FUTURE EARTH 2013 – MAY 2, 2013

WEBINAR LOGISTICS

WELCOME!

THIS MEETING IS BEING RECORDED

- **Starting Time?** We will begin promptly at the announced starting time (Eastern Time).
- **Webinar Audio?** US/Canada participants dial 1-888 -469-1754 or 1-773-756-4633 and announce passcode: Future Earth to be joined to the audio bridge in listen-only mode. International Participants dial the appropriate free-phone number for your specific country listed on the chart found at URL: http://sites.nationalacademies.org/PGA/biso/futureearth/index.htm.
- **Q&A Session?** Questions will be accepted **via live audio and via email** at future-earth@nsf.gov for reply during the announced Q&A period.
- **Captioning?** Go to: **www.fedrcc.us/** and enter **event confirmation # 2134314** from a separate browser page to view streaming captions**.**
- **Handouts/Slides?** Presentation slides and webinar evaluation form can be found at: http://sites.nationalacademies.org/PGA/biso/futureearth/index.htm.
- **To Get Help?** Send private WebEx chat to meeting host**,** call WebEx at 1-800-857-8777 and press 0 for technical support, or Email: kotts@nsf.gov.
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Future Earth

North American Consultation

Webinar I

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I. Background and History- James Syvitski

II. Research Strategy- Diana Liverman

III. Governance Structure and Transition Strategy- Peter Liss

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Background and History

North American webex, May 2013

James PM Syvitski, IGBP Chair

WMO
IOC
ICSU

ICSU
IUBS
SCOPE
UNESCO

IGBP
IHDP
DIVERSITAS
WCRP

1991

2001

1980

1986

1996

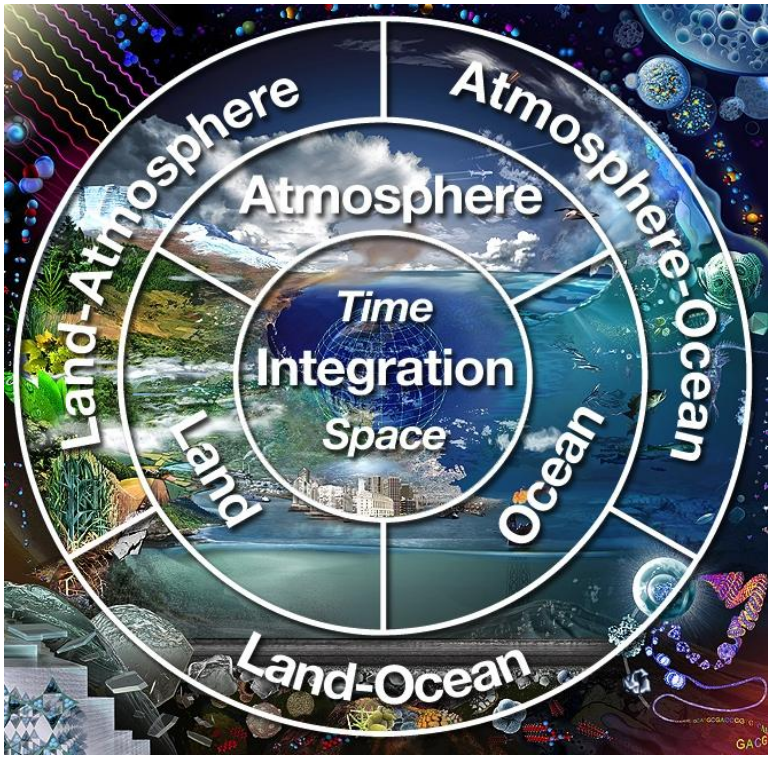
ICSU

ICSU
ISSC
UNU

Integrated Earth-system Approach

- International research on the planet's key biogeochemical processes *including* humans since 1986
- Integrated Earth-system approach — globally & regionally.
- Addressing impacts, adaptation and vulnerability
- Application of models, inter-comparisons & data evaluation

GLOBAL CHANGE IGBP International Geosphere-Biosphere Programme



International Geosphere-Biosphere Programme

- ✧ Analysis, Integration & Modeling of the Earth System
- ✧ Global Land Project
- ✧ International Global Atmospheric Chemistry
- ✧ Integrated Land Ecosystem-Atmosphere Processes Study
- ✧ Integrated Marine Biogeochemistry & Ecosystem Res
- ✧ Land-Ocean Interaction in the Coastal Zone
- ✧ Past Global Changes
- ✧ Surface Ocean—Lower Atmosphere Study

World Climate Research Programme

- Climate and Cryosphere
- Climate Variability and Predictability
- Global Energy and Water Exchanges
- Stratospheric Processes and their Role in Climate

International Human Dimensions Programme

- Earth System Governance Project
- Global Land Project
- Land-Ocean Interactions in the Coastal Zone
- Integrated History of People on Earth
- Integrated Risk Governance
- Urbanization and Global Environmental Change

DIVERSITAS

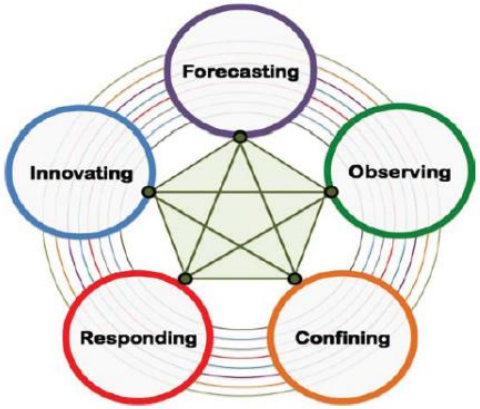
- ✧ bioGENESIS
- ✧ bioDISCOVERY
- ✧ ecoSERVICES
- ✧ bioSUSTAINABILITY
- ✧ agroDIVERSITY
- ✧ ecoHEALTH
- ✧ freshwaterBIODIVERSITY
- ✧ Global Mountain Biodiversity Assessment

Earth System Science Partnership

- ✧ Global Carbon Project
- ✧ Global Environmental Change and Food Systems
- ✧ Global Environmental Change and Human Health
- ✧ Global Water System Project

A new initiative arising from converging efforts

ICSU – ISSC
Visioning



Seeking stronger
partnership

Belmont
Forum

Co-designed by a global Alliance of partners

GECs

Important Dates

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research for global sustainability

ESSP — Ended Dec 2012 — **FE Transition Team**

Spring 2013 — **Interim Secretariat**

Fall 2013 — **Project transition begins**

IHDP International Human Dimensions on Global Environment — Ends Jun 2014

Spring 2014 — **Permanent Secretariat**

DIVERSITAS an international programme of biodiversity science — Ends Dec 2014

GLOBAL CHANGE IGBP International Geosphere-Biosphere Programme — Ends Dec 2015

Dec 2015 — **Projects transition is complete**

WCRP World Climate Research Programme — **Continues**

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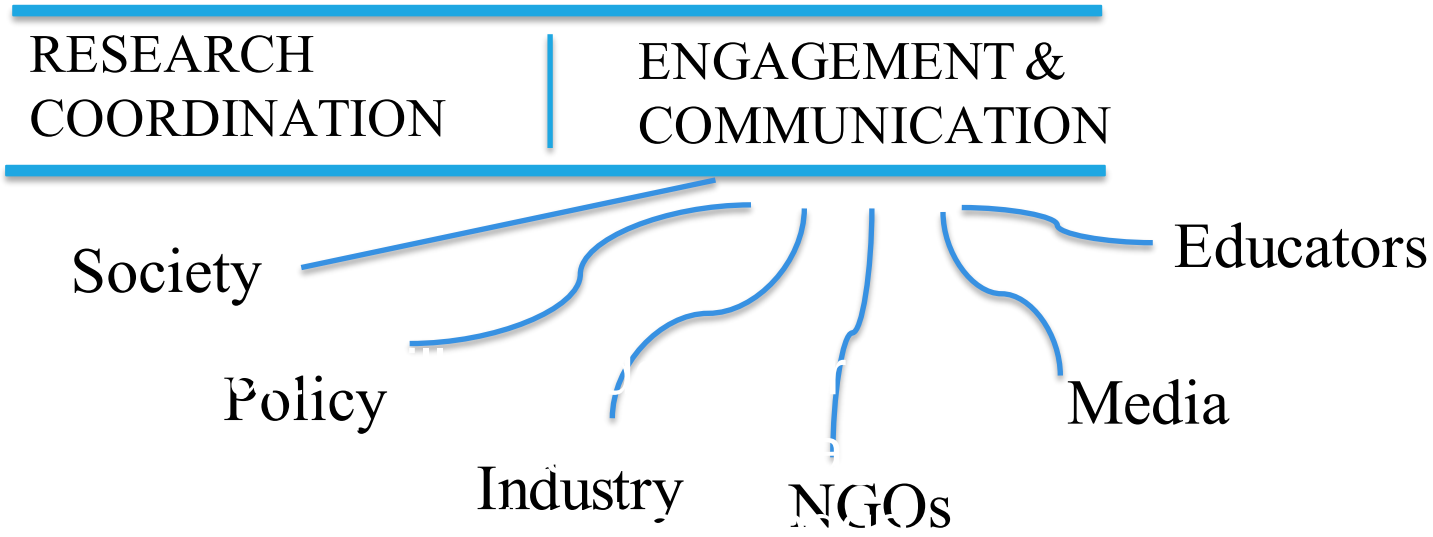
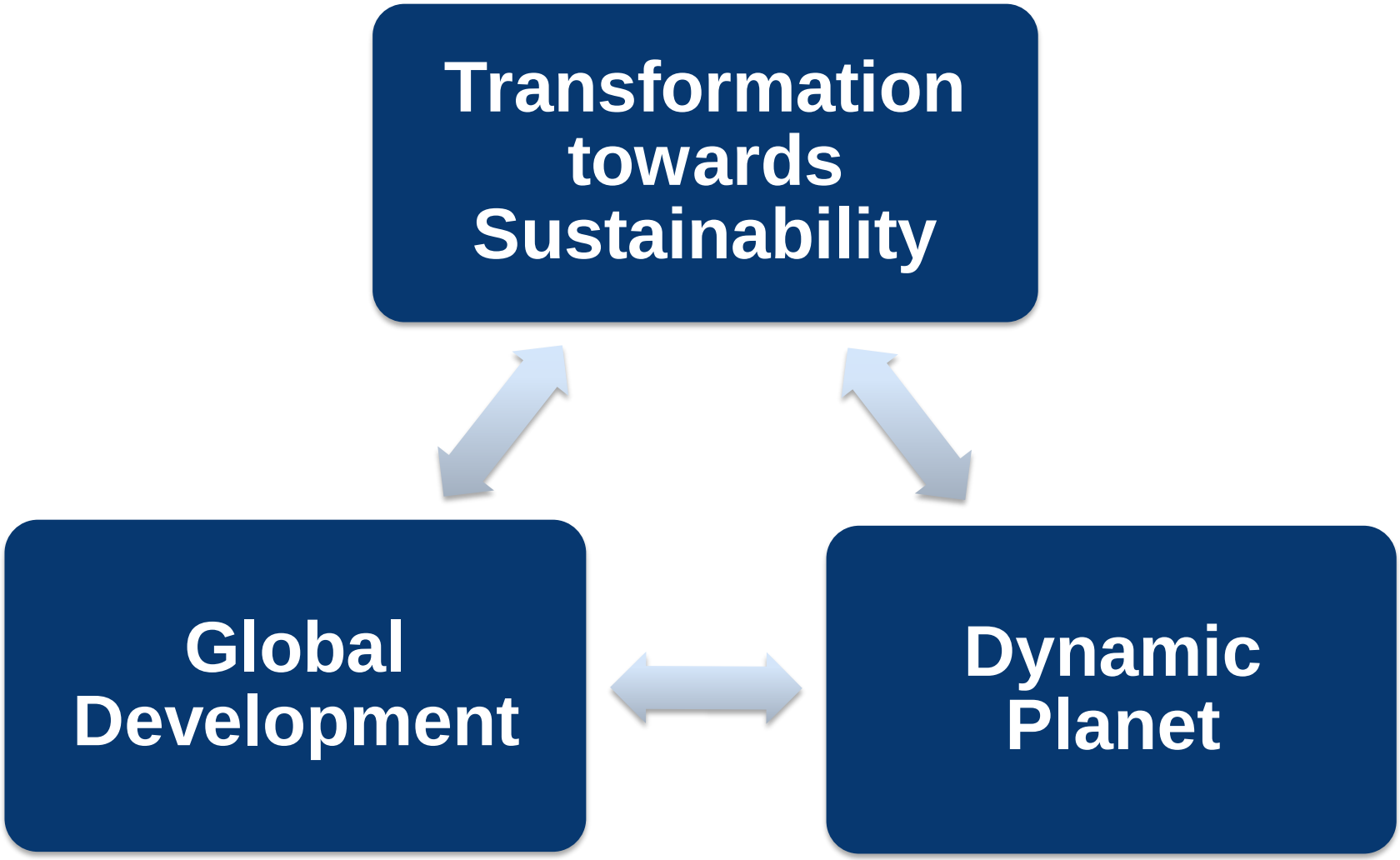
research for global sustainability

An international **platform** for



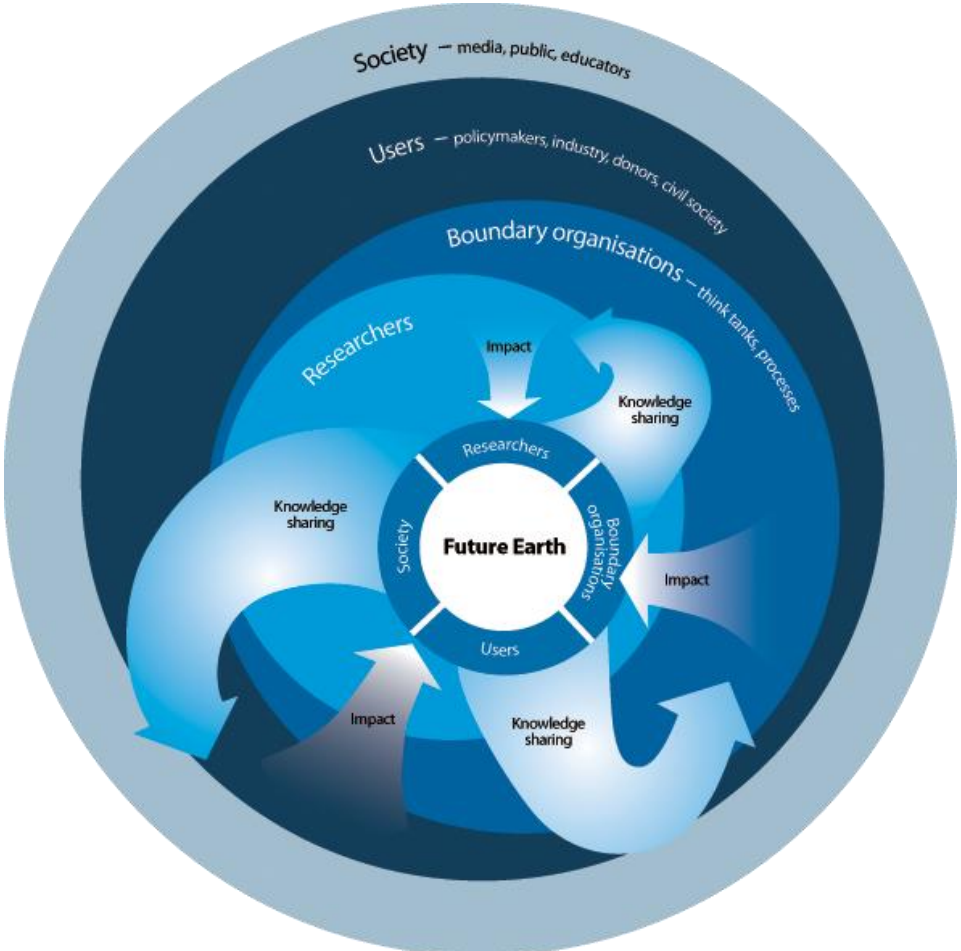
Future Earth Research Themes



Criteria for Future Earth research

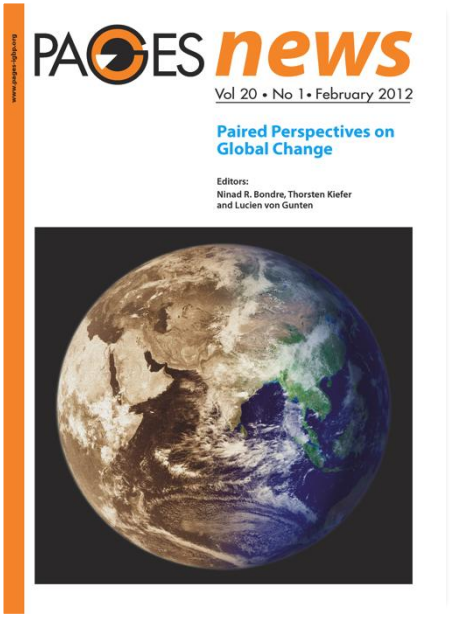
- From fundamental to **actionable** Earth system **research** for global **sustainability**
- Answers to **complex questions** that require international collaboration
- **Co-design** and co-production of knowledge
- **Integration** of natural, economic, engineering, arts, humanities and social **sciences**
- **Regional to global scale**

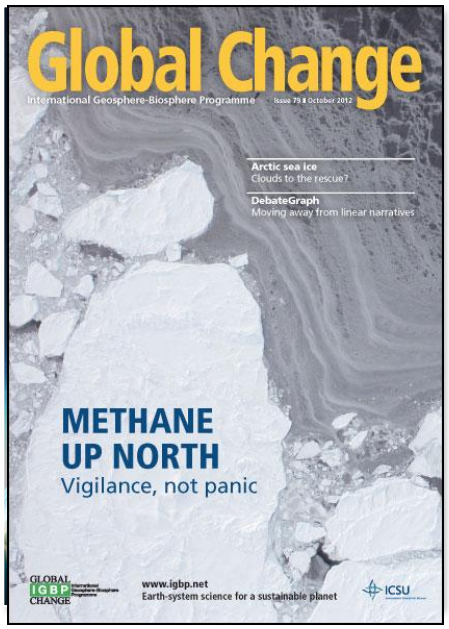
Old habit of pushing latest advances
vs.
Co-production of science and society

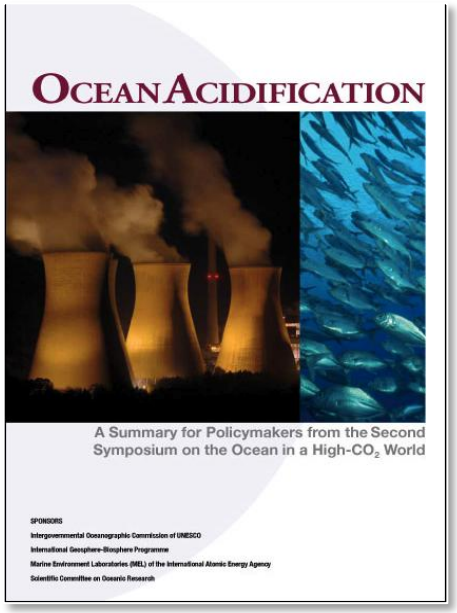


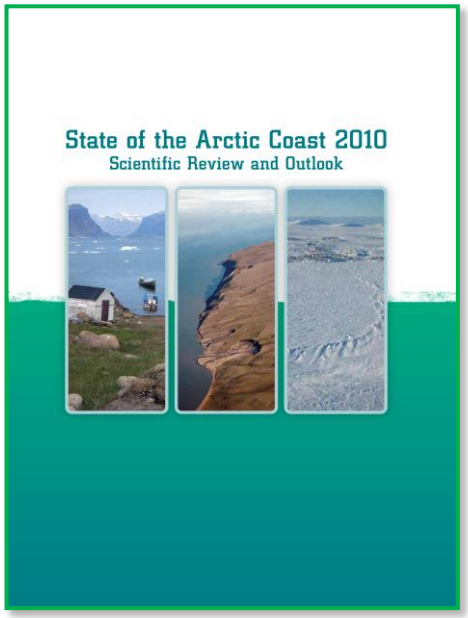
Earth's life support system is intimately-linked to society

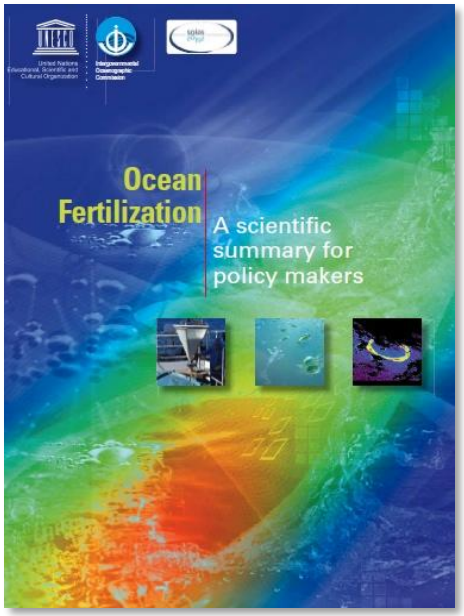
Future Earth to continue the strong leadership of past Programmes

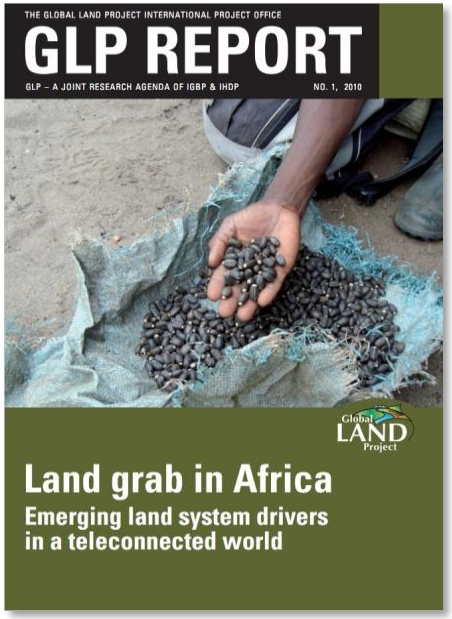


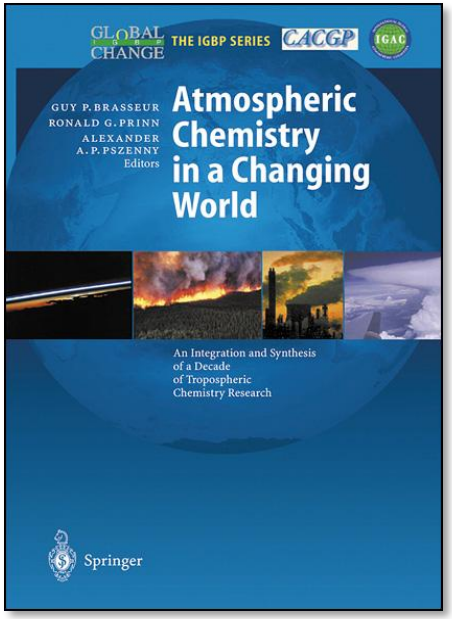


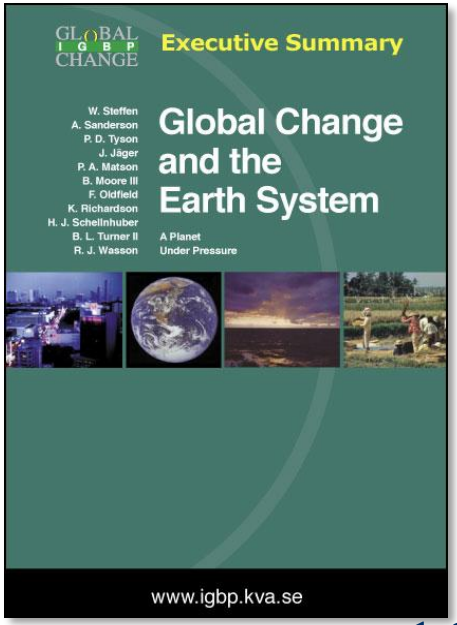












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has some big shoes to fill but is aided by a clear vision to provide critical knowledge required for societies to face the challenges posed by global environmental change and to identify opportunities for a transition to global sustainability.

photos: www.dawide.com

II. Research Strategy- Diana Liverman

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research for global sustainability

ICSU
International Council for Science

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research for global sustainability

UNEP

IGFA
International Group of Funding Agencies for Global Change Research

UNESCO
United Nations Educational, Scientific and Cultural Organization

BELMONT FORUM

ICSU
International Council for Science

ISSC
international social science council

UNITED NATIONS UNIVERSITY

WMO

futureearth

research for global sustainability

To provide the knowledge required for societies in the world to face risks posed by global environmental change and to seize opportunities in a transition to global sustainability

Some of the challenges we face

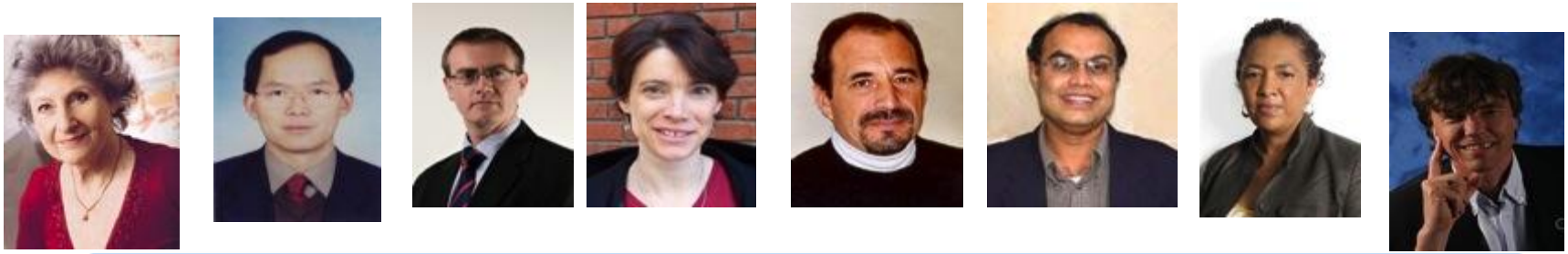
- Food, water and energy for 9+ billion people within sustainable planetary boundaries
- Valuing and protecting nature's services and biodiversity
- Adapting to a warmer and more urban world
- Transitioning to low carbon societies
- Providing income and innovation opportunities through transformations to global sustainability
- Reducing disaster risks
- Aligning governance with stewardship

Request to the transition team

Design a *more integrated, interdisciplinary and international* research program to understand and solve the challenges of global environmental change

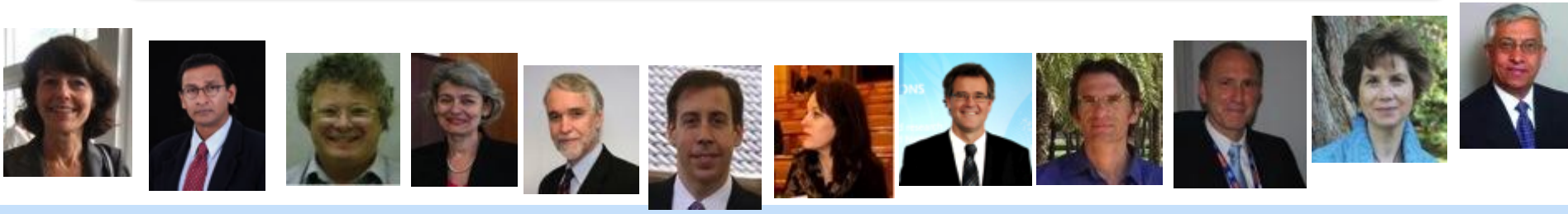
- Respond to a growing sense of urgency about global change and to expanded interest from stakeholders
- Strengthen connections from Earth system science to social science and other disciplines
- Codesign the initiative with funders and users
- A strategy to support and enhance existing projects and networks with improved funding, infrastructures, less duplication, and regional foci

The Transition Team



Many disciplines, sectors, regions

for a co-design effort



17 individual capacity members, 12 ex-officio (ICSU, ISSC, Belmont Forum, UNESCO, UNU, UNEP) and Global Environmental Change Programme Directors

Research Strategy: What do people want to know about global environmental change?

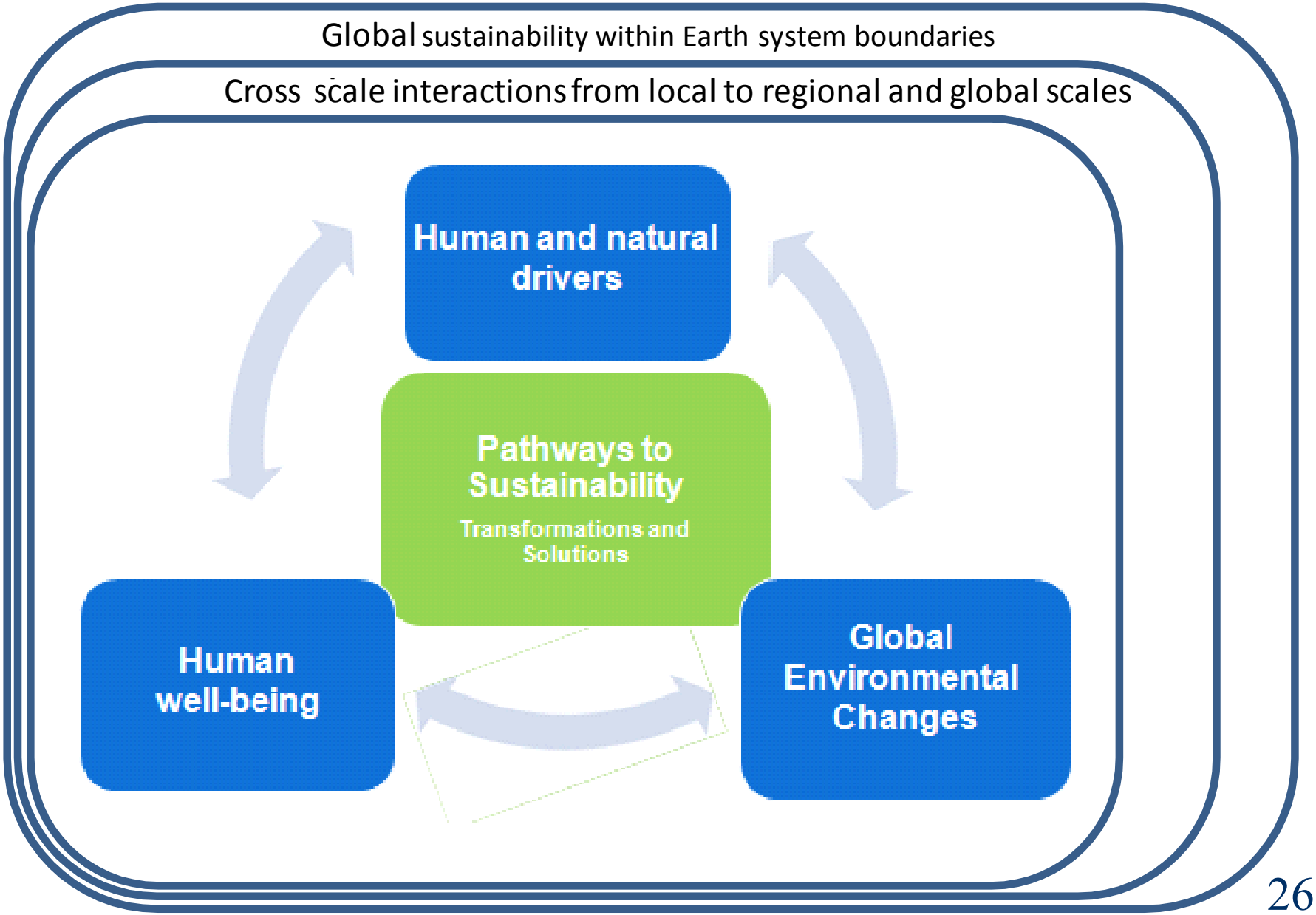
How and why the global environment is changing,
what are likely future changes and what the implications are for human wellbeing and other species,
what choices can be made to reduce harmful risks and vulnerabilities and enhance resilience, and
how this knowledge can support decisions and sustainable development

photos: www.dawide.com

The approach to organizing Future Earth research

1) Develop a conceptual framework
2) Identify a set of research themes
    - broad areas in which research will be carried out
    - example research questions
3) Populate with existing and new projects
4) Propose ways to governthe initiative

Conceptual framework for Future Earth



Research Themes

1. Dynamic Planet
2. Global Development
3. Transformation towards Sustainability

Dynamic Planet:

Observing, explaining, understanding, projecting earth, environmental and societal system trends, drivers and processes and their interactions; as well as anticipating global thresholds and risks.

Global development:

Providing the knowledge for addressing the most pressing needs of humanity including sustainable, secure and fair stewardship of food, water, biodiversity, health, energy, materials and other ecosystem functions and services.

Transformation towards Sustainability:

Understanding transformation processes and options, assessing how these relate to human values and behavior, emerging technologies and economic development pathways, and evaluating strategies for governing and managing the global environment across sectors and scales.

Future Earth Cross Cutting Capabilities

To facilitate integration across research themes, science will be supported by a set of cross-cutting capabilities in science and outreach (many delivered through partnerships).

Observing Systems
Data Systems
Earth System Modeling
Theory Development
Synthesis and Assessments
Capacity Development and Education
Communication
Science-Policy Interface and interactions

Dynamic Planet: Example questions

- What approaches, theories, and models allow us to explain the functioning of Earth and socio-ecological systems, understand the interactions between these mechanisms, and identify the role of feedbacks and evolution within these systems?

- What are the states and trends of key environmental components such as climate, soils, the cryosphere, biogeochemistry, biological diversity, air quality, freshwater, and oceans, and in the human drivers of change, such as population, consumption, land and sea use, and technology. How do these relate to the states and dynamics in the social foundations of sustainable development, including well-being, equality, health, education, human security? How and why do these vary across time, space, and social context?

- What changes are predicted under the most likely scenarios of natural and social driving forces and Earth, social and biological system responses?

Dynamic Planet: Example questions

- What are the risks of rapid or irreversible changes, of crossing regional to global thresholds and planetary boundaries and inducing tipping points and social-environmental crises due to global environmental change?
- What can be understood and anticipated about the condition and future for critical zones and biomes such as coasts, tropical forests, arid zones or polar regions?
- What kind of integrated global and regional observing systems and data infrastructures are needed to document and model the coupled earth system and the anthropogenic drivers and impacts of change? Can we develop reliable monitoring systems, models and information systems and services that anticipate and provide early warnings of large scale and rapid change?

Global development: example questions

- What insights and innovations in basic earth, biological and social sciences are most important to the environmental bases of sustainable development?
- What are the patterns, trade-offs and options for equitable and sustainable use of resources and land, and how can we ensure sustainable access to food, water, clean air, land, energy, genetic resources and materials for current and future populations?
- What are the implications of global environmental change including climate change for food, water, health, human settlements, biodiversity and ecosystems? How can climate services, ecosystem management and disaster risk assessment reduce these impacts and build resilience?
- What are the links between biodiversity, ecosystems, human well-being and sustainable development?
- How socially and environmentally effective, efficient and equitable are alternative approaches for conceiving, measuring and implementing development projects and initiatives?

Global development: example questions

- How should Sustainable Development Goals be defined in order to enable the twin-goals of world development and global sustainability?
- What options are available to provide energy for all with reduced environmental impacts, and what are the social implications of these energy choices?
- How can the business and industrial sector contribute to development, prosperity and environmental stewardship through the management of their production and supply chains?
- How does global environmental change affect distinct groups in society such as Indigenous people, women, children, subsistence farmers, business, the poor or the elderly? How does their environmental knowledge contribute to solutions for sustainable development?
- What options are available in terms of ecosystem restoration to restore the environmental bases of sustainable development?

Transformation towards sustainability

- How can governance and decision-making be aligned across different levels, issues, and places to manage global environmental change and promote sustainable development? What is known about the successes and failures of different actors in managing global environmental change, at different scales, and using different strategies?
- Can technologies provide viable solutions to global environmental change and promote sustainable development? What are the opportunities, risks and perceptions associated with emerging technologies such as geo-engineering or synthetic biology? How can technology and infrastructure choices be combined with changes in institutions and behaviours to achieve low carbon transitions, food security and safe water?
- How do values, beliefs and worldviews influence individual and collective behaviour to more sustainable and mindful lifestyles, patterns of trade, production and consumption? What triggers and facilitates deliberate transformations at the individual, organizational, and systems levels; what socio-political and ecological risks does it entail?
- What do we know about past transformations of the Earth System, as well as in ideas, technology and economy and how can the knowledge and lessons learned guide future choices?

Transformation towards sustainability

- What are the longer-term pathways towards sustainable urban futures and landscapes, successful and sustainable 'blue societies, and a green economy?
- What are the implications of global environmental change for conservation of species and landscapes including the possibilities for restoration, reversal of degradation and relocation?
- How can the Earth and social system adapt to environmental changes that could include warming of more than 4°C over the next century?
- Can our present economic systems, ideas and development practices provide the necessary framework to achieve global sustainability and if not, what can be done to transform economic systems, measures, goals and development policies for global sustainability?
- What are the implications of efforts to govern and manage the Earth system for sustainability for scientific observations, monitoring, indicators and analysis? What science is needed to evaluate and assess policies and facilitate and legitimise transformation?
- How can the massive volume of new geophysical, biological, and social data, including local knowledge and social media be managed and analysed so as to provide new insights into the causes, nature and consequences of global environmental change and to facilitate the identification and diffusion of solutions?

photos: www.dawide.com

III. Governance Structure and Transition Strategy- Peter Liss

FUTURE EARTH
GOVERNANCE STRUCTURE

Peter Liss

School of Environmental Sciences

University of East Anglia,

Norwich, UK

Currently at Texas Institute for Advanced Study

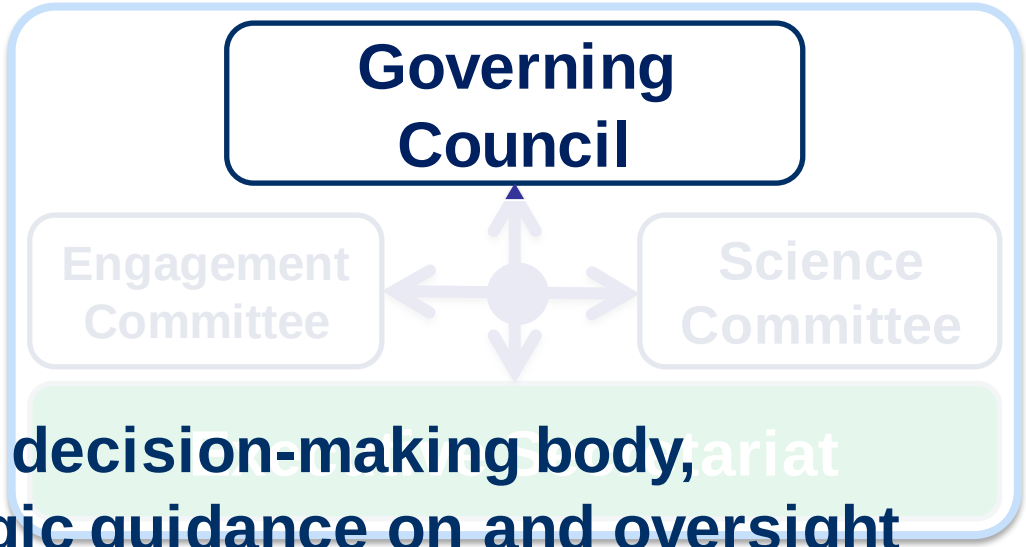
Texas A & M University

A 10-year initiative by a new international Science and Technology Alliance for Global Sustainability

WMO is an observer

The Alliance

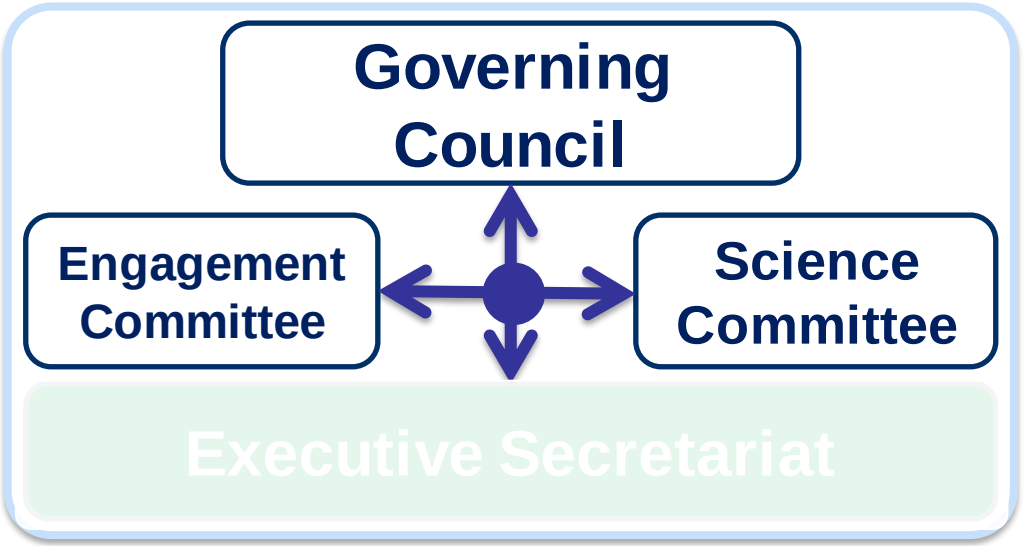
- A growing, multi-stakeholder partnership
- Established Future Earth
- Will promote and support the further development of Future Earth
- By building and maintaining the enabling conditions for Future Earth to operate successfully



- The overarching decision-making body, providing strategic guidance on and oversight of Future Earth's operations and resource mobilisation
- To comprise scientists from different fields, policymakers, business, industry and other stakeholders from different parts of the world
- Will be appointed by the Alliance
- Between now and May 2014 the Alliance will function as an interim Governing Council

The Engagement Committee:

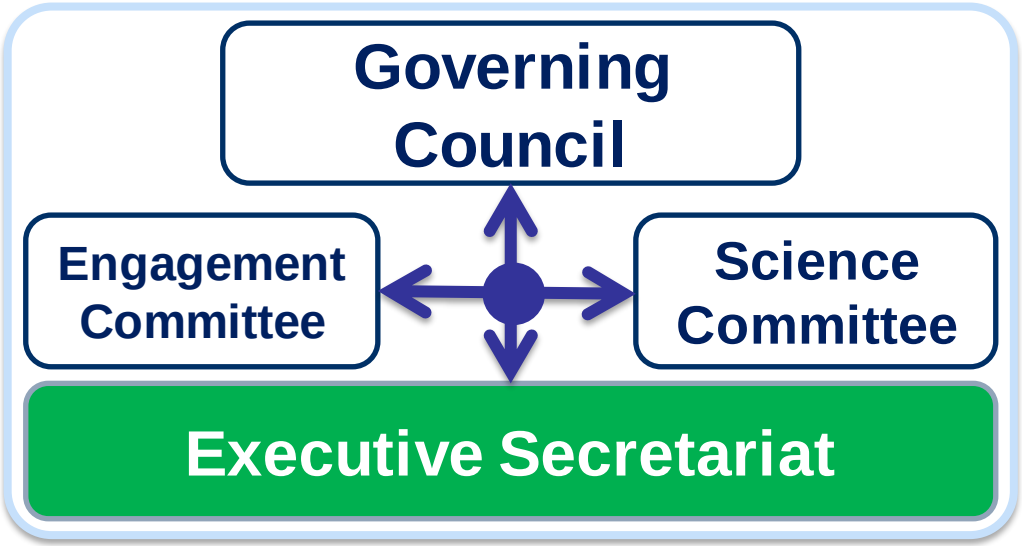
- To guide/oversee implementation of co-design/production/
- dissemination of research
- To include voices from e.g. business, civil society and government
- Will be established by late 2013 and appointed by the Alliance
- Role in outreach, communication, regional activities



The Science Committee:

- Provide scientific guidance, propose new projects and priority issues, and secure the highest quality research
- Represent the full spectrum of scientific fields, as well as scientists from other sectors
- Will be established early 2013; appointed by ICSU/ISSC on behalf of the Alliance

They must work closely together

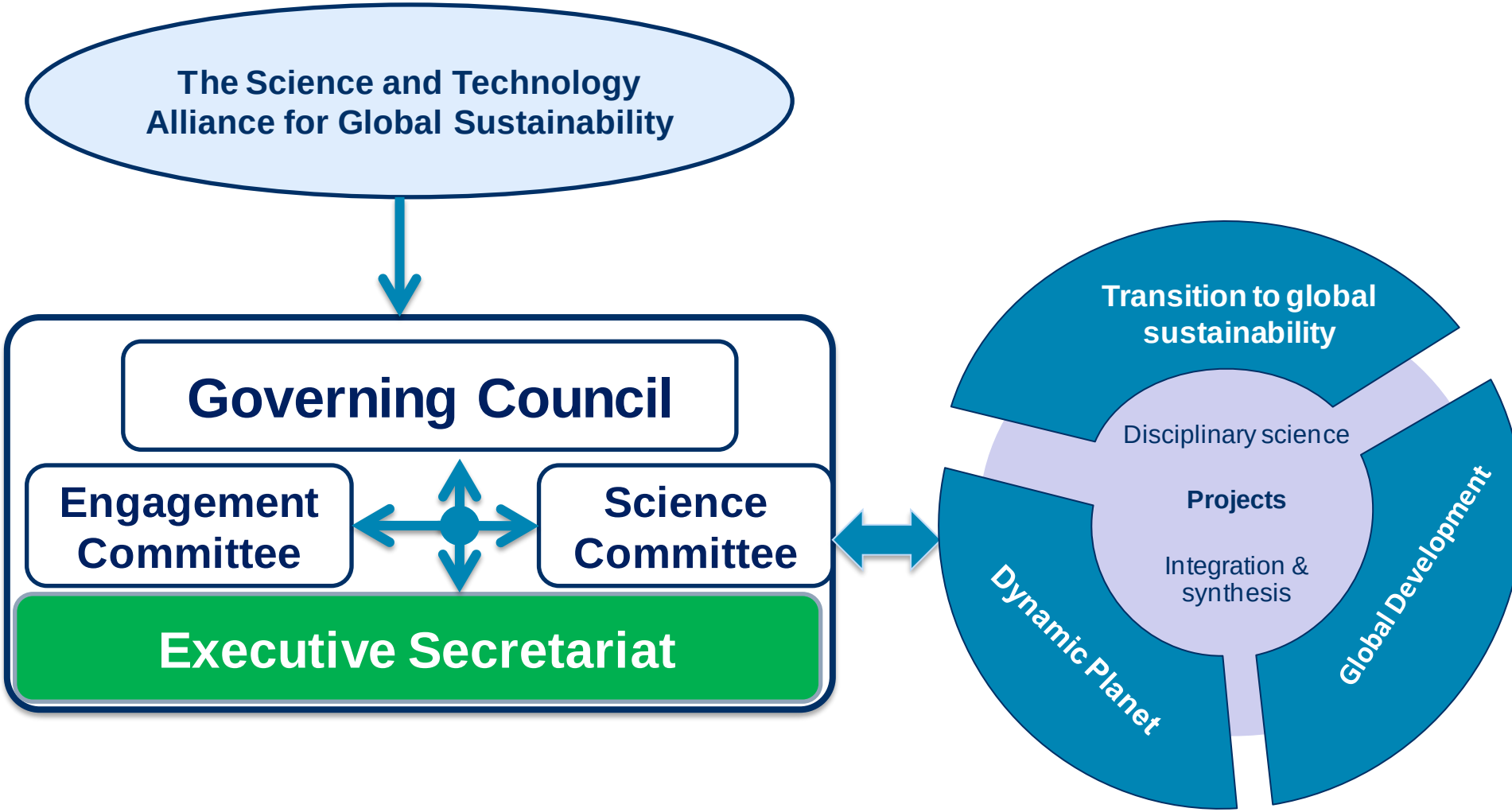


- To implement the strategies and activities approved by the Governing Council, carrying out the day-to-day functions of Future Earth
- To act as an integrator and facilitator, also coordinating access to cross-cutting capabilities
- To be established via an open, competitive call that will be issued by the Alliance
- An interim Secretariat, bringing together capacities of existing GEC Programme Secretariats will be operational as from early 2013

Future Earth as a globally representative platform

But also a globally distributed platform to ensure that research, capabilities and partnerships are developed at the most relevant level(s)

Role of regions in linking across scales, integrating knowledge, catalysing transformative initiatives


The Science and Technology Alliance for Global Sustainability
Governing Council
Engagement Committee
Science Committee
Executive Secretariat
Transition to global sustainability
Disciplinary science
Projects
Integration & synthesis
Dynamic Planet
Global Development

NEXT STEPS

Consultations timeline

Timeline towards implementation