

at a glance



REIPPPP focus on Western Cape

Provincial Report Volume 3

June | 2019

The IPPPP partnership between



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA



national treasury

Department:
National Treasury
REPUBLIC OF SOUTH AFRICA



Overview of the Provincial Report

The Department of Energy's (DoE) Independent Power Producers Procurement Programme (IPPPP) was established at the end of 2010 as one of the South African government's urgent interventions to enhance the country's power generation capacity.

The programme's primary mandate is to secure electrical energy from the private sector, drawing from both renewable and non-renewable energy sources. Energy policy and supply are not only about electrons, fuel and carbon technologies. In reality, it is rather a matter of socio-energy system design, as energy systems are deeply embedded in the broader patterns of socio-economic factors, political life and organisation. Consequently, the IPPPP has not only been designed to procure energy, but also to contribute to the broader national development objectives of job creation, social upliftment and the broadening of economic ownership.

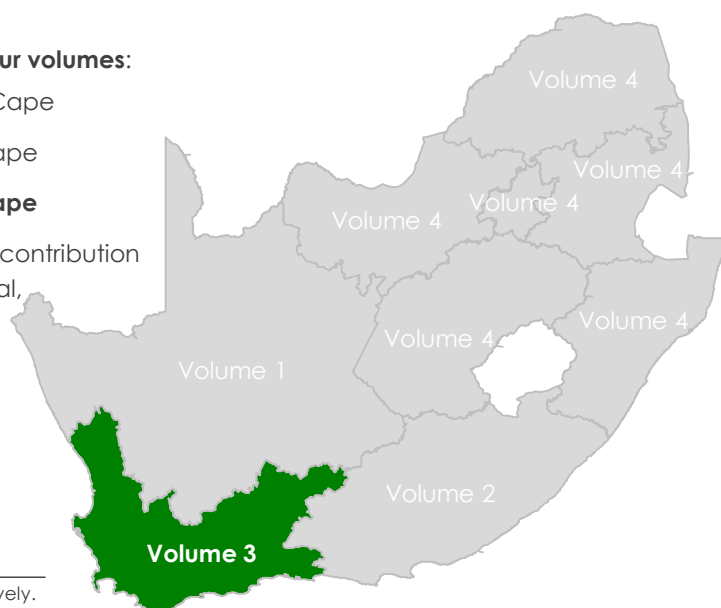
The purpose of the Provincial Report is to provide a high level, "at a glance" overview of the Independent Power Producers Procurement Programme (IPPPP) activities per province. Due to the advanced implementation status of the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) relative to other energy source-based programmes, it is largely focused on the REIPPPP.

The REIPPPP projects of the first seven bid windows (BW1, BW2, BW3, BW3.5, BW4, 1S2¹ and 2S2¹) were distributed across all nine provinces of South Africa. By nature, the distribution of IPPs depends on the location where renewable energy resources offer the most potential for any particular technology. As such, the geographic spread of various IPPs varies throughout the country according to the resource potential – e.g. the Eastern Cape offers some of the best wind conditions in the world for onshore wind-to-electricity generation, and likewise the Northern Cape for solar electricity generation. Overall, most renewable power plants are located in the rural areas of the Northern, Eastern and Western Cape.

Project distribution and numbers informed the development of four Provincial Report components. Individual report components are available for the Northern, Eastern and Western Cape provinces, where most projects are concentrated. The combined contribution across the remaining six provinces is incorporated into a single volume.

The **Provincial Report** is, therefore, available in **four volumes**:

- **Volume 1:** REIPPPP focus on the Northern Cape
- **Volume 2:** REIPPPP focus on the Eastern Cape
- **Volume 3:** REIPPPP focus on the Western Cape
- **Volume 4:** REIPPPP focus on the collective contribution from the Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga and North West Province.



Note 1. 1S2 & 2S2 refers to Smalls BW1 and Smalls BW2 respectively.

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 Producers Procurement Programme (IPPPP) activities in the **Western Cape** province, with the focus on the Renewable Energy Independent Power Producers Procurement Programme (REIPPPP) as the most advanced component of the IPPPP.

The IPPPP is anchored within the overall South African policy framework, notably the:

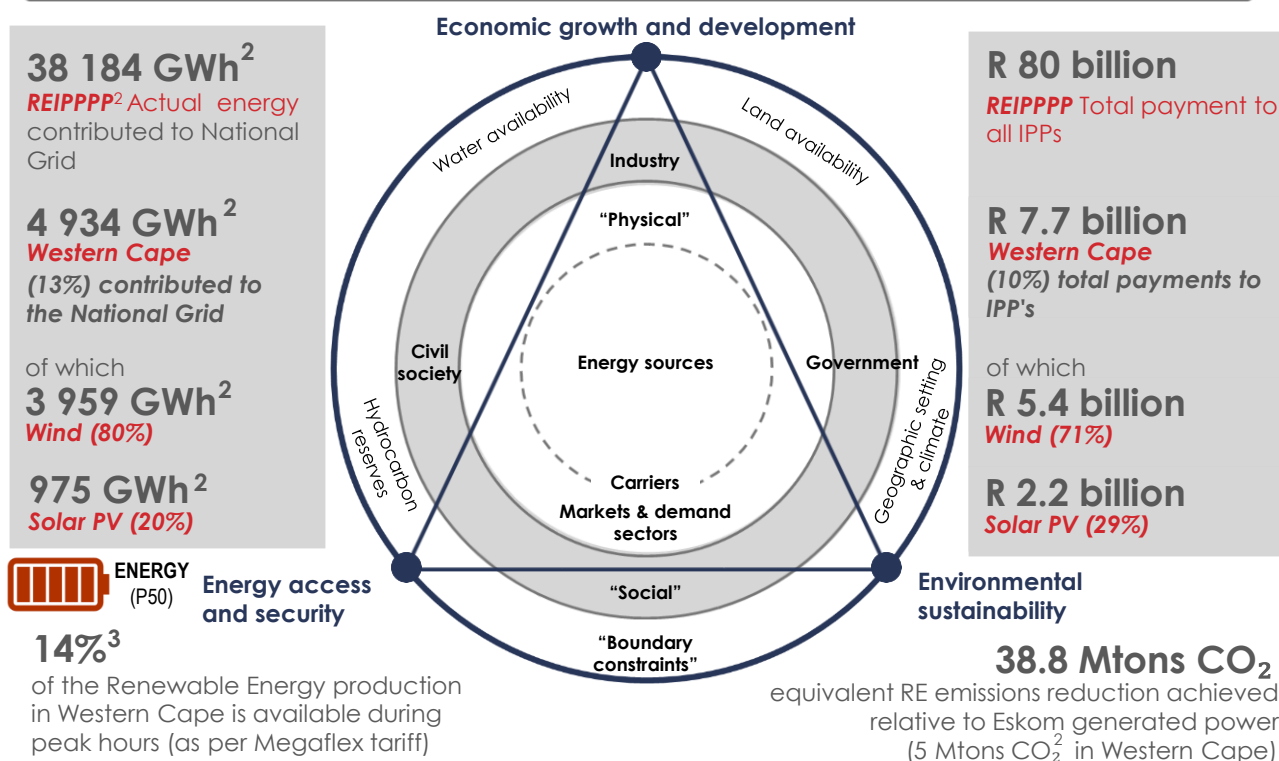
- Respective White Papers on Energy Policy (1998) and Renewable Energy (2003);
- The Electricity Regulation Act (2006) and National Environmental Management Act (1998);
- The South African National Development Plan (NDP);
- The Integrated Energy Plan (IEP); and
- The Integrated Resource Plan (IRP) 2010 for Electricity.

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

This report provides highlights of the IPP project portfolio procured to date under the REIPPPP's Bid Windows (BW) 1, 2, 3, 3.5⁴, 4, 1S2 and 2S2 in the Western Cape.

The **first section** of the report highlights IPP commitments and contributions that are already being realised in the Western Cape province (as at June 2019). The **second section** gives a brief overview of the economic status and socio-economic features of the Western Cape, and contextualises the energy capacity and the economic contribution of the REIPPPP in the province relative to the total national programme. The **third section** gives more information on the REIPPPP at the municipal level where projects are located. The **Appendix** contains relevant notes and observations, definitions and an index of icons.

Key REIPPPP Energy Triangle¹ Facts: Western Cape (for period 11/2013 – 06/2019)



Note 1. Source: World Economic Forum – Global Energy Architecture Performance Index Report (2013) **Note 2.** Energy (and carbon emissions) figures understated. Latest quarterly figures not received from some IPPs. **Note 3.** Percentage figure correct as at end June 2016 as updated figures not available. **Note 4.** No projects in the Western Cape; all BW3.5 projects are located in the Northern Cape.

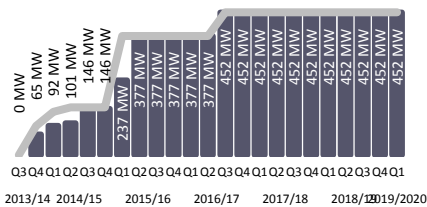
Highlights for the WC

4

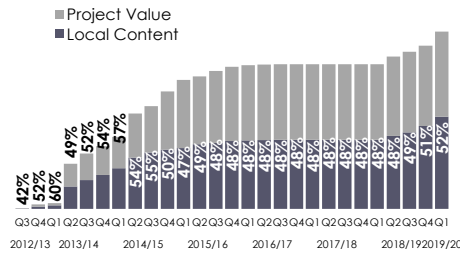
Key statistics | major achievements of the REIPPPP in the WC as at June 2019

megawatts operational (MW)

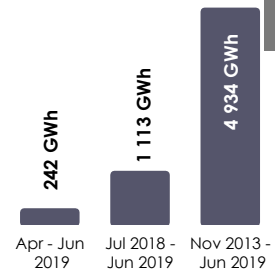
planned: 453 MW



local content achieved in construction



clean energy generated^{3,6} (GWh)

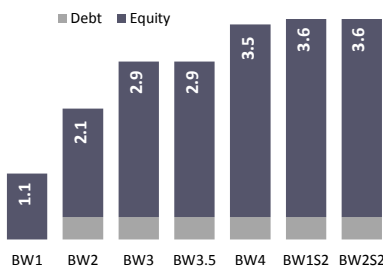


REIPPs in the WC have consistently contributed new capacity to the network since the beginning of 2014. As at end June 2019, **100%** of IPPs scheduled¹ to be operational have started commercial operations. The average lead time to complete these 9 projects has been 1.8 years.

Local content is reported as a percentage of Total Project Value² achieved during construction. Local content achieved in the WC up until this quarter was 52% of Total Project Value.

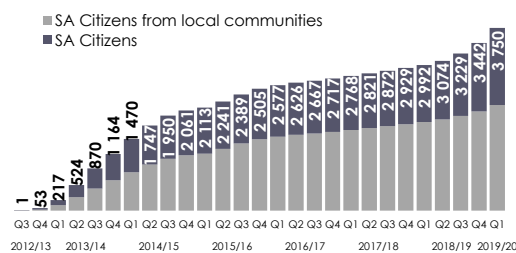
Although production is only ramping up as IPPs become operational, 4 934 GWh⁶ have already been generated by the renewable energy portfolio in the WC since inception to date - thereby offsetting 5.0 Mton CO₂⁶ emissions⁴. In this quarter alone, the projects generated 242 GWh⁶.

investment attracted (cumulative R billion)



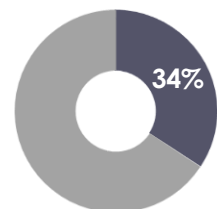
The total foreign equity and financing invested in REIPPs (BW1 - BW4, 1S2 and 2S2) in WC reached R3.6 billion. This is 9% of total investment attracted into SA by the REIPPPP.

employment creation³ (job years)⁵



Employment for South African citizens including people from communities local to the IPP operations in the WC were 3 750 job years as at end June 2019.

equitable shareholding (%)³



Black South Africans hold 34% of the shares across the complete supply chain (for the 11 active projects in BW1, BW2, BW3 and BW4). Local communities hold 6% equity in the IPPs of BW1, BW2, BW3 and BW4.

Note 1. All IPPs (9 out of 9 originally planned) have reached commercial operation date (COD) in the province by end June 2019. **Note 2.** Refer Appendix A for applicable definitions and terminology. **Note 3.** For actual achievements only data for Active projects are reported - referring to all projects that have commenced construction i.e. currently BW1, BW2, BW3 (16 of 17 projects), BW3.5 (1 of 2 projects; no projects in WC) and BW4. 1S2 and 2S2 have not completed financial close. **Note 4.** Carbon emission reductions reflect all energy generated in the Western Cape from inception to date. **Note 5.** Employment / Job creation measured in job years (equivalent of a full time employment opportunity for one person for one year). **Note 6.** Energy (and carbon emissions) figure understated. Latest quarterly figures not received from some IPPs.

Vredendal Solar

Located in Matzikama, West Coast District Municipality, Western Cape

operational since 31 July 2014...



8.8 MW



94 GWh

generated to date¹

35 000 Solar PV modules

Using **locally produced solar PV modules** and **built almost exclusively** by **South African citizens** "...from the civil works, to mechanical structures, to module manufacture and installation, even the inverter station assembly and electrical installation, all have been done by South African businesses"^{1,4}



177

job years²

Employment opportunities for South African citizens during construction and operation to date¹



28 309

South African homes³ powered

by electricity generated by this IPP to date¹



95 365

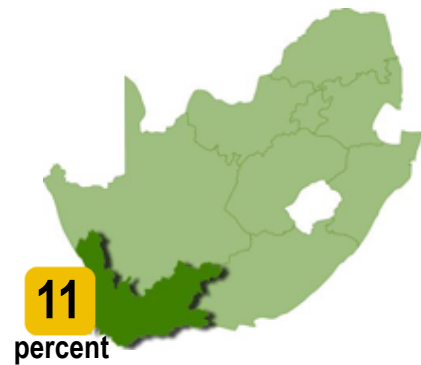
ton CO₂ offset

from electricity generated by this project to date¹

Note 1. From 31 July 2014 until 30 June 2019. **Note 2.** Employment / job creation measured in job years (equivalent to a fulltime employment opportunity for one person for one year). **Note 3.** Average households powered to date is based on energy produced from start of operation to end September 2015 (using ~3319 kWh/a/hh). **Note 4.** <http://www.esi-africa.com/news/solar-energy-the-power-to-empower/>

Western Cape

Renewable energy gaining momentum and set to continue contributing to economic growth and development

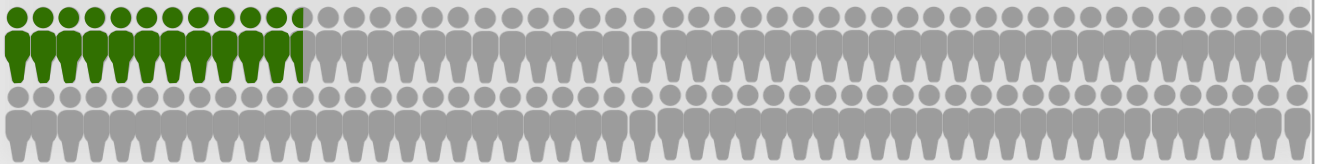


11 percent
of the surface area of the country

Key provincial attributes

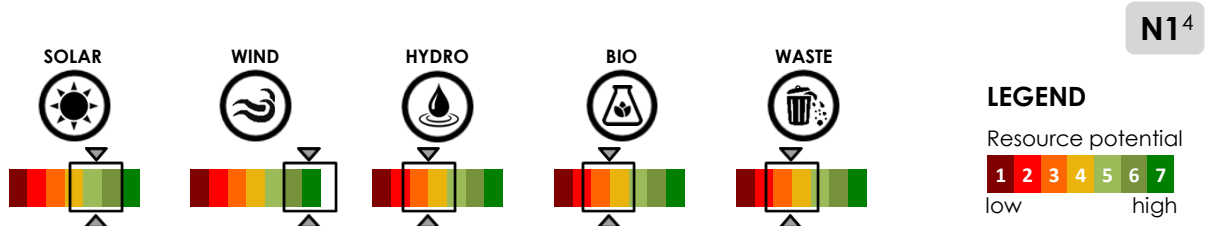
The Western Cape, together with the Free State, has the third largest **geographic footprint** among the 9 South African Provinces (after the Northern Cape, Eastern Cape) and covers 11% of the country's surface area. The Province is home to 6.4 million of the total 55.7 million South African **population**. This translates into an average **population density** of 49 people per km², which is slightly above the national average of 46 people per km².

11.4 of every 100 South Africans live in the Western Cape | **49** people per km² vs national average **46** people per km²



The Western Cape government 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 first of South Africa's provinces to develop a Sustainable Energy Strategy¹ and it has also launched a Green Economic Strategic Framework that targets job creation in the sector and building a strong environmentally conscious 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 Western Cape government funded and 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.



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.

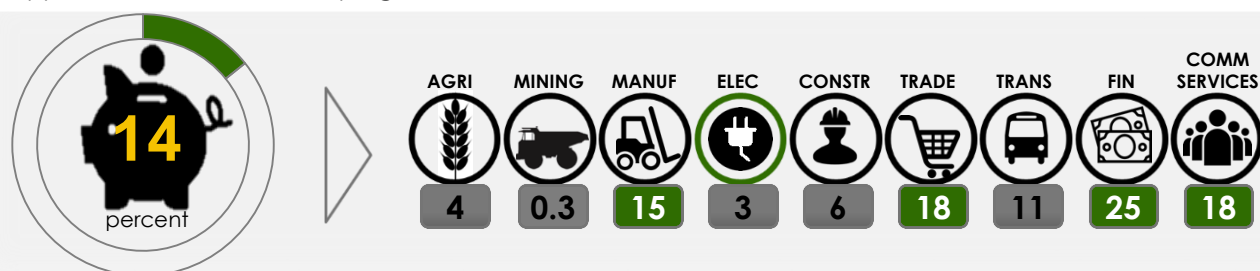
All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2016 Estimates. **Note 1.** Adopted by the Western Cape provincial government in 2009. **Note 2.** Target stated relative to energy use in the province in 2004 as described in the Strategy. **Note 3.** Scales are indicative and based on the potential analysis included in the Western Cape 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 attributes¹

The Western Cape makes the third largest contribution to national GDP at 13.6%, which is in line with its geographic size and population, and good relative to its natural resource endowments. Economic activity is largely concentrated in the City of Cape Town where almost two thirds of the provincial population lives.

While the province has a well diversified economic base, the financial services (25.0%), community services (18.3%), retail and wholesale trade (17.6%) and manufacturing (15.3%) sectors contributes most to value added. The remainder of output emanates from the transport (11.0%), construction (5.8%), agriculture (3.9%), electricity (2.8%) and mining (0.3%) sectors. Mining has a low proportionate share in the total provincial GDP due to the limited mineral extraction potential in the province, especially relative to the rest of the South African economy.

The provincial electricity industry is likely to receive a substantial boost from the electrical energy projects located in the province as a result of the IPPPP, which will further contribute to economic growth and development. In this regard, the development and expansion of the renewable energy industry has strong support from the Western Cape government.



Employment¹

While still unacceptably high, at 21.5% for 2016 and down slightly from 21.8% in 2015, the province has a lower unemployment rate relative to the overall official unemployment rate for South Africa of 26.1%. However, the provincial unemployment rate has been steadily rising from the 18.8% y/y recorded in 2007. Nonetheless, approximately 4 out of 5 people in the province's economically active population are employed.



The largest employer in the province is the finance sector which account for 19.3% of the labour market in the province. Thereafter most employment opportunities are offered within the community services sector (18.7%), trade (18.6%), manufacturing (13.2%), agriculture (10.1%), private households (7.5%), construction (7.3%), transport (4.7%), utilities (0.4%) and mining (0.2%).

The province's green economy strategic framework emphasises the need for a sustainable growth path that is accompanied by job growth. The strategic framework also identifies opportunities beyond energy infrastructure development and includes unlocking manufacturing and employment opportunities in the broader 'green' economy. These efforts, in combination with the IPPPP, are contributing to the creation of new **direct and indirect job opportunities**.

Note 1. All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2016 Estimates.

IPPPP in the Western Cape

Building energy (🔌)
supply capacity (🔌)

ENERGY
(P50)

1 793

gigawatt hours / a

1.8

M ton/a

CO₂

8

CAPACITY



606

megawatts

9

percent

of total
capacity
procured

The Western Cape has attracted 9% of the IPPPP projects to date. The electrical energy that will become available from the investments in BW1, 2, 3, 3.5, 4, 1S2 and 2S2 will equate to roughly 8% of the Western Cape's own energy needs.

Capacity contribution

The Western Cape consumed **22 302 GWh electricity in 2018** or 9.8% of the national total (226 534 GWh)¹. With the newly developed IPP capacity (procured in BW1 to BW4, 1S2 and 2S2), the province will produce around 8% of its own electrical power needs from renewable energy sources (although in practice this energy will be fed into the national grid).

The IRP 2010 contains a target of 17.8 GW of renewable energy capacity by 2030, of which 7 GW needs to be operational by 2020 (5 GW by 2019 and a further 2 GW by 2020)⁴. At the national level, a total of 6 422 MW has been procured from 112 IPPs under the REIPPPP to date. Of these, 64 IPPs are operational which have established 3 976MW of capacity (against a contracted capacity 4 001 MW) and generated 38 184 GWh⁷ of electricity since inception. The Western Cape accounts for 606 MW (9%) of procured capacity, of which 452 MW (11% of national total) electrical energy capacity is operational, with 4 934 GWh⁷ (13% of national total) electricity generated since inception.

Western Cape renewable energy projects in BW1 to 4, 1S2 and 2S2 will save a gross Eskom grid equivalent of 1.8 million tonnes CO₂ emissions² per annum.

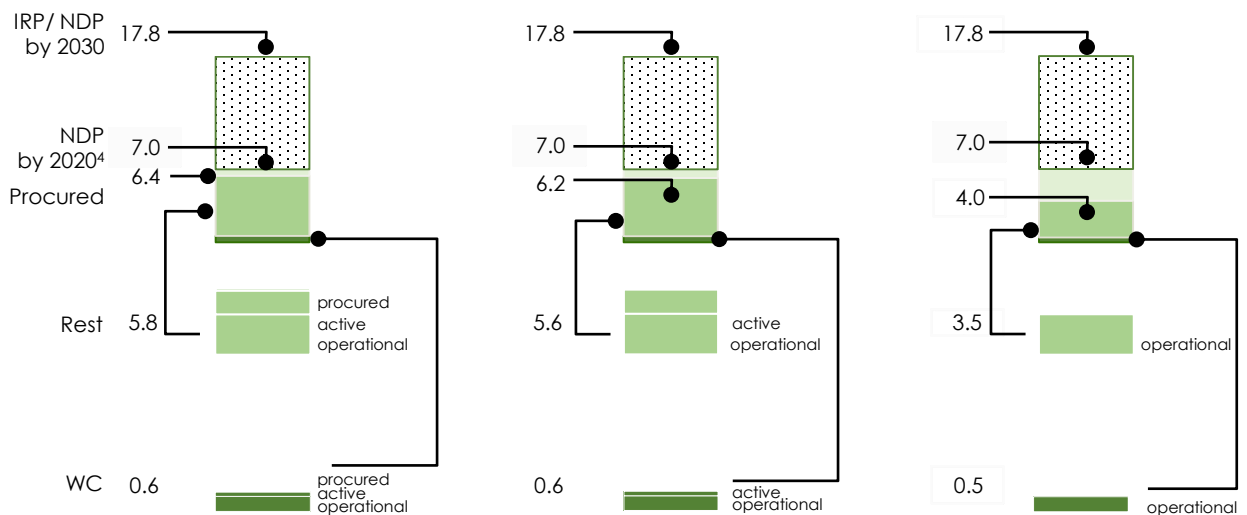
Procured⁵
Capacity (GW)³



Active (have reached FC)⁶
Capacity (GW)³



Operational
Capacity (GW)³



14 of the 112 projects in BW1 to 4, 1S2 & 2S2 are in the WC

11 of the 90 active projects are in the WC

9 of the 64 operational projects are in the WC

Note 1. Stats SA P4141: Electricity generated and available for distribution (201906). **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 IPPPPP and IRP targets. **Note 4.** Breakdown of targets set out in Appendix notes. **Note 5.** Projects for BW1, 2, 3, 3.5, 4, 1S2 and 2S2. **Note 6.** Projects in BW3 and BW3.5 (1 project each), 1S2 and 2S2 have not yet reached financial close. **Note 7.** Energy (and carbon emissions) figure understated. Latest quarterly figures not received from some IPPs.

IPPPP in the Western Cape

Building energy supply capacity



14

percent

of total wind capacity
procured in the REIPPPP

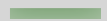
6

percent

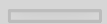
of total PV capacity
procured in the REIPPPP

9

LEGEND



Province

Not operational yet
at time of reporting

Rest of programme



Operational

The Western Cape has attracted 14% of the total wind capacity procured in BW1 to BW4, 1S2 and 2S2 under the REIPPPP in South Africa, contributing 467 MW of the national total 3 366 MW **wind power**. Of the 14 renewable energy IPPs in the province, wind has the dominant share with 8 IPPs or 77% of total provincial capacity. This is followed by 5 solar PV IPPs contributing 134 MW or 22% and 1 biomass IPP at 5 MW or 1% of total provincial capacity.

Technology contribution

Procured (BW 1 to 2S2)

14

projects

606

megawatt

of which:

no. projects	% share ¹ rest WC 100 -	megawatts
0		0
5	94 6 	134
8	86 14 	467
0	100 - 	0
1	90 10 	5
0	100 - 	0

Active²

11

projects

592

megawatt

of which:

no. projects	% share ¹ rest WC 100 -	megawatts
0		0
5	94 6 	134
6	86 14 	458
0	100 - 	0
0	100 - 	0
0	100 - 	0

Operational³

9

projects

452

megawatt

of which:

no. projects	% share ¹ rest WC 100 -	megawatts
0		0
5	91 9 	134
4	84 16 	319
0	100 - 	0
0	100 - 	0
0	100 - 	0

Note 1. WC share (green bar/fill) vs. remainder of programme (other 8 provinces). **Note 2.** IPPs that have reached financial close.

Note 3. Operational capacity achieved (numbers rounded) has fallen 0.12 MW short of contracted capacity (453 MW).



Solar PV



Wind



Solar CSP



Hydro



Biomass



Landfill gas

Investment share of the IPPPP attracted into the Province



15.0
Rand billion

Invested
(programme
total: R 209.7
billion)

1.5
Rand billion

Community
net income

10

N3

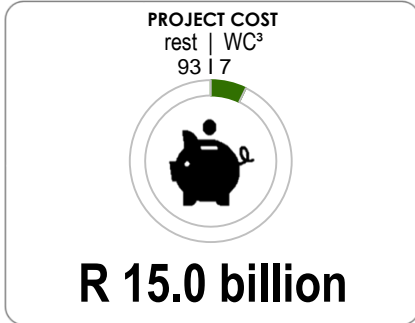
The province has attracted 7.1% of the total IPPPP investments to date and has secured a substantial share of the equity for local communities with benefits materialising over the project life¹.

Investment share

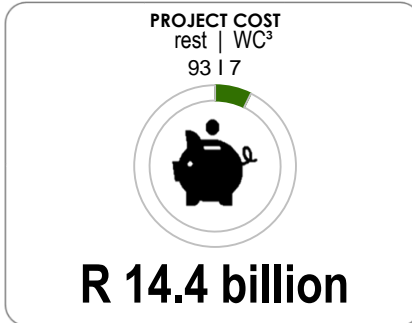
The province attracted 7.1% of the IPP investments in BW1, 2, 3, 3.5, 4, 1S2 and 2S2. The combined IPP investment share of the province, across BW1 to BW4, 1S2 and 2S2, would be equivalent to 3% of the Western Cape's annual gross domestic production (R591 billion).

By June 2019 the **project value**⁴ that had been realised in the WC totaled R7.2 billion.

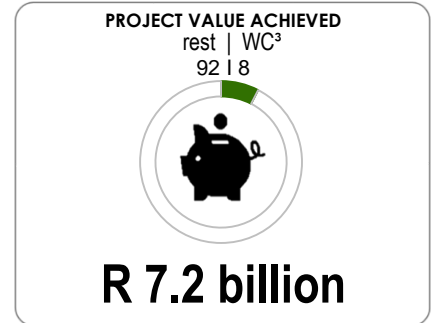
Procured (BW 1 to 2S2)²



Active

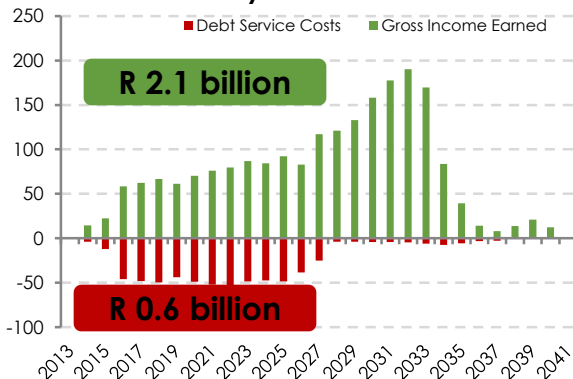


Achieved

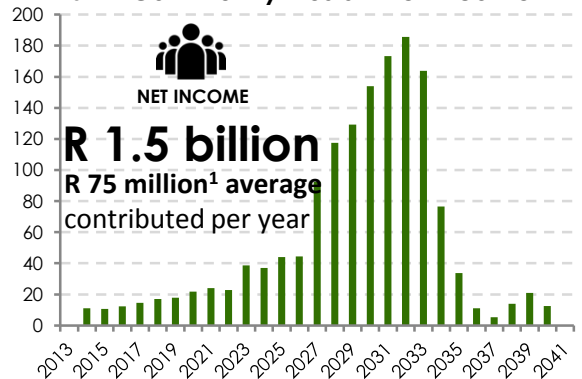


A substantial portion of these investments have been structured and secured as local equity. Individual communities' dividends earned will depend on the terms of each transaction corresponding with the relevant equity share. The aggregate impact of BW1, 2, 3, 3.5, 4, 1S2 and 2S2 investments and earnings projected for local communities associated with the projects in the province (accrued over 20 years) present a net income of R1.5 billion.

ZAR Million Community Trusts - Income & Costs



ZAR Million Community Trusts - Net Income



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 debt repayment obligations in the preceding years. **Note 2.** Projects for BW3 and BW3.5 (one project each), 1S2 and 2S2 have not yet reached financial close. **Note 3.** Western Cape share (green bar/fill) vs. remainder of programme (other 8 provinces). **Note 4.** Project value indicative of progress against committed investment; refer definitions in Appendix A for Total Project Value and Total Project Costs.



Project cost



Community trust
(local equity)

Economic development resulting from the IPPPP and the sizable wind component in particular



10.4
Rand billion

Procurement spend (programme total):
R 149.9 billion)

5.1
Rand billion

Locally procured (programme total):
R 67.6 billion)

11

Clean energy production supported by the procurement strategy of the REIPPPP is contributing directly to the Western Cape's provincial objective of building 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 10.4 billion or 7% of the total committed procurement spend of the programme. Of this, R5.9 billion (57%) has already been spent.

Committed (BW 1 to 2S2)²

10.4

Rand billion
Procurement spend

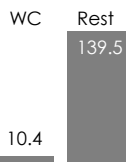
rest | WC³

93 | 7

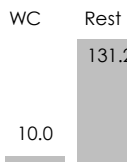


Achieved against committed

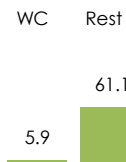
Planned



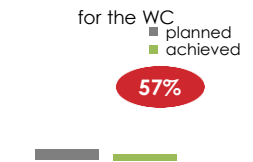
Active



Achieved



Achieved vs planned



Localisation share

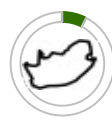
45% of the total project value¹ in the Western Cape has been allocated for local procurement, with the intent of stimulating the development of localised industries and the green economy. By this reporting quarter, 73% of the committed local spend had already been realised.

5.1

Rand billion
Localisation spend

rest | WC³

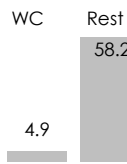
92 | 8



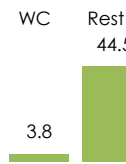
Planned



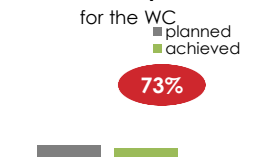
Active



Achieved



Achieved vs planned



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 for BW1 to BW4, 1S2 and 2S2 is R108.3 million. This contribution will accrue over the operational life of the projects which has only started. As a result, only a small percentage has been realised at this early stage of the 20-year portfolio operational life.

0.1

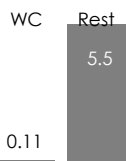
Rand billion
Enterprise development commitment (local)

rest | WC³

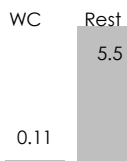
98 | 2



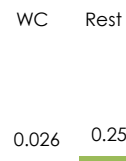
Planned



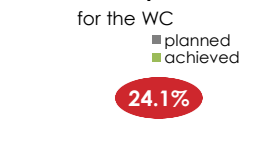
Active



Achieved



Achieved vs planned



Note 1. Refer Total Project Value definition in Appendix (Definitions). **Note 2.** Projects for BW3 and BW3.5 (one project each), 1S2 and 2S2 have not yet reached financial close. **Note 3.** Western Cape share (green bar/fill) vs. remainder of programme (other 8 provinces).



Procurement



Localisation



Economic Development



Local community

Employment creation in the Western Cape by the IPPPP



5 041

job years¹

out of a programme total of 60 851 job years within **local communities**



12

The Western Cape benefits from the employment opportunities created during the construction and operation of IPPs. The province also captures a high share of the total employment created under the REIPPPP as a result of the large number of IPP projects that are located within the Province.

Employment creation

As for the rest of the country, employment creation remains a top priority in the Western Cape. IPP investments in BW1 to BW4, 1S2 and 2S2, within the province alone, will contribute new employment opportunities for **South African citizens**² estimated to be 11 068 job years over the construction and projected operational life of the plants.

Approximately 10% of the total jobs created for SA citizens under the overall REIPPPP, in BW1 to BW4, 1S2 and 2S2 (114 271 job years), will therefore be created by IPP projects located in the Western Cape Province.

Committed (BW 1 to 2S2)⁴

2 454

Construction job years of total 11 067 job years

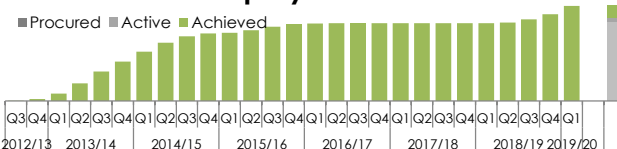
rest | WC³

93 | 7



Achieved cumulative against planned (Job years)

Construction employment



115%

of planned job opportunities in the WC realised

Notably, 782 or 32% of these new employment opportunities have been retained within **local communities** (in the province) associated with the respective IPP plants. To date, the opportunities during construction for people from local communities have significantly exceeded expectations, achieving 189% of what is planned across all 7 BWs.

782

Job years

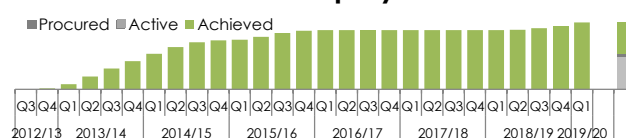


rest | WC³

94 | 6



Local construction employment



189%

of planned job opportunities in the WC realised

During the construction phase (2 – 4 years), the number of people employed on site typically spikes, and then tapers off to a lower and more steady employment number over the extended 20 year operational life of a project. Although lower in numbers, these opportunities are both sustainable and in environmentally friendly firms, thereby contributing to the national objective of creating 'green' jobs, and will accrue over 20 years. At this early stage, already 938 job years have been created by the IPPs that started operations.

8 613

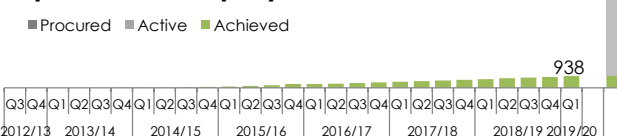
Operations job years of total 11 067 job years

rest | WC³

89 | 11



Operations employment



10.9%

of planned job opportunities in the WC realised

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 residing in the Western Cape shown. **Note 3.** Western Cape share (green bar/fill) vs. remainder of programme (other 8 provinces). **Note 4.** Projects for BW3 and BW3.5 (one project each), 1S2 and 2S2 have not yet reached financial close.



Employment



Local community

Socio-economic benefits resulting from the IPPPP



0.9
Rand billion⁴

committed
SED in the
local
community

13

Approximately 6% of the total **socio-economic development (SED) contribution** leveraged by the IPPPP commitments in BW1 to BW4, 1S2 and 2S2 have been in the Western Cape province.

Development share

The IPP projects in the Western Cape that have been procured in BW1 to BW4, 1S2 and 2S2 have made a combined socio-economic development commitment¹ of R1.3 billion over the 20 year planned project operational life. This represents 6% of total SED commitments under the overall REIPPPP. Of this SED contribution, R0.9 billion has been committed to **local communities** located within the vicinity of the IPP projects in the Western Cape.

Committed (BW1 to 2S2)²



R1.3 billion

of which **local**:



R0.9 billion

Committed by active IPPs



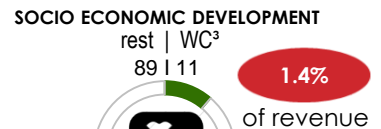
R1.2 billion

of which **local**:



R0.8 billion

Achieved / realised



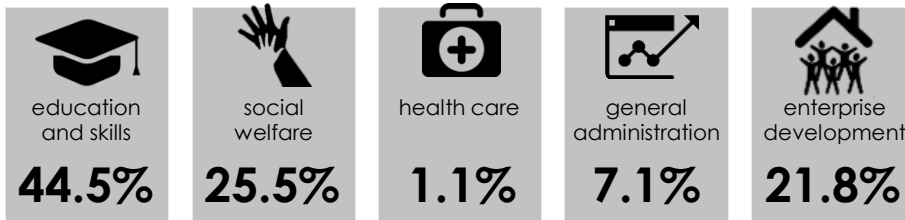
R0.10 billion

of which **local**:



R0.10 billion

In the Western Cape, the expenditure on SED and ED initiatives to date under the IPPPP have been focused on five categories, namely; education and skills development, social welfare, health care, general administration, and enterprise development:



Development challenges in the province relate to electricity supply services, health care and youth unemployment. Education and skills development is therefore well aligned, however future SED initiatives can be better tailored to align with provincial development priorities in subsequent bid rounds.

Note 1. SED commitments are made as a percentage of annual revenue. **Note 2.** Projects for BW3 and BW3.5 (one project each), 1S2 and 2S2 have not yet reached financial close. **Note 3.** Western Cape share (green bar/fill) vs. remainder of programme (other 8 provinces).



Socio economic
development



Local community

The impact on local municipalities



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

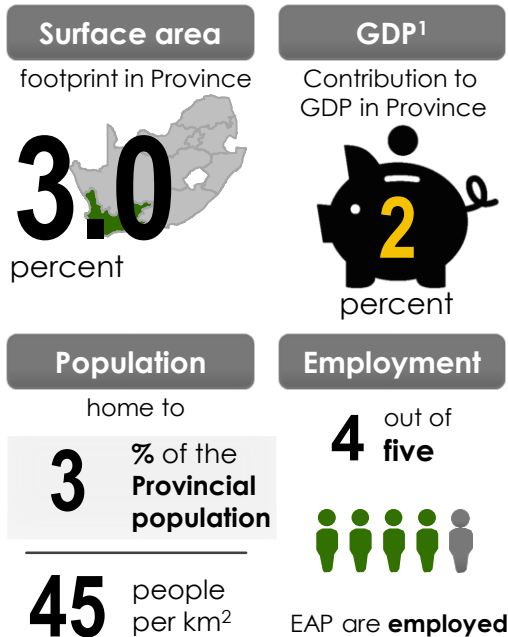


OW – Onshore wind; PV – Solar photovoltaic; CSP – Concentrated solar power; SH - Small hydro; LG – Landfill gas; BM - Biomass



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

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



1 project | 36 MW
of which



R 1 580 million²
10.6% of total for province

R 65 million²
5.0% of total for province

R 201 million^{2,3}
13.3% of total for province

1 568 job years²
14.2% of total for province

1 project | 136 MW
of which



R 2 669 million²
17.8% of total for province

R 210 million²
16.2% of total for province

R 398 million^{2,3}
26.4% of total for province

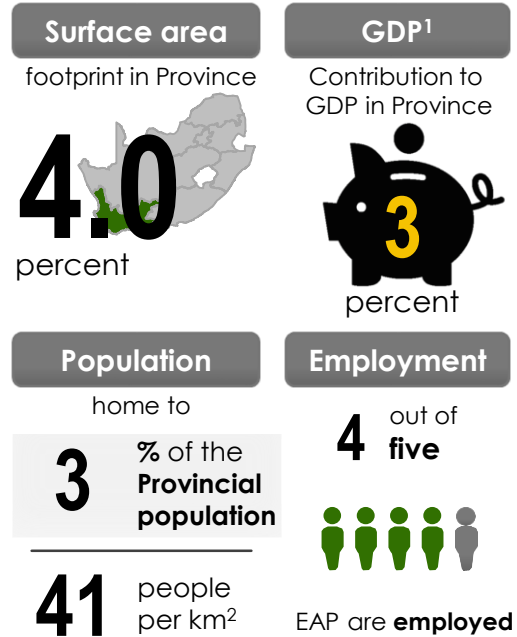
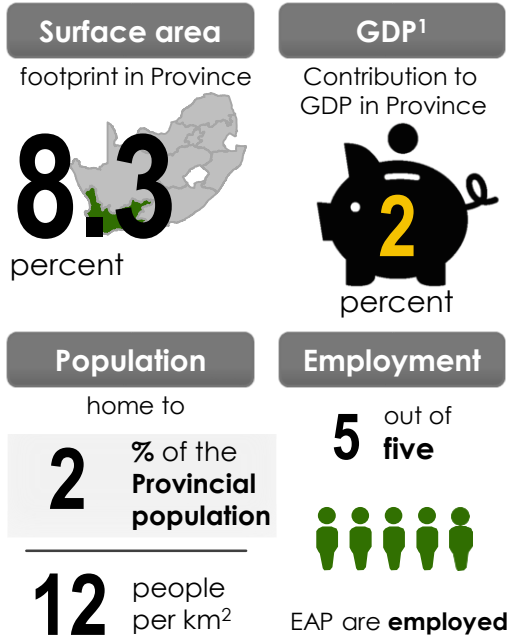
653 job years²
5.9% of total for province

Note 1. All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2016 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 • **Cape Winelands**
Local municipality • **Witzenberg**

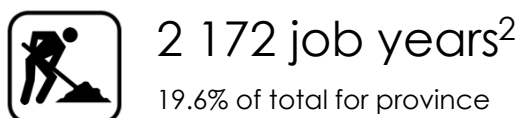
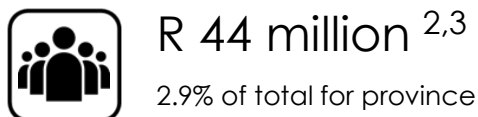
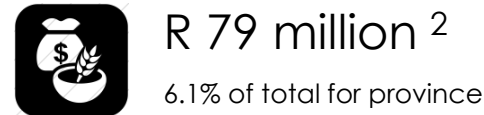
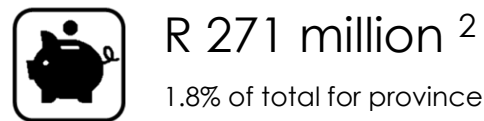
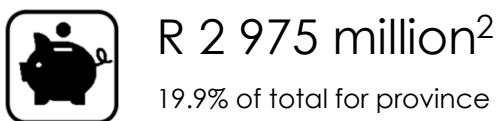
District • **Eden**
Local municipality • **George**



1 project | 108 MW
of which



1 project | 5 MW
of which



Note 1. All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2016 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 • **Overberg**Local municipality • **Swellendam**

Surface area

footprint in Province

2.5
percentGDP¹Contribution to
GDP in Province**2**
percent

Population

home to

2 % of the
Provincial
population**35** people
per km²

Employment

4 out of
fiveEAP are **employed**

Surface area

footprint in Province

3.0
percentGDP¹Contribution to
GDP in Province**1**
percent

Population

home to

1 % of the
Provincial
population**10** people
per km²

Employment

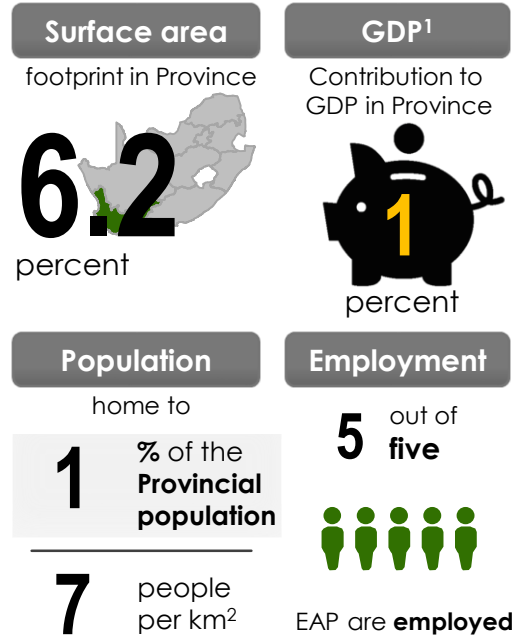
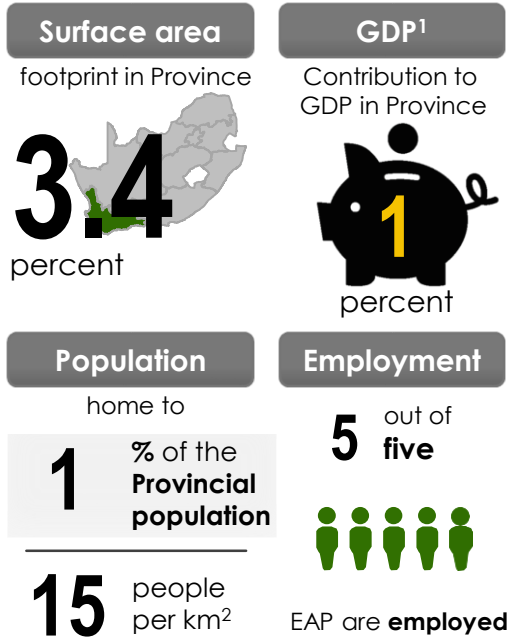
4 out of
fiveEAP are **employed**1 project | 27 MW
of which1 project | 32 MW
of whichR 665 million ²
4.4% of total for provinceR 970 million ²
6.5% of total for provinceR 21 million ²
1.6% of total for provinceR 199 million ²
15.3% of total for provinceR 295 million ^{2,3}
19.6% of total for provinceR 34 million ^{2,3}
2.3% of total for province382 job years ²
3.4% of total for province1 391 job years²
12.6% of total for province

Note 1. All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2016 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 • **West Coast**
Local municipality • **Bergvriër**

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



1 project | 9 MW
of which



1 project | 75 MW
of which



R 240 million²
1.6% of total for province

R 11 million²
0.8% of total for province

R 5 million^{2,3}
0.4% of total for province

676 job years²
6.1% of total for province

R 1 276 million²
8.5% of total for province

R 86 million²
6.6% of total for province

R 159 million^{2,3}
10.6% of total for province

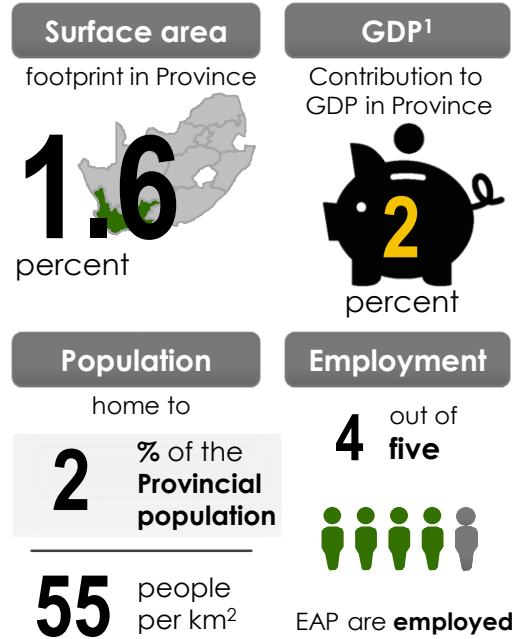
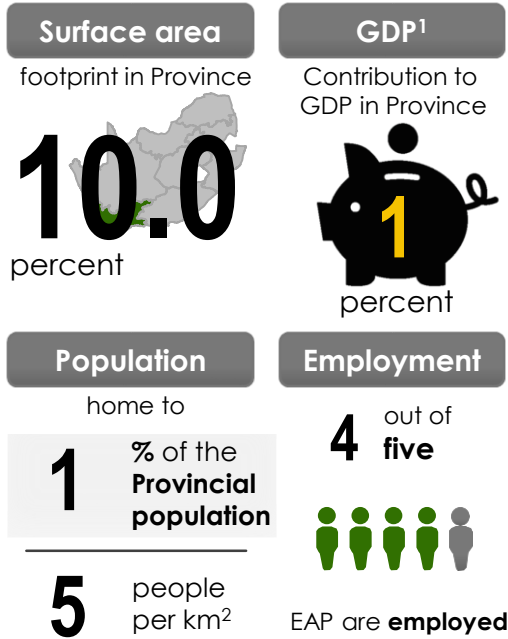
1 518 job years²
13.7% of total for province

Note 1. All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2016 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 • **West Coast**
Local municipality • **Matzikama**

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



2 projects | 14 MW
of which



R 414 million ²
2.8% of total for province

R 11 million ²
0.8% of total for province

R 6 million ^{2,3}
0.4% of total for province

766 job years ²
6.9% of total for province

3 projects | 160 MW
of which



R 3 697 million ²
24.7% of total for province

R 221 million ²
17.0% of total for province

R 218 million ^{2,3}
14.5% of total for province

1 165 job years ²
10.5% of total for province

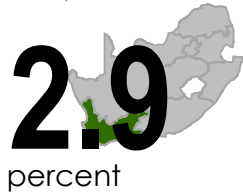
Note 1. All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2016 Estimates. **Note 2.** IPP data reflects cumulative values over the construction phase and projected operational life (production phase) of the projects (i.e. 20 years). **Note 3.** Reflects the cumulative, net positive, cash flows over the 20 year production phase.



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

**Surface area**

footprint in Province

**GDP¹**Contribution to
GDP in Province**Population**

home to

2
% of the
Provincial
population

35
people
per km²

Employment

4
out of
five

EAP are **employed**

1 project | 5 MW
of which



R 209 million ²

1.4% of total for province



R 0.3 million ²

0.0% of total for province



R 67 million ^{2,3}

4.5% of total for province



111 job years ²

1.0% of total for province

Note 1. All economic data = IHS Global Insight Regional eXplorer 744 (2.5q), 2016 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.

Appendix A

Reference component

Notes and observations

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

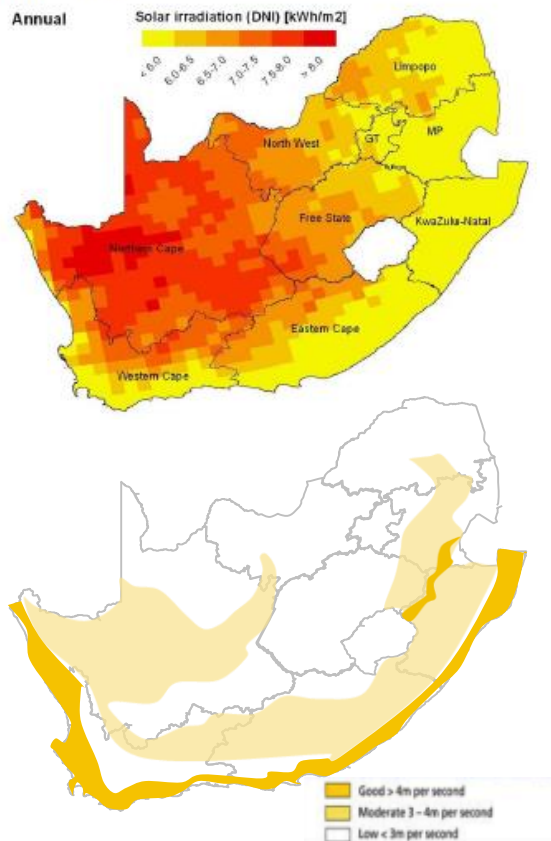


Fig. 1: National resource maps, SIP 8 Business plan

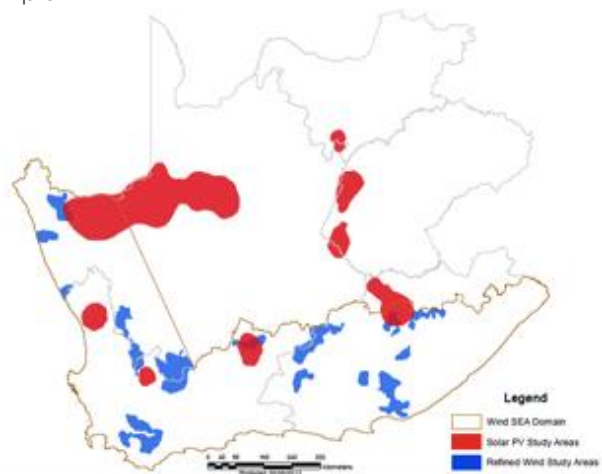


Fig. 2: CSIR high yield zones
(http://www.safiri.co.za/ec/corridor_planning_&_development.html)

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

- Total renewable energy capacity developed by 2030: 17 800 MW (Outcome 10, Sub-outcome 2)
- Signed renewable energy deals for 7 000 MW by 2019 (Outcome 6, Sub outcome 2, item 18)
- RE generation commissioned : 5 000 MW by 2019 (Outcome 6, Sub outcome 2, item 26) RE generation capacity commissioned: 7 000 MW 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 6 725 MW RE through IPPs by 31 March 2019¹.

To date, the Minister of Energy has determined in four **Ministerial determinations** i.e. 2011, 2012, 2015 and 2016 that, 14 725 MW are to be procured from renewable energy IPPs. In terms of progress towards these targets:

- The Ministerial determinations represent approximately 83% of the 2030 target of 17 800 MW.
- The combined capacity procured in BW1 to 4 and 1S2 (i.e. 6 422 MW) represents approximately 92% of the 2020 target (i.e. 7 000 MW or 5 000 MW in 2019 plus 2 000 MW in 2020) for renewable energy deals.
- The combined capacity of BW1, BW2, BW3, BW3.5 and BW4 (already commissioned or in construction phase, i.e. 6 323 MW) exceeds the 2019 target for capacity commissioned (i.e. 5 000 MW), but due to delays in the signing of the BW4 projects, it is expected that only approximately 4 000 MW will be operational by the end of 2019.

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.

Note 1. This target was not met due to delays in concluding PPAs of BW3.5 and BW4 projects with Eskom, between the time of procurement and April 2018, as well as delays in the finalisation of the IRP 2018.

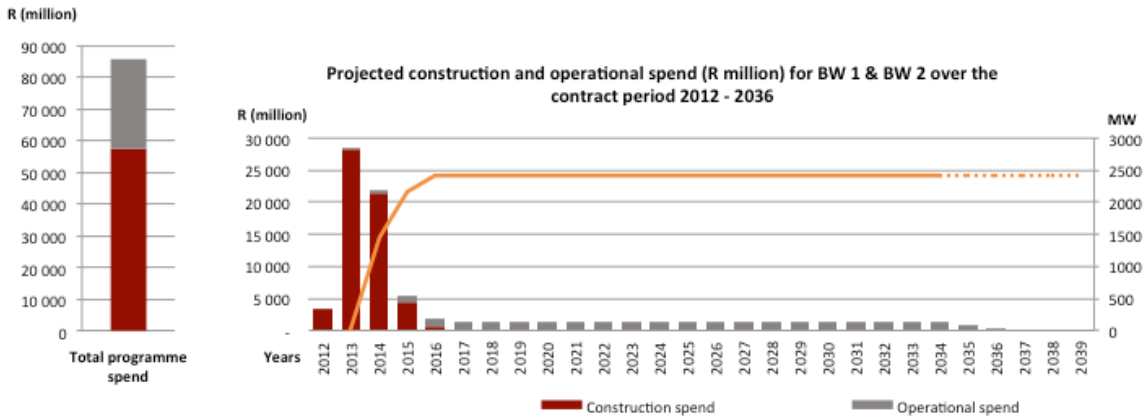


Fig 3. Operational and construction spend patterns

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.

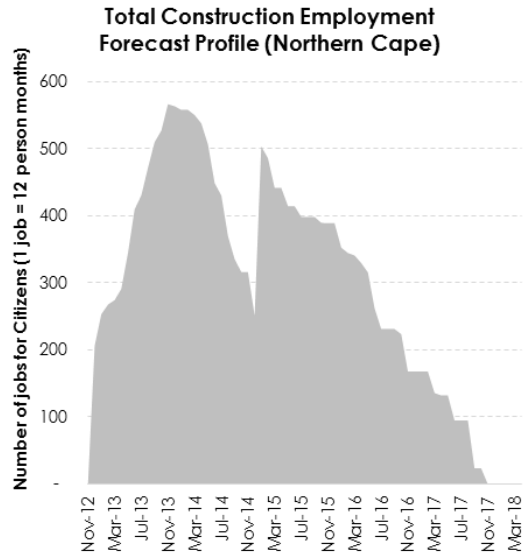


Fig 2. Construction employment forecast (example from Northern Cape Province)

Labour requirements during the production phase will be limited, however 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 Generally Accepted Accounting Practices (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 May and ending at 24:00 hours on 30 June 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 30 June 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 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 to be incurred up to the commercial operations date in the design, construction, development, installation and/or commissioning of a project, which is equal to the total debt and equity related to a project as reported at commercial close.
- **“Total Project Value”** means the total project cost that involves the capital costs and costs of services procured for the construction of a project, but excludes finance charges, land costs, mobilisation fees to the operations contractor and the costs payable to the distributor, national transmission company and/or a contractor for the distribution or transmission connection works.

Glossary of icons

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



Gross Domestic Product
(percentage indicating the
contribution share)

percent

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
-  Youth
-  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)

 Small RE projects

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]

IPPPP Office Contact information

Address:
Bylsbridge Office Park, Building 9, cnr
Jean and Olievenhoutbosch Ave,
Centurion

Telephone: +27 (0)87 351 3000

Website: www.ipp-projects.co.za



Independent Power Producer Office

Bylsbridge Office Park, Building 9, cnr Jean and Olievenhoutbosch Ave, Centurion

Tel: +27 87 351 3000



energy

Department:
Energy
REPUBLIC OF SOUTH AFRICA



national treasury

Department:
National Treasury
REPUBLIC OF SOUTH AFRICA

