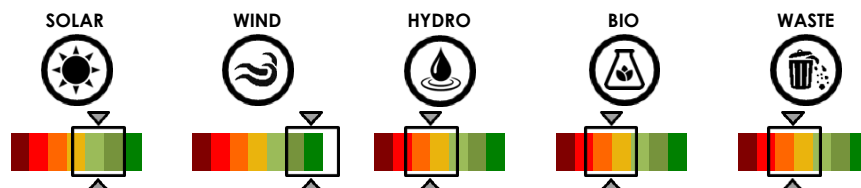
43

people per km²



The Western Cape Government (WCG) has set an ambitious goal of becoming the Green Economic Hub of the African continent and introduced a number of strategic frameworks to achieve this goal. It was the of South Africa's provinces to develop a Sustainable Energy Strategy¹. This Strategy incorporated a bold target of 15%² for renewable energy in the Province by 2014. Its Provincial Spatial Development Framework (PSDF) sets a target of 25% by 2020. It has also launched a Green Economic Strategic Framework that targets job creation in the sector and building a strong green economy in the Province.

To support these objectives the Province is actively building institutional capacity and creating a conducive policy environment. In particular, GreenCape - a WCG government-funded, industry-led initiative - established in 2010 to support investors - has seen considerable expansion. GreenCape provides support to renewable energy IPPs to unlock the **potential**³ for **renewable energy production** in the Province.



N1⁴

LEGEND

Resource potential



Other related Provincial strategies include OneCape 2040 - the Province's long term socio-economic vision - the Western Cape Infrastructure Framework, the Draft Western Cape Climate Change Response Strategy and 110% Green, the Western Cape Premier's green economy programme which aims to create a platform for mobilising society around the green economy through practical action, partnerships and networks.

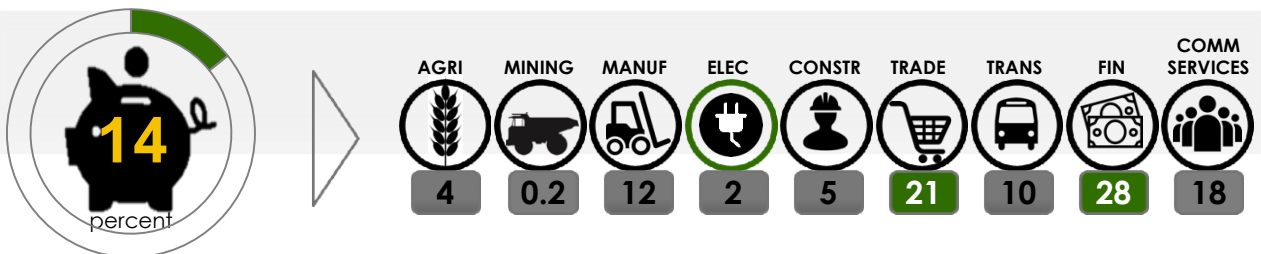
Note 1. Adopted by the Western Cape Provincial Government in 2009. **Note 2.** Target stated relative to energy use in the Province in 2004 as described in the Strategy. **Note 3.** Scales indicative only based on the potential analysis included the WC Sustainable Energy Strategy and the wind and solar resource maps (refer Appendix to this report). **Note 4.** Notation indicates additional notes and observations available in the Appendix (Reference Component) to this report.

Key economic attributes

The Province contributes 14% to the National GDP, with services contributing more than 60% to provincial production. There is a heavy focus on tertiary industries in the Province, while the financial sector contributes more than a quarter of provincial GDP and commercial services 18%. With the Province's economic development approach strongly focused on the green economy it endeavours to attract 'green investment and business' and generate job opportunities in this sector. Development of the renewable energy industry has been specifically identified for support through promoting the placement of renewable energy facilities in strategic areas of the Western Cape as well as through supporting renewable energy industries.

The province's manufacturing base has not recovered from the 2008/09 global recession and still contributes around 12% to provincial GDP.

Economic activity is largely concentrated in the City of Cape Town where almost two thirds of the Western Cape population lives.



Employment

At 21.6% and 29% respectively, unemployment and youth unemployment rates in the Province are low relative to the country average (Statistics South Africa², 2011). The Western Cape has a high percentage of the population that is working age (almost 70% in most municipalities) and one of the lowest rates of illiteracy in the country. As a result, dependency ratios are amongst the lowest in the country. However, labour force survey data^{3, 4} shows that Provincial unemployment has continued to grow over the preceding decade, especially amongst the youth.



The largest employers are the wholesale and retail and community services industries⁴ which account for more than 40% of the labour market in the Province. Until 2010, the electricity industry accounted for only 0.5% of the employment opportunities in the Province.

Green is Smart (2013), the Province's green economy strategy framework, emphasises the need for the green growth path to be accompanied by job growth. The strategic framework identifies opportunities beyond energy infrastructure development, looking at unlocking manufacturing and employment opportunities in the broader green economy. These efforts have already attracted the first solar PV model manufacturing plant in the country (Jinko Solar), and are expected to create 250 new direct job opportunities as well as indirect opportunities in secondary industries such as maintenance and installation.

Note 1. All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2013 Estimates. **Note 2.** Source: Statistics SA Census 2011, Provinces at a glance (November 2012). **Note 3.** Source: Statistics SA, second Quarterly Labour Force Survey (2014). **Note 4.** Stats SA, DBSA Information Analysis Unit calculations. **Note 5.** <http://www.southafrica.info/business/investing/solar-060814.htm#.VLjPRYqUcYI>

IPPP Programme in the Western Cape

Building energy supply capacity

ENERGY (P50)
1 230 gigawatt hours / a

CAPACITY
453 megawatts

1.2 M ton/a CO₂

9 percent of total capacity procured

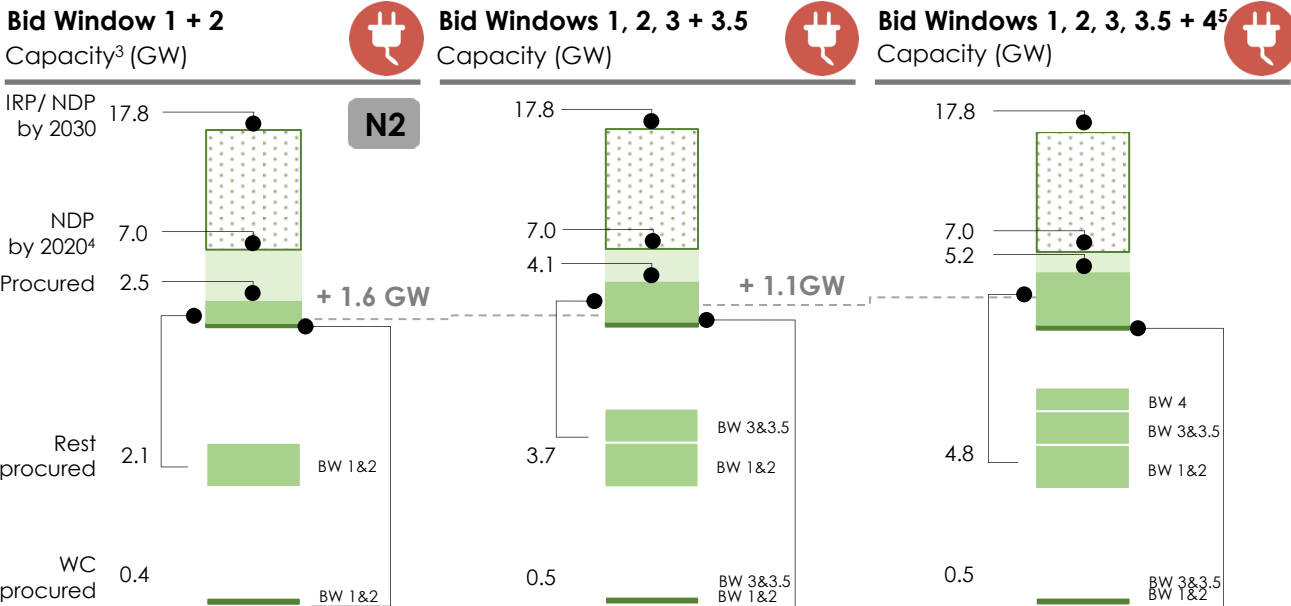
The Western Cape has attracted 9% of the IPP build programme to date. The electrical energy that will become available from the investments in Bid Windows 1, 2, 3, 3.5 and 4 (once finalised) will equate to roughly 5.4% of the Western Cape's own energy needs¹.

Capacity contribution

The Province consumes approximately **22 714 electrical energy (GWh) per annum¹** or **10.5% of the national total**. With the newly developed REIPPPP **capacity (measured in GW or MW depending on magnitude)**, the Western Cape will produce approximately 5.4% of its own power needs locally from renewable energy sources (although in practice this energy will be fed into the national grid and available for the rest of South Africa). In its Provincial Spatial Development Framework, the Province identified the opportunity for renewable energy generation to supply 25% of the energy requirements in the Province by 2020.

The IRP contains a target of 17.8 GW of RE capacity, of which 6.9 GW needs to be procured (with 5 GW required to be on the national grid) by 2019. Bid Window 1 and 2 procured 2.5GW (of which 15% is located in the Western Cape). In Bid Window 3 and 3.5 a further 1.66 GW was secured nationally, with Bid Window 4 aiming to add another 1.1GW. In total bid windows 1, 2, 3, 3.5 and 4 will contribute 5.2 GW i.e. 75% of the 7 GW procurement target for 2019. Of this 5.2 GW procured, 0.5 GW (~9%) is located in the Western Cape.

Western Cape RE projects for BW 1, 2, 3, 3.5 and 4 will save a gross Eskom grid equivalent of 1.2 million ton CO₂ emission² per annum, and the national programme a total of 16.3 million tons per annum.



8 of the **47 projects** in bid windows 1&2 in the WC

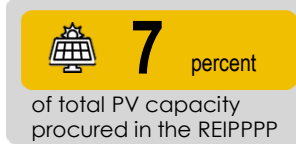
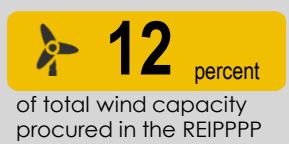
9 of the **66 projects** in bid windows 1, 2, 3 & 3.5 in WC

9 of the **79 projects** in bid windows 1, 2, 3, 3.5 & 4 in the WC

Note 1. Eskom energy sales to the Western Cape calendar year 2013, StatsSA. **Note 2.** Calculated based on average Eskom equivalent emission factor of 1.015 kg CO₂-equivalent per kWh, expressed as Million tons per annum (Energy Research Centre, UCT). **Note 3.** Cumulative capacity towards IPP and IRP targets. **Note 4.** Breakdown of targets set out in Appendix notes. **Note 5.** Projects for BW3 (2 projects), 3.5 and 4 have not yet reached financial close.

IPPP Programme in the Western Cape

Building energy supply capacity



LEGEND

- Province (Green bar)
- Rest of programme (Grey bar)
- Not operational yet at time of reporting (White circle)
- Operational (Green circle)

The Western Cape has attracted 12% of the Wind capacity procured in BW 1, 2, 3, 3.5 and 4 in the REIPPPP Programme in South Africa, contributing 319MW of the total 2 671MW **wind power**. Of the 9 REIPPs in the Province, wind has the dominant share of capacity – 4 REIPPs representing 70% of capacity. The 5 solar PV IPPs contribute 134 MW, 30% of the capacity.

Technology contribution

Bid Window 1 + 2

8 projects
378 megawatt

of which:

no. projects	% share ¹	megawatts
0	100 -	0
4	94 6	59
4	74 26	319
0	100 -	0
0	100 -	0
0	100 -	0
0	100 -	0

Bid Windows 1, 2, 3 + 3.5

9 projects
453 megawatt

of which:

no. projects	% share	megawatts
0	100 -	0
5	91 9	134
4	84 16	319
0	100 -	0
0	100 -	0
0	100 -	0
0	100 -	0

Bid Windows 1, 2, 3, 3.5 + 4

9 projects
453 megawatt

of which:

no. projects	% share	megawatts
0	100 -	0
5	93 7	134
4	88 12	319
0	100 -	0
0	100 -	0
0	100 -	0
0	100 -	0

Note 1. EC share (green bar/fill) vs. remainder of programme = "other provinces".



Investment share of the IPPP Programme attracted into the Province



10.4
Rand billion

1.3
Rand billion

Invested (programme total : R 168.9 billion)

Community net income

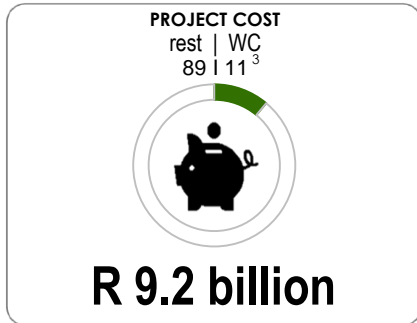
N3

The Province has attracted 6% of the total IPPP Programme investments in Bid Window 1, 2, 3, 3.5 and 4 and has secured a substantial share of the equity for local communities with benefits materialising over the project life¹.

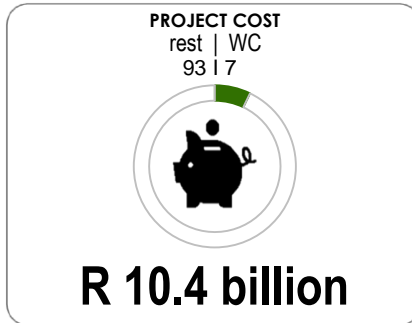
Investment share

The Province attracted 6% of the IPP investments in bid windows 1, 2, 3, 3.5 and 4. The combined IPP investment share of the Province, across the four bid windows, would be equivalent to 2% of the Western Cape's annual gross production.

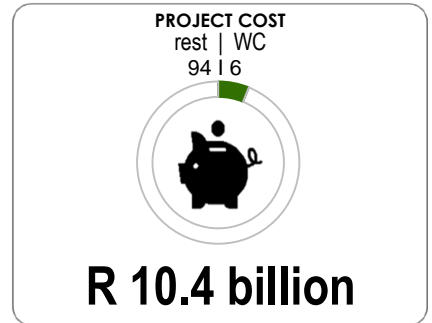
Bid Window 1 + 2



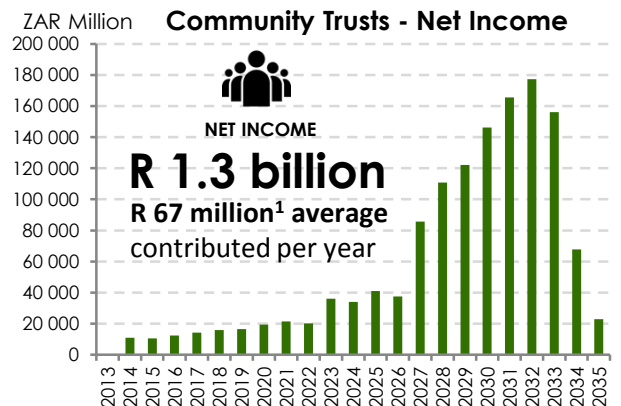
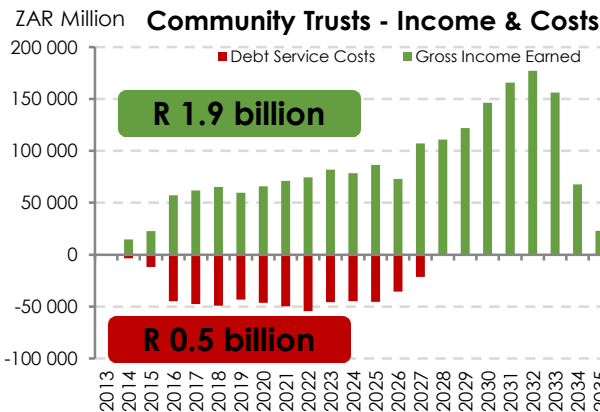
Bid Windows 1, 2, 3 + 3.5



Bid Windows 1, 2, 3, 3.5 + 4²



A substantial portion of these investments have been structured and secured as local equity. Individual community's dividends earned will depend on the terms of each transaction corresponding with the relevant equity share. The aggregate impact of BW 1, 2, 3, 3.5 and 4 investments and earnings projected for local communities associated with the projects in the Province (accrued over 20 years) present a net income of R1.3 billion.



Note 1. Note that all financial values are reported for the full expected project lifespan of 20 years. The bulk of the money will only start flowing into the communities from 2028, due to repayment obligations (to development institutions) in the preceding years. **Note 2.** Projects for BW3 (two projects), 3.5 and 4 have not yet reached financial close. **Note 3.** WC share (green bar/fill) vs. remainder of programme = "other provinces"

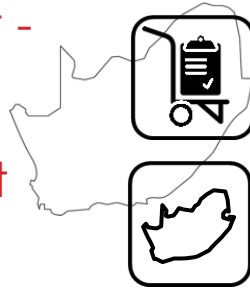


Project cost



Community trust (local equity)

Economic development - resulting from the IPPP Programme and the sizable wind component in particular



7.3
Rand billion
Procurement spend (programme total : **R 127.5 billion**)

3.4
Rand billion
Locally procured (programme total : **R 55.6 billion**)

The REIPPP Programme and procurement strategy is contributing directly to the Western Cape provincial objective of developing sustainable energy, stimulating a 'green' economy and achieving sustainable economic growth and development.

Procurement spend

The total procurement spend in the Western Cape, during both construction and production, amounts to R 7.3 billion, i.e. 6% of the total committed procurement spend of the programme.

Bid Window 1 + 2

6.6

Rand billion
Procurement spend

rest | WC
88 | 12



Bid Windows 1, 2, 3 + 3.5

7.3

Rand billion
Procurement spend

rest | WC
93 | 7



Bid Windows 1, 2, 3, 3.5 + 4²

7.3

Rand billion
Procurement spend

rest | WC
94 | 6



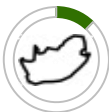
Localisation share

42% of the total project value¹ in the Western Cape has been allocated for local procurement, with the intent of stimulating development of localised industries and the green economy.

2.9

Rand billion
Localisation spend

rest | WC
88 | 12



3.4

Rand billion
Localisation spend

rest | WC
92 | 8



3.4

Rand billion
Localisation spend

rest | WC
94 | 6



Enterprise development

The development of local enterprises will further be directly supported with an allocation earmarked for enterprise development over the projected portfolio development and operations horizon. The commitments made towards **local** enterprise development in the Province is comparatively large compared to other provinces.

13.7

Rand million
Enterprise development commitment

rest | WC
97 | 3



47.9

Rand million
Enterprise Development commitment

rest | WC
97 | 3



47.9

Rand million
Enterprise Development commitment

rest | WC
99 | 1



Note 1. Refer Total Project Value definition in Appendix (Definitions). **Note 2.** Projects for BW3 (two projects), 3.5 and 4 have not yet reached financial close.



Procurement



Localisation



Economic Development



Local community

Employment creation - jobs attracted into the Province by the IPPP Programme



2 502



job years¹

out of a programme total of 43 962 job years within **local communities**

The Province has benefitted and will continue to benefit from the employment opportunities created during construction and operation of the IPP power plants – capturing a large share of the total employment created because of the significant number of projects that are located in the Province.

Employment creation

Employment creation is an enormous priority in the Province, one of the two provinces most impacted by high levels of unemployment in the country. IPP investments (BW 1, 2, 3, 3.5 and 4) within the Western Cape alone has contributed new employment opportunities for **South African citizens**² estimated to be approximately 6 710 job years over the construction and projected operational life of the plants.

Proportionate to the share of the current IPP portfolio located in the Province, 8% of the total employment contribution projected for the overall IPPP Programme will be created by projects located in the Province.

Bid Window 1 + 2

5 192

Job years
1 575 during construction

rest | WC
82 | 18



Bid Windows 1, 2, 3 + 3.5

6 710

Job years
1 799 during construction

rest | WC
89 | 11



Bid Windows 1, 2, 3, 3.5 + 4³

6 710

Job years
1 799 during construction

rest | WC
92 | 8



Notably, 37% of the employment opportunities associated with the IPPs in the Province (2 502 of 6 710) have been retained within **local communities (in the Province)** associated with the respective IPP plants:

1 440

Job years

rest | WC
86 | 14



2 502

Job years

rest | WC
91 | 9



2 502

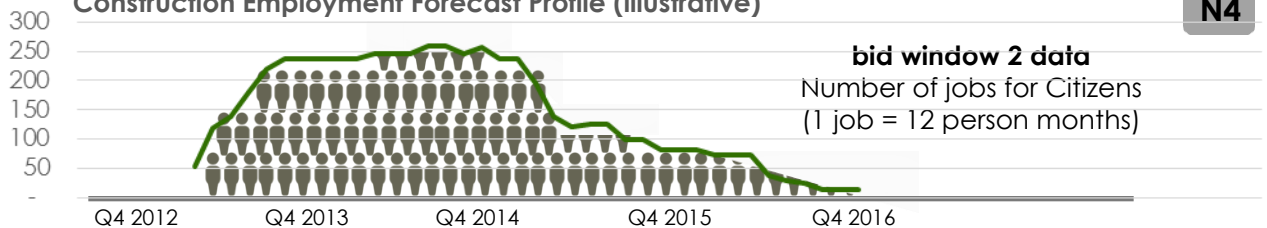
Job years

rest | WC
94 | 6



During the construction phase (2 – 4 years) the number of people employed on site typically spike (illustrated below) and then taper off to a lower, steady employment number over the extended, 20 year operations period. Although lower numbers, these opportunities are both sustainable and 'green', contributing to the National objective of creating green jobs.

Construction Employment Forecast Profile (illustrative)



Note 1. Job year = equivalent of a full time employment opportunity for one person for one year. **Note 2.** Employment numbers for South African citizens shown, total for IPPP Programme is 60 368. **Note 3.** Projects for BW3 (two projects), 3.5 and 4 have not yet reached financial close.



Employment



Local community

Socio economic benefits resulting from the IPPP Programme



0.2
Rand billion

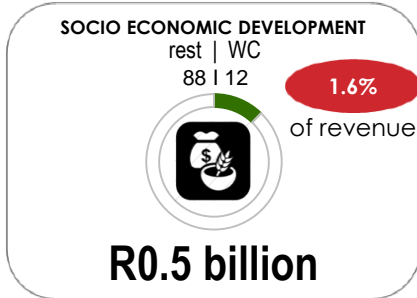
committed
SED in the
local
community

Approximately 4% of the **socio-economic development (SED) contribution** leveraged by the IPPP Programme procurement commitments for Bid Window 1, 2, 3, 3.5 and 4 have been in the Western Cape.

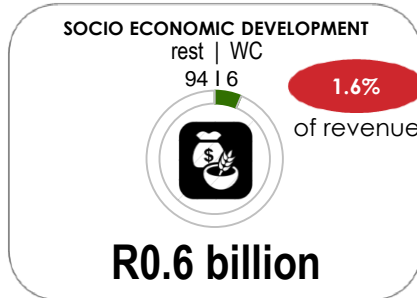
Development share

The IPP projects in the Western Cape across Bid Windows 1, 2, 3, 3.5 and 4 have made a combined socio-economic development commitment¹ of 0.6 billion over the 20 year projected project life. Of this SED contribution, R0.2 million has been committed to local communities directly associated with the Western Cape IPP projects.

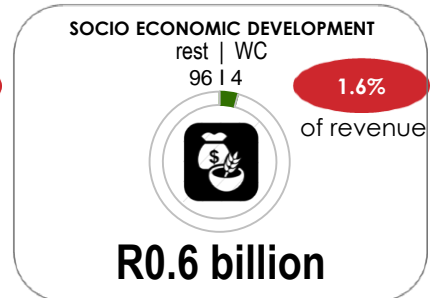
Bid Window 1 + 2



Bid Windows 1, 2, 3 + 3.5



Bid Windows 1, 2, 3, 3.5 + 4²



of which local:



of which local:



of which local:



Expenditure on SED initiatives (to date) were focused mostly on infrastructure (31% of total SED expenditure), enterprise development (28%) and education and skills development (19%). Total spending on management and planning, social and welfare, and health care were 7%, 4% and 2% respectively. About 8% have not been allocated to one of the SED spend categories.

Development challenges in the Province³ relate to electricity supply services, health care and the deterioration in unemployment amongst the youth. Education and skills development is therefore well aligned, but future SED initiatives may be better tailored to align with the Provincial development priorities if directed in subsequent bid rounds.

The IPPPP contribution with respect to youth employment has not been a requirement and/or obligation during the first bid windows and reporting cycles, but will be included as a tracking measure in subsequent bids.

Note 1. SED commitments are made as a percentage of revenue. **Note 2.** Projects for BW3 (two projects), 3.5 and 4 have not yet reached financial close. **Note 3.** Sourced from as identified by the DBSA Information Analysis Unit, Western Cape profile summary report, www.dbsa.org/en/DBSA-Operations/Proj/Documents.

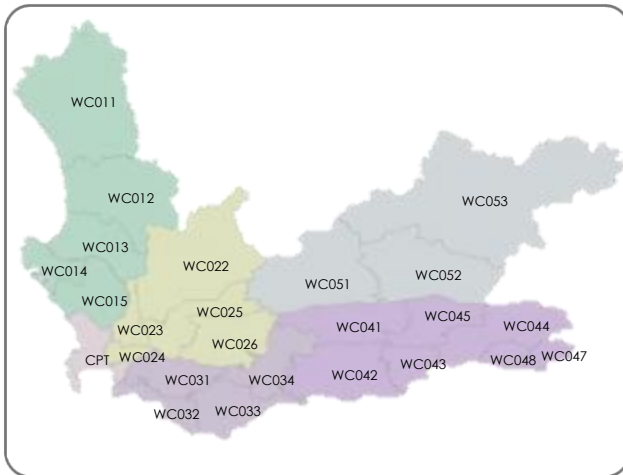


Socio economic
development



Local community

The impact on local municipalities



IPP Project status	OW	PV	CSP	SH
Bid submission				
Under construction				
No financial close yet				
Operational				
Came online last quarter				
Expected to come online next quarter				
Completed – no Grid connection				

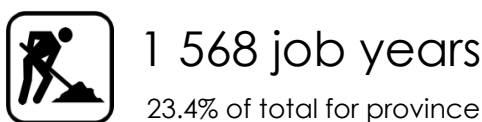
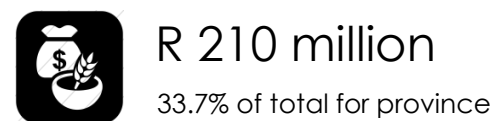
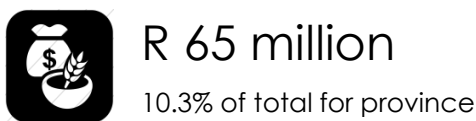
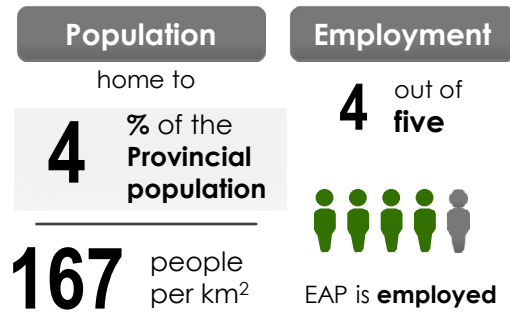
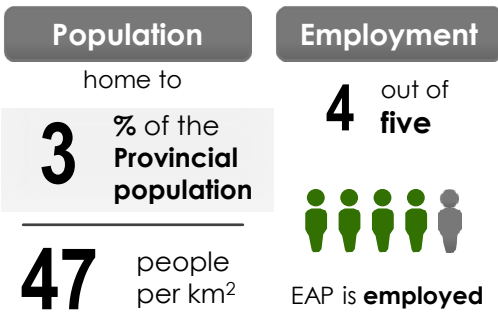
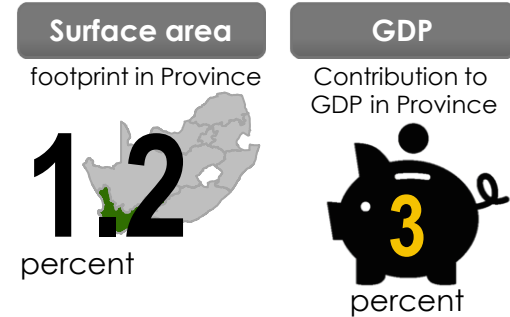
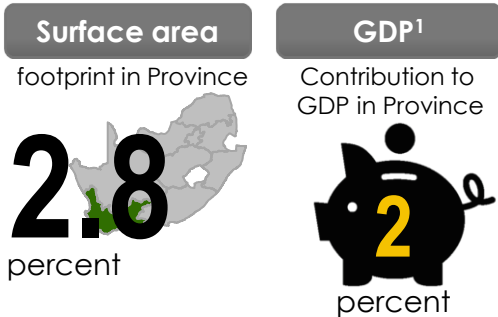


OW – Onshore wind; PV – Solar photovoltaic; CSP – Concentrated solar power; SH - Small hydro



District • **Cape Winelands**
Local municipality • **Breede Valley**

District • **Cape Winelands**
Local municipality • **Drakenstein**

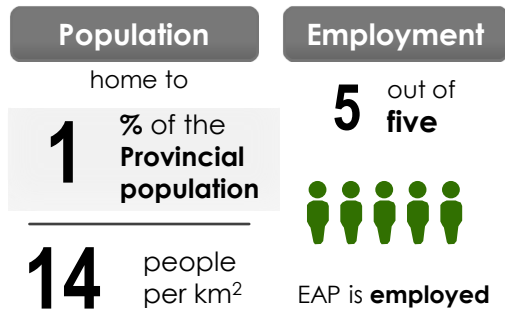
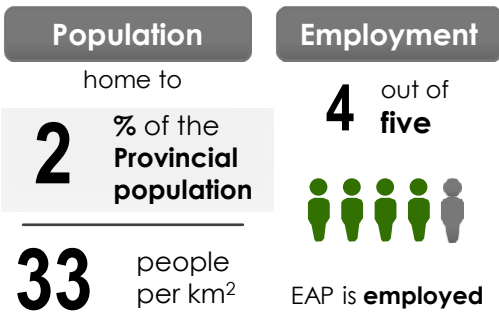
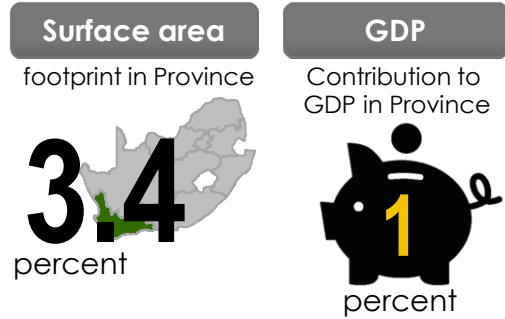
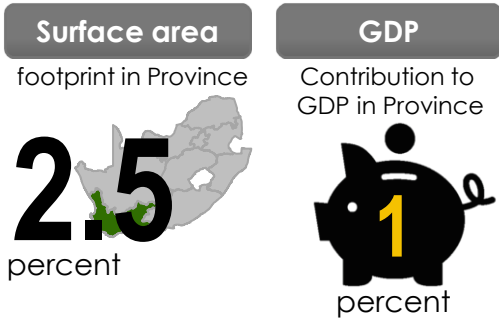


Note 1. All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2013 Estimates. **Note 2.** IPP data reflects cumulative values over the construction phase and projected operational life (production phase) of the projects (i.e. 20 years). **Note 3.** Reflects the cumulative, net positive, cash flows over the 20 year production phase.



District • **Overberg**
Local municipality • **Theewaterskloof**

District • **West Coast**
Local municipality • **Bergrivier**



1 project | 27 MW
of which



1 project | 9 MW
of which



R 665 million
6.4% of total for province

R 240 million
2.3% of total for province

R 21 million
3.3% of total for province

R 11 million
1.8% of total for province

R 295 million
21.9% of total for province

R 5 million
0.4% of total for province

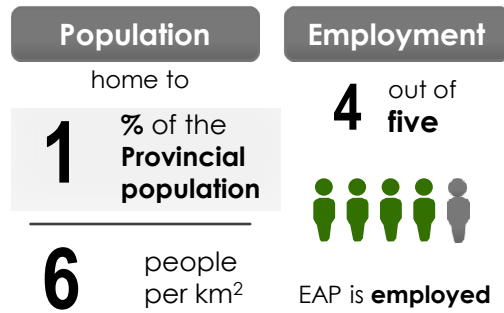
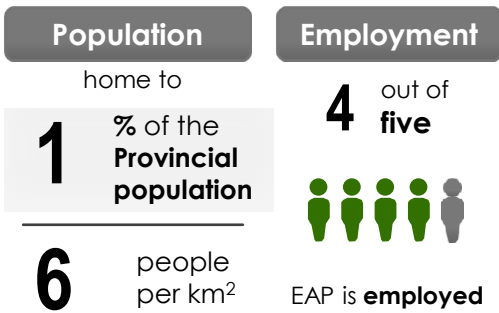
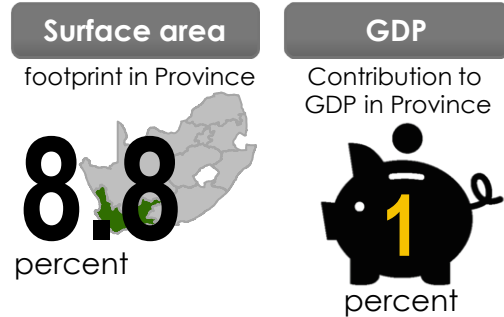
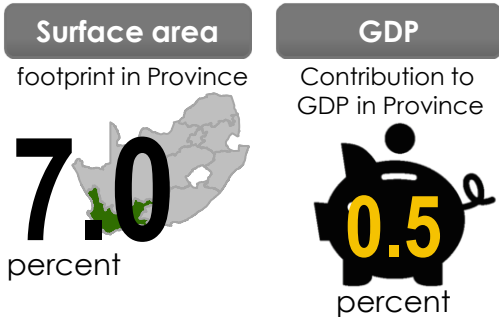
382 job years
5.7% of total for province

676 job years
10.1% of total for province



District • **West Coast**
Local municipality • **Cederberg**

District • **West Coast**
Local municipality • **Matzikama**



1 project | 75 MW
of which



1 project | 9 MW
of which



R 1 230 million
12% of total for province

R 231 million
2.2% of total for province

R 86 million
14% of total for province

R 11 million
1.7% of total for province

R 159 million
12% of total for province

R 6 million
0.5% of total for province

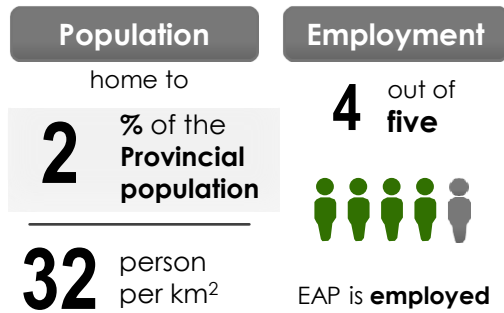
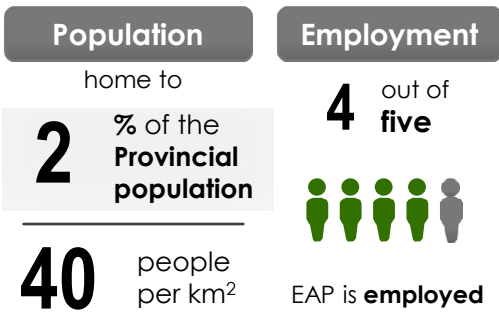
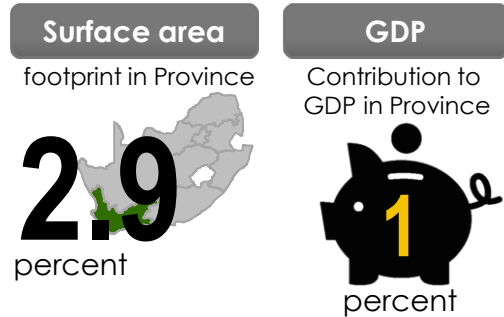
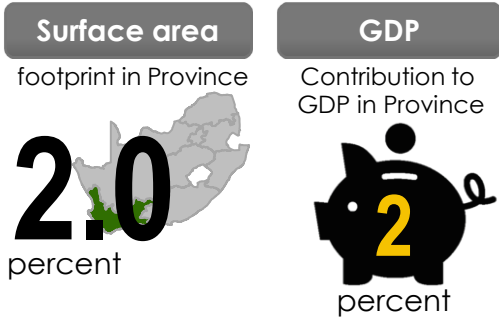
1 518 job years
23% of total for province

676 job years
10.1% of total for province



District • **West Coast**
Local municipality • **Saldanha Bay**

District • **West Coast**
Local municipality • **Swartland**



2 projects | 156 MW
of which



1 project | 5 MW
of which



R 3 565 million
34.3% of total for province

R 209 million
2.0% of total for province

R 221 million
35.4% of total for province

R 0.3 million
0.0% of total for province

R 214 million
15.9% of total for province

R 67 million
5.0% of total for province

1 128 job years
16.8% of total for province

111 job years
1.7% of total for province

Appendix A

Reference component

Notes and observations

N1. Wind and solar resource maps indicating the natural resources for the Province.

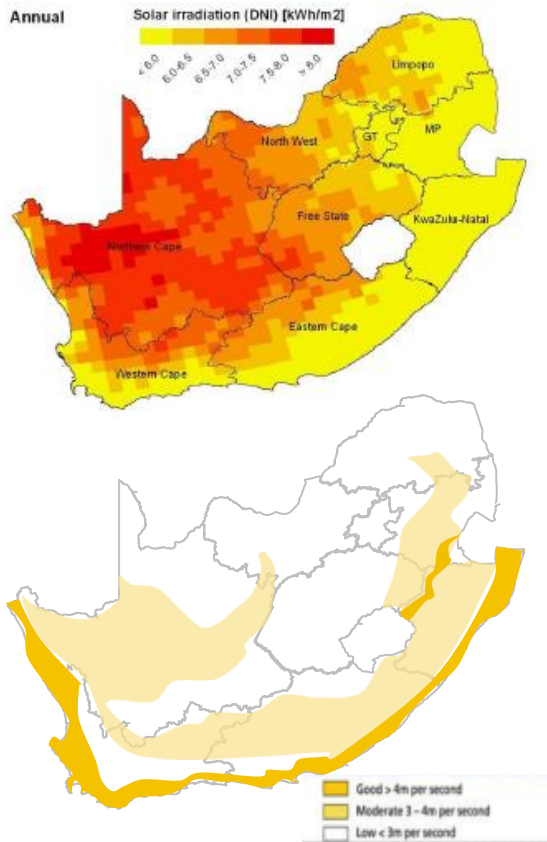


Fig. 1: National resource maps, SIP 8 Business plan

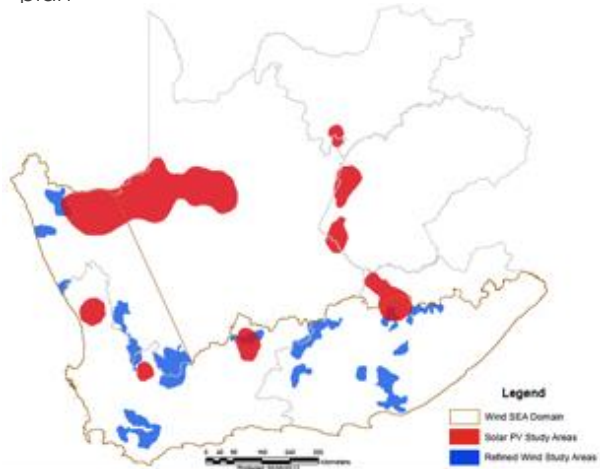


Fig. 2: CSIR high yield zones (http://www.safiri.co.za/ec/corridor_planning_&_development.html)

N2. National targets for renewable energy has been set in the National Development Plan (NDP) as:

- Total renewable energy capacity developed by 2030: 17 800MW (Outcome 10, sub-outcome 2)
- Signed renewable energy deals for 7 000MW by 2019 (Outcome 6, Sub outcome 2, item 18)
- RE generation commissioned : 5 000MW by 2019 (Outcome 6, Sub outcome 2, item 26) RE generation capacity commissioned: 7 000MW by 2020 (Outcome 6, Sub outcome 2, item 26)

The Green Energy Strategic Infrastructure Project (SIP), that operationalises the NDP, sets the target to deliver 6 725MW RE through IPPs by 31 March 2019. To date, the Minister of Energy has determined in two **Ministerial determinations** i.e. 2011 and 2012 that 6 925MW are to be procured from renewable energy IPPs.

In terms of progress towards targets:

- The Ministerial determinations represent approximately 38% of the 2030 target of 17 800 MW.
- The combined capacity procured in BW 1, 2, 3, 3.5 and 4 represents approximately 75% the 2019 target for renewable energy deals.
- The combined capacity of BW 1 and 2 (already commissioned or in construction phase) represents approximately 50% towards the 2019 target for capacity commissioned.

N3. Spend patterns will vary notably between the construction and production phases. Project construction expenditure will be characterised by short periods (2 – 4 years) of variable, but typically high spend that will taper off, commensurate with the coordination, delivery and completion of plant construction on site. The spend and labour requirements of the operations period are expected to have a more steady pattern related to production and maintenance of the plant, sustained over 20 years. The spend pattern for the construction phase is illustrated (Fig 2) using indicative data.

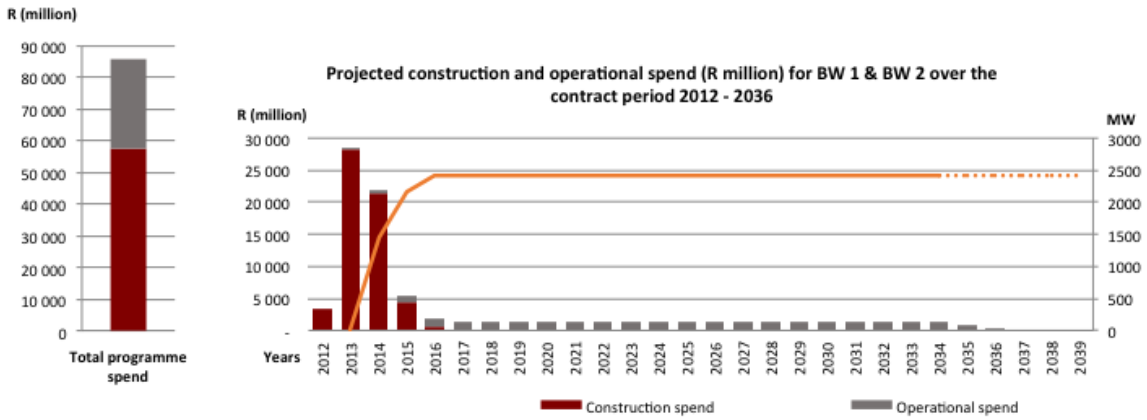


Fig 3. Operational and construction spend patterns

N4. Employment over time. As for N3 (spend), the labour needs will be more intense (i.e. more people for shorter durations of time) during construction phase, tapering off as the construction of the plant is completed.

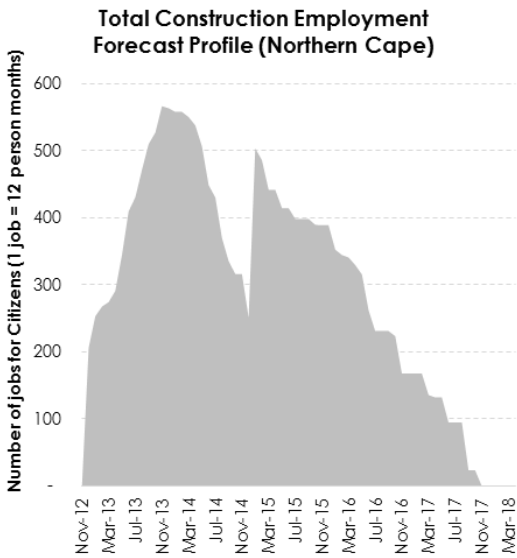


Fig 2. Construction employment forecast

Labour requirements during the production phase will be limited, but is likely to offer more sustainable employment opportunities over the 20 years of operation.

Contract definitions and terminology

As per the definitions in the REIPPPP Implementation Agreements (IA) and Power Purchase Agreement (PPA):

- **“Capital Expenditure”** means any expenditure treated as capital expenditure under GAAP.
- **“Commercial Energy Rate”** means the rate per MWh applicable to Commercial Energy.
- **“Commercial Operation Date (COD)”** means the date specified in the Notice of Commencement of Facility i.e. it is the date on which the Independent Engineer ascertains that the Facility is completed, connected to the Grid and able to generate power.
- **“Contracted Capacity”** means the anticipated Capacity of the Facility at the Delivery Point and expressed as AC power capacity, net of auto-consumption and the electrical losses up to the Delivery Point.
- **“Contract Quarter”** means the periods:
 - (a) 1 April to 30 June;
 - (b) 1 July to 30 September;
 - (c) 1 October to 31 December; and
 - (d) 1 January to 31 March,
 during the Term. Should the Effective Date fall within any of the periods referred to above (and not commence on 1 April, 1 July, 1 October or 1 January), then the first Contract Quarter shall commence on the Effective Date and shall be the remaining portion of the Contract Quarter in which the Effective Date falls, plus the next Contract Quarter.
- **“Contract Year”** means each twelve (12) Contract Month period commencing at 00:00 hours on 1 April and ending at 24:00 hours on 31 March of the following year provided that:
 - (a) the first Contract Year shall commence at 00:00 hours on the first day after the Effective Date and shall end at 24:00 hours on 31 March of the following year; and
 - (b) the final Contract Year shall end at 24:00 hours on the Termination Date.
- **“CPI”** means the weighted average consumer price index (Dec 2012 = 100) as published by Statistics South Africa (or its equivalent successor entity), which is referred to as "Headline CPI – All urban areas" in Statistical Release P0141 from time to time (or equivalent successor index).
- **“Deemed Energy”** means that Energy Output that would otherwise be available to the Buyer, but for a System Event or a Compensation Event, as determined in accordance with Schedule 6 (Deemed Energy Payment).
- **“Deemed Energy Payment”** means an amount (excluding VAT) that shall be due and payable by the Buyer to the Seller for the Deemed Energy during a specified period pursuant to the provisions of clause 14 (Consequences of a System Event), which payment shall be calculated in accordance with Schedule 6 (Deemed Energy Payment) with reference to the Commercial Energy Rate, and dependent on the period in respect of which such payment is due and payable.
- **“Direct Agreement”** means the direct agreement entered into (or to be entered into) between the Buyer, the Seller, the Department and the Lenders (or their agent) in relation to the PPA and the Implementation Agreement.
- Employment numbers are expressed as a percentage of the sum of StatsSA reported employed and unemployed numbers.

- **"GAAP"** means generally accepted accounting practice in the Republic of South Africa as approved from time to time by the South African Accounting Practices Board.
- **"Implementation Agreement"** means the implementation agreement to be entered into between the Seller and the Department.
- **Job years.** Employment / Job creation is reported in job years i.e. the equivalent of a full time employment opportunity for one person for one year).
- **"Local Content"** means the portion of the Total Project Value that is in respect of South African Products.
- **NERSA** – refers to the National Energy Regulator of South Africa, established pursuant to Section 3 of the National Energy Regulator Act, 40 of 2004.
- **"Operating Expenditure"** means any expenditure treated as operating expenditure under GAAP.
- **"Operating Period"** means the period from the later of the Commercial Operation Date and the Scheduled COD to the Termination Date Construction Period.
- **"Overnight Cost"** refers to the cost of a construction project if no interest was incurred during construction, as if the project was completed "overnight" (see also Total Project Cost, definition B).
- **"PPA"** means the power purchase agreement to be entered into between a Project Company, as the Seller, and the Buyer pursuant to the IPP Procurement Programme.
- **P50 / P90** – refers to probabilities for annual energy production which are expressed as P values. A P50 figure is the level of generation that is forecasted to be exceeded in 50% of years over a 10 year (or sometimes 20 year) period. Similarly, a P90 figure is the level of generation that is forecasted to be exceeded in 90% of years over a 10 year period – in other words, the risk that an annual energy production of P90 is not reached is 10%.
- **"Total Amount of Procurement Spend"** means the monetary spend on the procurement of goods and services for purposes of undertaking the Project Activities (without double counting), excluding costs of imported goods and services, taxation, salaries and wages.
- **"Total Project Cost"** means:
 - (a) for the purposes of calculating the Development Fee, an amount equal to the aggregate of the total Debt and Equity which is, as at the Signature Date, forecast in the Financial Model to be contributed up to the Commercial Operation Date; and
 - (b) for all other purposes, the total Capital Expenditure, forecast as at the Signature Date, to be incurred up to the Commercial Operation Date by the Seller in the design, construction, development, installation and/or commissioning of the Project.
- **"Total Project Value"** means during the Construction Measurement Period, the capital costs and costs of services procured for the construction of the Facility, excluding Finance Charges, land costs, mobilisation fees to the Operations Contractor and the costs payable to the Distributor, Network Transmission Costs (NTC) and/or a Contractor for the Distribution Connection Works or the Transmission Connection Works (as the case may be).

Glossary of icons

These icons are used in the document to represent the following concepts:



Gross Domestic Product (percentage indicating the contribution share)

9 broad economic sectors as defined in the International Standard Industrial Classification (ISIC) and reported on by StatsSA



Agriculture



Mining



Manufacturing



Electricity



Construction



Trade (wholesale and retail)



Transport



Finance



Community services

ENERGY (P50)



Energy (kWh, MWh or GWh) production / generation projected with a 50% probability that it will be achievable for the established capacity

CAPACITY



Generation capacity (kW, MW or GW) i.e. the rated output capability of the power plants

Renewable energy source | technology type:

SOLAR



Solar PV (photovoltaic)



Solar CSP (Concentrated Solar Power)

WIND



Wind generation

HYDRO



Small hydro

BIO



Biomass

WASTE



Landfill gas / waste to energy

Performance Measures



Total project costs



Community trust (community equity / shareholding)



Procurement spend



Localisation / local content

Glossary of icons (continued)

These icons are used in the document to represent the following concepts:



Socio-economic development



Employment / Job creation measured in job years (equivalent of a full time employment opportunity for one person for one year).



Enterprise development



Black South African citizen



Women



Youths



People with disabilities



Construction phase



Operations phase



Key learnings



Looking forward / next focus



Risks



Price



Revenue



Local community share (used to indicate where a measure pertains to a community local to where the IPPs are)

Colour convention used [RGB]

Colours used to denote technologies



Solar PV [220 | 89 | 36]



CSP [245 | 149 | 1]



Wind [82 | 109 | 176]



Landfill, hydro, biomass, biogas (when treated as a group e.g. IRP) [209 | 40 | 46]



Hydro [151 | 167 | 208]



Landfill [152 | 154 | 172]



Biogas [180 | 179 | 146]



Biomass [155 | 187 | 89]

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