



Climate Change Science and Technology Research Platform

Public Hearings : White Paper on Climate Change

Prepared for Portfolio Committee on
Water and Environmental Affairs
Presented by: Isaac Maredi
05 June 2012



science
& technology

Department:
Science and Technology
REPUBLIC OF SOUTH AFRICA

Policy and Strategic Imperatives

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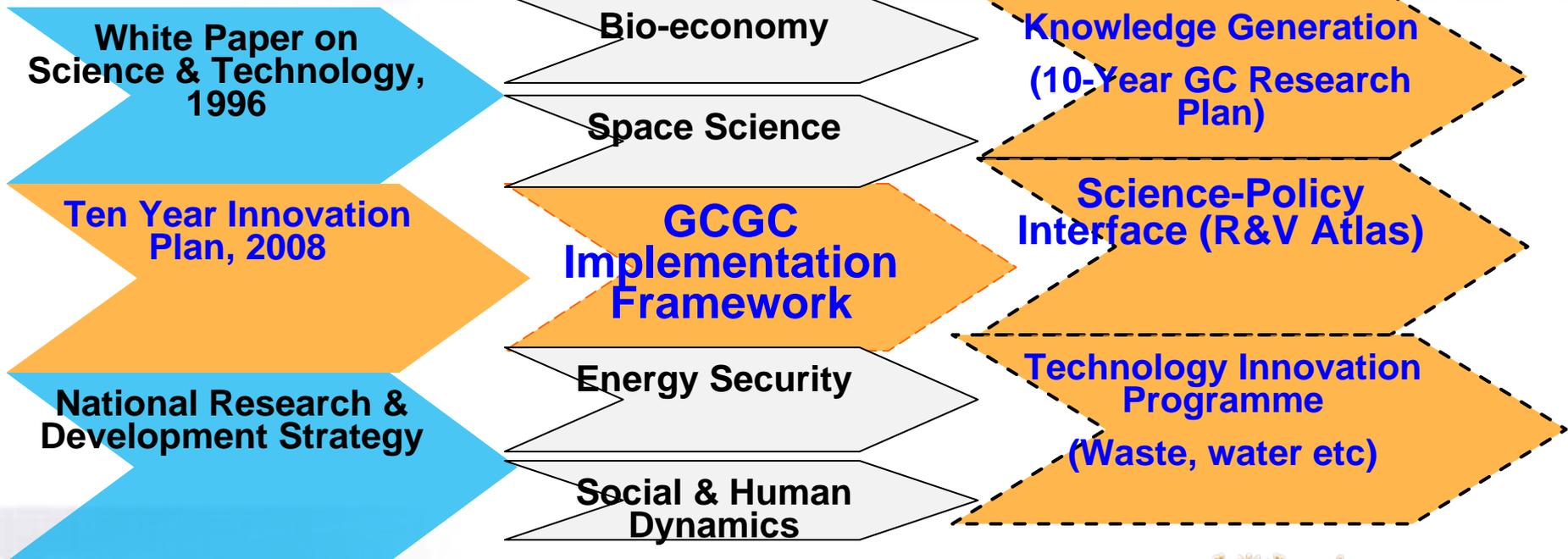


Policy and Strategic Context

Policy Framework

Grand Challenges

Programme Portfolios



Global Change Grand Challenge (GCGC) 2008-2018

Underlying principles of the global change challenge

- .Adopts a systems and **interdisciplinary approach**
- .Distinguished by its focus on **South Africa's unique developmental challenges** and geographic location
- .Contributes to local and global research & knowledge
- .Strongly grounded in a **social-ecological paradigm**
- .Support decision-making and is **policy-relevant**
- .Ability to attract the next generation of scientists

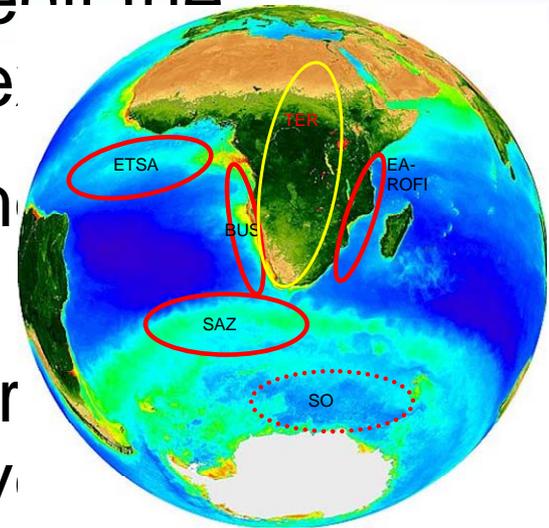
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Second Level

Third Level

Fourth Outline Level

Fifth Outline



GCGC-Primary indicators

**Knowledge Generation
(10-Year GC Research
Plan)**

Overall goal: Improving scientific understanding of global environmental change

**Science-Policy Interface
(R&V Atlas)**

Overall goal: Bridging the global change science and policy/practice divide

**Technology Innovation
Programme
(Waste, water etc)**

Overall goal: Facilitating responses to global change impact through technological innovation

Existing Plans and Programmes Contributing to The White Paper on Climate Change

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Global change research plan



- **Purpose** – Improve the scientific understanding of global environmental change
- The Plan adopts a sustainability science approach where the focus is on the coupled human-environment systemic relationship

KT1: Understanding a changing planet

- Observation, monitoring and adaptive management.
- Dynamics of the oceans around southern Africa.
- Dynamics of the complex internal earth system.
- Linking the land, the air, and the sea.
- Improving model predictions at different scales.

KT2: Reducing the Human Footprint

- Waste minimization methods and technologies
- Conserving biodiversity and ecosystems services
- Institutional integration to manage ecosystems and the services they offer
- Doing more with less

KT3: Adapting the way we live

- Preparing for rapid change and extreme events
- Planning for sustainable urban development in a South African context
- Water security for South Africa
- Food and fibre security for South Africa

KT4: Innovation for Sustainability

- Dynamics of transition at different scales - mechanisms of innovation and learning
- Resilience and capability
- Options for greening the developmental state
- Technological innovation for sustainable social-ecological systems.
- Social Learning for sustainability, adaptation, innovation and resilience.

Current programmes & initiatives

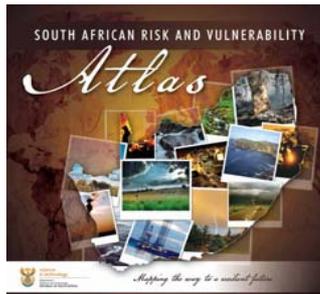


ACCESS



National Research Foundation

Applied Center for Climate & Earth Systems Science



NRF
National Research Foundation

SAEON
South African Environmental Observation Network



Total investment – R 60m/yr

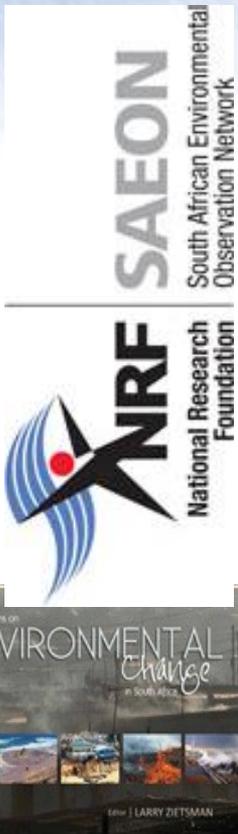
ACCESS



- Established in 2009 as a COE - virtual network of collaborating partners (research councils, universities)
- Governance – Board and Advisory Committee
- Recently developed an *Implementation Prospectus* - research & services programme, and education & training programme
- ACCESS Research Programme comprised seven (7) themes aligned to the GC Research Plan

Total investment – R 60m/yr

SAEON



- Established in 2002 as a longer-term research platform with the mandate of co-ordinating and supporting long-term *in-situ* environmental observation and monitoring.
- Manages its operations through six (6) nodes across the country – *Arid; Egagasini; Elwandle; Fynbos; Ndlovu; and Grassland, Forests & Wetlands*
- In 2010 SAEON published a book based on long-term environmental observation – “Observations on Environmental Change in South Africa”, together with a booklet on **policy implications**
- **SAEON supports a number post-graduate students (20 in 2011) attached to the nodes**

AEON



- AEON programmes (Inkaba yeAfrica and !Khure) focus on deep earth science.
- Inkaba ye Africa is a SA-Germany joint multi-disciplinary collaborative earth science initiative while !Khure Africa is a SA-French flagship scientific cooperation programme in the geosciences linking geodynamic co-evolution of earth and life to tectonics.
- AEON completed technical demonstration of **PUMP** – *Passive Underground Mine-water Purification* – developed to lab-scale proof-of-concept; and same for conflict diamond forensics project

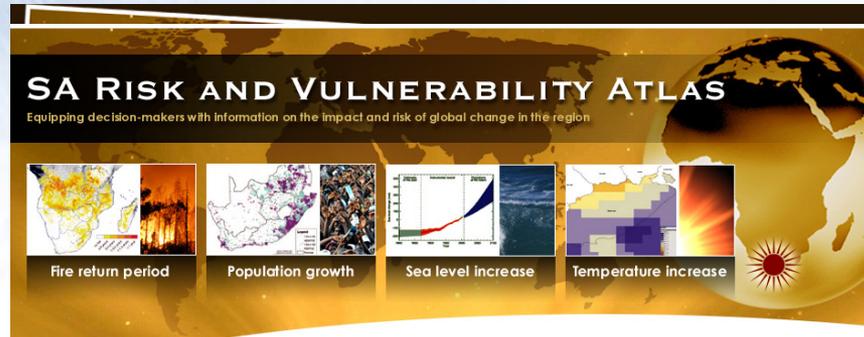
AEON

- In December 2011, a special volume of the SA Journal of Geology (Vol 114, No 3-4, December 2011) dedicated to Inkaba yeAfrica was published
- **An total of 306 post-graduate students were supported in the last two years - 116 (2011) and 190 (2012)**
- In December 2011, three SA researchers were awarded the “Green Talents” sustainability prize by German Parliamentary State Secretary for being exceptional young scientists active in the field of sustainable development. An increase from 1 SA winner (2009) to 2 (2010).



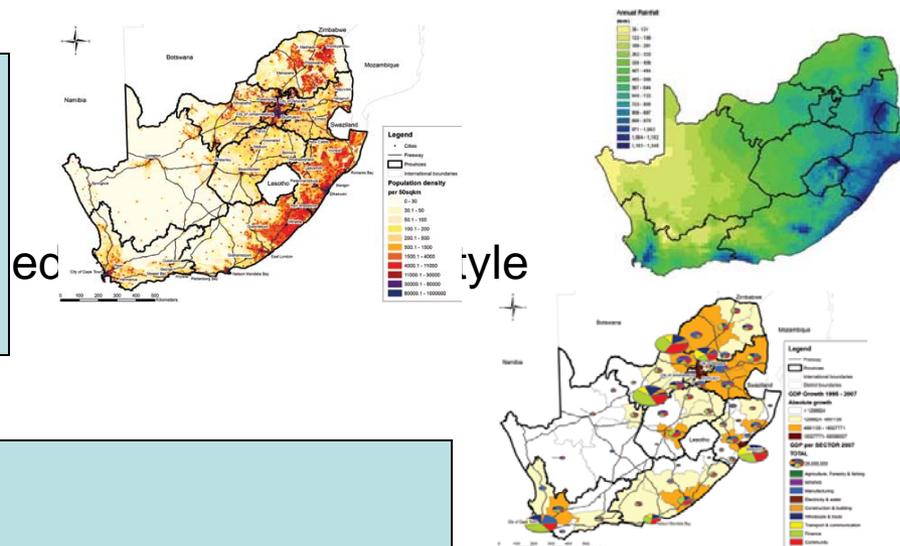
R&V Atlas - Architecture

A decision-support tool for local decision-makers



Focus broadly on environmental risks and disasters

Linked to other electronic databases & systems – climate, ecological, demographics etc



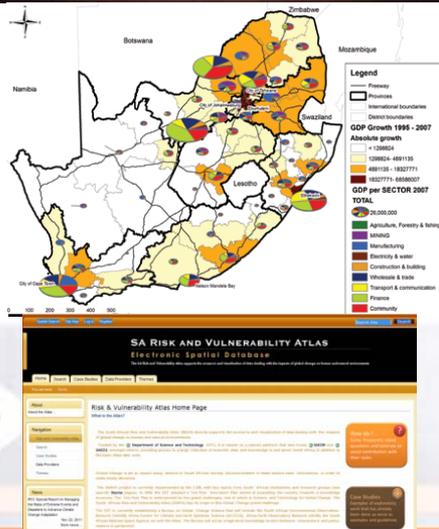
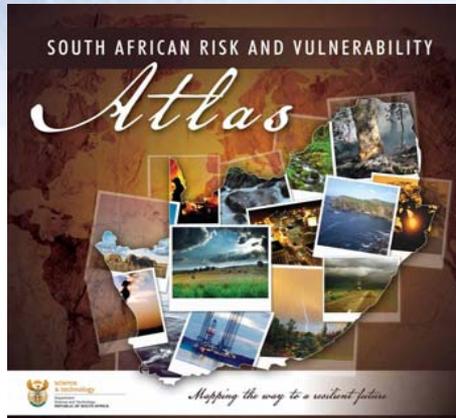
Support development of human capital in risks and vulnerability assessments

Users/beneficiaries:

- . Municipalities
- . Universities & research entities
- . Organized local groups – farmers, industry etc
- . Individuals

R&V Atlas...(Science Centres)

- A long-term complementary programme to **build capacity** and **provide risk assessment services to local users**
- **5 rural-based universities** identified to host the centres in the initial phase of the programme
 - 3 pilot centres are in place (Universities of Limpopo, Fort Hare and Walter Sisulu)
 - 2 more centres (Zululand, Venda/North West) to be added in 2013/14
 - DST provide funding and technical support - salaries of Centre Managers, office equipment and bursaries for students (Masters & PhDs) attached to the Centres



Key Areas for Further Consultation

- Chief Scientific Advisor to the Minister of Science and Technology and associated Scientific Advisory Council
- Climate change foresight study
- Climate change science council

DST Medium Term Planning Support to The WPCCC

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Global change human capital development plan

- HCD efforts will include:
 - Setting up centres of excellence, centres of competencies and research chairs that support the global change grand challenge research, infrastructure and innovation plans
 - Guaranteed long-term bursaries (Hons, MSc) programs at selected **previously disadvantaged universities (PDU)**
 - Studentships – temporary full-time employment within institutions within the NSI
 - Development of early career scientists within science councils, including obtaining further higher degrees, thus building critical mass
 - **Job opportunities:** Internships at science councils
 - Research collaboration with universities: joint appointments and direct contracting of university researchers
 - Participation in international student exchange and training programmes

Improving Scientific Understanding

- Scale up research activities across the four knowledge areas of the GCRP, and introduce additional research programmes
- Monitor and evaluate the effectiveness of the implementation architecture and other instruments designed to generation new knowledge and required human capital
- Continue to provide funding support for post-graduate students
- Initiate and strengthen strategic partnerships that can unlock resources to support the implementation of the Plan
- Strategy to monitor and manage with transparency, accountability and for success

Bridging science-policy divide

- Profile and market R&V Atlas
- Move towards full operationalization of the IT-based spatial database system of the Atlas
- Identify and grow strategic partnerships with key institutions like DBSA, GCIS, BUSA/NBI and SALGA in developing the Atlas further and supporting outreach activities
- Roll-out R&V Science Centres to more areas

2020

Global change technology development & innovation

- Develop a portfolio of technology and innovation programmes that respond to the sustainable development and green economy ambitions of the country
 - Finalise and implement a **national waste innovation programme**
 - Develop a **water technology and innovation roadmap** for South Africa
- Identify and forge strategic partnerships with leading countries in identified technologies

Regional Science Initiatives

- SADC STI Framework to support climate change response
 - *Aim* – to support science, technology and innovation(STI) support to regional climate change response
 - Draft Framework finalised and awaiting SADC Ministerial endorsement
- Southern African Science Service Centre for Climate Change and Adaptive Land Management (SASSCAL)
 - Aim – to facilitate research and provide products and services for decision-making
 - Integrated Science & Implementation Plan (ISIP) has been finalised
 - Namibia to serve as Secretariat; NRF - national executing agency and ACCESS - implementing agency

Thank You

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