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South Africa's Participation in IEA-OES

Energy Innovation For Life

SANERI so far

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- Established under Ministerial Directive in October 2004, as a company wholly owned by CEF.
  - To undertake in-house research and development in non-nuclear energy
  - To act as a funding agency for R&D in non-nuclear energy.
- During the last quarter of 2006/2007, SANERI went into full operation.
- The Department of Science and Technology, together with the Department of Minerals and Energy, are joint custodians of SANERI and assist in providing political and strategic focus (transition to SANEDI)
- SANERI's research priorities are guided by
  - National Energy Research, Development and Innovation Strategy (developed by DME, DST and stakeholders)
  - the DST 10 Year Innovation Plan of 2007 (5 Grand Challenges)
  - SANERI strategic plan stakeholder workshop of 2007.

Key Objectives

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- Ensure long term health of energy research capacity in the country and assist in stimulating a culture of innovation in the energy research environment
- Support government goals of energy security of supply through identifying viable and sustainable diversified energy supply options
- Address deficiencies in current race, gender and age profile of postgraduate students, academia, engineers and scientists
- Stimulate socio-economic upliftment through improved access to modern, clean and affordable energy services
- Support economic growth - accelerating applied research projects getting to market, ultimately resulting in commercial rollout
- Assist in the coordination of SA participation in various international bodies involved in energy R&D (IEA, REEEP)

SANERI's core activities

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Human Capital Development

This is focused on developing skills for non-nuclear energy through postgraduate training and consists of the following programmes

- Bursary Support Scheme
- Chairs of Energy Research Programme
- Hub and Spokes of Energy Programme

Energy Research Programme

SANERI financially supports basic and applied research in institutions of higher learning, research centres, private companies and individuals. The research has to be in line with SANERI's thematic areas and short term research priorities

Cooperative R&D Activities

One of SANERI's objective is to create local and international partnership to leverage funding, research facilities and share knowledge to accelerate technology development and innovation in the thematic areas.

Deliverables to Date

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Programme \ Year	2006/7	2007/8	2008/9
Research Chairs	1. Full Chair (Clean Coal Technologies – Wits) 2. Full Chair (Biofuels and Alternative Liquids – US 3. Assoc Chair (Biofuels and Alternative Liquids – UNW) 4. Associate Chair in Clean Coal (UNW)	Pending funding from the NRF	
Hub and Spoke and Centres	1. Renewable Energy and Sustainable Energy (US)	3 Spokes for Hub 1) Wind Technologies (UCT and US) 2) Solar PV (Fort Hare and NMMU) 3) Solar Thermal (UP and US)	2. Energy Efficiency and DSM (UP) 3, Centre for Energy systems and Analysis 4. Centre for Carbon Capture and Storage 5. Centre or Green Transport
Bursary Support Programme	12 PhD Students 15 Masters Students	9 PhD Students 18 Masters Students	Budget amounts revised to R100k for PhD and R80k for Masters
Contract Research	43 projects	31 projects	Dependent on budget allocation

SANERI Achievements to date…

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- International and Local collaboration
  - SANERI is a country representative in a number of the International Energy Association (IEA) Implementing Agreements
  - Fraunhofer Institute (Transport division)
  - Brandenburg Technical University
  - SANERI is the country's National Contact Point for energy research collaboration with the European Union under their FP7 programme
  - Royal Danish Embassy and SAWEP (+ 5 partners)
    - Development of updated Wind Atlas for SA
  - SANERI is host to REEEP's Southern African secretariat
- Research projects beginning to yield results
  - A number of SANERI funded research projects are already being presented in international and local conferences.
  - A number of technology development projects are ready for prototype development and demonstration
- The baseline of energy research outputs in SA has been completed.
- SANERI brand matured (local and international markets)

National Energy Act (Act 52 of 2008)

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- Promulgated as Act 52 of 2008 in October 2008
- The Energy Act, 2008 (No.52 of 2008) establishes the South African National Energy Development Institute (SANEDI)
- SANEDI has 2 main functions:
  - Energy research and energy technology development
  - Energy efficiency measures implementation
- SANEDI may be viewed as the merger of SANERI and NEEA.
- SANEDI strives to bridge the gap between R&D and demonstration & implementation
- Through a combination of state, donor and private sector funding it is anticipated that key projects could be accelerated, leading to faster deployment and consequently, more job and local manufacturing opportunities

SANEDI involvement in project life cycle

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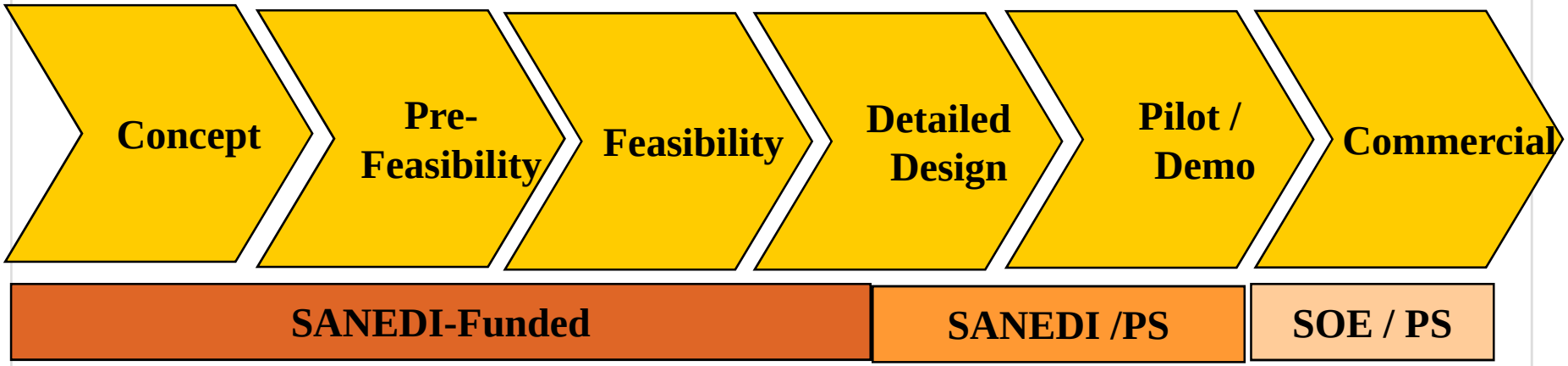

International Energy Agency (IEA)

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is an intergovernmental organisation which acts as energy policy advisor to 28 member countries in their effort to ensure reliable, affordable and clean energy for their citizens.

Founded during the oil crisis of 1973-74, the IEA's initial role was to co-ordinate measures in times of oil supply emergencies. As energy markets have changed, so has the IEA.

Its mandate has broadened to incorporate the "Three E's" of balanced energy policy making: energy security, economic development and environmental protection.

Current work focuses on climate change policies, market reform, energy technology collaboration and outreach to the rest of the world, especially major consumers and producers of energy like China, India, Russia and the OPEC countries.

www.iea.org

Implementation Agreements

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- are at the core of the IEA's International Energy Technology Co-operation Programme.
- focus on technologies for fossil fuels, renewable energies, efficient energy end-use and fusion power. Effective dissemination of results and findings is an essential part of the mandate of each Implementing Agreement.
- Participants in Implementing Agreements fall into two categories: Contracting Parties and Sponsors
- Financing arrangements for international co-operation through Implementing
- Agreements fall into two broad categories:
  - Cost sharing, in which participants contribute to a common fund to finance the work.
  - Task sharing, in which participants assign specific resources and personnel to carrying out their share of the work.
  - Some Implementing Agreements use a combination of these two mechanism

http://www.iea.org/Textbase/techno/Framework_text.pdf

Benefits of participation

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- Shared costs and pooled technical resources
- Avoided duplication of effort and repetition of errors
- Harmonised technical standards
- A network of researchers
- Stronger national R&D capabilities
- Accelerated technology development and deployment
- Better dissemination of information
- Easier technical consensus
- Boosted trade and exports

Ocean Energy Systems (OES-IA)

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- aims to facilitate and co-ordinate ocean energy research, development and demonstration through international co-operation and information exchange

Strategic Objectives

- To actively encourage and support the development of networks of participants involved in R,D&D, prototype testing and deployment, policy development, and deployment, and facilitate networking opportunities.
- To become a trusted source of objective information and be effective in disseminating such information to ocean energy stakeholders, policymakers and the public.
- To promote and facilitate collaborative research, development, and demonstration to identify and address barriers to, and opportunities for, the development and deployment of ocean energy technologies.
- To promote policies and procedures consistent with sustainable development.
- To promote the harmonization of standards, methodologies, terminologies, and procedures where such harmonization will facilitate the development of ocean energy.

http://www.iea-oceans.org/index.asp

Ocean Energy

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Ocean renewable energy resources can be broadly categorized into:

- Tides - Potential energy associated with tides can be harnessed by building barrage or other forms of construction across an estuary.
- Waves - Kinetic and potential energy associated with ocean waves can be harnessed using modular technologies.
- Tidal (Marine) Currents - Kinetic energy associated with tidal (marine) currents can be harnessed using modular systems.
- Temperature Gradients - Thermal energy due to the temperature gradient between the sea surface and deepwater can be harnessed using different Ocean Thermal Energy Conversion (OTEC) processes.
- Salinity Gradients - At the mouth of rivers where fresh water mixes with salt water, energy associated with the salinity gradient can be harnessed using pressure-retarded reverse osmosis process and associated conversion technologies.

Collaborative Annexes

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- Annex I - Review, Exchange and Dissemination of Information on Ocean Energy Systems
- Annex II - Development of Recommended Practices for Testing and Evaluating Ocean Energy System
- Annex III - Integration of Ocean Energy Plants into Distribution and Transmission Electrical Grids
- Annex IV - Assessment of Environmental Effects and Monitoring Efforts for Ocean Wave, Tidal, and Current Energy Systems

Other partnering initiatives

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- NEET is part of the IEA's programme supporting the G8 Gleneagles Plan of Action. It works to foster broader, more effective international co-operation, in particular with non-IEA countries. www.iea.org/neet/
- Energy Research in the 7th Framework is to aid the creation and establishment of the technologies necessary to adapt the current energy system into a more sustainable, competitive and secure one. http://cordis.europa.eu/home_en.html
- EU-Ocean Energy Association supports a number of initiatives in various areas of interest to the association and its members (e.g. Legislation, Funding, Regulatory, Government Relations), ensuring that members are involved in key legislation concerning ocean energy technologies, and providing EU-OEA members with a voice in important discussions in which they are stakeholders. www.eu-oea.com
- INORE is made by, for and with PhD students and Post Docs who work with issues related to Offshore Renewable Energy (offshore wind, wave or tidal energy). http://inore.org

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Thank You

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