Western Cape – A Green Economy Hub

Western Cape Government
FOR YOU

SALDANHABAY
INDUSTRIAL DEVELOPMENT ZONE

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South Africa: committed to climate change response

- Signatory of United Nations Framework Convention of Climate Change (UNFCC) and Paris Agreement
  - Updated NDC in 2021 – increased ambition
- National Climate Change Response Policy
- Low-Emission Development Strategy 2050
- National Climate Change Adaptation Strategy
- Review of Integrated Resource Development Plan 2019
- Just Transition Framework for South Africa
- Carbon Tax

SA global rankings
CO2/capita 3rd
CO2/GDP 7th
CO2 total 13th
Energy sector is dominant contributor

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South Africa: Initiatives to encourage green investment

- Renewable Energy Independent Producers Programme (REIPPP)
- Over 32 green economy-related policies and strategies
- Accelerated depreciation allowances for machinery for renewable electricity generation and biofuels production
- R&D tax incentives including for green technologies (150% reduction)
- Energy efficiency savings tax allowance
- Motor vehicle emission tax
- Incandescent globe taxes
- Incentive for biodiversity conservation
- South Africa ranked one of the top 15 nations in the world for driving the green growth agenda (ahead of Australia, Singapore, and Finland)

- this drive is on the back of a range of funding solutions, import and tax incentives available to green technology manufacturers and service companies, as well as those who use or procure such goods and services. (South African Climate Finance Landscape 2020)

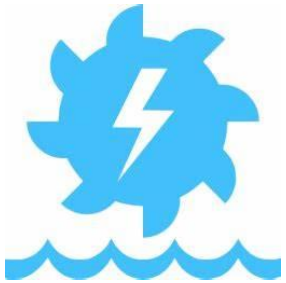
Western Cape: unlocking green industries, sustainability & climate resilience

- Western Cape Climate Change Response Strategy
- Greenhouse Gas Emissions Pathway Project & Race to Zero 2050
- Municipal Energy Resilience Initiative
- Smart Agri Project
- Ecological Infrastructure Investment Framework
- Provincial Biodiversity Strategy and Action Plan
- The City of Cape Town has budgeted over US$1 billion for alternative water supplies over the next 5 years
- The City of Cape Town is the first city in the world to decrease water usage by 50% in 3 years, as recognised by the International Water Association
- 110% Green Initiative
  - Call to action to all organisations, both public and private, to:
    - Commit to enabling a Green Economy in the Western Cape
    - Collaborate on taking decisive action to drive the growth of a green economy
    - Ensure positive impact on society and the environment.

Energy sector liberalisation

NATIONAL policy shifts unlock market opportunities in renewable energy - from utility scale to small-scale embedded generation, energy services, storage & efficiency

- Over the past decade the **Renewable Energy Independent Power Producers Procurement Programme (REIPPPP)** has driven investment in this sector (mainly solar and wind) (established in 2011);
- 2022 – **complete removal** of licensing threshold for embedded generation announced
- Far-reaching amendments will enable a **competitive market for electricity generation** and the establishment of an independent state-owned transmission company.
- Currently, municipalities around the Western Cape are prioiritising the conclusion the wheeling frameworks, i.e. the financial and legal frame work regulating the new energy generation markets.
- Commercial & Industrial, small businesses, tourism industry and private households are preparing for favourable wheeling terms which is expected to be the catalyst for an explosive responsive from Small Scale Power Generators.
    - History in WC – 2 stages below the rest of the country in Cape Town, George & Stellenbosch advanced stages of full power security.



Western Cape: committed to driving energy security & energy transition

Recent policy shifts enable investment opportunities and the ability to strengthen energy security

Collaboration across public and private sector between Wesgro, the Atlantis Greentech SEZ, Saldanha SEZ, GreenCape, InvestSA, the Western Cape Government and City of CapeTown collaborates to drive green economic growth.

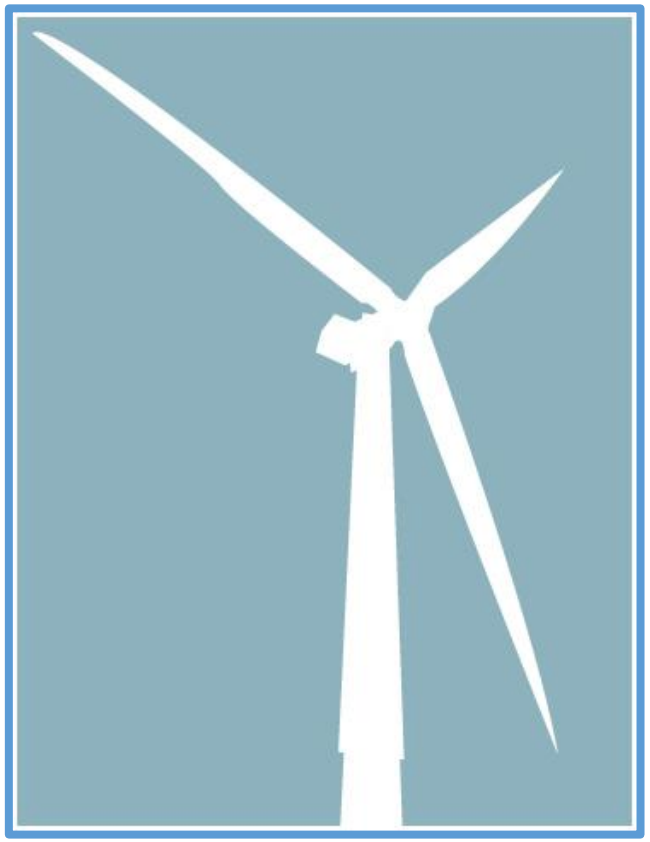
Western Cape province

- City of Cape Town opened first round of procurement of power from independent power producers in 2022 to procure up to 200 MW of renewable energy through tendering procedures over coming months (with the possibility to procure more in future rounds)
- Dedicated energy team to help municipalities to procure electricity, Stellenbosch Municipality - leading municipality to procure electricity from IPPs and intends to issue an RFP in 2022/23
- Almost 90% of preferred bidders in Bid Window 5 are based in the Western Cape

The Western Cape has attracted US1.93 billion in FDI in renewable energy projects between 2003 and 2021

Western Cape: Africa's Green Economy Hub

- Over 80% of green energy project developers have chosen Cape Town as head office base based on strong green services hub
- Thriving innovative green tech solutions eco-system supported through multiple incubators and accelerators, research and knowledge management
- The South African Renewable Energy Technology Centre (SARATEC) ensures availability to green skills resources and labour in wind and solar
- Leader in last-mile e-mobility manufacturing and solution providers
- Flourishing sustainable agriculture practices through clean energy and smart-agri solutions
- The Green Building Council of South Africa, based in Cape Town, is one of the first GBCs in the world
- South Africa identified as global leader in green buildings and has one of the fastest growing green building sectors in the world
- Home to award winning GreenCape, a public benefit organization, driving the uptake of the green economy nationally and providing world class market intelligence in large scale renewable energy, SSEG, mobility, circular economy, water and sustainable agriculture.



Western Cape green economy

Western Cape green economy support ecosystem

Western Cape Government
Economic Development and Tourism
BETTER TOGETHER.

CITY OF CAPE TOWN
ISIXEKO SASEKAPA
STAD KAAPSTAD

investSA
ONE STOP SHOP

INVEST CAPE TOWN
COLLABORATE | ENABLE | PROMOTE

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special economic zone
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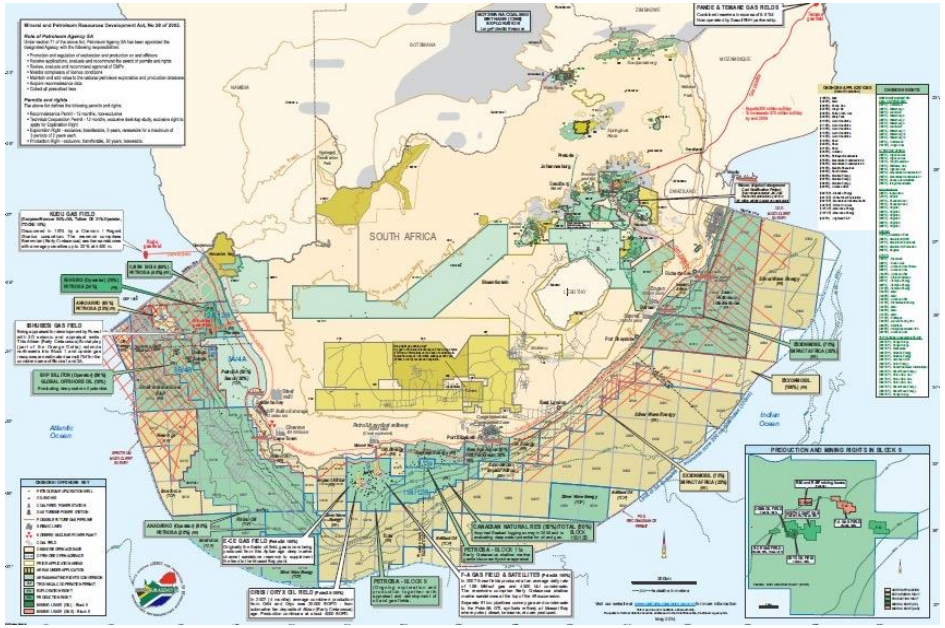
INDUSTRIAL DEVELOPMENT ZONE

WISP
Western Cape Industrial Symbiosis Programme
Delivered by GreenCape

Natural Gas

- The Western Cape has proven natural gas reserves off the south coast of Mossel Bay.
  - The Luiperd & Brulpadda fields: 3.3 trillion cubic feet (tcf) of gas & 192 million barrels of condensate
  - Total Energies is the operator and the fields are expected to produce by 2025.
  - Gas will be processed at the PetroSA gas to liquid (GTL) refinery in Mossel Bay.
  - Some gas will be supplied to Eskom's 740MW Gourikwa oil fired power plant through a 90km pipeline.



- Shale gas deposits in the Karoo basin span across three provinces, viz. Western, Eastern and Northern Cape.
  - The deposit is one of the largest recoverable shale gas resource in the world.
  - Econometrix estimates if only 5% of the resource is economically recoverable, this could add about 3.3% to the country's GDP for 25 years, which is nearly double the total current contribution of coal mining to the economy.
- Exploration for other hydrocarbon resources is ongoing along the southern and western coast.
- Natural gas is viewed to be "green" by the EU and is expected to continue to be a significant part of the energy supply mix for several decades and we welcome this approach and look forward to inviting more investors into the sector.

Green Hydrogen: Astronomical Global Demand

Global (annual) demand estimates for renewable electricity to produce green hydrogen by 2050:

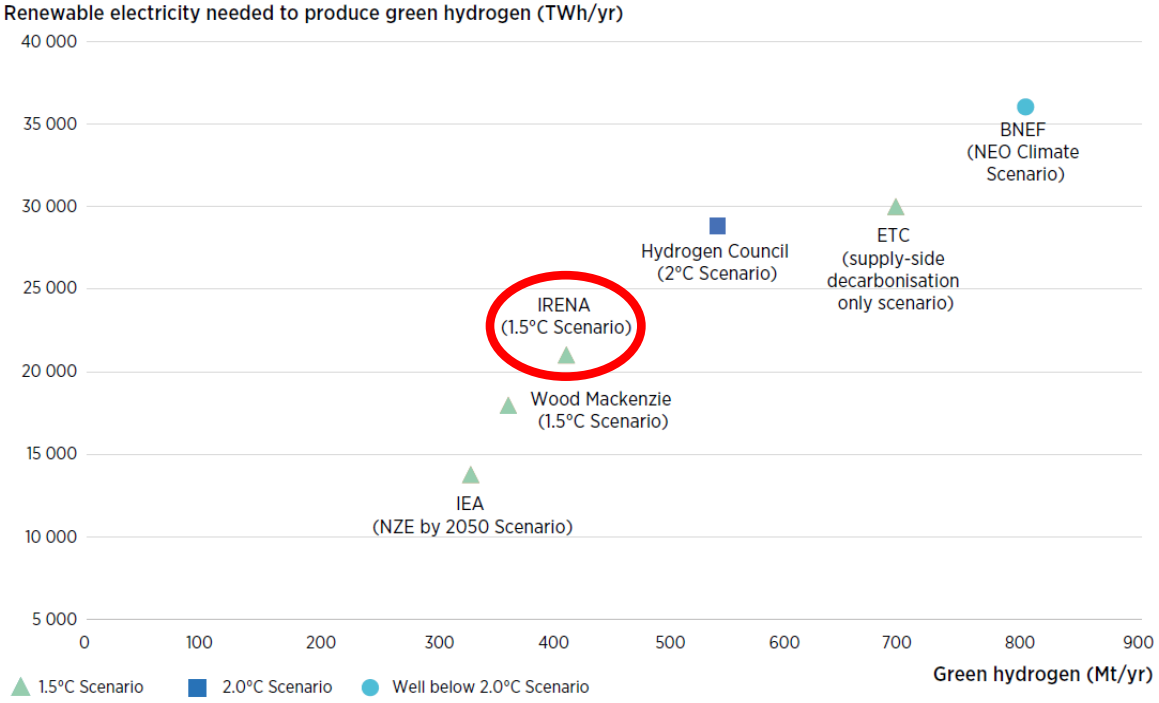
- 21 million gigawatt-hours of renewable electricity for 400 million metric tons (Mt) of Green Hydrogen

  (source: IRENA Coalition for Action (2021), *Decarbonising end-use sectors: Practical insights on green hydrogen,* International Renewable Energy Agency, Abu Dhabi)

- Other estimates between 14 million and 36 million GWh for between 320 and 800 Mt of green hydrogen

German demand 3 Mt by 2035

- 10% own supply, i.e. 300,000 t



Green Hydrogen for the EU:

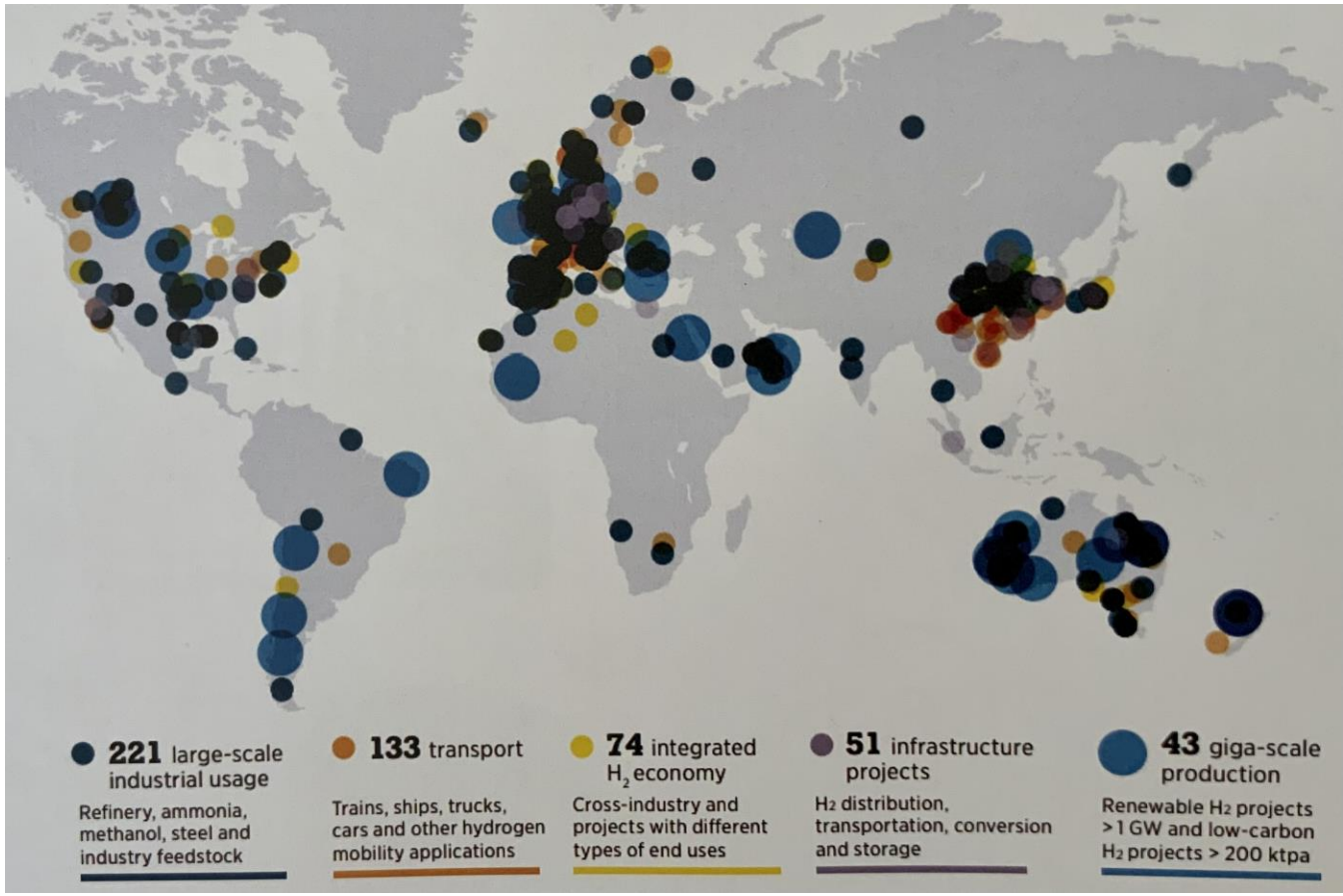
- European Green Deal towards climate neutrality by 2050, aiming to cut GHG emissions by 50–55% by 2030
- Most green hydrogen used for industrial purposes, green steel, chemicals & fertilisers

Green Hydrogen: Western Cape Manufacturing OPPORTUNITY

Saldanha potential

- Identified as high-potential location by international studies
- Suitable port infrastructure and Freeport (SBIDZ) availability (major investor interest)
- Bulk exports and green bunker fuels (World Bank study commissioned on Saldanha and Boegoebaai)
- Engineering value chains for component manufacturing
- Local demand:
  - Steel plant converting to produce Green Steel using green hydrogen
  - Refinery in Cape Town
  - Cement
  - Transport: Shipping, Road transport corridor from Cape Town to Northern Cape / Namibia, Municipal heavy-duty vehicle fleets
  - Mining
- Social & Environmental Issues
  - Water – 2% of opex
  - Over specify electricity supply to support Municipal Resilience

Clean hydrogen projects & investments (Nov 2021)



Africa behind the curve

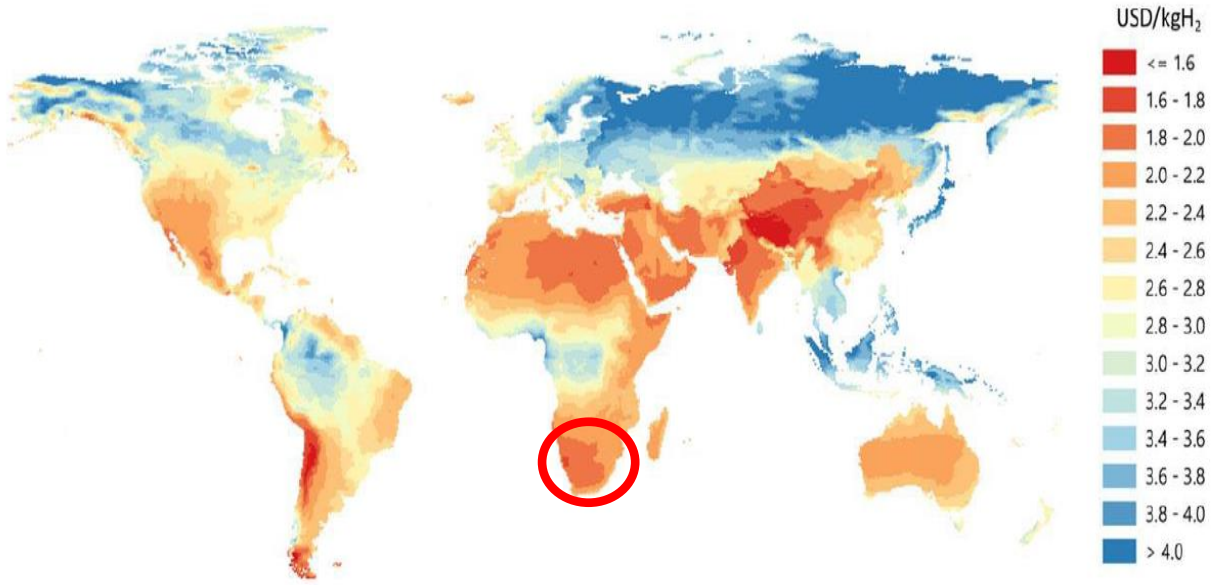
Green Hydrogen: South African opportunity & Western Cape alignment

SA Hydrogen Policy Statements

- **Hydrogen Society Roadmap for South Africa, 2021**
  - national coordinating framework for integration of hydrogen-related technologies in various sectors of the SA economy and stimulate economic recovery
- **Hydrogen Commercialisation Strategy (DTIC)**
  - Green industrialisation plans – e.g. steel, electric vehicles
  - Possible funding for green industrialisation has been identified and a green paper circulated for comment
  - The draft Green Hydrogen Commercialisation Strategy is expected to be completed soon
- **Boegoebaai** (incl. Sasol) and **Hydrogen Valley**
  - Proclaimed projects with momentum

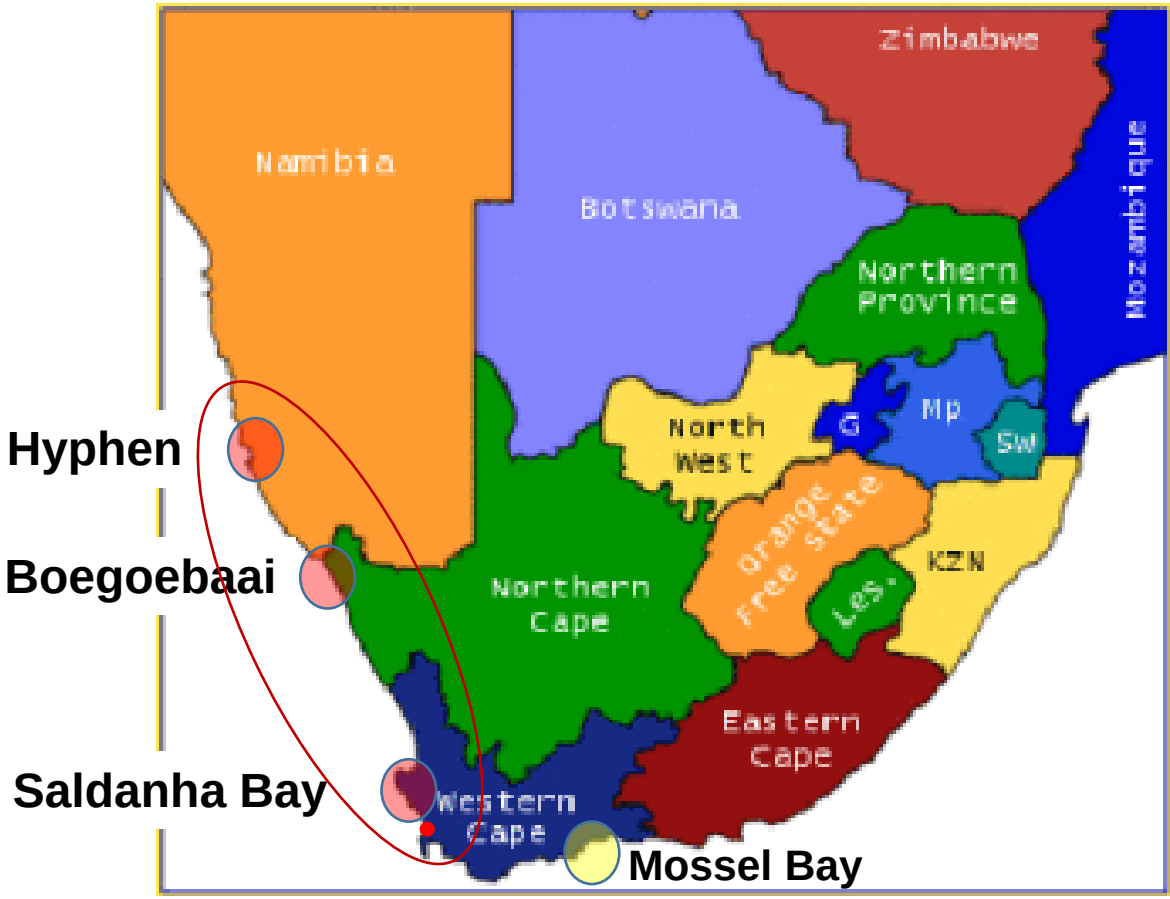
SA competitive advantages:

- High-potential renewable energy generation capacity
- Globally competitive cost to produce
- Leader in Fischer-Tropsch technology (conversion into green fuels)
- Platinum group metals (required for component manufacturing)



Collaboration along the Southern African Atlantic Green Hydrogen Belt – Manufacturing Paradigm

- Hyphen project in Namibia
  - 5 GWh of renewable electricity (current country demand 670 Mwh), to produce 300,000 t of green hydrogen
  - Project cost: $9.4 billion
- Collaboration to establish Atlantic Green Hydrogen Corridor for:
  - Green Shipping route
  - Green trucking route along the north-south road corridor (Cape Town through Namibia to Angola and Zambia)
- Collaboration to share export capacity, maximising efficiencies of scale and lowering unit transport costs
- Collaboration and potential for standardisation for technology and requisite service industry
- R&D and Skills Development for the region
  - UWC producing green hydrogen in Vredendal, UCT electrolyser plates, Stellenbosch tech valley, Solar energy skills development at CPUT



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University of Cape Town · iYunivesithi yaseKapa · Universiteit van Kaapstad

UNIVERSITY of the WESTERN CAPE

Cape Peninsula University of Technology

Collaboration and Execution efficiency

- Government
  - National – Various stakeholder national departments, including Treasury, DTIC, Presidency, Infrastructure, Invest SA, Health & DME. Presidency's RSA Green Hydrogen Conference at the end of November in Cape Town
  - Bi-lateral - SA & Namibia
  - Provincial – DEDAT, Treasury
  - Local – Municipalities, SEZ
  - Willing and positively motivated government and wider ecosystem
- Private Sector
  - Investors
  - Bi-lateral offtake agreements
- Universities & SETAs
  - Four highly performing universities
  - Western Cape able to develop, attract and retain skilled workforce
- Bankable – Yes
  - Deman vs Supply
  - Technical, Social, Environmental and Comercial considerations


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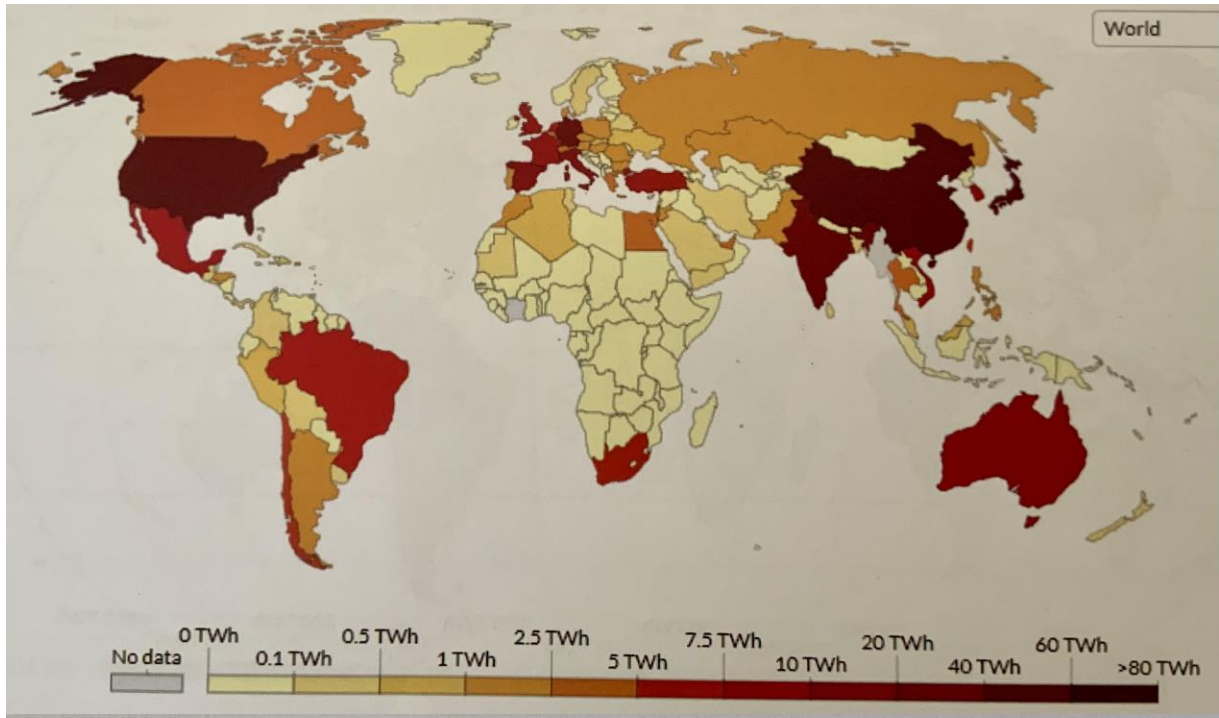
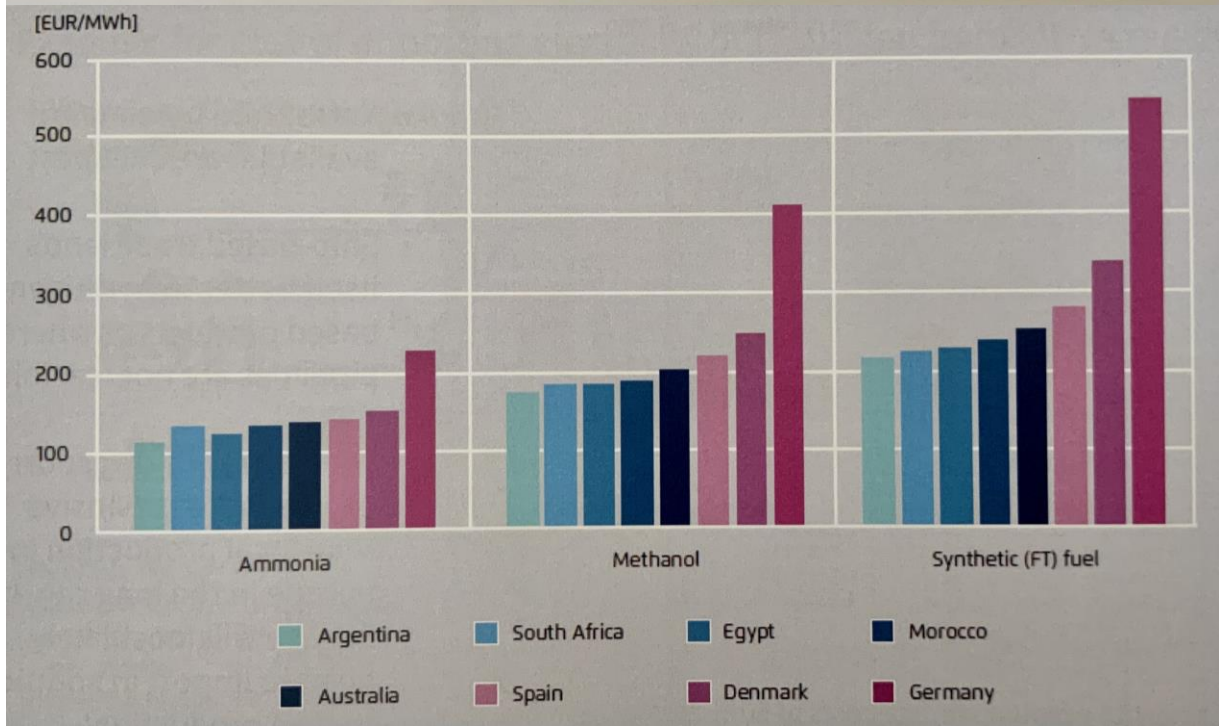
An inspiring place to do business

Green South Africa a seasoned Solar energy generator

Solar power generation, 2020 (in TWh/year)



Landed cost in central Europe



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The WC has been driving energy resilience work for some time

SSEG (solar PV support to develop & update to all WC municipalities):

- SSEG frameworks (22 WC, 69 SA)
- SSEG feed-in tariffs (21 WC, 33 SA)
- WC work used nationally
- WC munis: 102 MW registered systems from December 2020 (est. only 50% of systems registered (City))

Support to drive businesses solar PV uptake – total of 40 new businesses supported in 2020/21 & 2021/22 with technical & financial info, 20 of these with analysis of PV developer offers & follows ups to previously supported businesses. Success rate (i.e. businesses undertaking procurement of PV systems): 55% for 2020/21 & 70% for 2021/22.

>10 000 downloads of the energy & water market intelligence reports annually

Wheeling support

- Framework & wheeling tariff development for 7 municipalities – big interest from businesses – way of keeping on the grid & revenue for municipalities

Support to green economy investors in WC:

- Establishment of the Atlantis SEZ for Greentech
- RE sector - 11 projects in WC between 2011 to 2021 -> R17.99 billion in FDI (Wesgro)
- Direct engagements

Note previous SSEG installed capacity figures (up to end of 2019/20 FY) used national inverter imports as a proxy for SSEG systems (and assumed a percentage of this for the WC). This data is no longer available and so we are now tracking registered SSEG systems with municipalities and Eskom (recognizing that many systems are unregistered (~50% previously estimated in City)).

Utility scale renewable energy

Context

- 5 bid windows executed:
  - close to **R200 billion investments attracted** (20% international investment)
  - **Bid window 5** with a total of **R50 billion investment** attracted
  - **RMIPPPP** attracted **R 45 billion investments**

- 6.4 GW procured to date
  - 5.2 GW of which is connected/operational

Opportunity

- Bid window 5 (2 583 MW) preferred bidders announced in October 2021 and scheduled to reach financial close by end of April 2022
- Bid window 6 (2.6 GW) expected by March 2022
- Bid window 7 (1.6 GW) expected by September 2022
- Battery storage: 513 MW RFP expected by March 2022
- Target – **20.4 GW by 2030 (New build)**
- Onshore Wind: 14.4 GW and Solar PV: 6 GW
- Large scale RE manufacturing capabilities reignited
  - Atlantis Special Economic Zone
  - Tax, land, import, export, skills

Technology	Indicative ZAR (million)/MW cost	IRP 2019 new capacity (MW)	Potential market value (based on IRP 2019 allocations)	Potential market value (Western Cape)
Solar PV	R 16.5 million	6 000	R 99 billion	R 14.8 billion
Wind	R 18.8 million	14 400	R 271 billion	R 40 billion
Distributed generation	R 12.0 million	4 000	R 48 billion	R 7.2 billion