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# **Climate Research in the Next Decade of Earth System Research: an ICSU Perspective**

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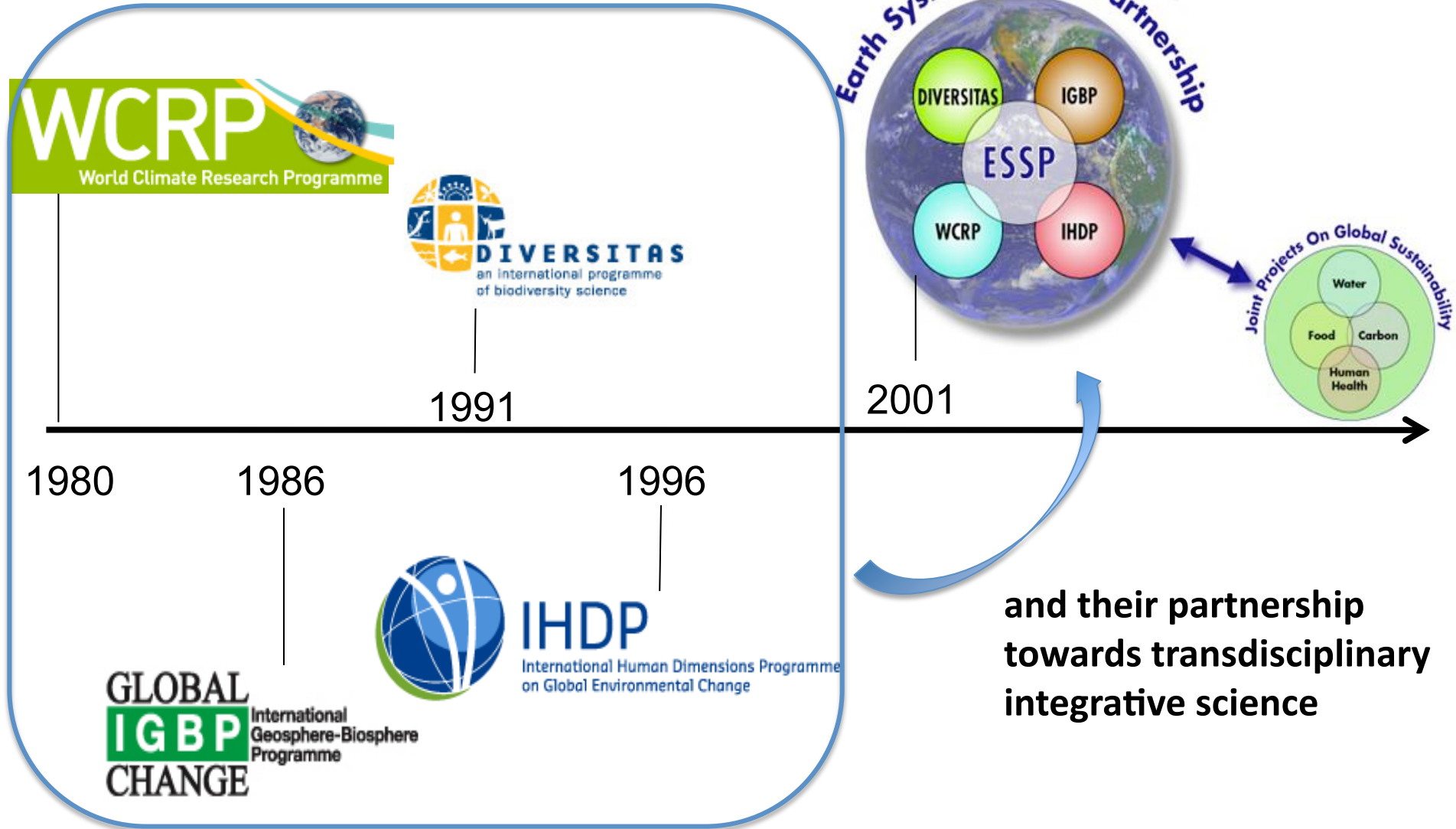
# ICSU: Who and what?

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- A membership organization with: 140 National Members (usually National Academies) and **31** International Scientific Unions
- Establishes interdisciplinary bodies (programmes) with partners in key areas (21), such as WCRP.

# Global Change (GC) research: a long, successful history

four GC Programmes



and their partnership  
towards transdisciplinary  
integrative science

all co-sponsored by ICSU

# The need for a more coordinated approach

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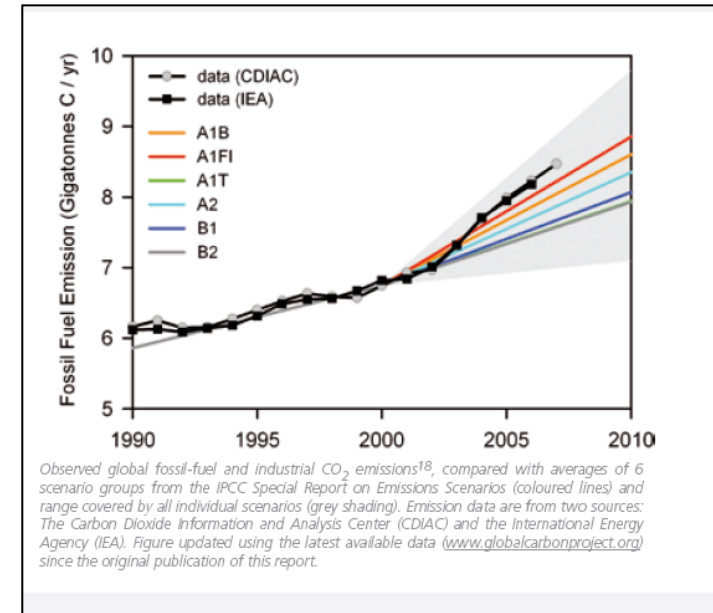
## Common recommendations from reviews of GC Programmes (2006-2009):

- Priority setting
- Effectiveness
- Integrated research framework

*“There is a clear need for an **internationally coordinated and holistic approach to Earth system science** that integrates natural and social sciences from regional to the global scale.”* (ESSP review, 2008)

# 30+ Year of Global Change Research

- Extraordinary progress in understanding the Earth System and consequences of human action
- Global environmental change outpacing response
- Current path is unsustainable



**Need far more information and understanding to solve the problem that global environmental change poses for our societies**

# What needs to be strengthened?

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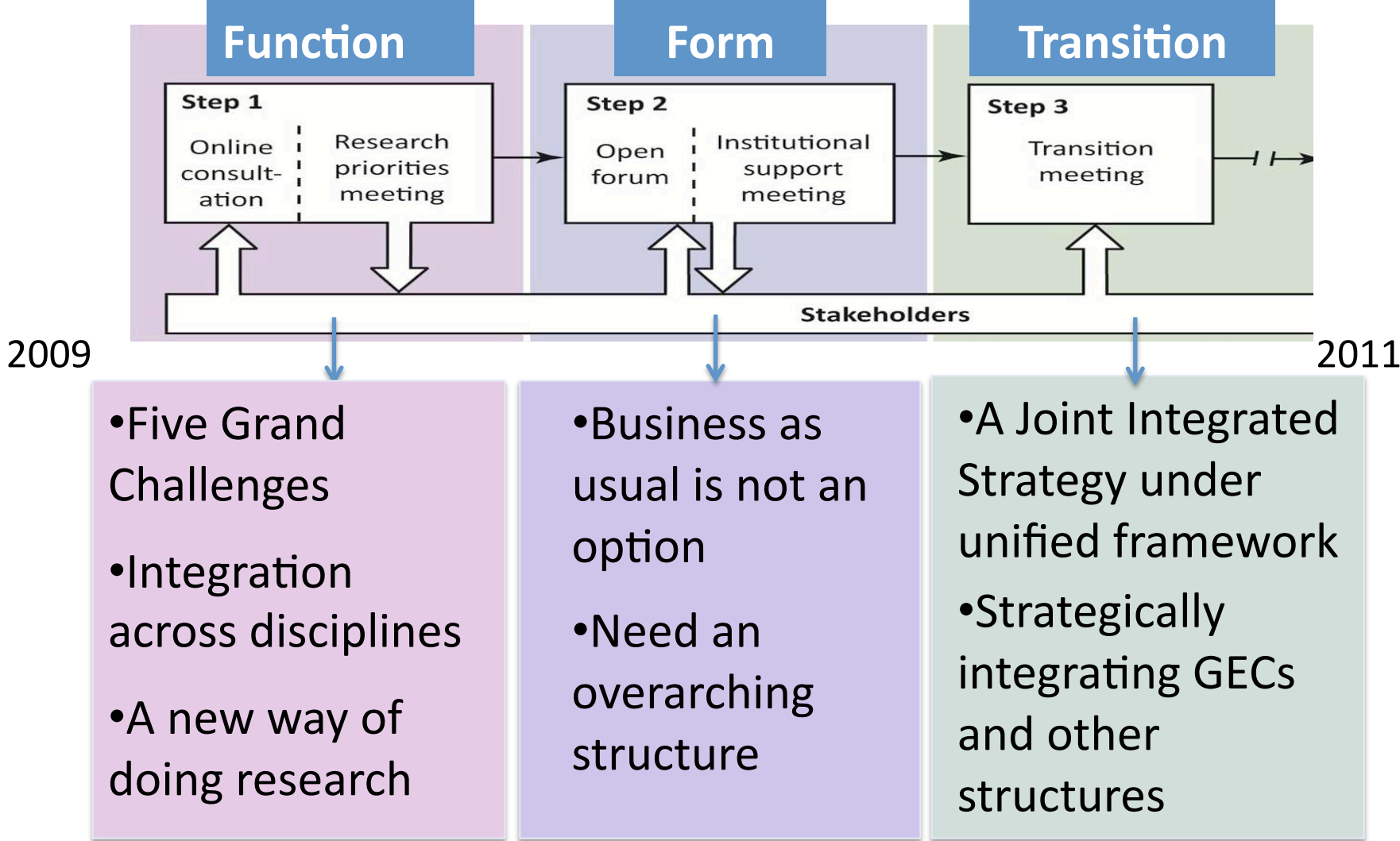
# Transition

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<b>From:</b>	<b>To:</b>
Disciplinary Research	Disciplinary, Interdisciplinary & Transdisciplinary
Strongest Emphasis on Natural Sciences	Full Range of Sciences and Humanities

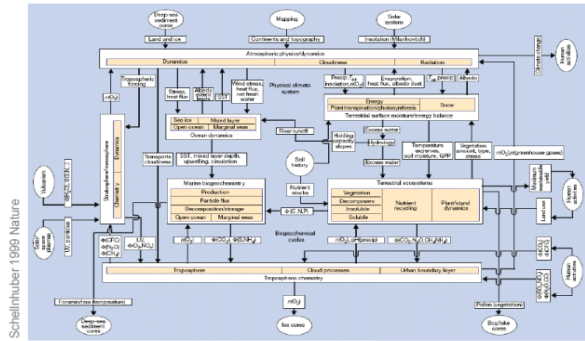


# ICSU-ISSC Visioning: a two-year consultative process

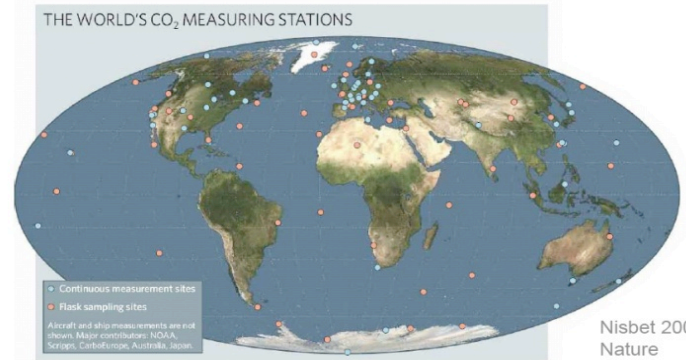




# Research questions: the five Grand Challenges



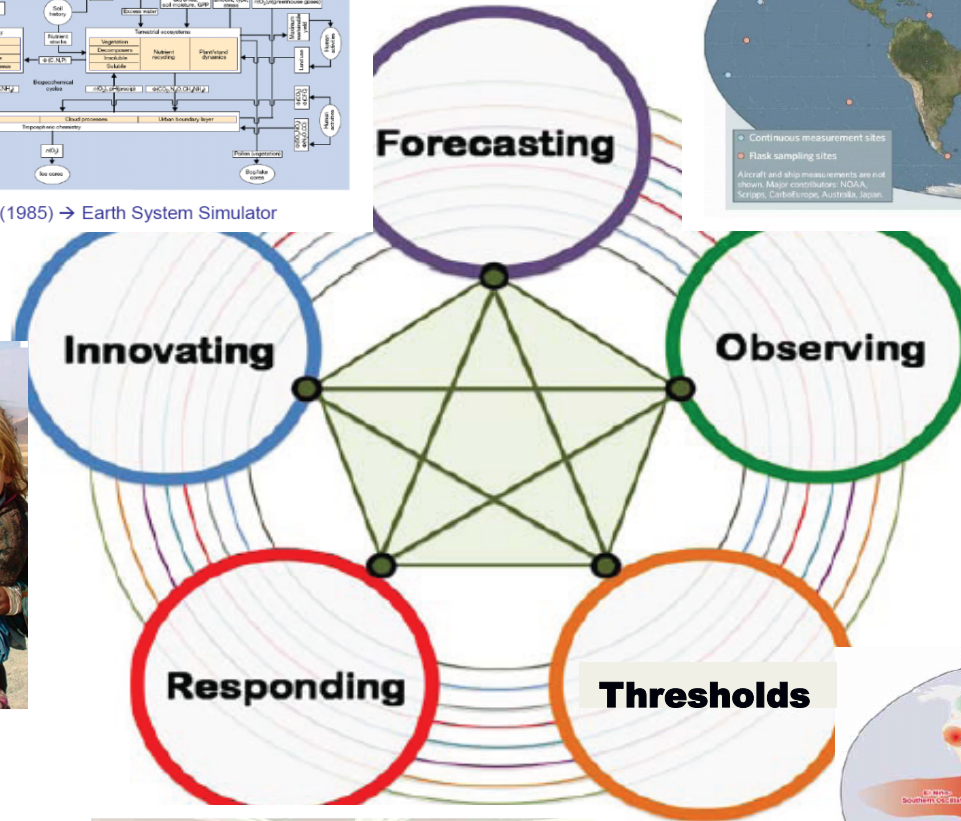
"Wiring diagram" (1985) → Earth System Simulator



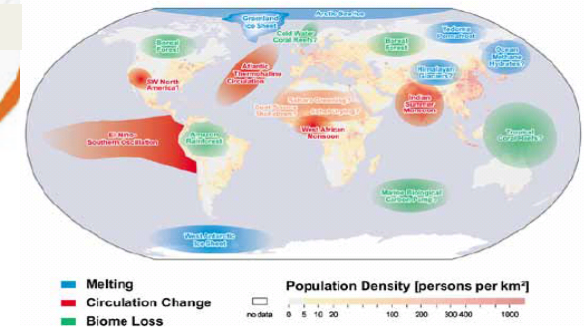
Nisbet 2007 Nature



Reid et al. 2010:  
Science,  
Vol. 330, 916-917.



Earth Governance

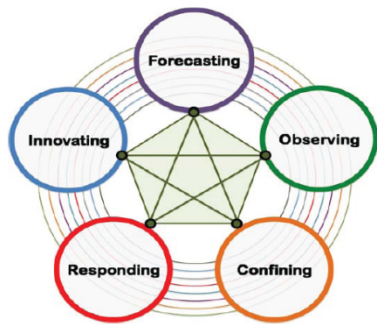


after Lenton et al. 2008

# Beyond Visioning: converging strategies

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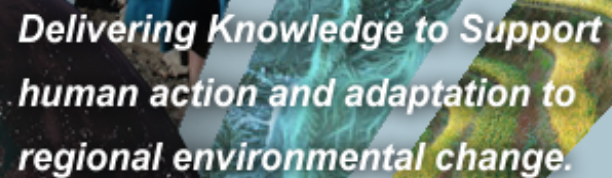
ICSU – ISSC  
Visioning



Cape Town  
meeting  
Dec 2010

Seeking stronger  
partnership

Belmont  
Forum



*Delivering Knowledge to Support  
human action and adaptation to  
regional environmental change.*

# A global Alliance for a new 10-year initiative



Note: WMO is an observer to ESSI





**Earth System Sustainability Initiative:  
towards a new architecture  
building on existing strengths**



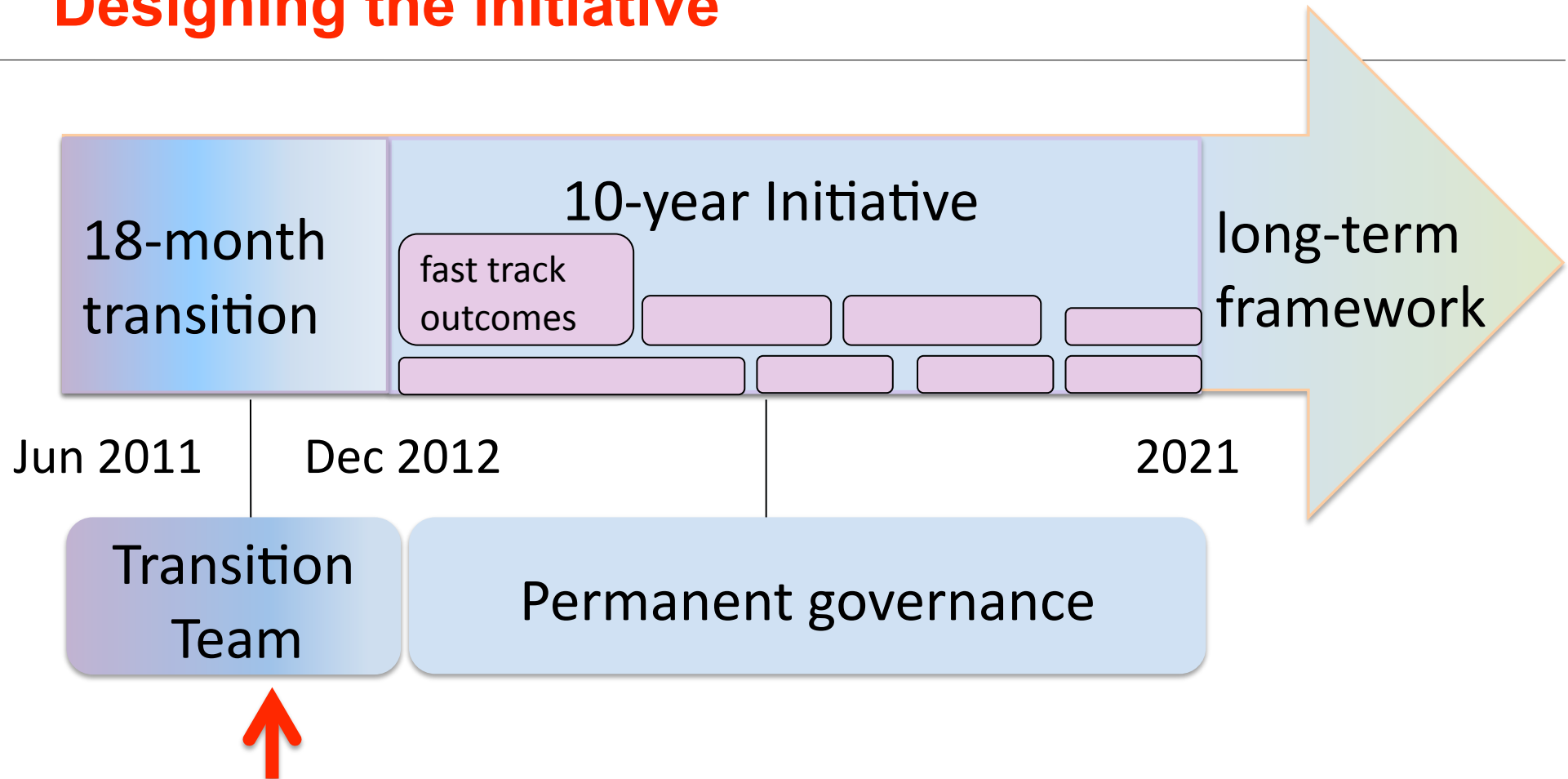
# Earth System Sustainability Initiative: goals

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- Deliver knowledge to respond to global change
- Address the grand challenges
- Engage a new generation of researchers

# Designing the initiative



A Transition Team oversees the design phase on behalf of the Alliance, until a permanent body is appointed

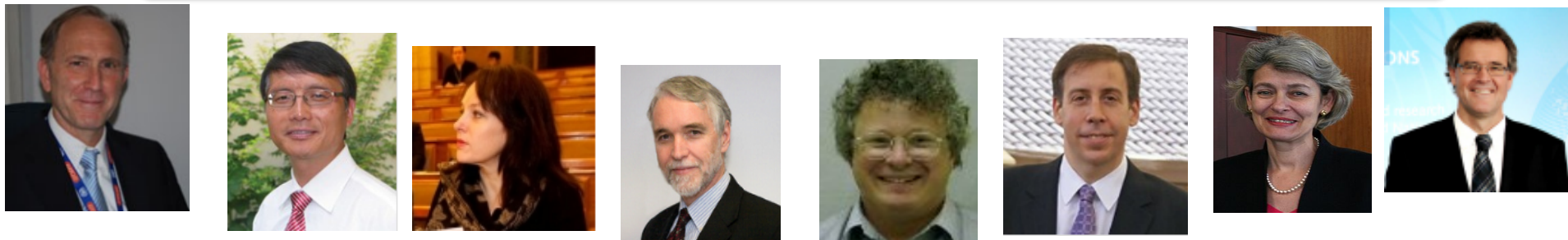
# Transition Team: members



Excellence across disciplines, sectors, regions



for a truly new co-design effort



17 individual capacity members and 8 ex-officio (ICSU, ISSC, Belmont Forum, UNESCO, UNU, UNEP)



# Conclusions

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- Climate research has made an enormous contribution to the Earth System Research and for the benefit of society in the past
- It also has a very important part to play in the new Earth System Sustainability Initiative with a holistic and overarching strategy/framework
- This conference provides an excellent opportunity to discuss the scientific challenges linked with and relevant to the Grand Challenges, which would help the community to strengthen its links to the wider research community.

For more information: [www.icsu.org](http://www.icsu.org)



The screenshot shows a Windows Internet Explorer browser window displaying the ICSU website. The address bar shows the URL: <http://www.icsu.org/what-we-do/projects-activities/earth-system-sustainability-initiative/>. The website features the ICSU logo (International Council for Science) and a navigation menu with links for 'About ICSU', 'What we do', 'Publications', and 'News centre'. Below the logo, there is a banner with the text 'Strengthening international science for the benefit of society' and four images: a tree at sunset, a busy street scene, a map of Africa, and a satellite image of a river network. A breadcrumb trail reads: 'Home > What we do > Projects and Activities > Earth System Sustainability Initiative'. The main heading is 'Earth System Sustainability Initiative' with a sub-heading 'Research Collaboration' and a 'Science for Policy' button. A date stamp indicates '11 July 2011'. At the bottom, there is a navigation bar with buttons for 'About the Initiative', 'Transition Team', 'Working Groups', 'Meetings', and 'FAQs'. A small text box on the right mentions 'IRDR programme to have new Scientific Chair'.

ICSU, the International Social Science Council (ISSC), the Belmont Forum, a high level group of major funders of global environmental change research, together with UNEP, UNU and UNESCO, are jointly establishing a new 10-year Earth System Sustainability Initiative. Its goal is to deliver knowledge to enable societies to meet their sustainable development goals in the next decades.