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South African National Energy
Development Institute (SOCI) Ltd.



SANEDI, Energy and the Ocean

ENERGY INNOVATION FOR LIFE

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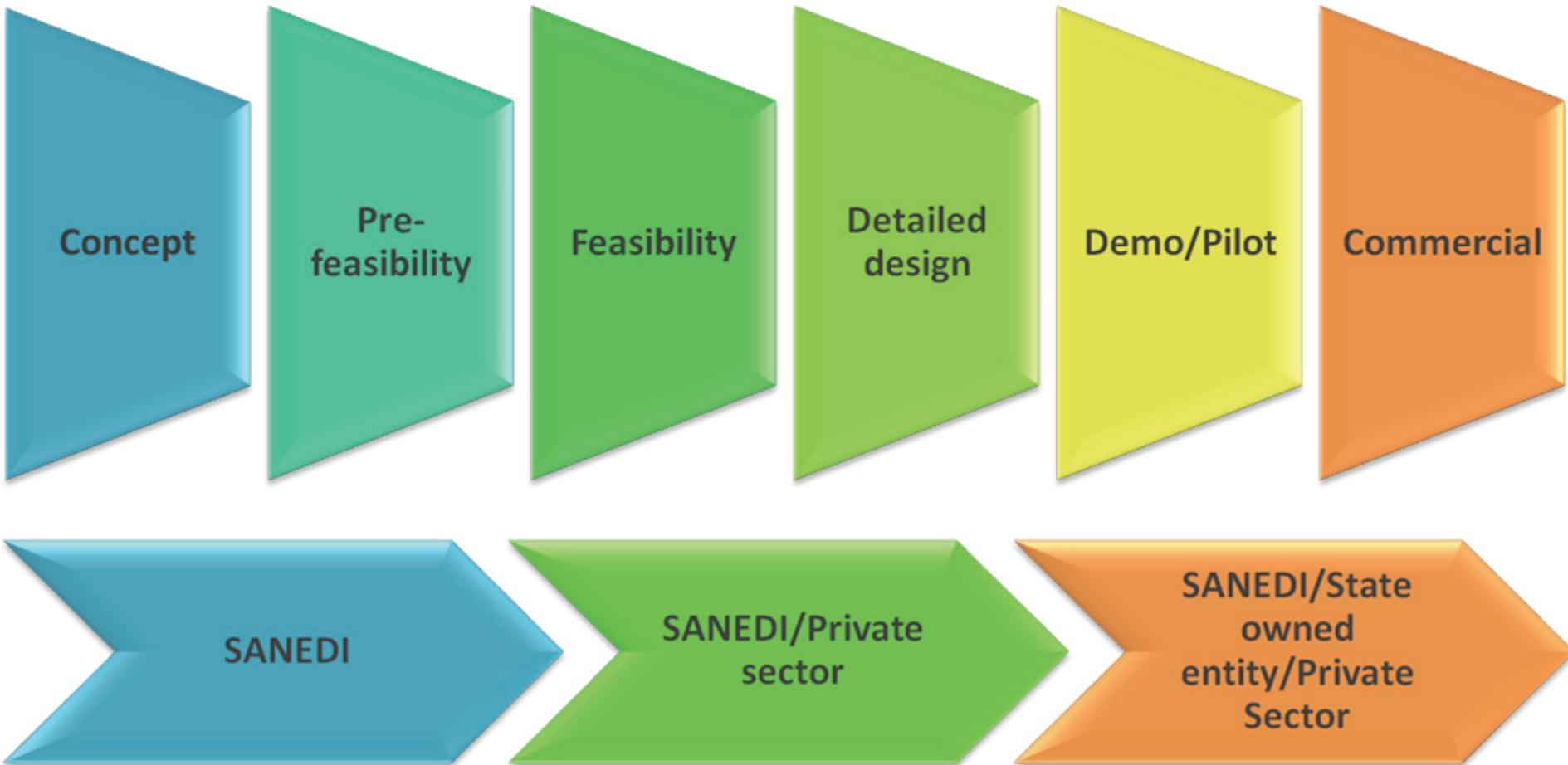
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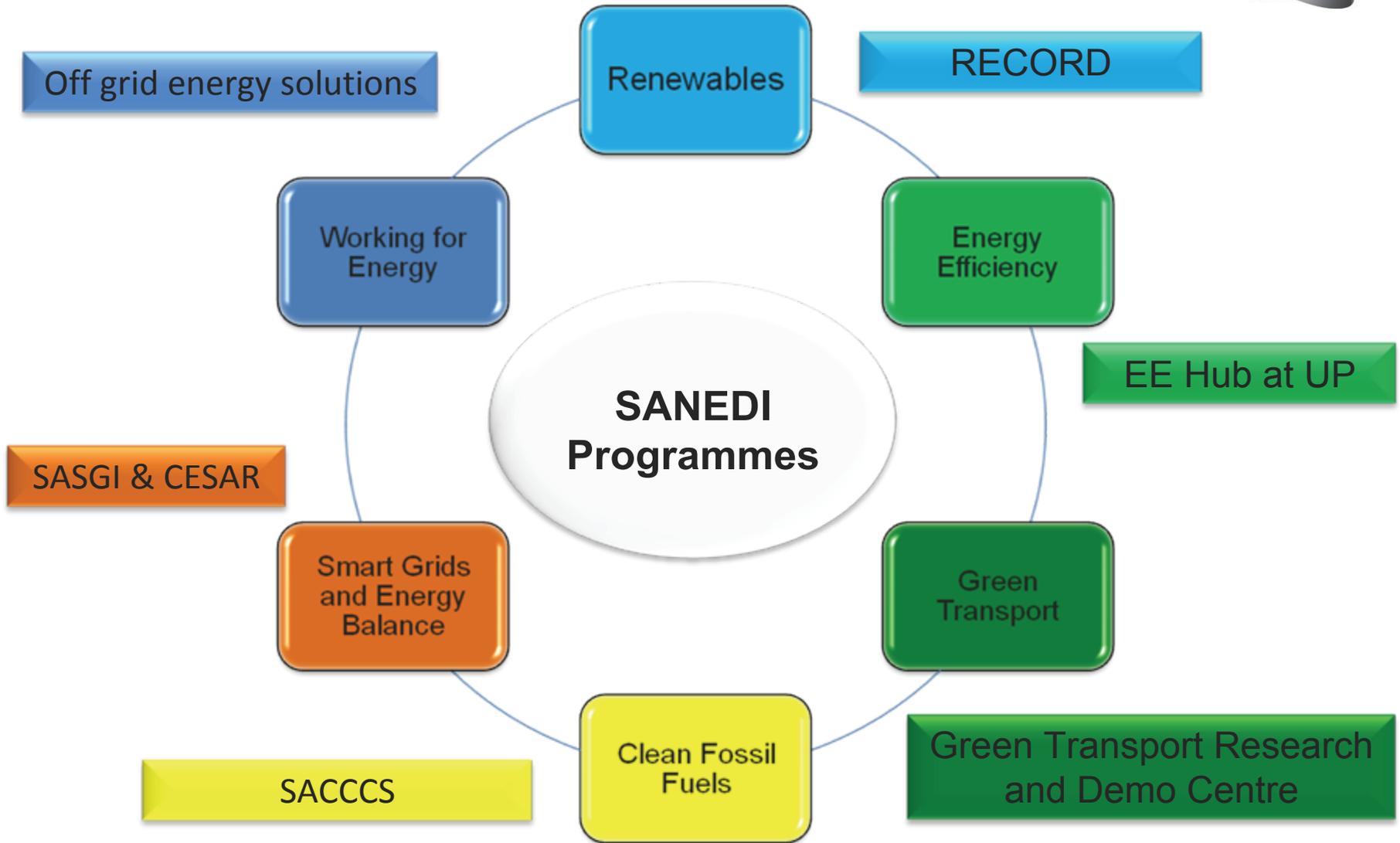
SANEDI overview

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SANEDI project involvement



SANEDI structure



Energy Efficiency



Section 12-I and
12-L of the Income
Tax Act

EEDSM Hub at the
University of
Pretoria

Afd Technical
Assistance Facility,
(TAF)

bigEE
Benchmarking Tool

Cool Surfaces
Project

ESCo Market
Facilitation

General EE-
advocacy

Proposed new activities

- Private Sector 'EE' Staff Incentive
- Industrial Energy Efficiency

Green Transport is involved in...



UNIDO Low Carbon Transport Project

EcoMobility Festival October 2015 - Sandton

The Case for Biogas as Vehicle Fuel

IEA Hybrid & Electric Vehicle Implementing Agreement (HEV IA)

The Clean Energy Ministerial (CEM) Electric Vehicle Initiative (EVI)

UJ Biogas Facility

Phase 1: South African Cities Network (SACN) Green Transport Project

Uyilo Project

PV Solar Powered Electric Game Viewing Vehicle

South African National Electric Vehicle Infrastructure Alliance

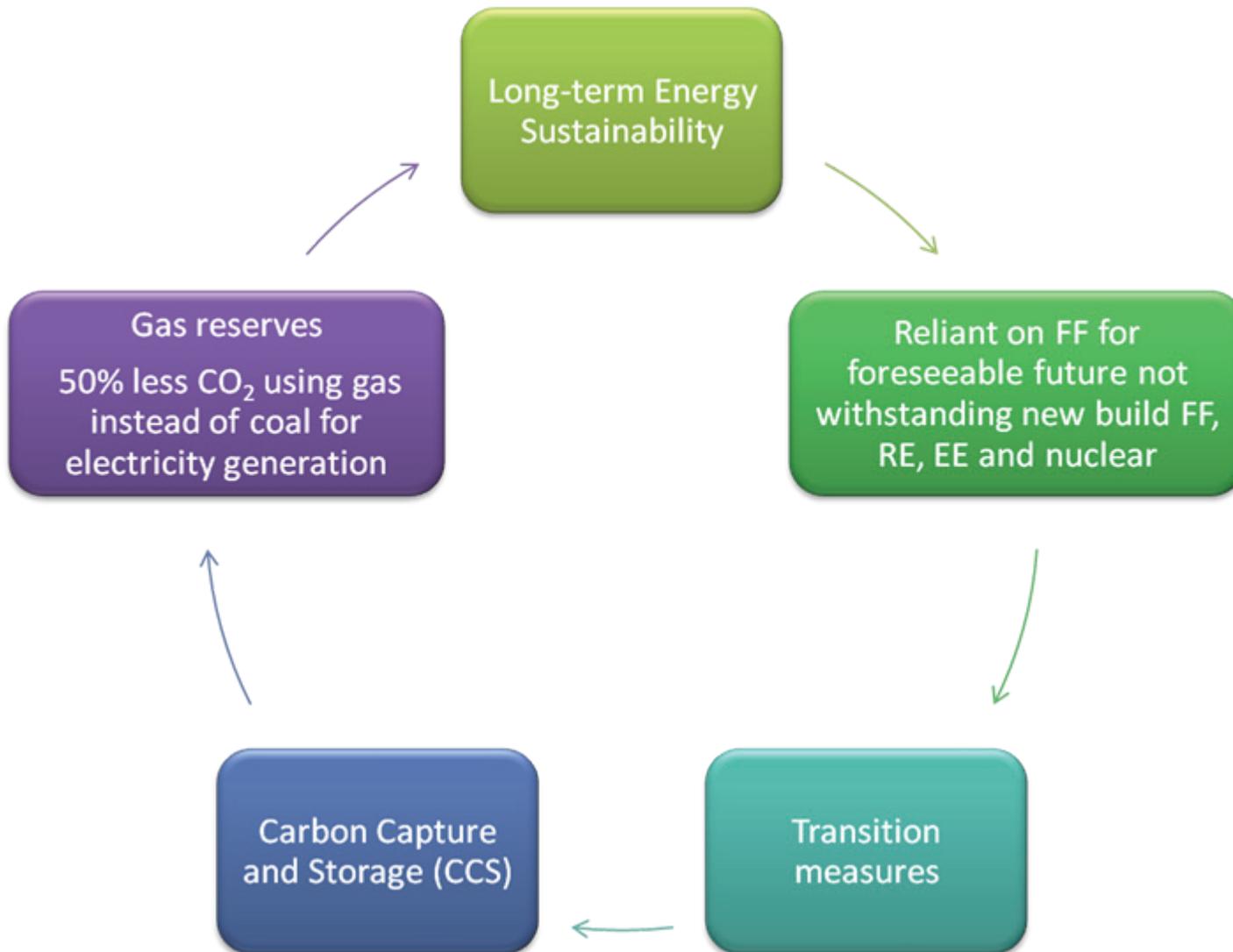
Electric Vehicle Roadmap

National Biogas Platform

Transport Refrigeration Project

12L Treasury Tax Incentive for Energy Efficiency in Transport

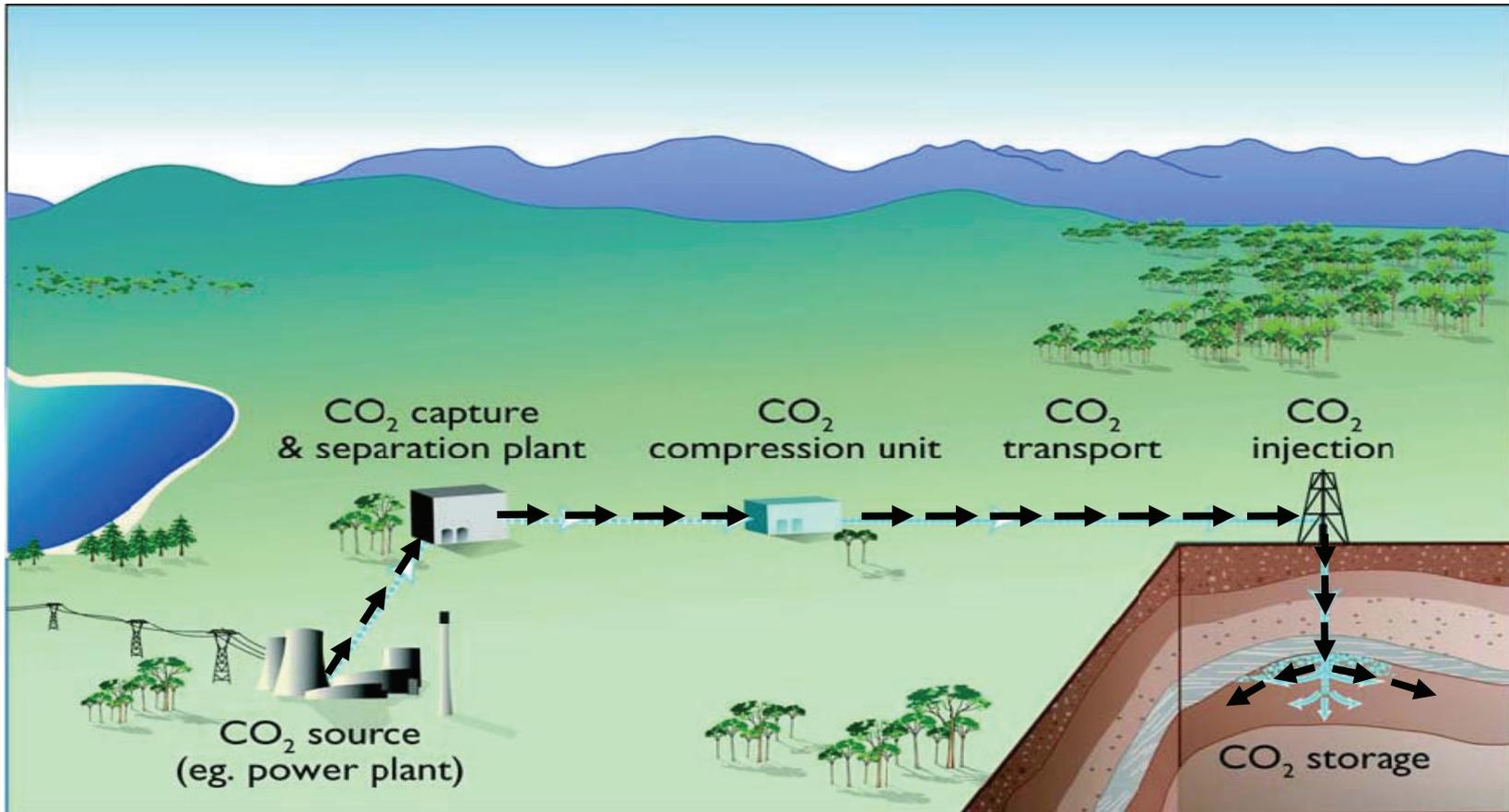
Clean Fossil Fuels



Carbon Capture and Storage Technology



South African Centre for
carbon capture
& storage



SOURCE: CO2CRC/IEAGHG

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Council for Geoscience

ATLAS

on
geological storage of carbon dioxide in South Africa



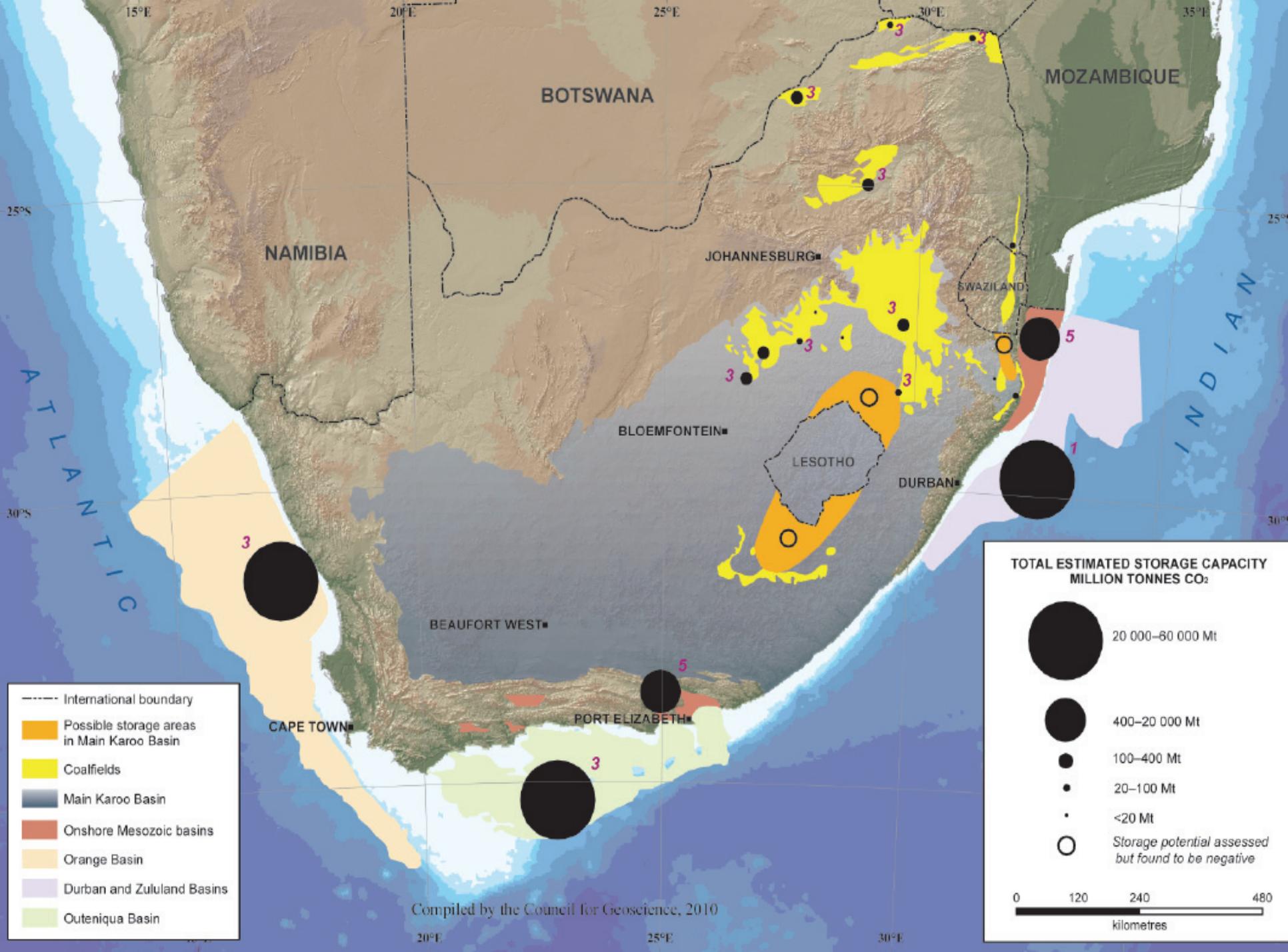
SASOL
reaching new frontiers



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- International boundary
- Orange Possible storage areas in Main Karoo Basin
- Yellow Coalfields
- Dark Grey Main Karoo Basin
- Red Onshore Mesozoic basins
- Light Orange Orange Basin
- Light Purple Durban and Zululand Basins
- Light Green Outeniqua Basin

**TOTAL ESTIMATED STORAGE CAPACITY
MILLION TONNES CO₂**

- Large Black Circle 20 000–80 000 Mt
- Medium Black Circle 400–20 000 Mt
- Small Black Circle 100–400 Mt
- Very Small Black Circle 20–100 Mt
- Dot <20 Mt
- White Circle Storage potential assessed but found to be negative

0 120 240 480
kilometres

Compiled by the Council for Geoscience, 2010

An Enabling Smart-Grid



Smart-Grid Project Deliverables



A Smart Metering code



Advanced Metering Infrastructure Security guideline



Investigate future Role of DSO in Active Network Management



Smart Grids capacity development for ESI



Embedded Generation code



Cost of Supply Study



Energy balancing and Control Methodology Study



Standardised methodology for industry evaluation & approval of OPEX/CAPEX budgeting for SA municipalities



Standardised Cost benefit analysis for SA municipalities



Focus areas

Applied Research

- Research into the availability and sustainability of renewable energy resources in targeted areas (rural areas and low income urban areas);
- Emerging Renewable Energy and Energy Efficiency Technologies

Demonstration of Renewable Energy Technology Applications

- Biomass to energy from invasive alien plants
- Production of charcoal derived in an environmentally friendly manner from these
- Biomass to bioenergy (biogas) derived from agricultural waste for rural and non-municipal commercial application
- Development of mini-grid hybrid and smart grid systems fed from various renewable based resources
- Mini-hydro systems and run-of-river schemes for non-grid applications.
- Solar powered electricity generation systems for small scale and minigrid based systems.
- Waste to energy from municipal and non-municipal solid waste and sewage treatment facilities;
- Small wind generation for non-grid applications, and
- Other alternative fuel sources for low cost housing, space heating, cooking and water heating.



Renewables Programme

WASA

REEEP

RECORD

Wind Atlas for South Africa (WASA)



WASA is a **Capacity Development and Research Cooperation Initiative** of the South African Department of Energy (DoE)

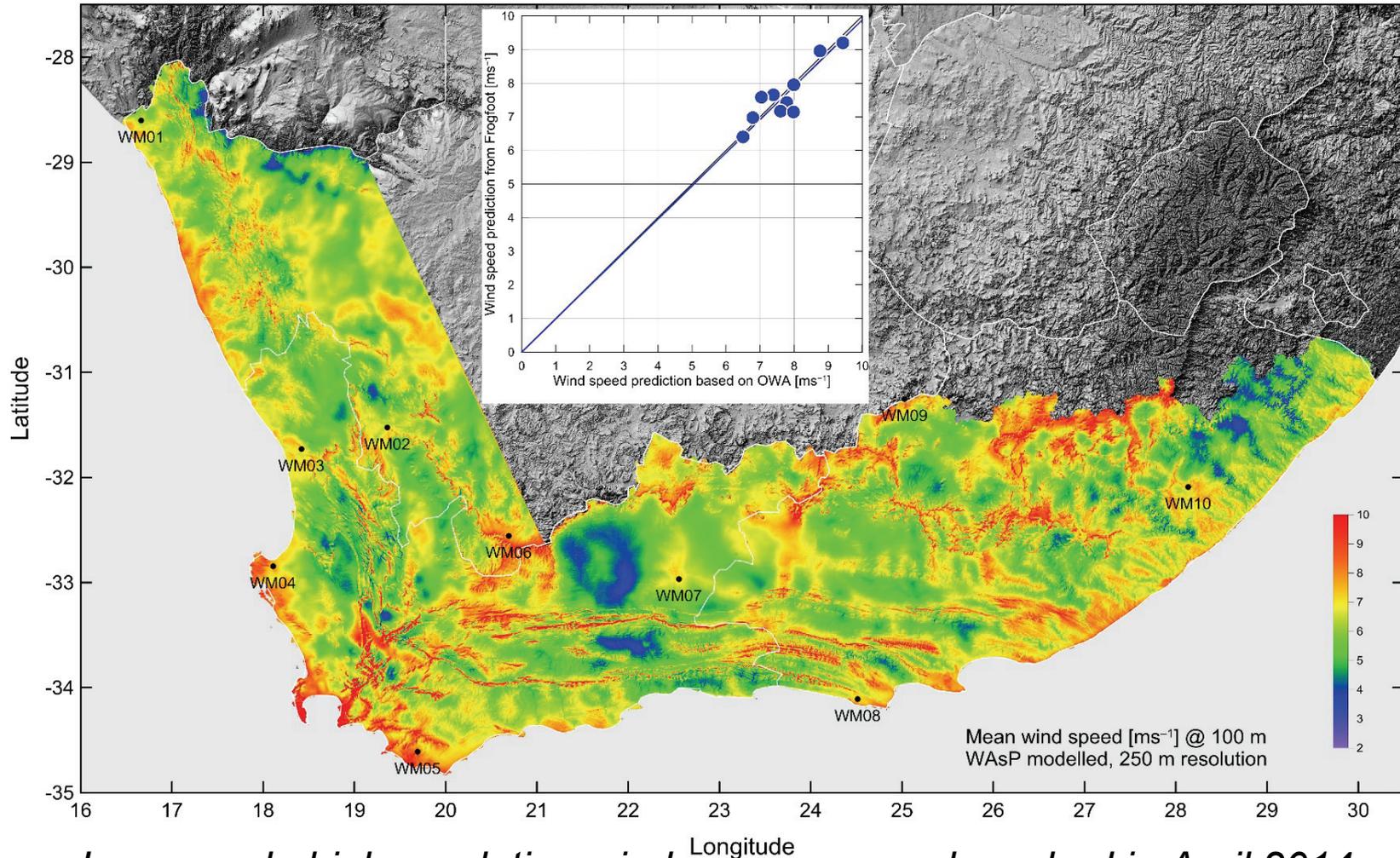
Phase 1 (2009 – 2014) covers Western Cape and parts of Northern and Eastern Cape provinces, funded by Danida (DKK 9.9 million) and the Global Environment Facility (GEF) R 8 million with UNDP support through the South African Wind Energy Programme (SAWEP).

Phase 2 (2014 to 2018) to cover the remaining areas of Eastern Cape, KZN and Free State provinces, funded by Danida (DKK 12 million)

Partners

-  SANEDI: executing agency – contracting the implementing partners, coordination and dissemination
-  UCT CSAG (*Climate System Analysis Group, University of Cape Town*): mesoscale modelling
-  CSIR (*Built Environment, Council for Scientific and Industrial Research*): Measurements, microscale modelling, application
-  SAWS (*South African Weather Service*): extreme wind assessment
-  DTU Wind Energy (*Dept of Wind Energy, Technical University of Denmark*): project activities

WASA Large Scale High Resolution Wind Resource map



Large-scale high-resolution wind resource map launched in April 2014 (local wind climate, 250 m grid spacing) with the mean wind speed

REEEP focal areas



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PORTFOLIO**

**OPEN
KNOWLEDGE**

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POLICY LAB

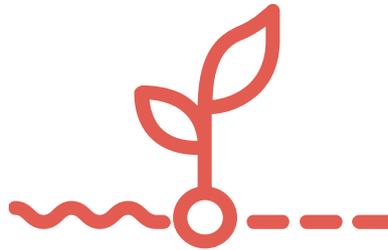
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ACCELERATOR**

REEEP



SMART CITIES

Sustainable Urban Transport
Urban Water Works
Affordable Efficient Housing



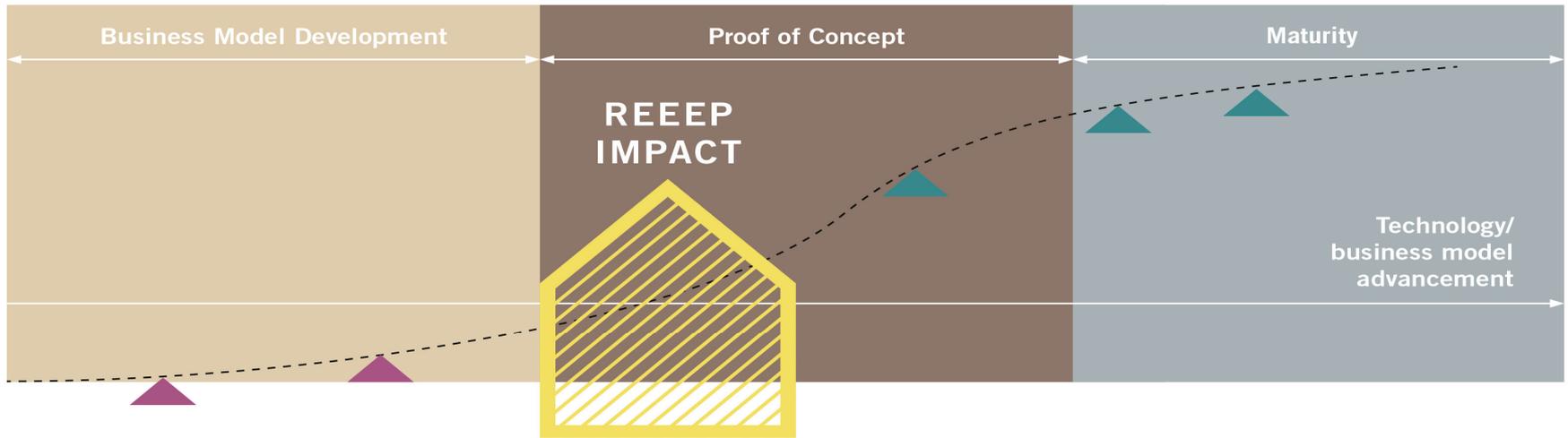
CROSS SECTOR SYSTEMS

Connecting Climate Knowledge
Water-Energy-Food Nexus in Agrifood



ENERGY ACCESS

Off-Grid Rural Electricity



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- 🌱 Coordinate Renewable Energy Research
- 🌱 Facilitate RE research & collaboration
- 🌱 Contribute to RE skills development
- 🌱 Marketing and awareness creation of RECORD and RE in SA & Support RE business development

Current collaborative Projects



Solar Roadmap (collaboration DOE, SANEDI, DST, GIZ and IEA)

- Mapping solar technologies and the way in which they fit into SA's long term energy plan
- Done in parallel with the DST solar technology study and the DOE IRP

Solar measuring station project (collaboration GIZ, SANEDI, DST, SU, NMMU, SAWS, USTDA, Eskom)

- Construction of solar MET stations in specific locations in SA, funded by GIZ & USTDA and managed by Stellenbosch University
- Ultimate goal to produce a verified ground measurement solar map of the resource available in SA

Renewable Energy Testing, Training and Demo Facilities (collaboration SANEDI, GIZ, CSIR, TIA, Green Cape, CPUT, SU, NMMU)

- South African Renewable Energy Technology Centre (SARETEC) at CPUT
- Centre for Energy Research (CER) at NMMU PV testing and research facility

RECORD Platforms



-  **ABP** (Algal BioEnergy Platform) – Established April 2013
-  **CPVP** (Concentrated Photovoltaic Platform) – Established November 2013
-  **SHTTP** (Solar High Temperature Technology Platform) – Established August 2014
-  **W2EP** (Waste to Energy Platform) – Established November 2014
-  **SWHTP** (Solar Water Heating Technology Platform) – to be Established 2015
-  **WETP** (Wind Energy Technology Platform) – to be Established 2015/6 (WASA and SARETEC link)
-  **SETP** (Solar Energy Technology Platform) – to be Established 2015/6 (CSTDI/RECE link)
-  **OERP** (Ocean Energy Research Platform)

RECORD Involvement in Ocean Energy

- 🇨🇿 Ocean energy literature:
 - <http://record.org.za/resources/downloads/category/ocean-energy>
- 🇨🇿 OEASA (Ocean Energy Association of South Africa)
- 🇨🇿 IEA OES IA (International Energy Agency Ocean Energy Systems Implementation Agreement)
- 🇨🇿 Need for Ocean energy resource maps, with data in public domain



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**THANK
YOU**

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