National Wind and Solar Photovoltaic Strategic Environmental Assessment

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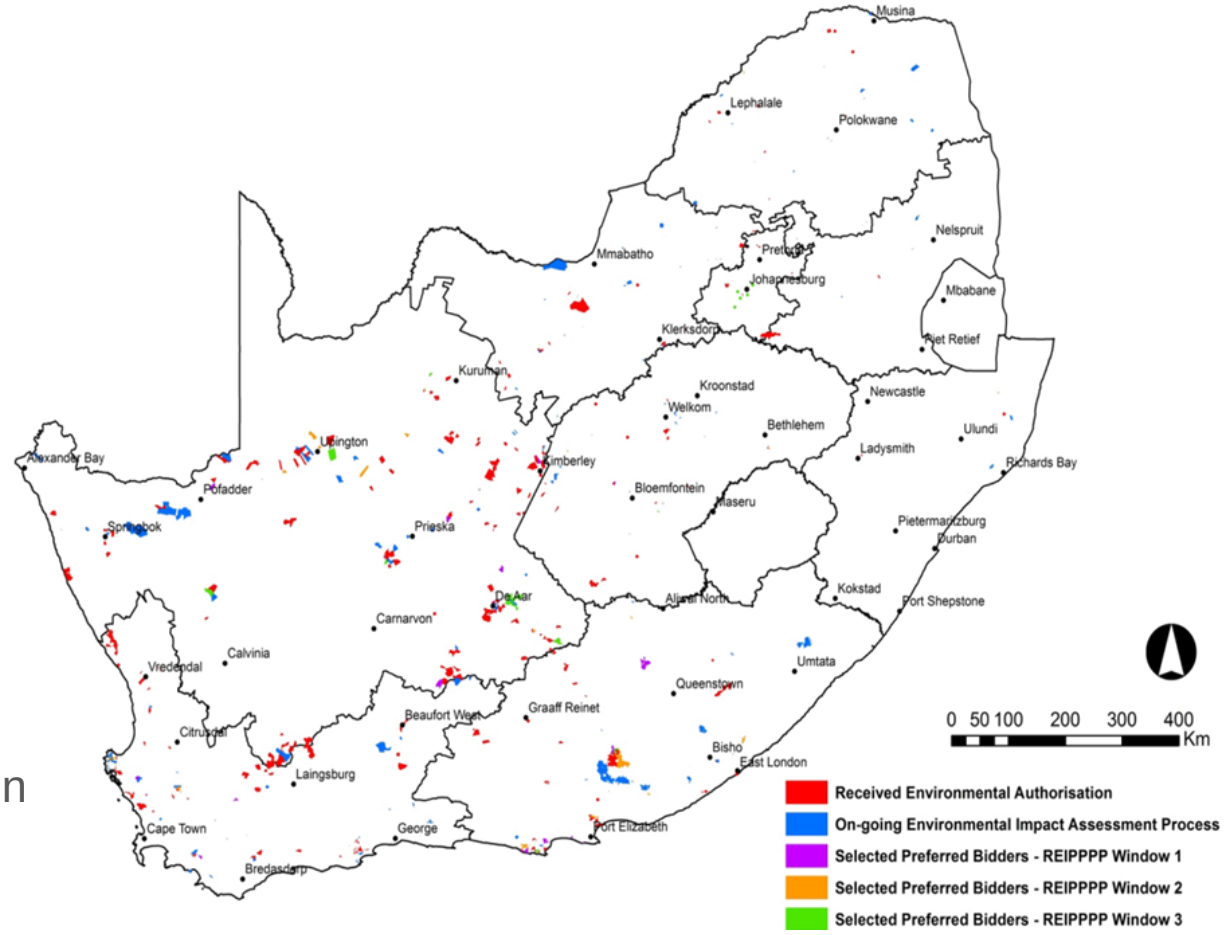
Renewables in South Africa

- Renewable Energy Independent Power Producer Procurement Programme : by end 2014: 64 renewable energy projects / 4 GW of capacity / R 120 billion private investment

- In 2014 only 1600 MW wind and PV projects connecting to the grid → net saving to the national economy of R 800 million (CSIR, 2015)

- To date more than 550 projects (41 GW) are proposed in SA

- Current SA policies: no spatial reference for Renewable Energy allocation



STRATEGIC ENVIRONMENTAL ASSESSMENT FOR WIND AND SOLAR PHOTOVOLTAIC ENERGY IN SOUTH AFRICA

2015

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Study Objectives

- Facilitate **Sustainable Development** through a holistic consideration of:
  - Environmental Impacts;
  - Social Needs; and
  - Economics.

- Undertake **Wide Stakeholder Consultation** with:
  - Government Departments & Parastatals;
  - 3 Spheres of Government;
  - Private Sector; and
  - Public.

- Achieve **Integration** through the alignment policies and plans at:
  - National;
  - Provincial; and
  - Local levels.

- Create an **Enabling Environment** through:
  - Streamlined Authorisations; and
  - Infrastructure Availability.

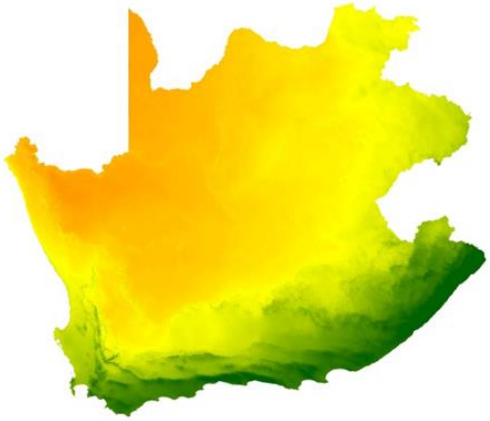
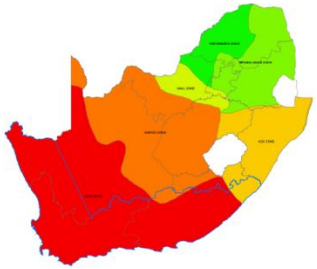
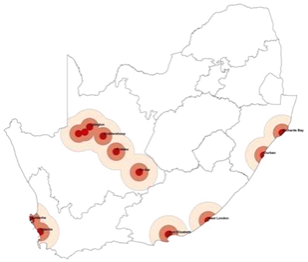
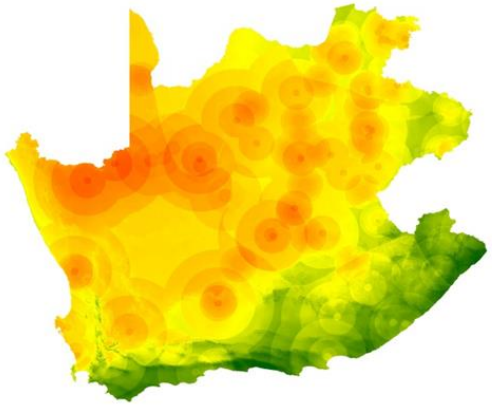
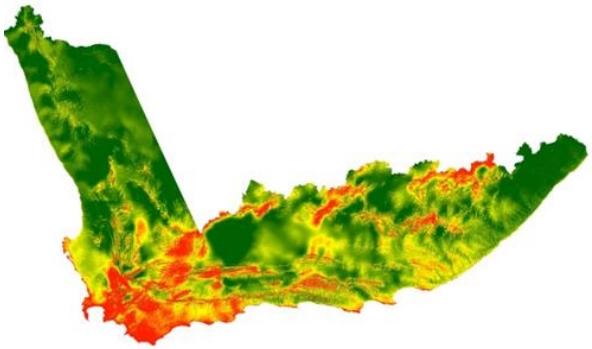
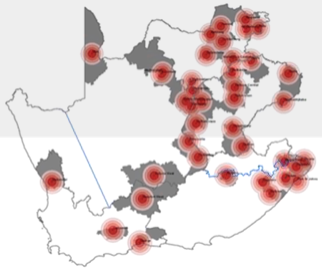
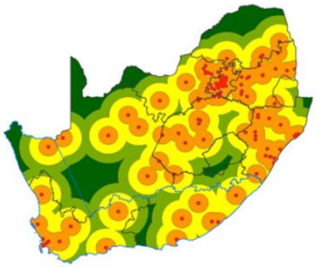
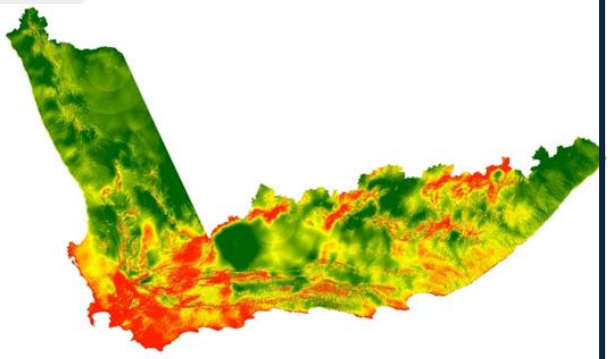
Vision and Mission

Vision

Large scale wind and solar photovoltaic projects that contribute to the National Development Plan are supported by **strategic planning**, endorsed by government, embraced by stakeholders, and attractive to investors.

Mission

To identify **Renewable Energy Development Zones** that are of strategic importance for large scale wind and solar photovoltaic development in terms of Strategic Integrated Project 8, and in which significant negative impacts on the natural environment are limited and socio-economic benefits to the country are enhanced.

	Raw Resource	Adjustments (Positive Mapping)	Development Potential
Solar PV		 TRANSMISSION LOSS  PRIORITY AREAS	
Wind		 SOCIO ECONOMIC NEED  TRANSMISSION INFRASTRUCTURE	

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Development Potential	Highest Provincial Development Potential	Constraints Mask (Negative Mapping)	Study Areas
Solar PV			
Wind			

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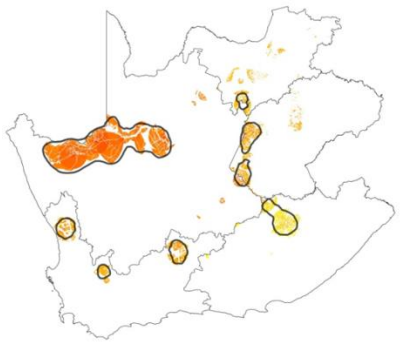
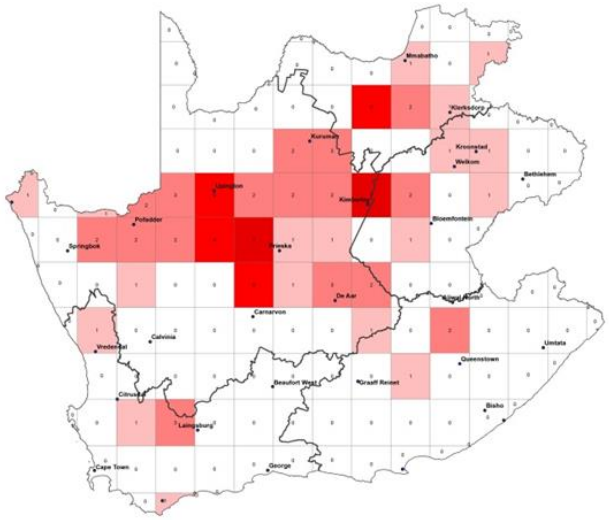
Study Areas

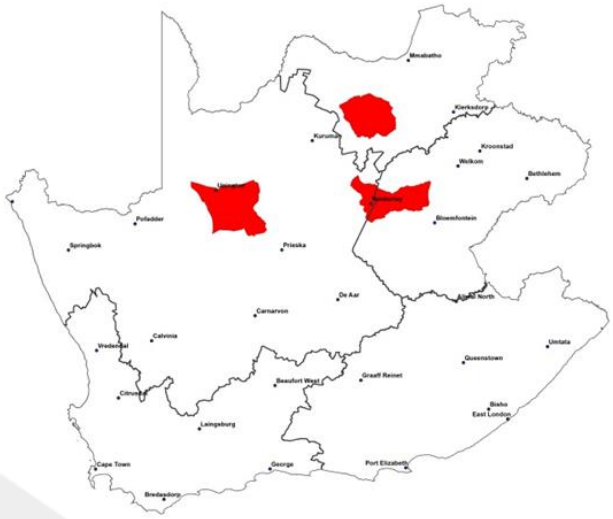
Industry Input (5 year)

Focus Areas

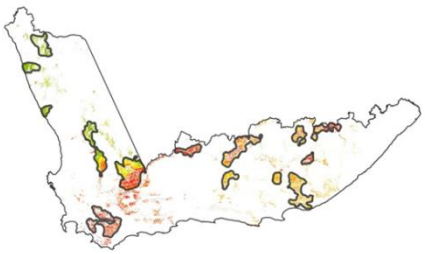
Solar PV

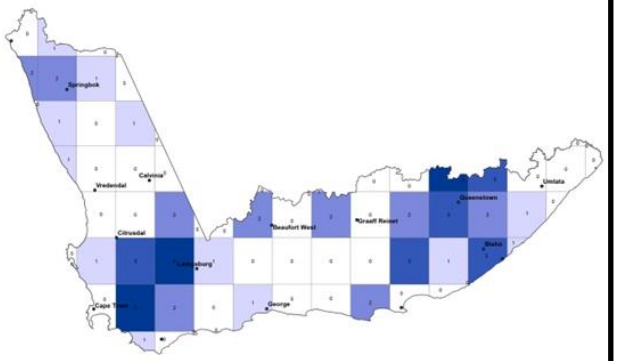


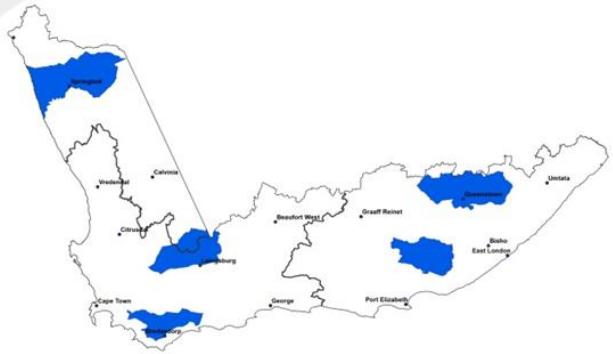




Wind







Consultation with national/provincial and local authorities and key stakeholders

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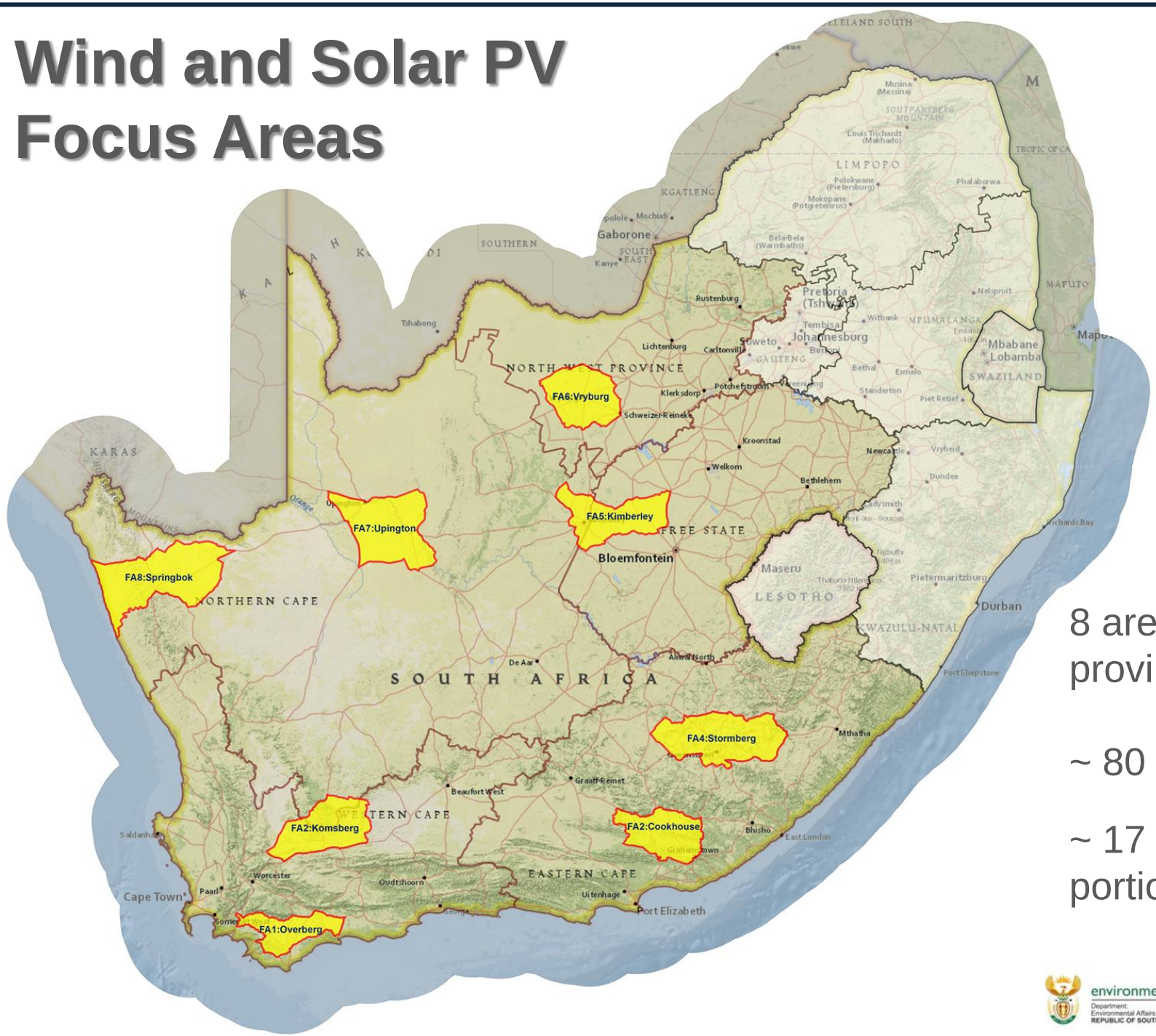
Wind and Solar PV Focus Areas



8 areas over 5 provinces

~ 80 000 km^2

~ 17 000 farm portions

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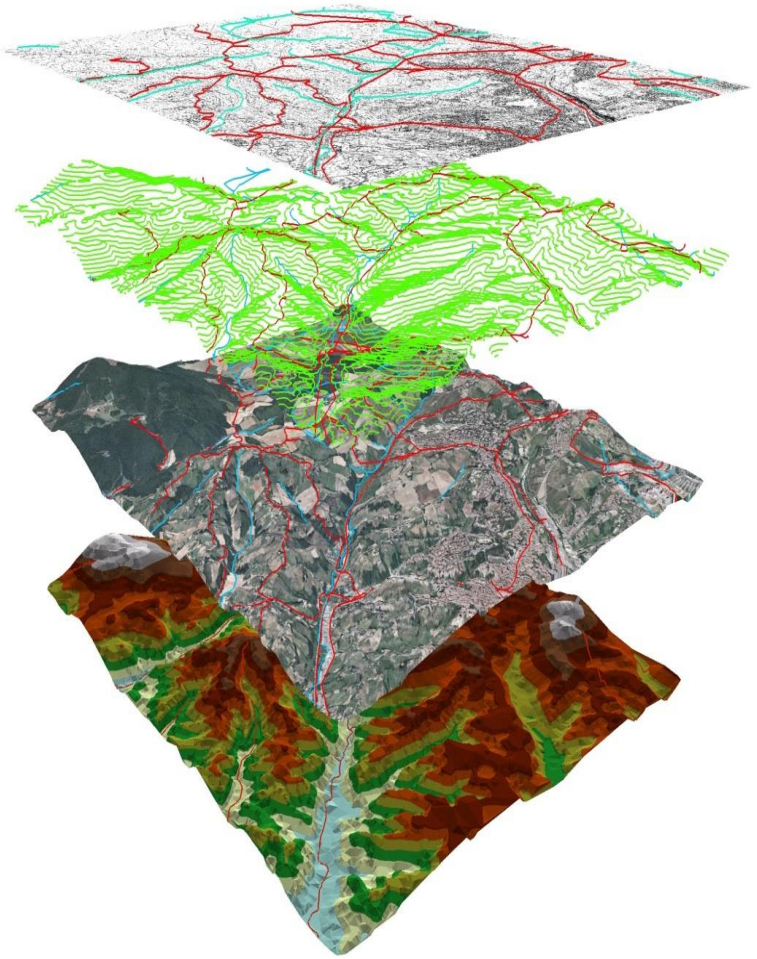
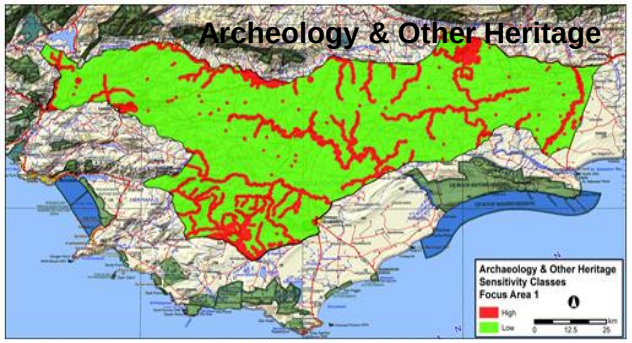
Scoping Level Pre-Assessments

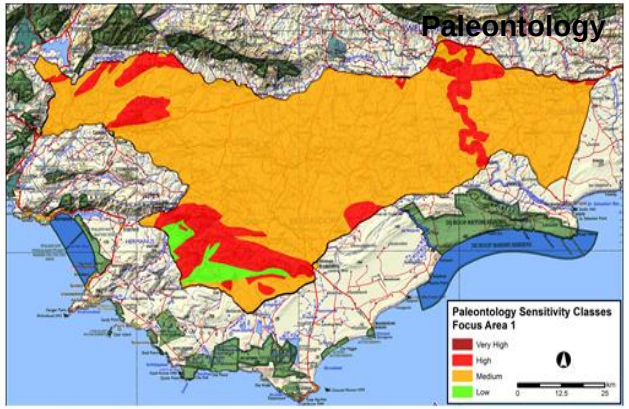


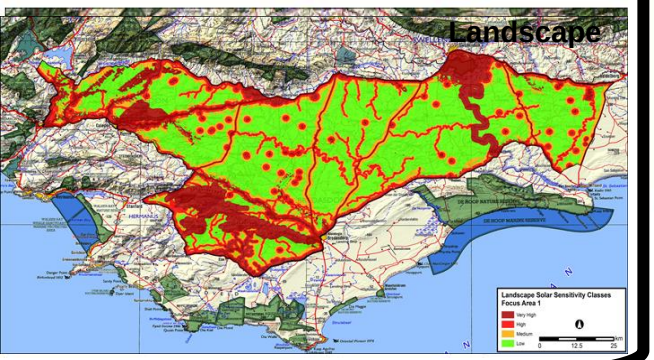
Absolute & Relative Sensitivity Layers for Wind & Solar PV for the 8 REDZs:

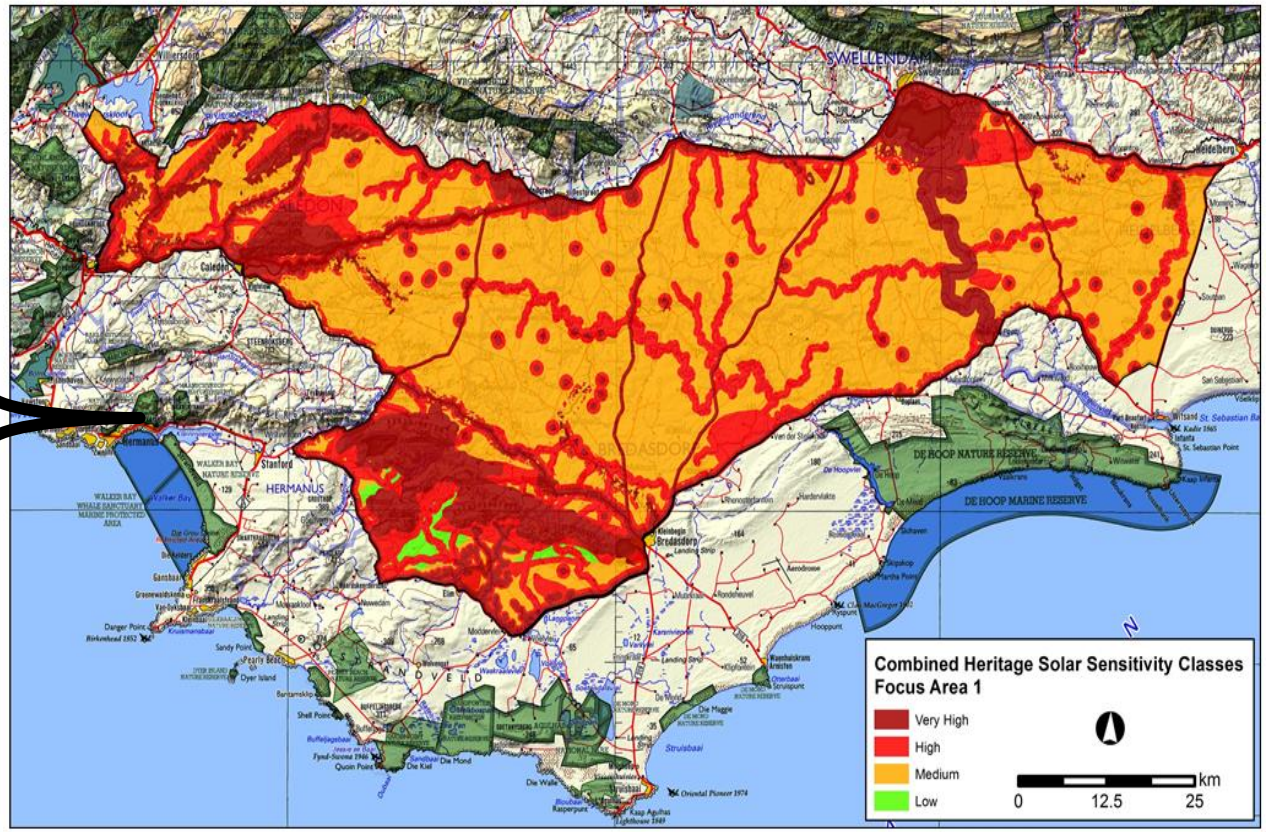
- Agriculture
- Landscape
- Heritage
- Terrestrial & Aquatic Biodiversity
- Birds
- Bats
- Civil Aviation
- Defence
- Telecommunication
- Weather Services
- SKA
- Mining
- Noise
- Flicker

Example: Integrated Heritage Sensitivities









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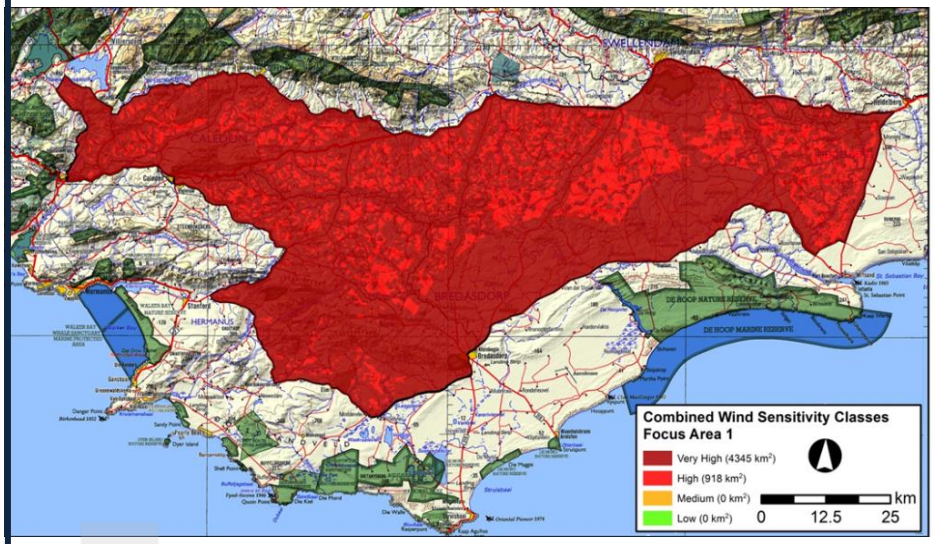
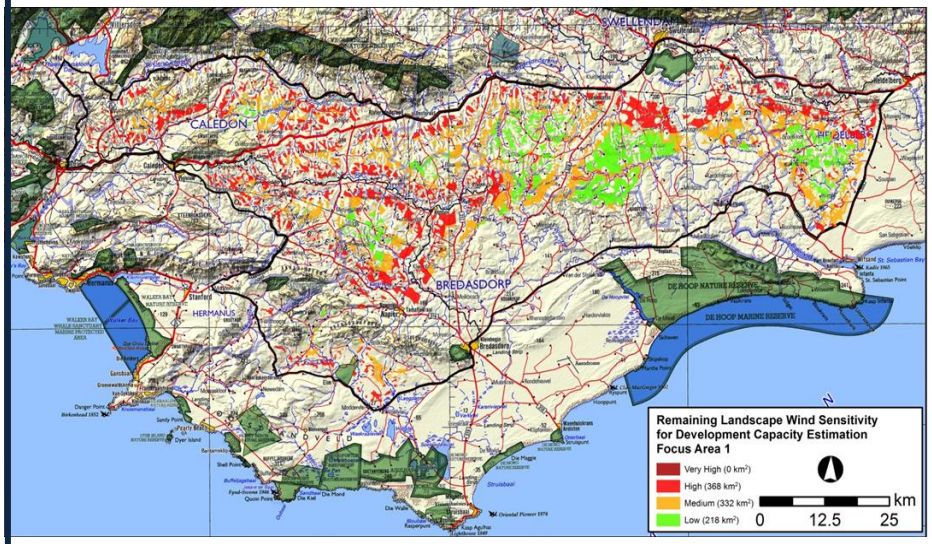
Combined Sensitivities



Landscape-based development density limits of remaining areas



Development Density Limits

appropriate cluster size and spacing of wind or solar PV facilities

Sensitivity	Cluster size guide	Buffer between clusters	Indicative overall development density	
			ha/Turbine	MW/km²
Very High	Further assessment required before development can be considered			
High	30 turbines	6 km if within same viewshed as another cluster	302	0.8
Medium	60 turbines		208	1.1
Low	120 turbines		160	1.4

Cluster: All turbines within 6 km of each other and within the same viewshed having a valid environmental authorisation or for which an environmental application has already been lodged and the assessment process is underway.

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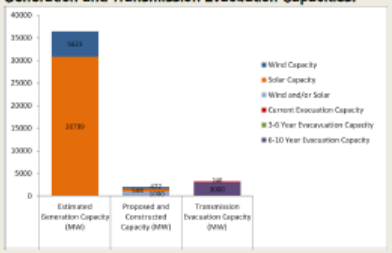
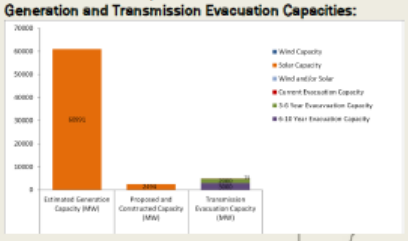
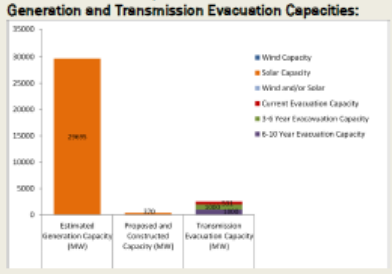
REDZ8: Springbok
Total area: 15214 km²
Total number of farm portions: 1240
Generation and Transmission Evacuation Capacities:



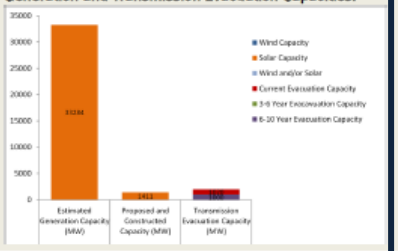
REDZ7: Upington
Total area: 12833 km²
Total number of farm portions: 1888
Generation and Transmission Evacuation Capacities:



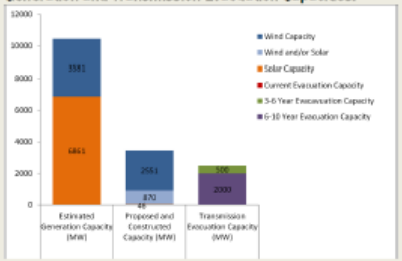
REDZ6: Vryburg
Total area: 9204 km²
Total number of farm portions: 2699
Generation and Transmission Evacuation Capacities:



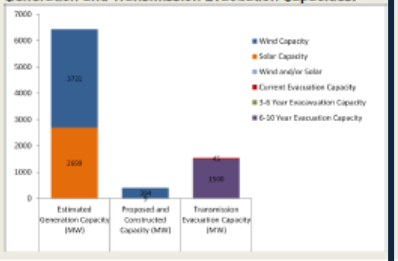
REDZ5: Kimberley
Total area: 9568 km²
Total number of farm portions: 2985
Generation and Transmission Evacuation Capacities:



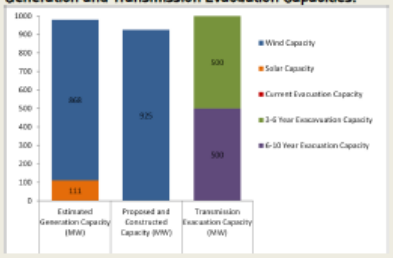
REDZ2: Komsberg
Total Area: 8846 km²
Total number of farm portions: 561
Wind capacity
Generation and Transmission Evacuation Capacities:



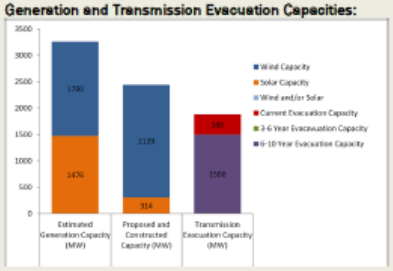
REDZ4: Stormberg
Total area: 12041 km²
Total number of farm portions: 2892
Generation and Transmission Evacuation Capacities:



REDZ1: Overberg
Total Area: 5263 km²
Total number of farm portions: 2472
Generation and Transmission Evacuation Capacities:

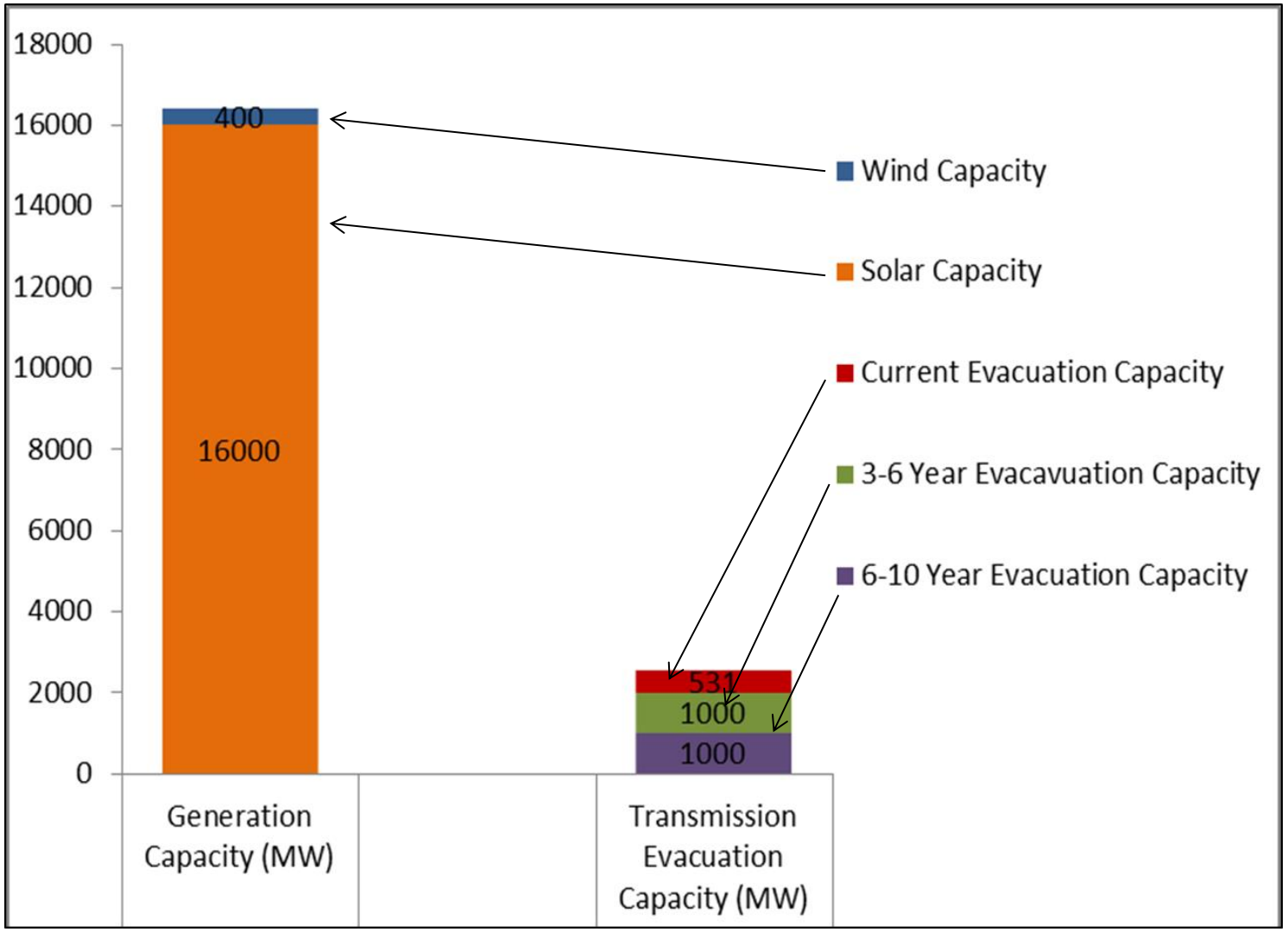


REDZ3: Cookhouse
Total area: 7366 km²
Total number of farm portions: 2409
Generation and Transmission Evacuation Capacities:



Generation vs Transmission Evacuation Capacities

Example: REDZ7: Upington



Electricity Grid Infrastructure Strategic Environmental Assessment
SIP 10