



The Role of Science in the Transition to a Sustainable Low Carbon Society

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Second Annual Researchers Meeting of the International
Research Network for Low Carbon Societies (LCS-RNet)

The Challenge



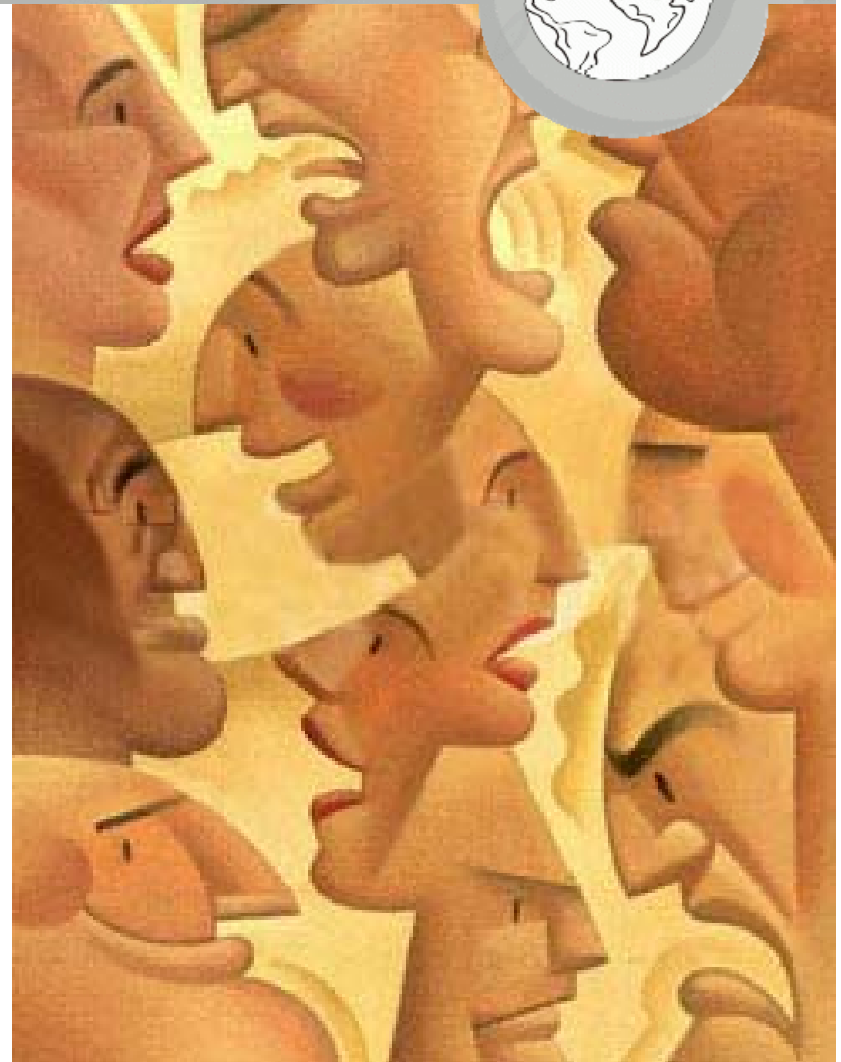
We are faced with persistent problems of unsustainability, which are

- 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



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What is Sustainability Science?



- Controversial
- **Not** a mature discipline with shared conceptual and theoretical components
- 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



- Heterogeneous in scope and practice
- In Europe, in particular, sustainability science is implementation-oriented
- Dealing with persistent problems of unsustainability that have a high level of complexity
- Focus on designing processes that are open, inclusive and goal-searching and that support learning and change

Key Research Themes



- Large, persistent problems of unsustainability
- Sustainability challenges: e.g., climate change, water scarcity, biodiversity loss and land use change
- Transitions - energy sector, water management, agriculture and mobility

Research Needs



A new body of scientific theory and method that is oriented specifically to deal with the missing 'integration' and 'holism' element of science that so far has made progress largely by developing along the lines of 'fragmentation' and 'specialisation'

Communities of sustainability scientists



- The group of people active in Europe (but also globally) is highly diverse and changing. Some scholars have pointed to the risk of putting them into one “niche”
- European Sustainability Science Group (ESSG; www.essg.eu)
- TD-Net; TIAS; ESSP; European Network on Sustainability Transitions; Resilience Alliance

Contribution of Sustainability Science to an LCS



- Sustainability Science can contribute through organising iterative processes in which stakeholders (including the research community) develop a **common view** about the scope of the 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.

Peer review

Project evaluation

Funding for the long-term, implementation-oriented, goal-searching processes

RESCUE



- Responses to Environmental and Societal Challenges for our Unstable Earth (RESCUE), www.esf.org/rescue
- Working group “ Interface between Science and Policy”
- **Opening science for a knowledge democracy**

RESCUE Recommendations



- Reliable Funding for RD4SD
- Commitment to Engagement and Communication
- Building capacity (to learn)
- Far-reaching Institutional Change

The Need for Institutional Change



- The existing institutions in the current governance structure for knowledge will have to be adapted to improve the links between science, policy and society
- Necessary to understand which kinds of institutions can support the necessary dialogue and science-practice partnerships
- Institutions needed for partnerships with the business and industry sectors and capacity building

One Step Forward



A set of 10-20 long-term demonstration projects covering different world regions and scales, sustainability needs/problem domains and policy contexts

To demonstrate viable / 'working' mechanisms of engagement and cooperation in knowledge production, learning and evaluation while tackling concrete sustainability concerns.

These demonstration projects should be carefully monitored and regularly compared and their processes and results should be disseminated widely.

Recommendations



- The status and profile of sustainability science and those who practice it need to be raised.
- The network of sustainability scientists should be strengthened so that a coherent framework for this work can be developed, a body of “good practice” can be documented and awareness of the potential of this kind of work is raised.
- Funding opportunities and new evaluation criteria are needed for long-term, iterative, goal-seeking projects to support transitions to sustainability.



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Doing Science

storytelling

Praxis Wissen

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