

The Role of Skills Development & Research for Ensuring Energy Security in South Africa



Improving Access to Energy in Sun-Saharan Africa



*8 - 10 November 2010
The Lord Charles Hotel, Cape Town*



Background



- **SANEDI** has been created, for the sole purpose of *assisting the State* to achieve its *strategic energy objectives*, as set out in the National Energy Act, 2008 (No. 34 of 2008), i.e.
 - Promote *diversification* of energy supply;
 - Ensure emerging energy *technologies* are incubated and commercialised;
 - Ensure appropriate *human capital* is developed to support new industries;
 - Stimulate *innovation* in energy R&D!



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Energy Poverty



- It will cost approximately US\$ 32 billion per annum, to enable the world's 1 billion energy-starved people to access energy supplies at home, by 2030!
- This amounts to only 3% of expected global energy investments, projected to 2030!

– *2010 World Energy Outlook, IEA*



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Energy Poverty – Health Impacts



- Household air pollution from the use of biomass in inefficient stoves, would lead to over 1,5 million premature deaths in 2030.
- Greater than estimates for premature deaths from malaria, TB or Aids.
- Clean stove distribution could therefore be as transformative as bed-nets or vaccines!



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What is Needed?



- **A common vision** on generation plant, fuel options & network requirements for the future.
- **Interaction** between Government Departments, eg. Energy, Economic Development, Science & Technology, National Treasury and the National Planning Commission is **critical!**
- A robust IEP plan that factors in **job creation** requirements & human capital development as key social criteria.
- A supply chain approach to innovation, with **Centres of Excellence** developed, that assist in stimulating **innovation** and taking products through the value chain, from conceptualisation to deployment!



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What is Needed, (cont'd) ?



- Product development towards **commercialisation**, including solar PV products, ocean energy technology, cleaner liquid fuels and concentrating solar power.
- Undertake **educational activities** which will include Grade 10 - 12 learners, Science & Engineering Undergraduates and Artisans.
- Undertake **specific research** for industry.
- Evaluate and **localise** technologies, (*including wind*).
- Support **standards** development!



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How?



- Larger, yet decentralised systems, operating in a **smart grid** environment:-
 - Limitation in natural resources;
 - Proximity to load;
 - Need for two-way communication on the grid, (*power and info*).
- **Job creation** enhanced through tech-transfer of key technology options, e.g. SWH, CSP, CPV, etc. – **return to manufacturing**.
- **Carbon capture and storage** is required in the medium-term, to allow for longer term technologies (*RE, Nuclear, etc.*), to mature.
- **SME development** enhanced through regional focus and emphasis on standardised components!
- **Funding** through Tax Incentives!



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Conclusion



- **Key Challenges:-**
Energy constraints;
High unemployment;
GHG-emissions.

Applied **research** in these areas should focus on providing an integrated solution to these **'challenges'** facing all of us!



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Final Thought



The power industry is trailing behind *other economic sectors already revolutionised by computerisation* e.g. retailing & manufacturing, and will see inexpensive computing power & low-cost bandwidth infuse every element of the grid with digital intelligence in coming decades!



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Thank You !

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