

RESILIENCE, SUSTAINABILITY AND RESEARCH POLICY: OPPORTUNITIES AND CHALLENGES

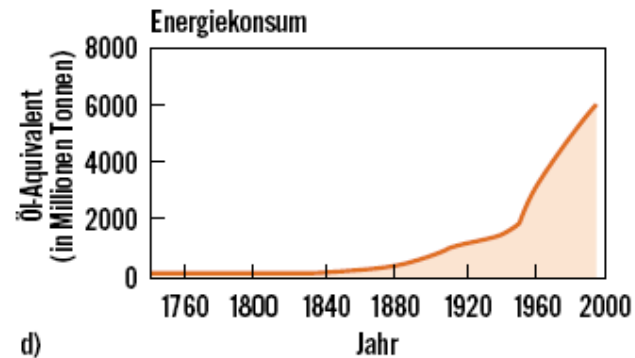
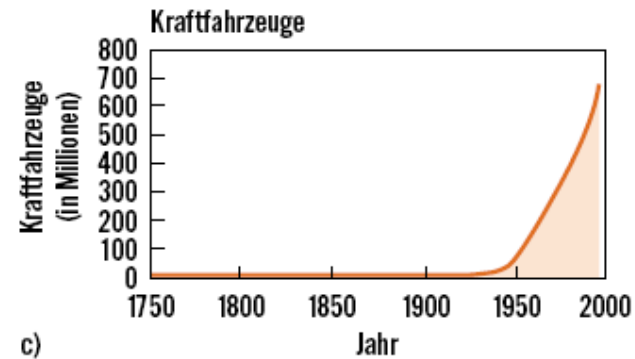
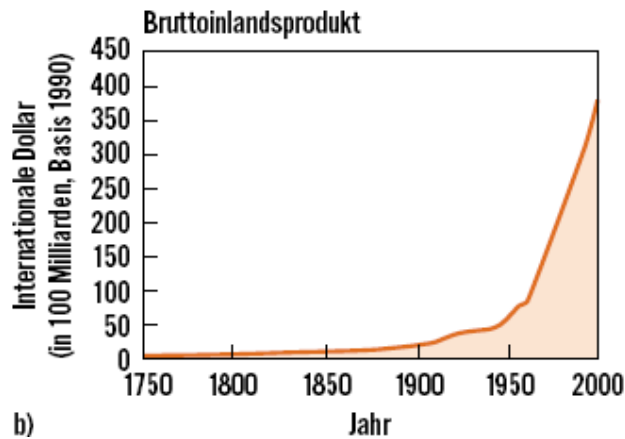
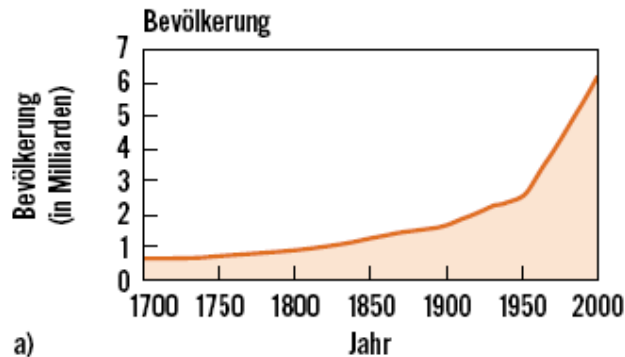
Jill Jäger

Vienna, Austria

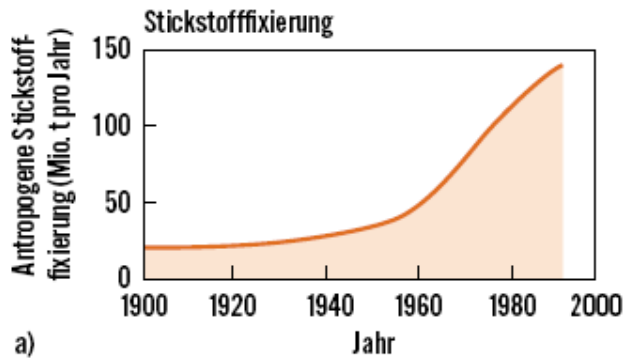
Global Change

- Often seen as a series of separate problems – climate change, biodiversity loss, dwindling water resources – with separate priorities and solutions.
- But the Earth behaves as a system, where biological and physical processes interact (also with human systems) to determine prevalent global environmental conditions.

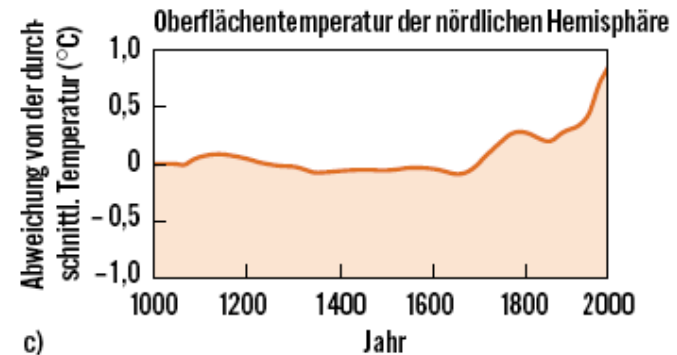
„The Great Acceleration“



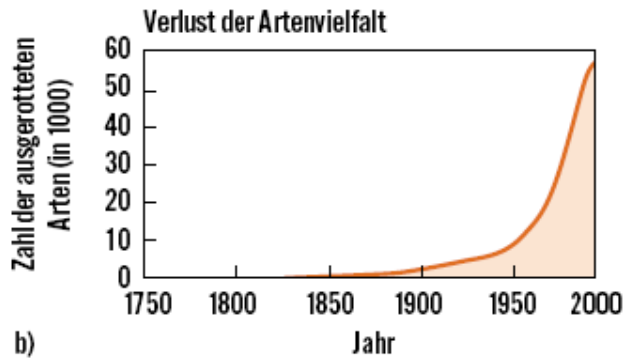
The Consequences



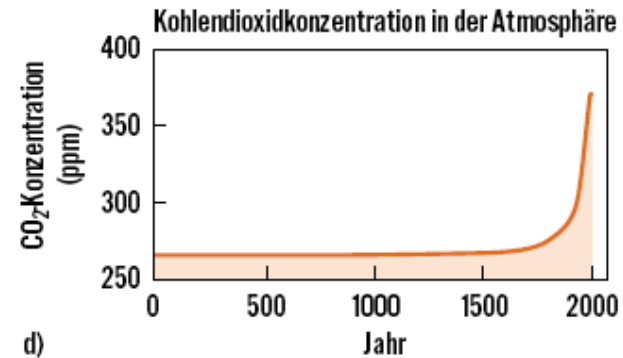
a)



c)



b)



d)

The Challenge

We are faced with persistent problems of unsustainability, which are

- complex
- riddled with uncertainties
- deeply rooted in our societal structures and culture

Meeting the Challenge

- Requires multi-, inter- and trans-disciplinary approaches
- New research paradigms

(See, Responses to Environmental and Societal Challenges for our Unstable Earth (RESCUE), www.esf.org/rescue)

What is Sustainability Science?

- Multiple sciences addressing a common theme – the reconciliation of societies' development goals with the planet's environmental limits over the long term
- Or, more broadly, harnessing science and technology in the quest for transitions to sustainability

Jill Jäger, Sustainability Science in Europe. Paper prepared for DG Research, October 2009

Sustainability science approaches must:

- encompass the interaction of global processes with the ecological and social characteristics of particular places and sectors;
- integrate the effects of key processes across the full range of scales from local to global;
- and achieve fundamental advances in our ability to address such issues as the behaviour of complex, self-organizing systems, as well as the responses of the nature-society system to multiple and interacting stresses .

RESILIENCE as a core question

Kates et al. (2001) identify 7 core questions for Sustainability Science, including:

What determines the **vulnerability or resilience** of the nature-society system in particular kinds of places and for particular types of ecosystems and human livelihoods?

Communities of sustainability scientists

- **European Sustainability Science Group (ESSG;** www.essg.eu)
- **TD-Net** (<http://www.transdisciplinarity.ch/e/index.php>); **TIAS** (<http://www.tias.uni-osnabrueck.de/>); **ESSP** (<http://www.essp.org/>); **European Network on Sustainability Transitions; Resilience Alliance** (<http://www.resalliance.org/1.php>)

Contribution of sustainability science

...to achieving sustainability

Sustainability science can contribute through organising iterative processes in which stakeholders (including the research community) develop a common view about the scope of the (unsustainability) problem, elaborate a common long-term vision for the future in this problem area and explore the possible pathways to achieve that vision using a variety of scientific tools and methods.

Two other important contributions

(1) dealing with complexity not by developing single solutions for single problems but considering interdependencies (and trade-offs);

(2) providing a transdisciplinary approach that fosters joint production of solutions in a societal context that makes implementation more effective than other approaches tackling these challenges.

Barriers

Taking a strategic approach towards specific implementation is still considered by many to be going beyond the remit of science.

Need to consider...

Peer review (e.g. of proposals that are goal-searching)

Project evaluation (e.g. of projects that explicitly adopt an adaptive management approach)

Funding for the long-term, implementation-oriented, goal-searching processes (e.g. longer project cycles with interim evaluation and learning)

Incentives

Research policy must also consider the incentives for sustainability scientists (in particular career incentives) and other stakeholders (in particular incentives to participate in all phases of long-term sustainability science activities).

VISIONS RD4SD (1)

Producing a shared vision on how to harness R&D to sustainability

EU coordinated action (contract under negotiation)

“National research policy makers from Member States and Associated Countries are invited to exchange views and develop a shared vision on how best to harness R&D to sustainable development”

VISION RD4SD (2)

- Analysis of how research systems (i.e. organisations, programmes and policies) are responsive to sustainability requirements.
- Proposals for monitoring and enhancing this response.
- Iterative, structured dialogue between R&D policy makers, with support of sustainability scientists.