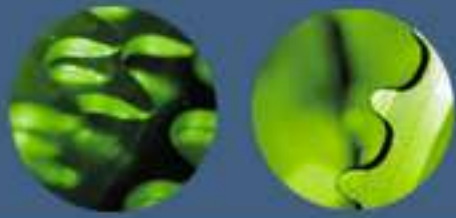




GLOBAL CHANGE GRAND CHALLENGE

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DST Mandate & key strategic objectives

- Policy Mandate
 - To promote research and technology development to support SD and improve the quality of life of all South Africans
 - To strengthen the National System of Innovation (NSI)
- Key policy documents
 - White paper on Science & Technology (1996)
 - National Research and Development Strategy (2002)
 - 10-Year Innovation Plan

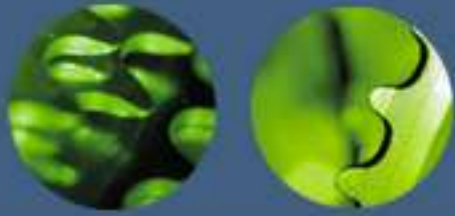


- Definitions

- “ .. *the network of institutions in the public and private sectors whose activities and interactions initiate, import, modify and diffuse new technologies.*” (Freeman, 1987)
- “ .. *a system of interconnected institutions to create, store and transfer the knowledge, skills and arte-facts which define new technologies.*” (Metcalfe, 1995)

- **Flow of technology and information** among people, enterprises and institutions that are key to innovative processes (OECD).
- Premised on the understanding that the linkages among the actors involved in innovation are key to improving technology performance.
- Key actors in NSI – DST, NACI, NRF, TIA and national research facilities

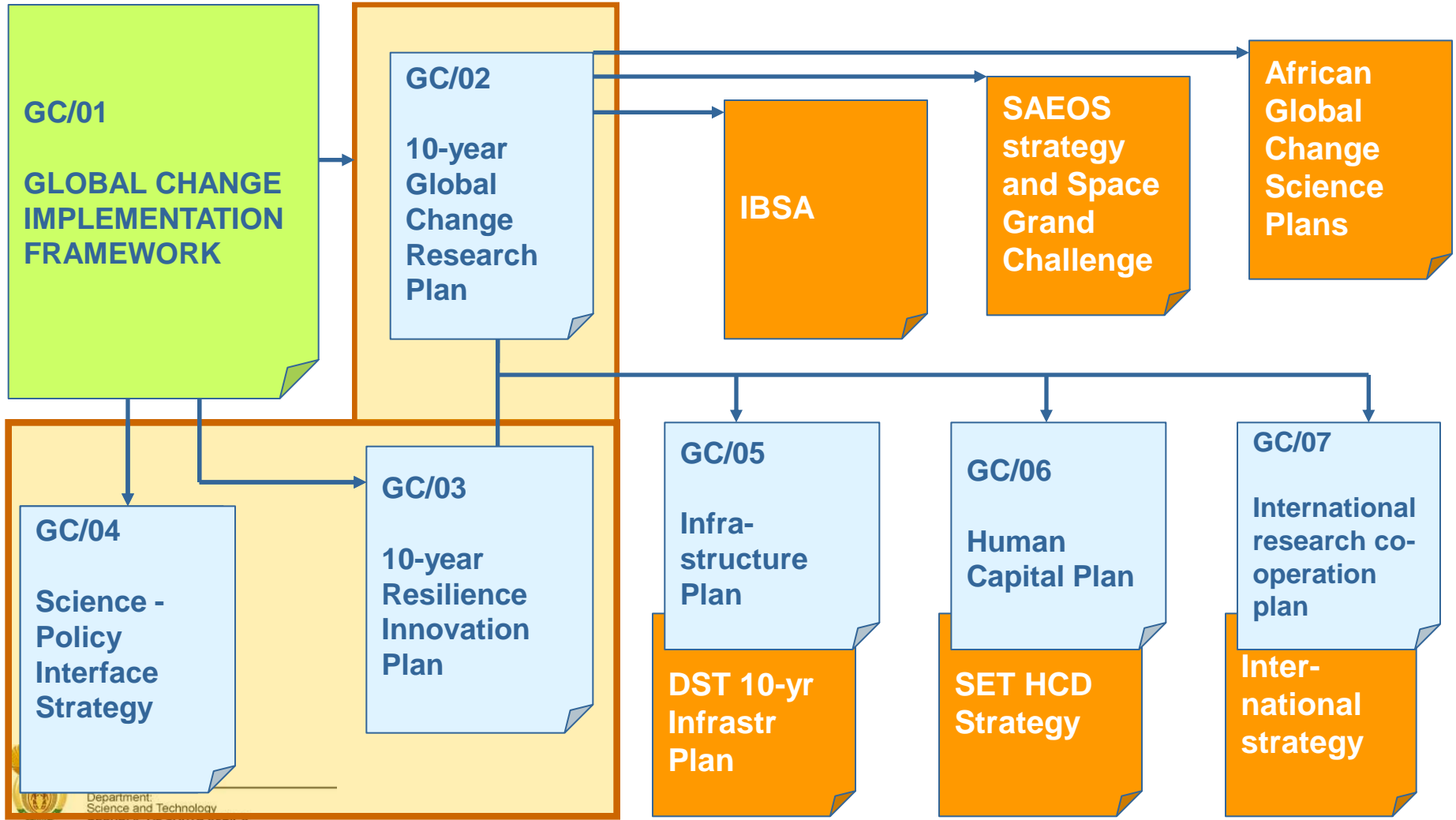
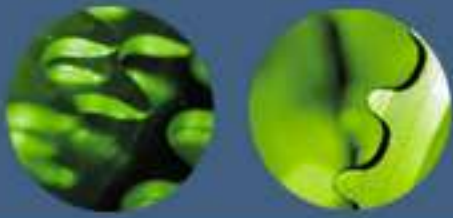


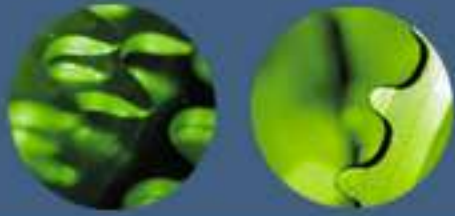


CONTEXT

- In 2007, DST adopted 10-Year Innovation Plan to transform the country to knowledge-based economy
- GCGC was identified as one of the five grand challenges that underpin the 10-Year Innovation Plan.
- Supports science and technology as well as key social, economic development, and environmental management objectives
- Three key components or focus areas:
 - Improving scientific understanding of global changes
 - Developing technologies and innovations to respond to global changes
 - Strengthening science-policy-practice interface



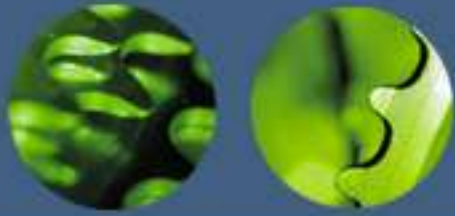




Design drivers

The form, shape, and structure of the Global Change Grand Challenge is a South African programme that must support science and technology as well as key social, economic development, and environmental management objectives

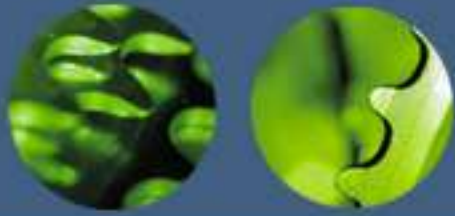




Primary Performance Measures

- **SCIENCE:** Extent to which scientific understanding of global change has improved as a result of South African research efforts, nationally, continentally, and internationally
- **TECHNOLOGY:** Extent to which South African has contributed to the development and deployment of innovative technologies that support appropriate responses to the negative impacts of environmental changes, particularly climate change
- **RELEVANCE:** Extent to which decision-makers have used improved scientific understanding and technological development to achieve sustainable development goals in South Africa and Africa





10 –Yr GC Research Plan



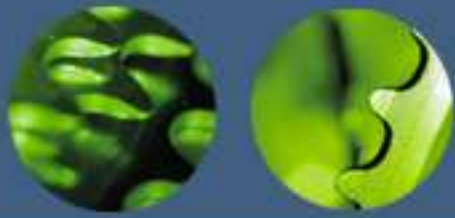
- 10-Yr GC Research Plan and an architecture for its implementation was finalized in 2010
- The Plan adopts a sustainability science approach where the focus is on the coupled human-environment systemic relationship
- Agency role for the management of implementation of GCRP – National Research Foundation, with ACCESS as hub for implementation.

<http://globalchange.grandchallengeonline.org/2gc-research-plan>



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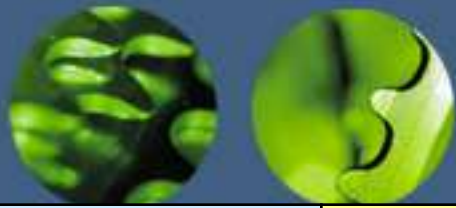
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Guiding Principles...

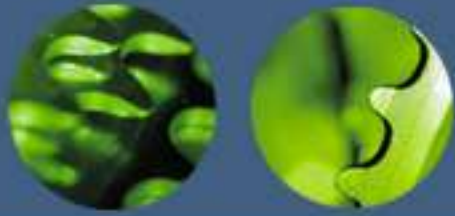
- Adopted a sustainability science approach where the focus is on the coupled human-environment systemic relationship
- Locates the grand challenge in context, particularly the need to accelerate a sustainable socio-ecological transition
- In terms of research frameworks, articulates the need for inter and trans-disciplinary research, particularly ways of engaging natural and social scientists





Research Plan - Summary

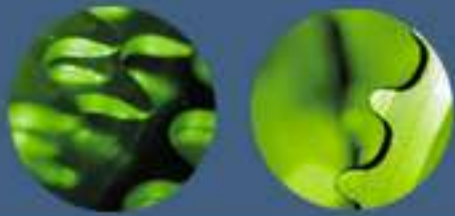
KT1: Understanding a changing planet	KT2: Reducing the Human Footprint	KT3: Adapting the way we live	KT4: Innovation for Sustainability
<ol style="list-style-type: none"> 1. Observation, monitoring and adaptive management. 2. Dynamics of the oceans around southern Africa. 3. Dynamics of the complex internal earth system. 4. Linking the land, the air, and the sea. 5. Improving model predictions at different scales. 	<ol style="list-style-type: none"> 1. Waste minimization methods and technologies 2. Conserving biodiversity and ecosystems services 3. Institutional integration to manage ecosystems and the services they offer 4. Doing more with less 	<ol style="list-style-type: none"> 1. Preparing for rapid change and extreme events 2. Planning for sustainable urban development in a South African context 3. Water security for South Africa 4. Food and fibre security for South Africa 	<ol style="list-style-type: none"> 1. Dynamics of transition at different scales - mechanisms of innovation and learning 2. Resilience and capability 3. Options for greening the developmental state 4. Technological innovation for sustainable social-ecological systems. 5. Social Learning for sustainability, adaptation, innovation and resilience



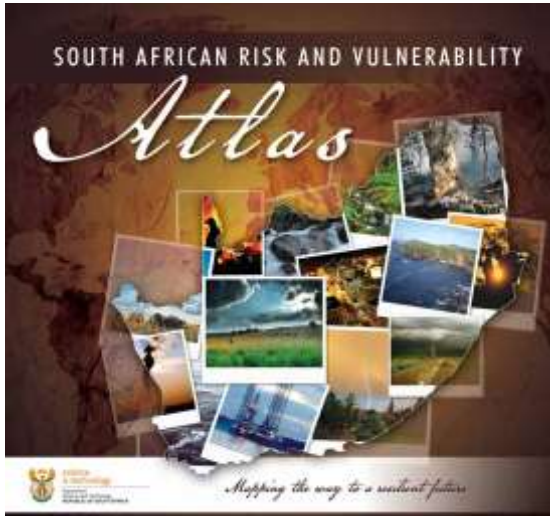
GC, Society and Sustainability research programme

- To support socio-ecological research and development of appropriate technological innovation
- Programmes and projects have been identified for support for initial period of 3 years – R40m/yr





Risk and Vulnerability Atlas



- SA R&V Atlas initiative initiated in 2009 with CSIR as an implementing agent
- Phase 1 (Jan 2009 – Jun 2010) was developmental phase with outreach activities to profile the initiative
- Phase 2 (Jul 2010 – 2012/13) focuses on operationalising the spatial database system



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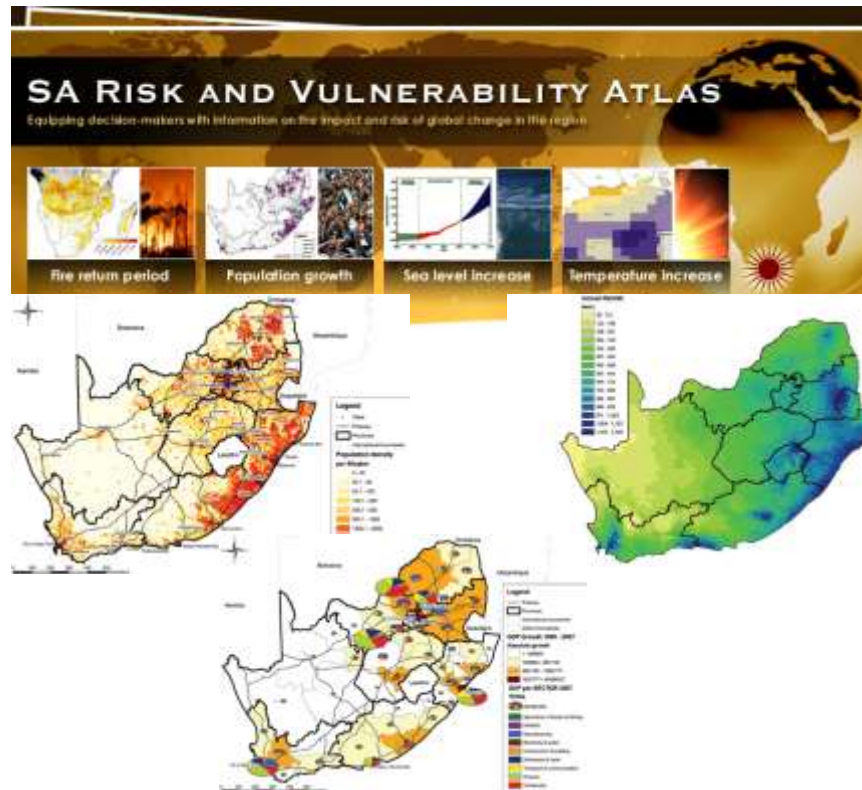
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R & V Architecture

- A science-policy interface initiative
- One-stop shop for relevant environmental risks and related information
- Comprises electronic spatial database system and repository of local based spatial-based risk and vulnerability information

A decision-support tool for local decision-makers

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

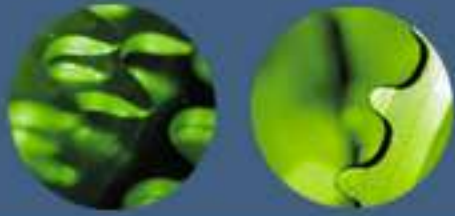


Focus broadly on environmental risks and disasters

Support development of human capital in risks and vulnerability assessments

Users/beneficiaries:

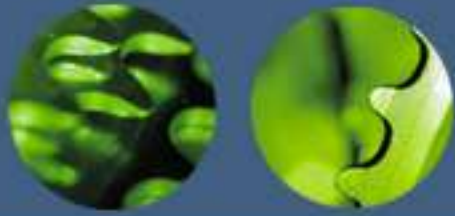
- Municipalities
- Universities & research entities
- Organized local groups – farmers, industry etc
- Individuals



R&V Science Centres

- It a long-term complementary programme to build capacity and provide risk assessment services to local users – *municipalities, farmers health officials etc*
- DST provides funding support to the centres – bursaries for students attached to the centres (Master & PhDs), capital equipment, internet connectivity etc
- Five rural-based universities are being targeted to host the centres – Limpopo, Fort Hare, Walter Sisulu (operational from 2011/12), Zululand and North West (coming 2012/13)
- The centres may provide other STI outreach services and support other initiatives
- Strong links with SASSCAL

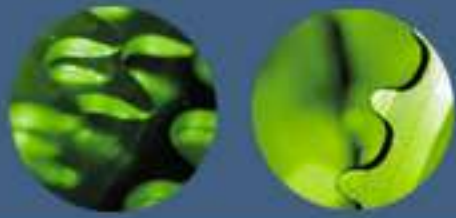




10-YR RESILIENCE INNOVATION PLAN

- Development starting to happen – to be informed by the Technology Needs Assessment (UNFCCC), Technology Localization Programme (DST) and other work emerging from other vulnerable sectors – water, agriculture and health.
- Priority sectors for development of appropriate technologies – Waste and Water (2011 -2013). Initiative work has started on the design of a national *Waste Innovation programme* .



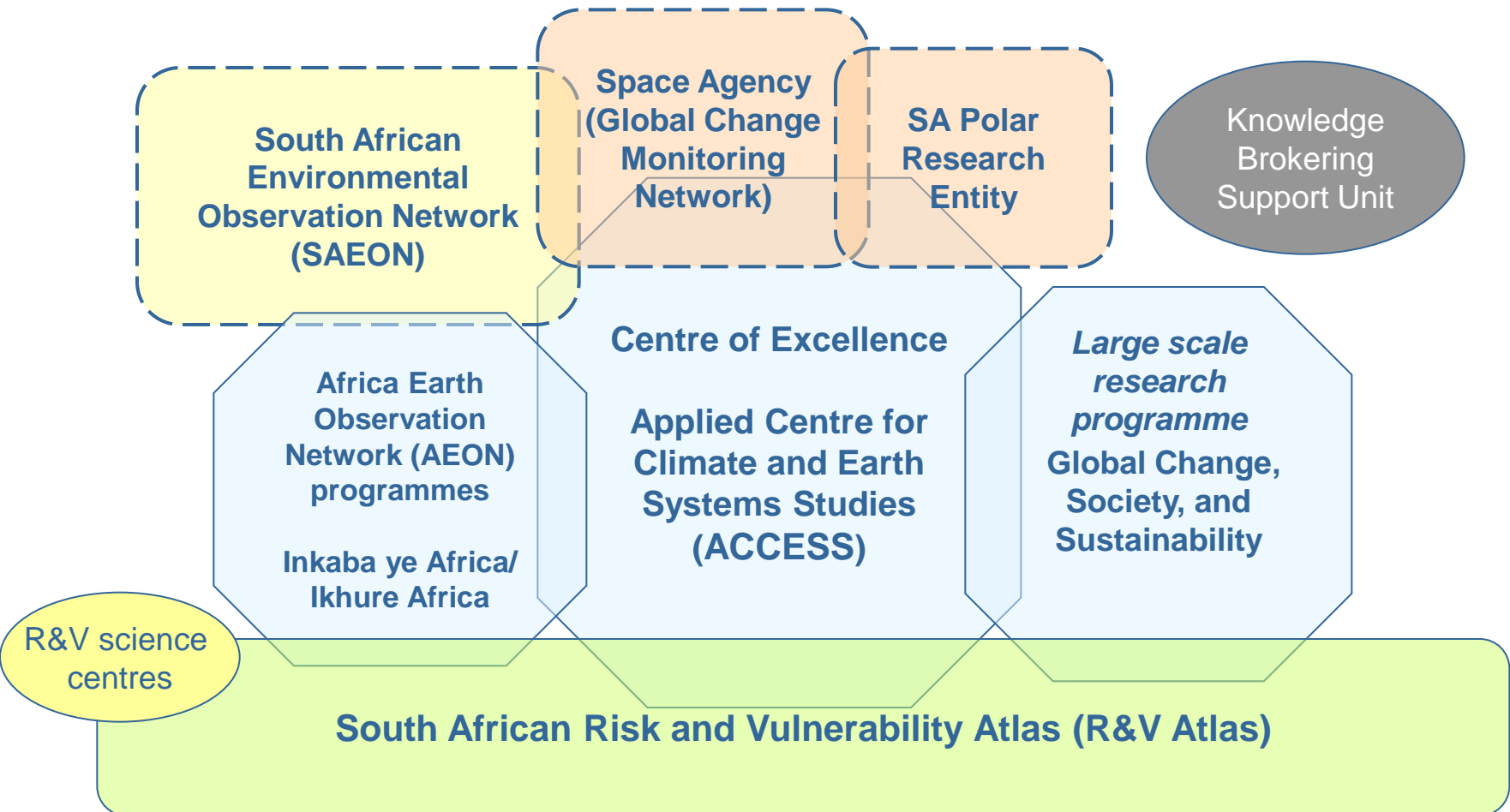


DST Instruments to support GC research

- Centres of Excellence
 - ACCESS
- Research Chairs programme (SARChi)
 - 5 – sustainability science (innovation sustainability), policy support (energy and climate change), social learning, earth system science etc
- Other instruments – targeted bursaries (Masters, PhDs and Post docs), student/researchers exchange programmes and mobility

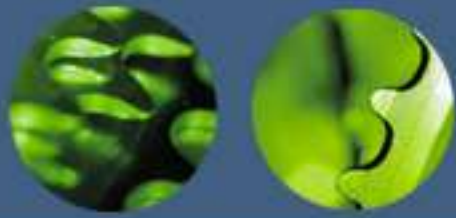


Global Change Performance and Investment Council



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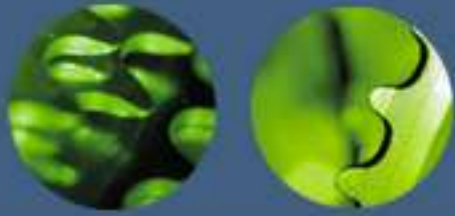
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Possible areas of co-operation

- GC Research Partnerships
 - Joint research projects
 - Regional and international networks
- Risk & Vulnerability
 - Development of a customized spatial database system & technical support
 - Capacity building and training in risk and vulnerability identification and analysis
- Technology Development
 - Identification of appropriate technologies and innovations for low-carbon economy
 - Possible support for
- Human Capacity Development
 - Student exchange programmes
 - Participation of scientists/researchers in joint projects





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