# New science for global sustainability? The institutionalization of knowledge co-production in Future Earth

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# CONTEXT

I. Complexity and urgency of global environmental change
II. Ongoing discussion about new modes of knowledge production
III. Calls for institutional change and new institutional forms in science

# GOVERNANCE OF SCIENCE

- Intermediary organizations
  - Intermediary organizations with a coordination mission; aim to contribute to the performance of a system (Hessels, 2013)
- Organizational structure and institutional rules
  - ... are not neutral instruments, but “embody certain intentions, aspirations and purposes” (Pinheiro & Stensaker, 2013)
  - ... matter for the production of more socially robust science (Klenk & Hickey, 2013)
  - … how are they legitimized and argued for? Subject of considerable debate an negotiation (Turpin, 1997)


futureearth
research for global sustainability

# RESEARCH FOR GLOBAL SUSTAINABILITY

*"Future Earth is a global research platform designed to provide the knowledge needed to support transformations towards global sustainability"*

Future Earth, 2013

*"… a new kind of research, co-produced with society and seamlessly integrating social and natural sciences, is now needed to support a transition to global sustainability"*

Future Earth, 2013

# From responding to major threats of global change...

*Our "... common goal must be to develop the essential knowledge base needed to respond effectively and quickly to the great challenge of global change" (Moore et al., 2001, p. 2)*

# … TO SCIENCE FOR GLOBAL SUSTAINABILITY

*Stresses the 'urgent need' for the scientific community to 'reorganize' and 'join forces' in working together towards a future of 'global sustainability' (ICSU, 2010)*

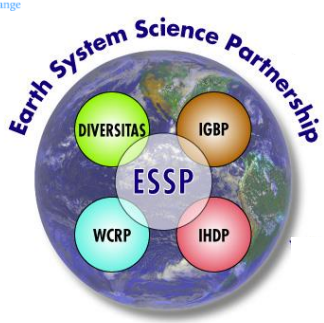
1979 1986 1991 1996 2001 2008 2010 2012

WCRP World Climate Research Programme

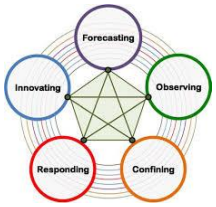
GLOBAL CHANGE IGBP International Geosphere-Biosphere Programme

DIVERSITAS an international programme of biodiversity science

IHDP International Human Dimensions Programme on Global Environmental Change




Reviews



# Design principles of 'Research for Global Sustainability'


- Solution-orientation
- Co-production
- Interdisciplinarity
- Inclusiveness

# CO-PRODUCTION OF KNOWLEDGE

- Analytical idiom of co-production
  - Co-production of science and social order (Jasanoff, 2004)
- Prescriptive/practical idiom of co-production
  - "The research agenda and projects should be co-designed and co-produced by researchers in collaboration with various stakeholders in governments, industry and business, international organisations, and civil society" (Future Earth, 2013)
  - Normative framework for organizing the science society interface
- Related terms: participatory knowledge production, civic science, joint knowledge production, transdisciplinarity, etc.

# PARTICIPATION IN SCIENTIFIC KNOWLEDGE PRODUCTION

- Who is allowed and able to participate?
- What role for participants?
- What relationship between academic and non-academic actors?

# Participation in scientific knowledge production

- Tension between narratives of usefulness and emancipatory, critical and reflexive objectives of participation (Lövbrand, 2011)
- Often remains rooted in traditional structures and assumptions of scientific knowledge production (Felt et al., 2012; Irwin, 2006; Turnhout et al., 2013)

# PARTICIPATION IN SCIENTIFIC KNOWLEDGE PRODUCTION

- Gained prominence *because* it allows for multiple interpretations, including more traditional perceptions of science-society interface (Turnhout et al., 2013)?
- Provide a possibility to overcome conflict between different value positions as it is adaptable to multiple contexts, visions and perspectives (Bensaude Vincent, 2014)?

# RESEARCH QUESTIONS

1. What different rationales for the co-production of knowledge can be distinguished in the context of Future Earth?
2. How is the principles of knowledge co-production institutionalized in the emerging structure of Future Earth?
3. What do these different rationales and their institutionalization imply for the role of science in environmental governance?

# INSTITUTIONS IN TRANSFORMATION

"before the box closes and becomes black"

Latour (1987) 'Science in Action'

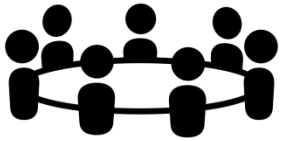
# METHODS OF DATA COLLECTION & ANALYSIS

## Document analysis

// Science plans, progress reports, reviews

// Scientific articles: self-assessments

## Expert interviews



## Participant observation

# 1. LOGICS OF CO-PRODUCTION

What are the rationales for co-producing knowledge within Future Earth?

# LOGICS OF CO-PRODUCTION

- Logics as analytical tool (Barry & Born, 2013)
  - Why is co-production considered necessary? (purpose)
  - Which transformation in research practices does it aim to bring about?

# LOGICS OF CO-PRODUCTION

- Rationales that motivate the co-production of knowledge within Future Earth
- Differ in their understanding of:
  - Why to co-produce knowledge
  - How to co-produce knowledge
  - With whom to co-produce knowledge
  - Roles and responsibilities of scientists and stakeholders
- Not mutually exclusive, not exhaustive, not reducible to each other

# Logic of Accountability

| | |
|---|---|
| Why | Being responsive to the needs of society |
| How | Design research agendas and project together with ‘users’ |
| With whom | Citizen, governments, funders (private sector funders?) |
| Science’s role | Providing the knowledge that society needs |
| User’s role | Informing research directions and research agendas |

*"… governments and society want a bigger say in the formulation of the research questions and issues that they want science to investigate and explore [...] they are making the investment, therefore they want to have more say in what the science priorities are and look like"*

Interview with co-chair of the Belmont Forum

*"[Answering to major societal concerns] is the only way to justify the money we have, and if we want to get some more into our science, this is the only way to go."*

Interview with member of Transition Team for Future Earth

# Logic of Impact

| | |
|---|---|
| Why | To ensure implementation of scientific knowledge |
| How | Engaging users throughout the research process to increase legitimacy, reduce skepticism and create ownership |
| With whom | Actors that can make a difference in society (e.g. private sector) |
| Science's role | Provide solutions; transition to global sustainability; co-producing sustainable future |
| User's role | Implement scientific knowledge in society |

*“For eight years we’ve published this Carbon Budget and every year it is worse, you know, you feel very… you have no power. […] and a lot of people feel like this. They see the deterioration of the ecosystem and you feel very powerless.”*

Interview with Science Committee member, Future Earth

*“There is […] a greater chance of creating durable, effective interventions if decision makers and other users of the research are appropriately involved in the process of designing and producing knowledge.”*

ISSC & Belmont Forum, 2011, p. 21

# Logic of Humility

| | |
|---|---|
| Why | Including multiple ways of knowing in (scientific) knowledge production |
| How | Recognising extra-scientific actors as legitimate knowledge holders; creating knowledge together |
| With whom | Actors with local/practical knowledge |
| Science's role | Facilitate knowledge production and stakeholder cooperation; engage in reflexive learning process |
| User's role | Epistemic partner in knowledge production process |

*"… like academics, non-academics are knowledge producers as well as users, [and] they hold valid knowledge that has to be part of framing the agenda and of research"*

Interview with Executive Director ISSC

*"[scientists should] be humble and reflective about their own positions, recognizing that their own views of the world and of what kinds of science and knowledge are appropriate are always positioned and partial"*

Prof. Melissa Leach, Vice-Chair of the Future Earth Science Committee, as quoted in Sayer, 2014

# Co-production as a flexible concept

- Logic of accountability, impact and humility
- Different meanings projected on category of knowledge co-production, including more traditional perception of science-society relations
- Different logics link to different ideas on the institutionalisation of knowledge co-production

# 2. INSTITUTIONALIZATION OF CO-PRODUCTION

How is a new institution of ‘research for global sustainability’ created in the context of  multiple and at times conflicting rationales for knowledge co-production?

# ICSU-ISSC VISIONING PROCESS

- Explore research priorities and possible new institutional structures for the next decade of global change research
- Grand Challenges Report: “urgent need” for the scientific community to reorganize and “take responsibility" in working together towards a future of ‘global sustainability (ICSU, 2010)

# New Initiative of Science Councils + Funders

*"The magnitude and urgency of the challenges facing humanity requires […] a common coherent strategy of transdisciplinary research for global sustainability"*

Belmont Forum, ICSU & ISSC, 2011

# The Science and Technology Alliance for Global Sustainability

- Formalizing the partnership
- Form a 'strategic alliance'







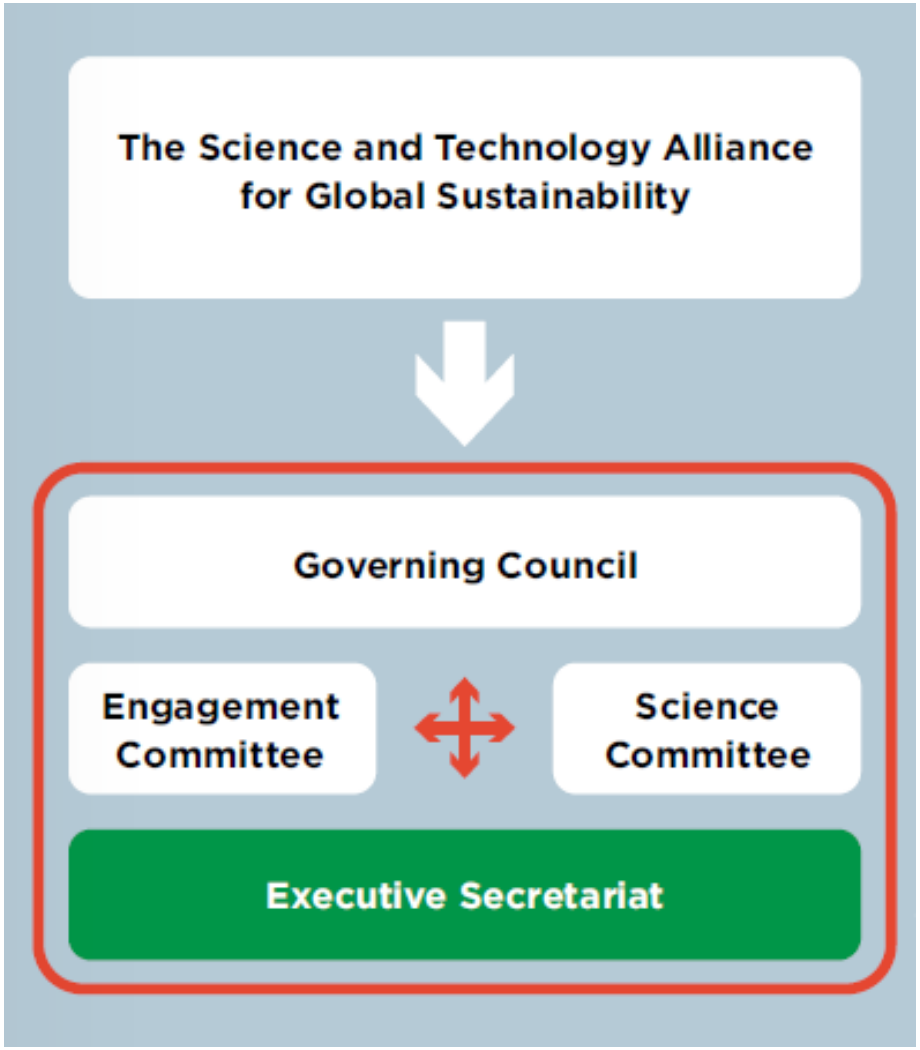

# The Transition Team

- Members: natural scientists, social scientists, stakeholders
- Task: developing a research agenda, strategy for and stakeholder engagement, and institutional design

- Stakeholders 'only' for legitimacy?
- Criticism: exclusive and top-down; 'does not practice what it preaches'

# DEBATING THE GOVERNANCE STRUCTURE

- Dual structure
  - Which one should be on top?
  - SC developed two years before EC
- Composition of EC
  - Drawing on "experience and know-how from other sectors"?
- Towards a single committee?



# Alliance as Governing Council

- UN organizations: legitimacy, authority and political convening power
- Belmont Forum: assuring accountability for the financial support
- Science Councils: is their influence decreasing?
- Do the organisations included in the Alliance speak for ‘society’?

# Institutional Rules and Processes

- From co-production in governance structure to co-production in research practices
- Co-production as criteria for evaluation and funding
- How to evaluate? Who is evaluating? Lack of experience and agreement among reviewers.

# INSTITUTIONALIZING CO-PRODUCTION

- Organizational structure follows logics of accountability and impact
- Institutional rules interpretative flexibility; different logics co-exist (but do not encourage scientist to change their research practices)

➢ Distinction between knowledge users as partners in governance structure or research project => one does not imply the other!

# INSTITUTIONALIZING CO-PRODUCTION

- Logic of humility diverges most from 'traditional' perception of science-society interface, requires institutional support, yet is least embedded in the institutional structure of Future Earth

➢ Interplay between logics and their institutionalization (e.g. accountability)?

# 3. SCIENCE/GOVERNANCE NEXUS

What do these logics of co-production and their particular institutionalization in Future Earth imply for the relationship between science and (environmental) governance?

# ‘Co-producing Global Sustainability’

- What is the role of science in governance for sustainability?

| | |
|---|---|
| Logic of accountability | Respond to societal needs |
| Logic of impact | Active change agent |
| Logic of humility | Modest societal partner |

# ‘Co-producing Global Sustainability’

- How is the boundary between science and society (re)envisioned?

| | |
|---|---|
| Logic of accountability | Redrawing traditional boundaries |
| Logic of impact | Increase the influence of science in society |
| Logic of humility | Increase the influence of society in science |

# ‘Co-producing Global Sustainability’

- Who is allowed and able to shape (scientific) image of a global sustainable future?
  - Do ‘users’ provide questions or knowledge?
  - Whose knowledge and values are included?
  - Room to debate the future of science in society?

# THANK YOU!

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