



# Department of Energy

## *Overview of Renewable Energy Roadmap - Public Workshop on Draft Integrated Energy Planning Report*

*Presented by Mokgadi Modise*

*26 September 2013*



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# Mandate, Mission, Vision

## **Mandate:**

- *“Ensure secure and sustainable provision of energy for socio-economic development”*

## **2014 Vision:**

- *“A transformed and sustainable energy sector with universal access to modern energy carriers for all by 2014”*

## **2025 Vision:**

- *“Improving our energy mix by having 30% of clean energy by 2025”*

## **Mission:**

- *“To regulate and transform the sector for the provision of secure, sustainable and affordable energy”*



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# South African RE Sector Governance Instruments

## Some applicable Policies, Strategies, Plans, Accords, etc

- White Paper on Energy Policy (1998)
- White Paper on Renewable Energy Policy (2003)
- Energy Efficiency Strategy (2005)
- Biofuels Industrial Strategy (2007)
- Industrial Policy Action Plan (1<sup>st</sup> & 2<sup>nd</sup> Iterations)
- New Growth Path Framework (2010)
  - National Skills Development Accord (2011) Local
  - Procurement Accord (2011)
  - Green Economy Accord (2011)
- National Climate Change Response White Paper (2011)
- National Development Plan, 2012

## Some legal & regulatory instruments

- Preferential Procurement Policy Framework Act (2000) & its Regulations
- Electricity Regulation Act, 2006 (as amended)
- National Energy Act, 2008
- Regulations on New Generation Capacity, 2009 (as amended)
- Integrated Resource Plan 2010 – 2030
- Petroleum Products Act, 1977 (as amended) and its Regulations



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# Strategic objectives

- The Department of Energy's vision by 2025 is to improve the energy mix by having 30% of clean energy.
- This will be achieved through the following strategic objectives:
  - develop effective legislation, policies and guidelines, encourage investment in the energy sector;
  - diversify energy mix, improve access and connectivity, provision of quality and affordable energy, promote safe use of energy and transform the energy sector;
  - develop enabling policies, encouraging energy efficient technologies as well as promoting;
  - promote clean energy alternatives, encourage economic development, promote job creation, etc.
  - facilitate the implementation of Renewable Energy, Energy Efficiency Technologies and also promotes and regulates the Clean Development

**energy** Mechanism (CDM) activities.

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# ***Renewable Resource Assessment and Application***

- ✓ The mere availability of a renewable energy resource does not mean that that resource can readily be used as an energy source. To utilise a resource several factors need to be considered: the conversion system, quality of the fuel, conversion cost, transport cost as well as the size and location of the demand.
- ✓ This section provides a preliminary overview of South Africa's technical renewable energy resource potential and applications.
- ✓ National level data is useful in identifying potential resource types and localised densities or areas of highest probability, but to move from such broad assessments to the identification of potential large-scale utilisation of renewable energy resources requires a lot more detailed and localised analysis.
- ✓ **Hence the Renewable roadmap is very critical**



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# ***Strategic Goals, Objectives, and deliverables of the Renewable White Paper Policy, 2003***

- ✓ Strategic goals and supporting objectives are part of the enabling framework which supports Government's purpose in meeting its commitment to promoting renewable energy.
- ✓ Achieving this required that the following four key strategic areas are addressed, i.e.
  - ❖ Financial instruments,
  - ❖ legal instruments,
  - ❖ technology development, and
  - ❖ awareness raising, capacity building and education.



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# *Financial and Fiscal Instruments*

## ✓ **Goal**

- ❖ To promote the implementation of sustainable renewable energy through the establishment of appropriate financial and fiscal instruments.

## ✓ **Objectives**

- ❖ To ensure that an equitable level of national resources is invested in renewable energy technologies, given their potential and compared to investments in other energy supply options.
- ❖ To set targets for the directing of public resources for the implementation of renewable energy technologies in combination with international sources of funding for this purpose.
- ❖ To introduce appropriate fiscal incentives for renewable energy.



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# *Financial and Fiscal Instruments (2)*

## ✓ **Objectives**

- ❖ To extend existing state financial support systems and institutions and introduce innovative approaches to the establishment of sustainable structures and financing mechanisms for delivering renewable energy systems.
- ❖ To facilitate the creation of an investment climate for the development of the renewable energy sector, which will attract foreign and local investors.



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# Financial and Fiscal Instruments (3)

## ✓ Deliverables

- ❖ An analysis of the current financial framework and an identification of barriers to the implementation of renewable energy sources.
- ❖ An investigation into appropriate financial (e.g., subsidies, and green certificates) and fiscal instruments/incentives (e.g. low interest loans and tax rebates) to stimulate the implementation of renewable energy technologies and practices.
- ❖ Incentives and regulations for the promotion of thermally efficient housing in collaboration with the Department of Housing.
- ❖ Monitor and evaluate the effectiveness of financial incentive schemes.
- ❖ An equitable electricity tariff structure that will be managed by the National Electricity Regulator that addresses the issue of cost of supply for the different renewable energy technologies, including capital replacement costs for non-domestic users.



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## *Financial and Fiscal Instruments (4)*

### ✓ *Deliverables*

- ❖ Support a national “green” market survey to ascertain the willingness of customers (households and commerce) to pay a premium for “green” energy.



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# Legal Instruments

## ✓ **Goal**

- ❖ To develop, implement, maintain and continuously improve an effective legislative system to promote the implementation of renewable energy.

## ✓ **Objectives**

- ❖ To develop an appropriate legal and regulatory framework for pricing and tariff structures to support the integration of renewable energy into the energy economy and to attract investment.
- ❖ To develop an enabling legislative and regulatory framework to integrate Independent Power Producers into the existing electricity system.
- ❖ To develop an enabling legislative framework to integrate local producers of liquid fuels and gas from renewable resources into their respective systems.



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# Legal Instruments (2)

## ✓ Deliverables

- ❖ Appropriate regulations for grid-connection and wheeling of electricity generated from renewable energy.
- ❖ Phasing in of regulations requiring power generator's tariffs to be based on full cost accounting and the incorporation of environmental externalities.
- ❖ New legislation for the energy sector incorporating renewable energy and energy efficiency that provides equitable opportunities for their development.
- ❖ Regulations for the petroleum industry to accommodate locally produced bio-diesel and ethanol.



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# Legal Instruments (2)

## ✓ Deliverables

- ❖ Clear rights for property owners to capture solar radiation on their property without interference by other structures or vegetation on neighbouring properties.
- ❖ Appropriate legal and regulatory instruments to stimulate the uptake of renewable energy power generation into the electricity system.
- ❖ Mechanisms to increase the access of renewable energy to the national electricity grid.



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# *Trade and International Cooperation*

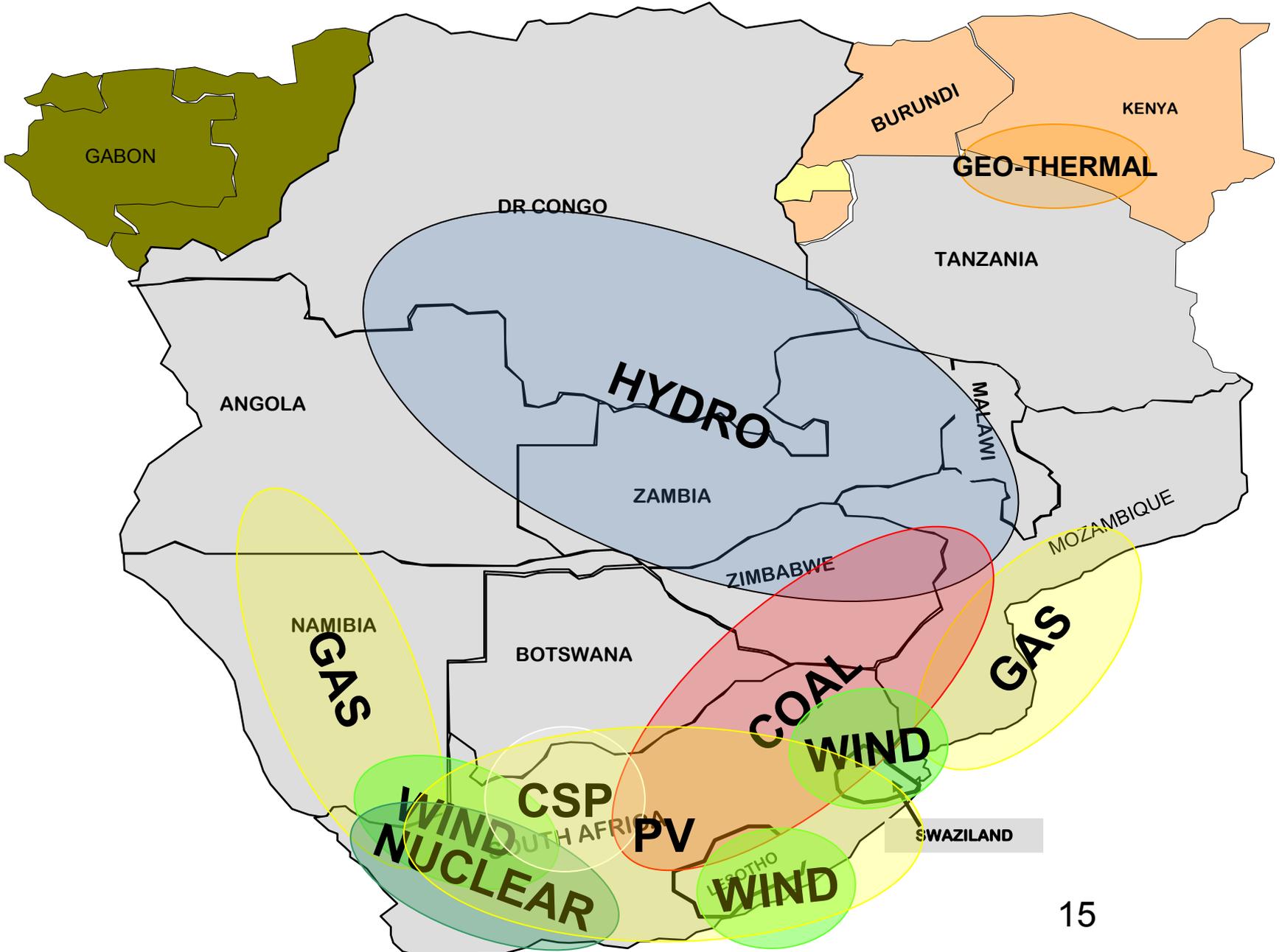
- The Renewable Energy White Paper Policy, 2003 identified the SADC Trade Protocol as one of the cornerstones of the SADC regional integration process.
- It anticipated export market implications for the local manufacture of renewable technologies
- Such technologies included photovoltaic systems, solar water heaters, small wind turbines, the photovoltaic systems which also included 'balance of systems' - inverters, regulators and batteries. Biomass conversion technologies, from fuel-efficient woodstoves, biogas digesters, bagasse and wood pulp power plants are all produced locally and had export potential.
- In the short to medium term solar cookers also could be mass-produced locally and have an export market in Africa.



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# Potential Energy Future – 2030 Envisages More Regional Integration



# Technology Development

## ✓ Goal:

- ❖ To promote, enhance and develop technologies for the implementation of sustainable renewable energy.

## ✓ Objectives

- ❖ To promote the development and implementation of appropriate standards and guidelines and codes of practice for the appropriate use of renewable energy technologies.
- ❖ To promote appropriate research, development and local manufacturing to strengthen renewable energy technologies and optimise their implementation.



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# Technology Development (2)

## ✓ Deliverables

- ❖ Standards governing the design, installation and performance of renewable energy systems, together with a certification process to verify that systems meet these standards.
- ❖ Revise Government tender procedures to include standards for renewable energy technologies.
- ❖ Monitor ongoing research and development programmes and identify additional investigations and demonstration projects that would assist in the development and optimisation of renewable energy systems.
- ❖ Identify appropriate public/private partnerships for the promotion of renewable energy technology development and implementation.



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# Technology Development (2)

## ✓ Deliverables

- ❖ Identify and expand areas for international co-operation in the field of renewable energy.
- ❖ Identification and enhancement of appropriate mechanisms to gain from technology and skills transfer and to benefit from international experience.
- ❖ Cost-effective energy storage mechanisms investigated.
- ❖ Integrate renewable energy R&D into the proposed National Energy Research Institute



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# Awareness raising and Capacity Building and Education

## ✓ **Goal**

- To raise public awareness of the benefits and opportunities of renewable energy.

## ✓ **Objectives**

- ❖ To promote knowledge of renewable energy and thereby increase its use.
- ❖ To promote and stimulate the renewable energy market through the dissemination of information regarding the economic, environmental, social and trade benefits of renewable energy technologies and their applications.
- ❖ To persuade the appropriate Government and Government funded institutions to implement training and education programmes with regard to renewable energy.
- ❖ To actively involve women in decision-making and planning and promote empowerment in renewable energy programmes or activities.
- ❖ To improve communication and interaction between national, provincial and local Government institutions on renewable energy policies.



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# Awareness raising and Capacity Building and Education (2)

## ✓ Deliverables

- ❖ Development and dissemination of a “benefits case for renewable energy”.
- ❖ Development of standards for accrediting renewable energy training programmes that are registered by the South African Qualifications Authority.
- ❖ Training programmes on renewable energy for stakeholders funded by the Energy Sector Education and Training Authority (ESETA).
- ❖ Awareness raising and marketing campaigns aimed at all stakeholders.
- ❖ Establishment of a renewable energy information centre or network of centres, possibly operated in conjunction with renewable energy demonstration centres, regional DME offices, regional ESETA offices and integrated energy centres established by Government.

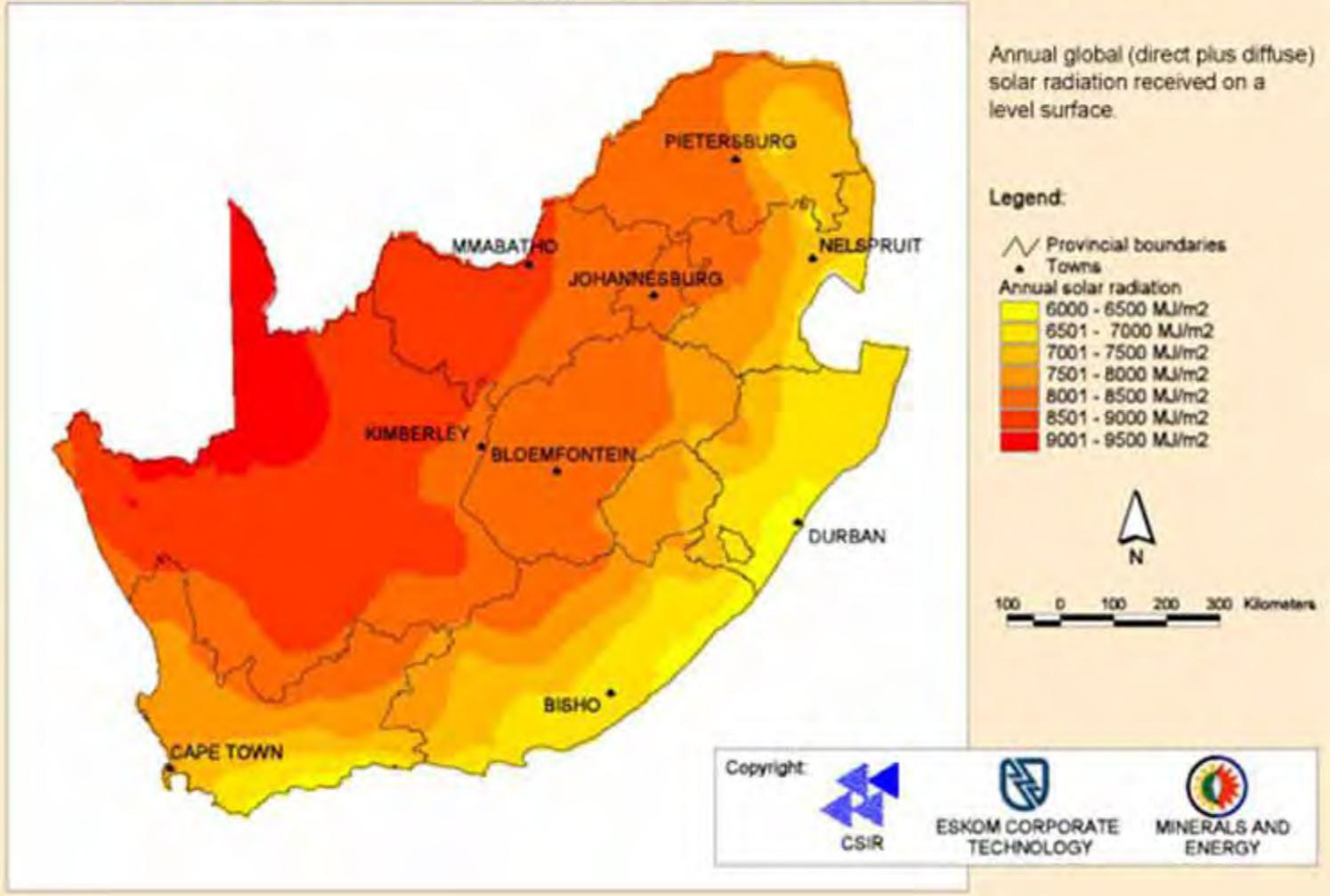


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# Introduction: South Africa's Solar Resource

South African Renewable Energy Resource Database - Annual Solar Radiation



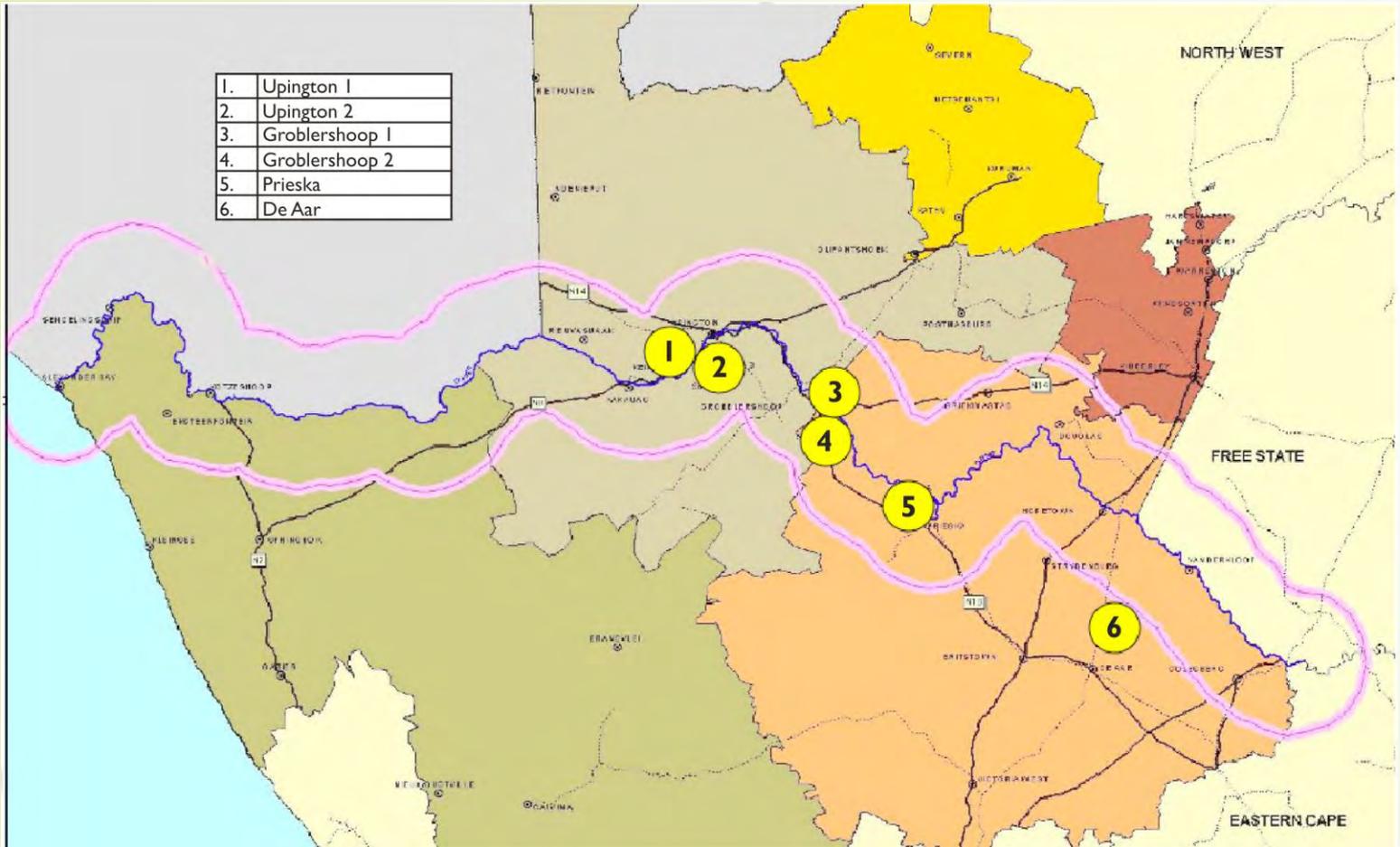
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# Targeted potential Sites

- Potential sites are marked with yellow below:

1.	Upington 1
2.	Upington 2
3.	Groblershoop 1
4.	Groblershoop 2
5.	Prieska
6.	De Aar



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# ***Solar Energy Technology Road Map (SETRM)***

- In June 2011, the South Africa Government through the Department of Energy signed an MoU with the International Energy Agency (IEA) to enhance its capacity and to tap into a wealth of knowledge and experience in IEA
- Through this collaboration including the South Africa-German Energy Programme implemented through GIZ, the Departments of Energy and Science & Technology initiated the development of a Solar Energy Technology Road Map (SETRM) for the country.
- Since 2012, both Departments engaged with various experts in the sector for the planning and preparation of this Solar Energy Technology Road Map with a National Workshop held in June 2012.
- This included setting a vision in an effort to define the desired pathway for this technology deployment and long terms goals of the roadmap;



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# ***Solar Energy Technology Road Map (SETRM)***

- The key area of focus for the SETRM is the integration of solar technology into the South Africa's energy mix through 2030 and 2050.
- Within the broad solar energy sector, the South Africa SETRM is focusing on four sub-sectors, that is, Solar Photovoltaic (PV & CPV); Concentrated Solar Power (CSP); Solar Heating and Cooling (with a particular emphasis on solar water heating also referred to Solar Thermal) and High Temperature Solar Energy (Current & Future applications)
- A national visioning workshop was held on 18-19 June 2013 with the specialist / experts in the sector. Pursuant this workshop, the actual development is in progress.
- It is important to note that South Africa is actively participating in the Global Solar and Wind Atlas coordinated by the International Renewable Energy Agency on behalf of the Clean Energy Ministerial. This is premised on the decision taken at the

Major Economic Forum in 2009.

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# Wind Atlas of South Africa

- It is also worth noting that in 2009 we embarked on an exercise through the South Wind Energy Programme (SAWEP), a programme funded by Global Environmental Facility with UNDP as the Executing Agent to update our wind atlas. This was a 4 year project covering three provinces, namely Northern Cape, Western Cape and Eastern Cape.
- A lot being achieved through this programme including the Wind Atlas of South Africa (WASA) including the installation of 10 Measurement Stations in the three provinces. In 2012 March, the first Numerical Verified Data was launched after at least one-year's worth of Quality Assured and checked wind energy data that are graphically displayed online and can be downloaded on the following websites:
  - <http://www.wasa.csir.co.za>
  - <http://wasadata.csir.co.za/wasa1Data>
- Phase 2 is commencing now in three Provinces, namely Eastern Cape, Kwa Zulu Natal and some parts of Free State



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# Conclusion

- As much as a lot has been achieved to date, it is acknowledged that more work still needs to be done in some of the areas, namely:
  - **renewables financing, full cost accounting including costs related to externalities and incentives,**
  - **technology assessment and deployment particularly:**
    - **heat and electricity – co-generation;**
    - **biofuels,**
    - **biomass,**
    - **biogas / energy from waste /landfill gas,**
    - **solar technologies,**
    - **wave energy, and**
    - **ocean currents**



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# Conclusion

- The Department of Energy remains committed to:
- Ensure security of energy resources, and pursuing an energy mix that includes clean and renewable resources to meet the needs of our fast growing economy, without compromising our commitment to sustainable development.
- Put in place clear programme of incentives for investment, as well as the development of the requisite human resource capacity to take full advantage of the opportunities presented due to the growth in this sector
- Acknowledges that many of the building blocks to support the scale up of RE and EE initiatives exist today and effort therefore should be concentrated on regrouping these building blocks and ensuring the right level of coordination between public and private sector finance to maximize the available financial resources.
- Putting all the necessary institutional structures and governance tools in place.



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# THANK YOU

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