



**Tshwane University
of Technology**

We empower people

**South Africa's
National
System of
Innovation &
*Sustainable Development***

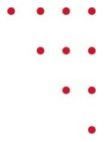
Rasigan Maharajh

South African – German Dialogue for Sustainability Science

Bonn, Germany

16th June 2008

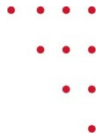




Outline

- National System of Innovation
 - Policy – Strategy – Plan - Agency
- Higher Education Landscape
 - Reform & Qualifications
- Sustainable Development
- Challenges





SANSI Policy

- 1996 - White Paper
- 2001 - R&D Strategy
- 2008 - 10 Year Plan
 - *stimulate the country's research community to engage in multidisciplinary approaches which transcend narrow and traditional disciplinary boundaries, develop new tools, techniques and teaching materials to better solve contemporary problems and position the country at the frontier of the knowledge enterprise*





Grand Challenges till 2018

- The “*Farmer to Pharma*” value chain to **strengthen the bio-economy** – over the next decade South Africa must become a world leader in biotechnology and the pharmaceuticals, based on the nation’s indigenous resources and expanding knowledge base.
- **Space Science and Technology** – South Africa should become a key contributor to global space science and technology, with a National Space Agency, a growing satellite industry, and a range of innovations in space sciences, earth observation, communications, navigation and engineering.
- **Energy Security** – the race is on for safe, clean, affordable and reliable energy supply, and South Africa must meet its medium-term energy supply requirements while innovating for the long term in clean coal technologies, nuclear energy, renewable energy and the promise of the “hydrogen economy”.
- **Global Climate Change Science** with a focus on climate change – South Africa’s geographic position enables us to play a leading role in climate change science.
- **Human and Social Dynamics** – as a leading voice among developing countries, South Africa should contribute to a greater global understanding of shifting social dynamics, and the role of science in stimulating growth and development.




























SANSI Public Sector 2008

| Ministries | Education | Science & Technology | Trade & Industry | Minerals & Energy | Agriculture | Health | Water Affairs & Forestry | Environment & Tourism | Treasury | Others (+/- 20) + Provincial + Local |
|----------------------------------|-------------------------------|---|--|---|-------------------------------|--------------------------|--------------------------|---|-------------------------|--------------------------------------|
| Agencies | National Research Foundation | | Industrial Development Corporation & Small Enterprise Development Agency | | | Medical Research Council | | | | |
| Research & Innovation Performers | Higher Education Institutions | Africa Institute Council for Scientific & Industrial Research Human Sciences Research Council | SA Bureau of Standards | Council for Geosciences MINTEK National Energy Research Institute Nuclear Energy Corporation | Agricultural Research Council | Medical Research Council | Water Research Council | Marine and Coastal Management Division South African National Biodiversity Institute South African National Parks Weather Services | Statistics South Africa | |



HE Landscape in 2008

| Traditional Universities | Comprehensive Universities | Universities of Technology | National Institutes |
|--|--|--|---|
| <i>Theoretically-oriented university degrees, postgraduate & research capacity</i> | <i>Combined academic and vocationally oriented education</i> | <i>Vocationally-oriented qualifications, postgraduate & research capacity</i> | <i>Incubators & Coordinating Mechanism</i> |
| <ul style="list-style-type: none">  University of Cape Town  University of Fort Hare  University of the Free State  University of KwaZulu-Natal  University of Limpopo  North-West University  University of Pretoria  Rhodes University  University of Stellenbosch  University of the Western Cape  University of the Witwatersrand | <ul style="list-style-type: none">  University of Johannesburg  Nelson Mandela Metropolitan University  University of South Africa  University of Venda for Science and Technology  Walter Sisulu University for Technology and Science  University of Zululand | <ul style="list-style-type: none">  Cape Peninsula University of Technology  Central University of Technology  Durban University of Technology  Mangosuthu Technikon  Tshwane University of Technology  Vaal University of Technology | <ul style="list-style-type: none">  Mpumalanga Institute for Higher Education  Northern Cape Institute for Higher Education |



National Qualifications Framework

| NQF Level | Band | Qualification Type |
|--|---|--|
| 8 7 6 5 | <i>Higher Education & Training</i> | <ul style="list-style-type: none"> • Post-doctoral Research Degrees • Doctorates • Masters Degrees • Professional Qualifications • Honours Degrees • National First Degrees • Higher Diplomas • National Diplomas • National Certificates |
| <i>Further Education and Training Certificate (FETC)</i> | | |
| 4 3 2 | <i>Further Education & Training</i> | National Certificates |
| <i>General Education and Training Certificate (GETC)</i> | | |
| 1 | <i>General Education & Training</i> | Grade 9 & ABET Level 4 National Certificates |





Sustainable Development Framework

South Africa aspires to be a

- sustainable, economically prosperous and self-reliant nation state that
- safeguards its democracy by meeting the fundamental human needs of its people,
- by managing its limited ecological resources responsibly for current and future generations, and
- by advancing efficient and effective integrated planning and governance through national, regional and global collaboration.





pathways to sustainable development

- Enhancing systems for integrated planning and implementation
- Sustaining our ecosystems and using natural resources efficiently
- Economic development via investing in sustainable infrastructure
- Creating sustainable human settlements
- Responding appropriately to emerging human development, economic and environmental challenges

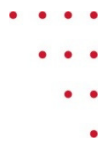




National State of Environment Report

- *Includes themes of:*
 - Atmosphere,
 - Biodiversity,
 - Climate,
 - Energy,
 - Environmental Governance,
 - Human Settlements,
 - Inland Water,
 - Land,
 - Marine & Coastal Ecosystems,
 - Waste, and
 - ***human vulnerability to environmental change,***
 - ***alternative environmental futures and recommendations for action.***

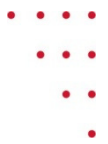




Projects

- South African Node of the Global Biodiversity Information Facility
- South African Biosystematics Initiative
- South African Research Chairs Initiative
- Chairs of Energy Research
- South African Environmental Observation Network





Challenges

- Cooperation for Learning about
 - Economic Growth & Development
 - *Biodiversity*
 - *Climate Change*
 - *Energy*
 - *Waste Management*
 - *Water & Air Quality*
 - *Human & Social Dynamics*
 - *Dimensions of Change*
 - Capacity, Capabilities & Competencies ...





Thank You

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Institute for **E**conomic **R**esearch on **I**nnovation

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