technology innovation AGENCY

Energy Efficiency Technology Development

Energy Efficiency Policies and Technologies in South Africa Workshop

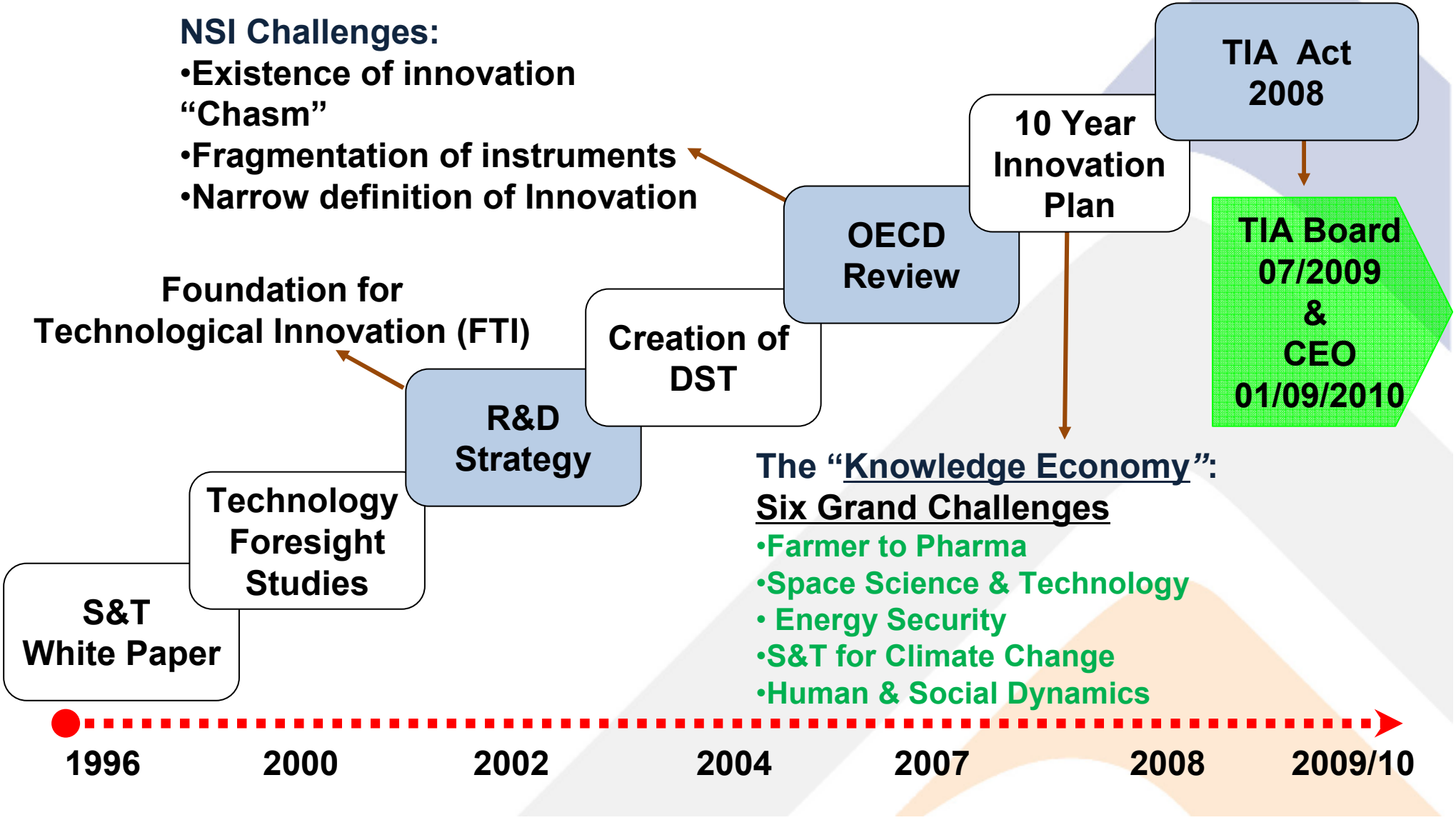
06th September 2012

Need? | TIA background | Role & Opportunity type | Funding criteria| Energy Sector EE alignment | Intended EE Techs.

Need for EE technology Development

- Strategic decision - communicated via policies, e.g. National Energy Act (2008)
  - Ensures energy resources are available in sustainable quantities to SA in support of economic growth and poverty alleviation
  - Takes into account environmental management requirements and energy planning
  - Allows for increased generation and consumption of renewable energy
  - Makes provision for holding strategic energy feed stocks, adequate investments in infrastructure and provision of energy demand information

Innovation Policy Drivers & Milestones



TIA Mandate, Vision, Mission

Mandate	To **support** the State in **stimulating** and **intensifying technological innovation** in order to **improve economic growth** and the **quality of life** of all South Africans **by [supporting*]** the **development and exploitation of technological innovations**"
Vision	To be a **world class** innovation agency that **supports** and **enables technological innovation** to achieve socio-economic benefits for South Africa
Mission	To support **technology innovators** to unlock South Africa's global **competitiveness** and deliver **socio-economic value**

TIA Sectors

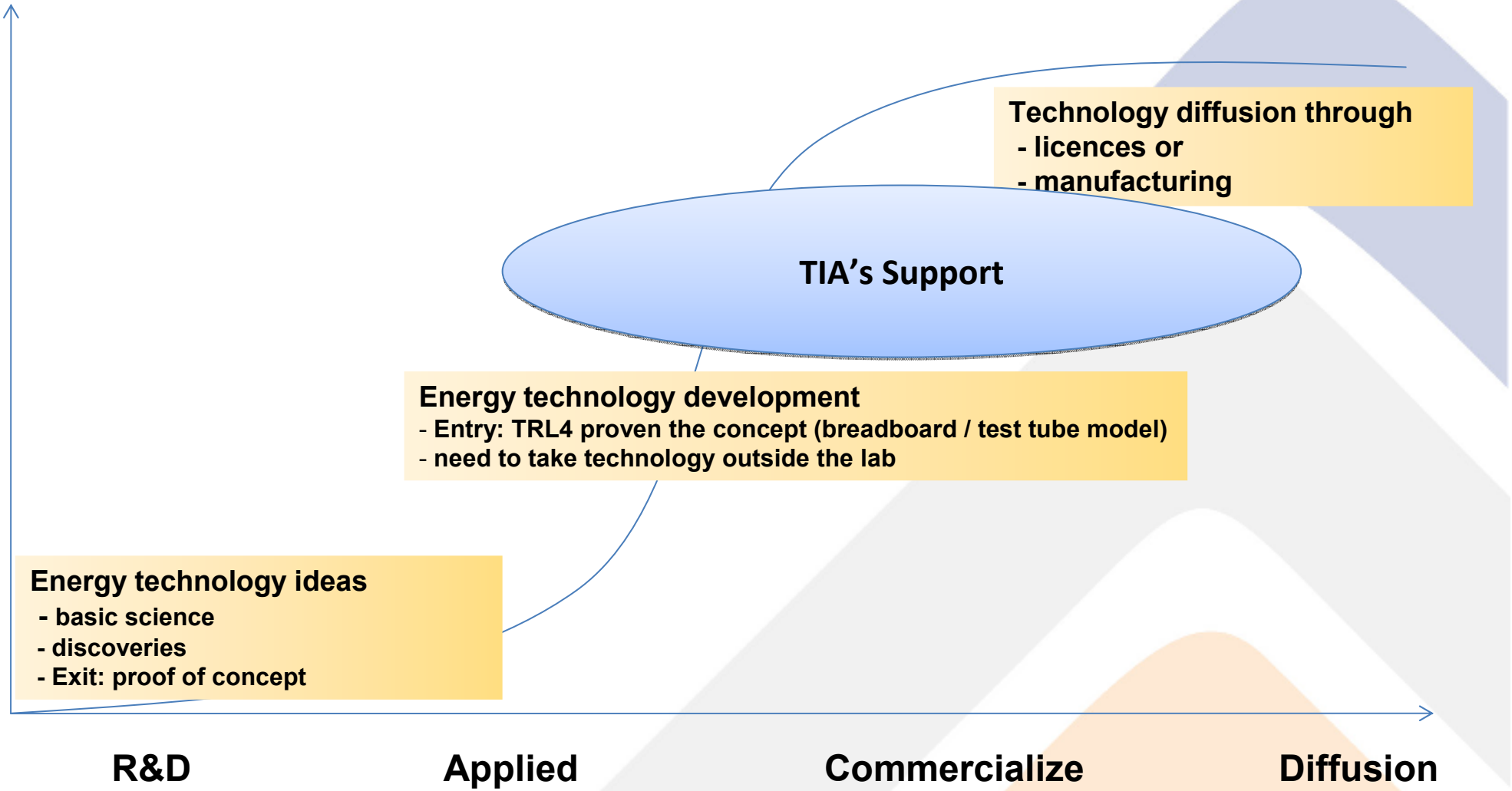
Biotechnology Sectors

- Agro
- Health
- Industrial Biotech

Industrial Sectors

- Advanced Manufacturing
- Energy
- ICT
- Mining

TIA's role


Technology diffusion through
- licences or
- manufacturing
TIA's Support
Energy technology development
- Entry: TRL4 proven the concept (breadboard / test tube model)
- need to take technology outside the lab
Energy technology ideas
- basic science
- discoveries
- Exit: proof of concept
R&D
Applied
Commercialize
Diffusion

Opportunity Type

- there exist creative new technology based ideas for either new or improved products, processes or services

or

- there are existing technology based ideas for new or improved products, processes or services that can be further improved, developed and exploited by South Africans or in collaboration with foreigners where a win-win partnership can be forged

or

- there is opportunity for the development of infrastructure and capacity in order to reduce the barriers to technological innovation in South Africa.

Funding Criteria

- Stage in the innovation value chain, and proposed path to innovation
- Potential attractiveness in market (sustainable competitive advantage)
- Intensity of social, economic and developmental impact potential
- Technical and commercial viability of plan
- Ability of team to implement plan
- Extent of prior investment, partnership or leverage of other resources
- Promotion of BEE
- Risk, balanced with outcomes potential in relation to total TIA portfolio
- Potential financial return
- Availability of funds

TIA Energy

Strengthen security of supply and a transition to a low carbon economy by supporting national deployment of renewable and alternate energy technologies

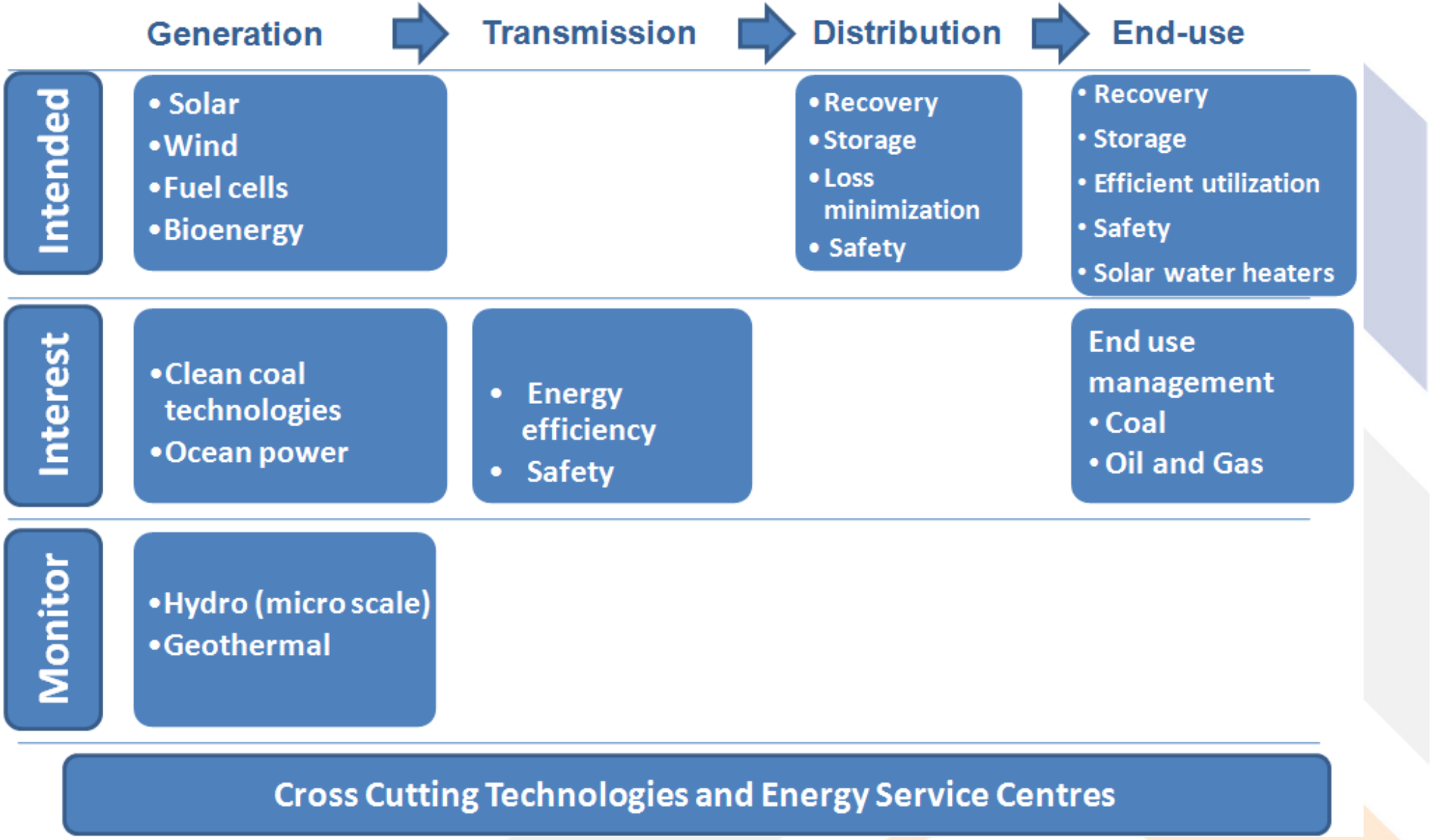
Support the development of enabling technologies for renewable energy technologies to ensure sustainability of the RETs industry

The unit's purpose is to support TIA mission and vision by supporting and contributing to the development of an innovative, competitive and sustainable energy industry that supports South Africa's economic growth and development

Support the development of energy management technologies

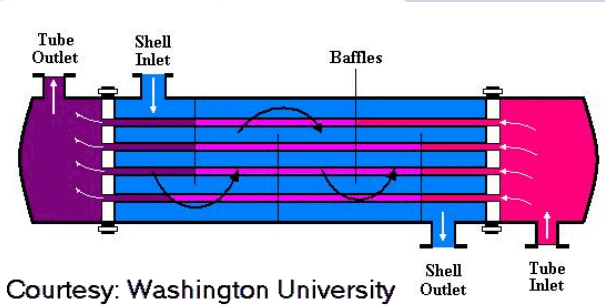
Create energy technology development platforms and service centres

Energy Technologies (EE location)



Intended Techs (Energy Management)?...

- Energy recovery, storage and efficient use
  - **Energy recovery**: haul trucks exhaust heat recovery technologies
  - **Energy storage (thermal, mechanical, chemical and electrical)**: Low cost, high energy density light weight energy storage technologies
  - **Improved energy consumption**, energy consumption monitoring, and ensure safe and efficient conversion / use of energy



Courtesy: Washington University

Thank You!

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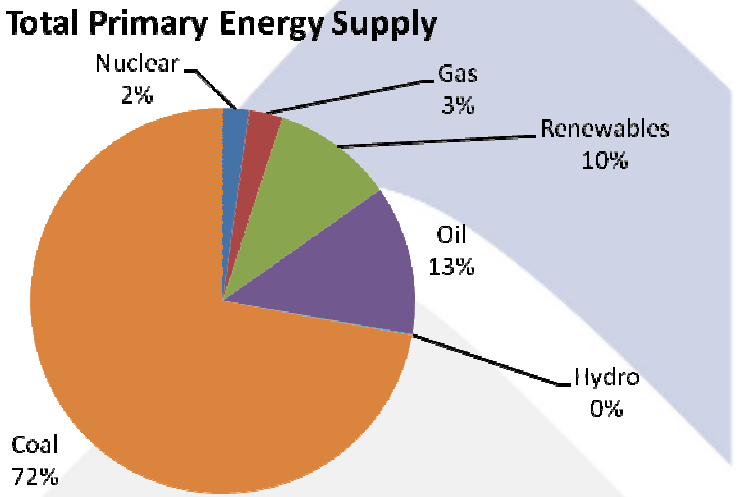
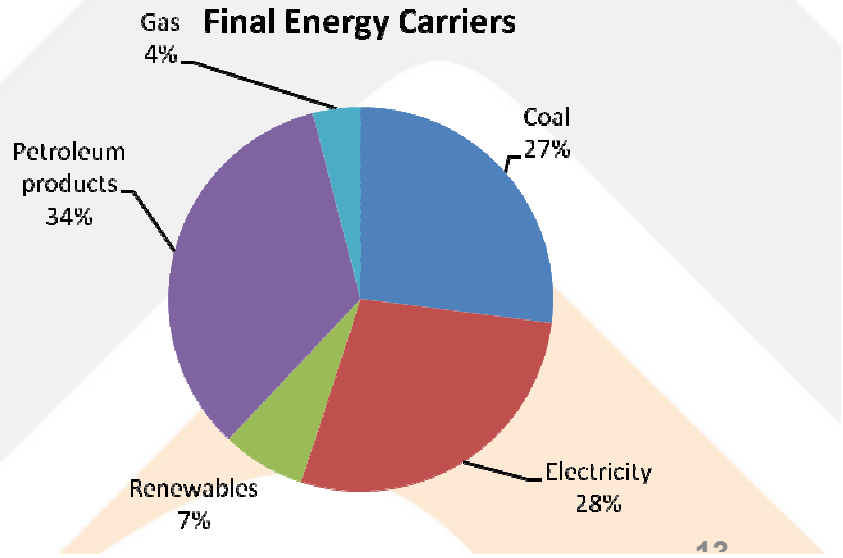
South Africa Energy Landscape

- Coal dominated energy resources
- Need to diversify energy mix
- Need to manage energy utilisation
- IRP2010 sets energy mix requirements to 2030
  - A total of 42.5 GW new capacity added:
    - Wind & Solar PV: 19.7% each,
    - Solar (CSP): 2.4%
    - Coal: 14.7%
    - OCGT & CCGT: 14.8%
    - Nuclear: 22.6%





*DoE

Parameters Map

Technology Theme	Technology Cluster	Market Attractiveness	Contribution to Environment			Technical Importance		Regulatory/Policy Support
		Market Potential (size and value)	Social (jobs)	Water (impact)	GHG Emissions (mitigations)	National Development Capacity (localization)	Technology Maturity	Policy Alignment & Incentives
Renewables	Solar (PV)	●	◕	●	●	◑	◑	●
	Solar (CSP)	●	◕	○	●	◔	◔	●
	Wind	●	◑	●	●	◔	◑	◑
	Hydro (Micro-scale)	◔	◔	●	●	◔	◕	◔
	Ocean	●	◔	●	●	◔	◔	○
	Fuel Cells	●	◕	◑	●	◔	◔	○
	Geothermal	●	◔	◕	●	◑	◕	○
Bioenergy	Biofuels	◑	◕	○	◔	◑	◑	◑
	Electricity (Biogas)	●	◕	●	◑	◑	◔	◔
	Landfill gas	●	◑	●	◑	◑	◔	◔
	Char	◕	◑	◔	◔	●	◕	◔
Energy Management	Recovery (including Combined Heat Power)	●	◔	◔	●	◔	◔	●
	Storage	●	●	◔	○	◔	◑	●
	Efficiency (Performance)	●	●	○	◔	◕	◔	●
Clean Coal Technologies	Coal Upgrading	◕	●	◔	●	◔	◑	◔
	Advanced Coal Power Technologies	◑	◑	◑	●	◑	◔	◔
	Emissions Control Technologies	●	◑	◔	●	◔	◔	◔
	Carbon Capture and Storage	●	●	◔	●	◔	◔	◔

Key message: Selection based on technology and its environment