

Regional Forum Western Cape, South Africa

09 November 2009



Overview of the Western Cape



Western Cape Profile

Population 5 Million

Diverse and rich in resources

- hundreds of species of flora and fauna
- many kms of coastline
- mountain ranges, plains and hills
- abundant wind, solar and biomass

Challenges of poverty

- vulnerability to climate change
- livelihoods threatened

Urbanisation



Framework conditions for Renewable Energy in the WC



Climate Change Response

- South Africa a signatory to the Kyoto Protocol
- Impacts of Climate Change
 - more flooding
 - more frequent fires
 - intensified drought
 - rise in sea level
- Western Cape Climate Change Response Strategy and Action Plan



Sustainable Energy Policy

- Sustainable Energy Strategy and Programme of Action
- Renewable energy has a key role in contributing to energy security and sustainable social and economic development in Western Cape
- Western Cape
Renewable Energy
Target: 15% by 2014



2014 Sustainable Energy Vision for the Western Cape

- *The Western Cape has a secure supply of quality, reliable, clean & safe energy, which delivers social, economic & environmental benefits to the Province's citizens, while also addressing climate change challenges facing the region & the eradication of energy poverty*

Sustainable Energy Strategic Intent for the Western Cape

- *To develop a sustainable energy system that reduces its impact on people's health and the environment whilst contributing to long-term sustainable economic development.*

Western Cape Sustainable Energy Goals

GOALS AND OBJECTIVES

GOAL 1

ALLEVIATE ENERGY POVERTY

- *Cost: electrical appliance;
- *inefficient appliances
- *use of paraffin stoves;
- *unsafe conditions
- *access to energy
- *costs of access

GOAL 2

IMPROVE HEALTH OF THE NATION

- Energy efficiency
- Increase use of renewable Energy
- *reduce ghg
- *improve outdoor & Indoor climate conditions

GOAL 3

REDUCE HARMFUL EMISSIONS

- *improve energy efficiency
- *increase use of renewable Energy
- *combat climate change
- *use of CDM's

GOAL 4

REDUCE NEGATIVE FOOTPRINTS IN OUR ENVIRONMENT

- *reduction in fossil fuels
- Use of cleaner energy
- More efficient use of Energy

GOAL 5

ENHANCE ENERGY SECURITY

- Increase resilience against external energy Supply disruptions

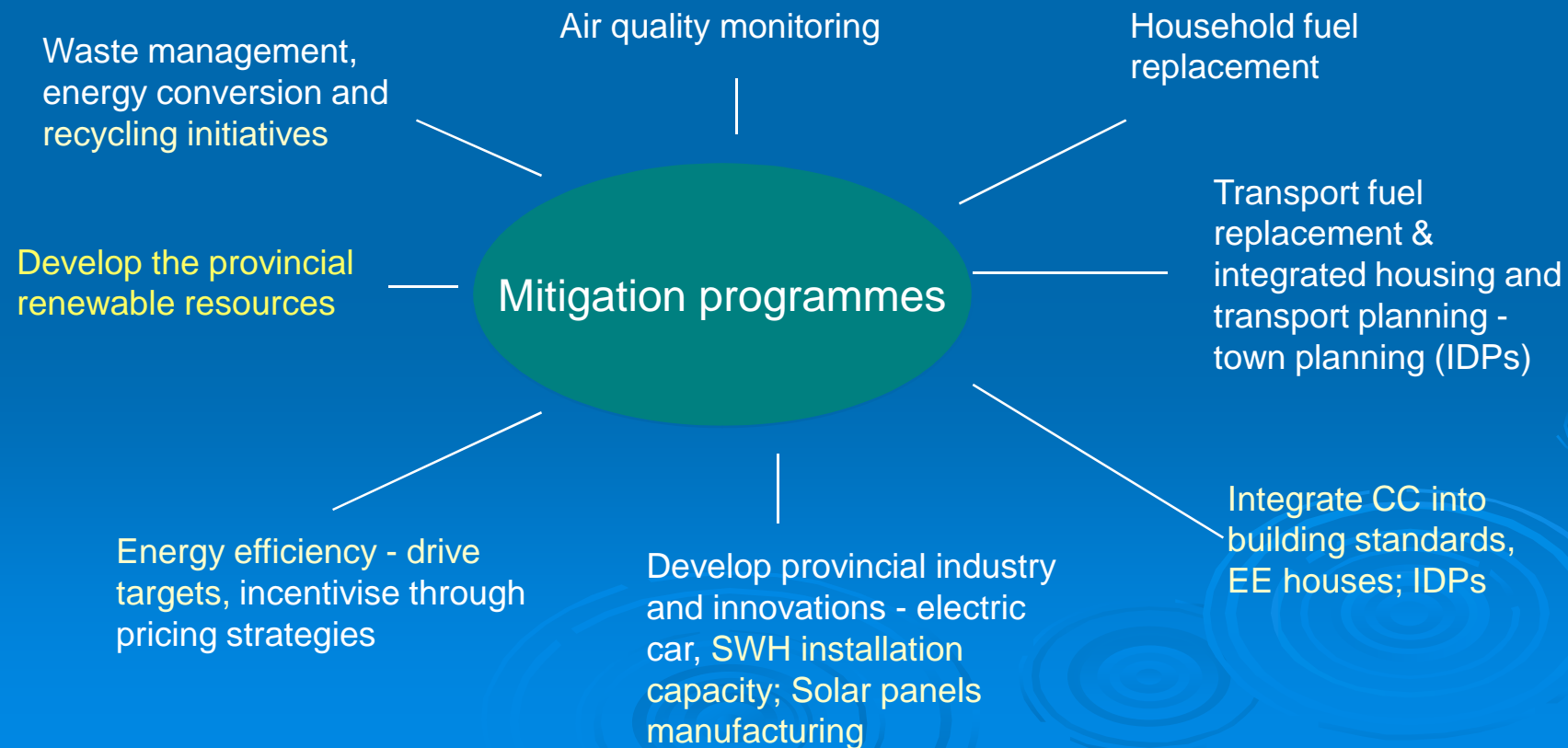
GOAL 6

IMPROVE ECONOMIC COMPETITIVENESS & JOB CREATION

- *improve industrial & Commercial efficiency
- *support industrial best Practice energy Management

The Western Cape Climate Change Strategy and Energy Strategy set the scene ...

75% adaptation, 25% mitigation, with some overlap



National Framework Conditions for Renewable Energy



Renewable Energy Feed in Tariff

- The REFIT was announced in March of this year (2009) with fair tariffs.

Technology	Tariff(R/kWh)
PHASE 1	
Landfill gas power plant	0.90
Small hydro power plant (less than 10MW)	0.94
Wind power plant	1.25
Concentrating solar power (CSP) with storage	2.10
PHASE 2 (proposed for public consultation)	
Concentrating solar power (CSP) without storage	3.13
Biomass solid	1.18
Biogas	0.98
Photovoltaic systems (Large ground or roof mounted)	4.48
Concentrating Photovoltaic (CPV)	5.48
Concentrating Solar Power (CSP) Central Tower	2.31

- REFIT has the potential to stimulate the development of a clean energy industry and promote the diversification of South Africa's energy supply

Future Expectations

- The REFIT has been much needed as South Africa currently has an almost negligible amount of installed renewable energy capacity (WC under 10MW)
- We are currently at the Pre-take off phase
- Our price of electricity is increasing and together with the incentive of the REFIT...

We will be experiencing a boom, any time soon!



Renewable Energy Potential in the Western Cape

- Summary of RE potential (note: solar is not limited by the resource and therefore not included below but would add many more MWs)

RE Resource	Power Generation Potential (MW)
Wind	
• Onshore	3 100 MW
• Offshore	1 500 MW
Hydropower	
• Primary Power Generation	15 MW
• Pumped Storage	1 800 MW
Wave Power	4 116 MW
Waste Management Systems	
• Landfill Gas	12 MW
• Waste Gasification	40 MW
• Sewage Waste	10 MW
Biomass	12 MW
Solar	Potential scale of application not limited by the resource.
Total	>10 602 MW

Conservative estimate

Wind Energy Utilisation in the Western Cape

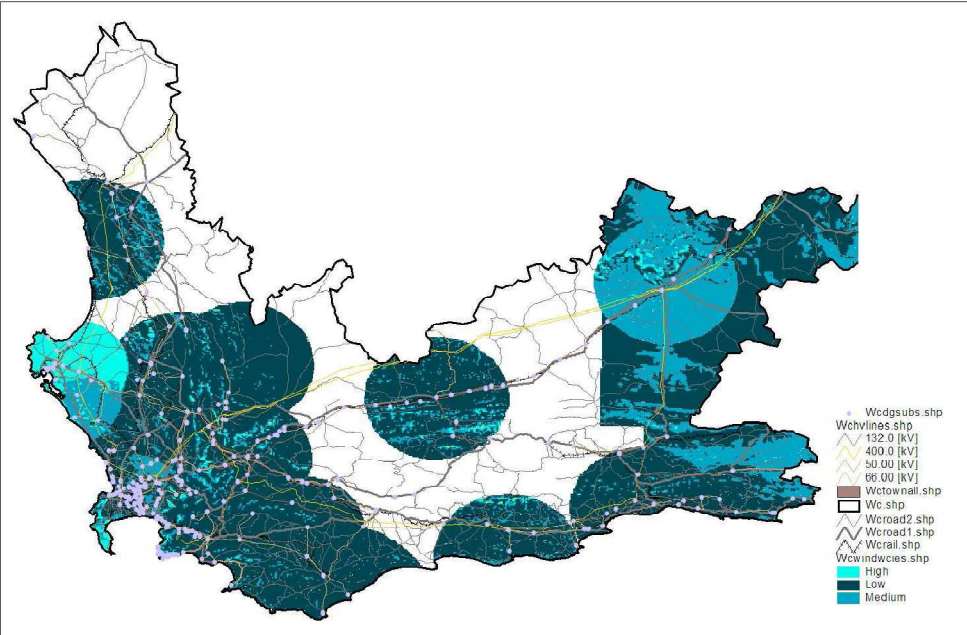
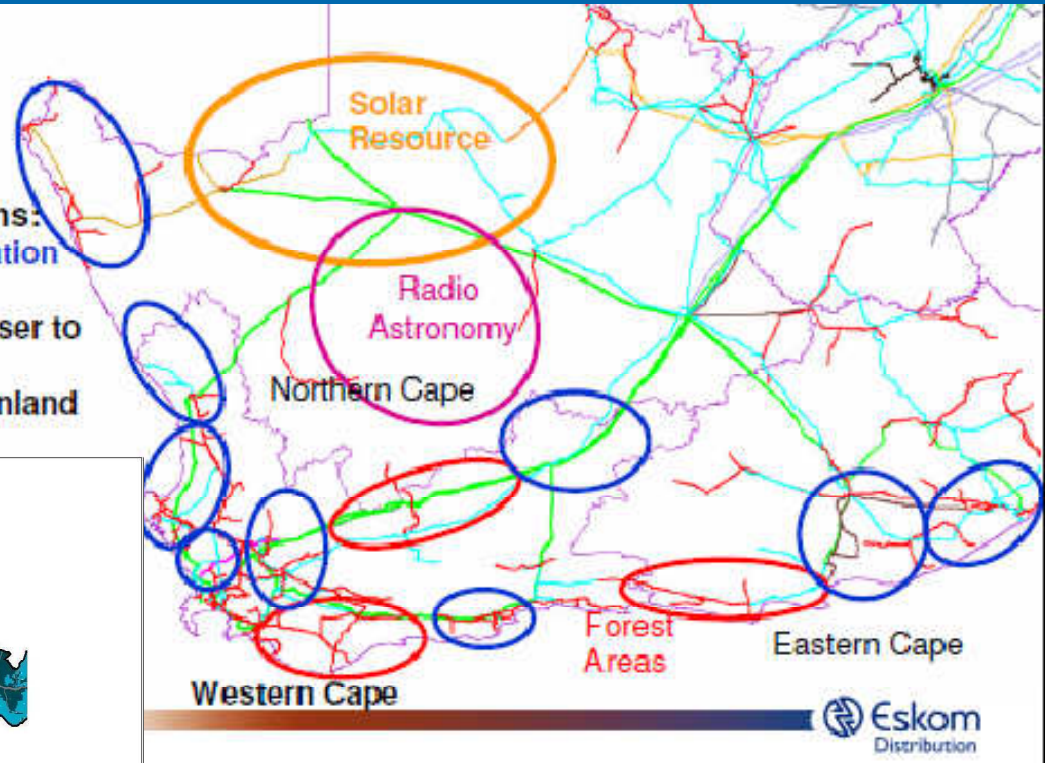


- Western Cape only province in the country with two wind farms
 - Darling Wind Farm (5MW)
 - Eskom Wind Turbine Testing Facility (3.6MW)
- 6000-9000MWs of interest from wind energy demonstrated
- Successful wind energy workshop with over 140 participants



400 kV
220 kV
132 kV
66 kV

Assumptions:
 •Main substation grid areas
 •Develop closer to main lines?
 •Coastal vs inland winds?



Western Cape wind resource and relevant transport and electrical infrastructure

Average annual speed at 10m a.g.l (m.s-1)

Filename: wcindeconmodeldevstratprojection.apr
 Layoutname: AreasLayout
 Prepared by: Jason Schäffler (Nano Energy)

Prepared for RESTIO Energy and WCDEADP

Adapted from CSIR, Eskom Corporate Technologies and DME (2004)

9000 MW of ideas
 (90 by 100MW wind farms)

Western Cape Department of
Environmental Affairs and
Development Planning
and GTZ Cooperation



- Cooperation agreement between DEADP, GTZ and ESKOM
- Deliverables of the project:
 - Regional Regulatory Action Plan
 - Grid Study
 - Capacity Building and Training
 - Renewable Energy Action Groups
- Project end date: December 2009

Creating the enabling environment for Renewable Energy

- *Regional Regulatory Action Plan:*

A study to identify and develop appropriate strategies and mechanisms for incentivising and supporting the implementation of renewable energy projects.


- *Grid Study:*

A study to determine the technical requirements, impacts and feasibility for connecting wind farms to the distribution and transmission grid.

- The study shows that 2800MW from wind energy can be seamlessly integrated into the national grid. This is good news for the Western Cape!

Current Barriers to Market Entry

Challenges
Institutional
Ongoing regulatory uncertainty
Proposed pre-qualification criteria and tender may discourage many investors and reduce effectiveness of RECIT
Industry concerns regarding independence of Single Buyer Officer
There is a need for finalisation of standardised Power Purchase Agreement
Clarity is required on minimum project size restrictions.
Greater clarity on overall licensing procedures
Grid connection for qualifying RE generators
EIA delays
Requirement for basic assessment for wind masts
Technical
Grid connection,
Capacity and strength of the different network assets within reasonable distance;
Network integration of power from intermittent generation sources;
System impact studies; and
Lack of accurate publicly available wind resource data.
Financial
Lack of information about what funding is available
More innovative options are required for smaller projects




To be addressed
in RRAP

Industry Development

- Western Cape currently has:
 - 1 x Potential Local Manufacturer (and another in the North-East)
 - 4 x Excellent Universities
- Not only technology transfer needed but everything from raw materials to financing projects to consultancies and other ancillary services needed.
- There is a skills gap across all industries who require artisans and technical maintenance staff – not specific to green industries.
- Addressing these gaps will create jobs and revenues and long-term development of the region

Issues requiring further clarification and guidance

- Approval procedures, planning permission, and licensing for generation and interconnection of independent renewable energy projects
 - Capacity building, training and industry development are vital
 - The Western Cape Regulatory Action Plan focuses on implementing measures which address the gaps in knowledge and uncertainty.
- 

Conclusion

- REFIT must be complemented with proactive planning policies and infrastructure improvement and investment which will assist in developing the Western Cape's extensive renewable energy resources
- Green Revolution!

