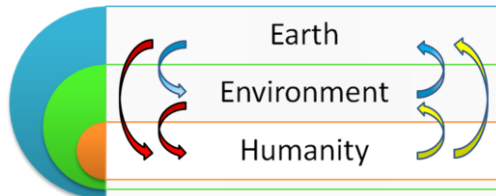


RESCUE Stakeholders Conference (16-17 May 2011)

Inputs from the RESCUE Working Groups & Task Force

**Working group 3:
Research methodologies and data requirements for addressing the global change challenges**



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Mission / Challenges

Initial Working Group Aims

Identify strengths and weaknesses of models and data analysis approaches used in global change research aiming at an integrated and global perspective on global change

Assess the state of integration of the human dimension and in particular the “soft” aspects such as perceptions and beliefs, situated knowledge

Make an inventory of data sets available for interdisciplinary research paying particular attention to availability and matching of scales

Assess the need and possibilities for integration of disparate data holdings

3/13




Mission / Challenges

RESCUE WG/TF inputs

**ICSU 2010 Grand Challenges
Driven by the Natural Sciences**

"I think that actually humans are really very predictable and social scientists tend ironically to not fully recognise this."

"..the "earth system science" modelling epistemology cannot be hegemonic, and can only admit a partial view of the social sciences."



**Working Group
Requirements for research methodologies and data**

"The mere use of the word 'data' betrays a barrier .. the different meanings ascribed to change .. cannot be reduced to 'data', without a radical rethinking of what is meant by 'data'."

Knowledge-Methodologies-Methods-Data
Data-Information-Knowledge-Wisdom model (Rowley, 2007)

*Quotations – from interviews
Rowley (2007) Journal of Information Science 33, 163-180*

4/13

Mission / Challenges

RESCUE WG/TF inputs



Working Group Guiding 'Research' Questions

I Characteristics
What are the characteristics of global environmental challenges that make them not easily amenable to policy solutions?

II Transition
How do we manage transitions to sustainable resource governance and management regimes, while at the same time respecting good governance principles?

III Human Agency
What is the role of human agency (as consumers, change agents, political entrepreneurs etc) in developing adaptive responses to global change in social-ecological systems?

5/13

Mission / Challenges

RESCUE WG/TF inputs



Working Group 'Methods-Data' Questions

I Characteristics
How can innovation in knowledge, methodologies, methods and data, support identification and implementation of sustainable policy solutions?

II Transition
What data and methods are required to understand transition processes and support their "management"?

III Human Agency
What are the kinds of knowledge, methodologies, methods and data needed to analyse the role of individual behaviour, and the factors at both the individual and the societal levels that influence this behaviour; and what are the drivers of and barriers to change?

6/13

Methods

RESCUE WG/TF inputs

- 1. Literature review**
- 2. Online questionnaire survey**
Focus on knowledge gaps and constraints to innovation
The Integrated Assessment Society (TIAS) website
Limited response (27), but useful at an early stage
- 3. Expert interviews**
Again – to assess knowledge gaps and constraints
Total of 22 structured interviews (using the 'Questions')
Individuals with research and policy backgrounds
- 4. Expert workshop (Ispra, June 2010)**
To identify knowledge gaps and how to resolve them
To identify the critical next steps
- 5. Position papers by WG members and external experts**
In total, 15 completed on issues perceived as critical

Context and Rationale

RESCUE WG/TF inputs

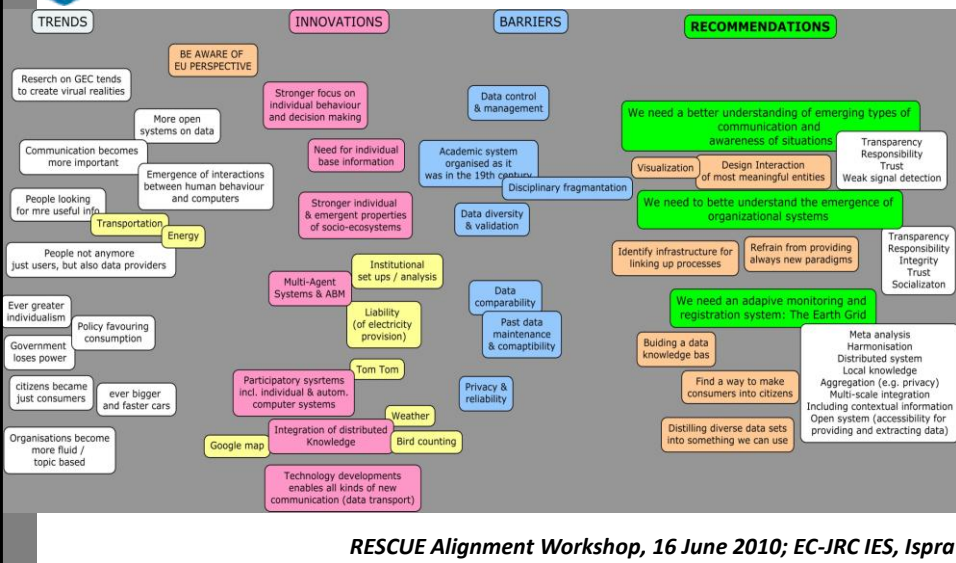
Our concerns were therefore defined as being with..

1. **Complex, adaptive, socio-ecological systems..**
 ..changing over diverse but interdependent spatial scales..
 ..that are poorly matched to our developed governance structures..
 ..and occur over time-scales beyond normal political horizons;
and with..
2. **Environmental changes that are in fact emergent signals..**
 ..of human agency acting within these complex socio-ecological systems;
..and with ..
3. **Management of structural transition at system level..**
 ..to new production, consumption, governance and management regimes.

“Global environmental change (GEC) is understood, enacted and transmitted by these and other aspects of globalisation; GEC and globalisation are mutually constituted..”

“Global climate change .. manifests itself differently in different places and cultures, and although it may be global in its causality, it creates a complex geography of winners and losers..”

Context and Rationale



9/13




Barriers and Requirements

RESCUE WG/TF inputs

1. **Multidisciplinary problems require interdisciplinary analysis**
2. **Barriers between environmental and social science world views**
 - Lack of shared ontologies, languages, methods
 - Science-policy separation v “Critical” social science
 - Quantitative model-based methods v Qualitative, interpretative
 - Climate change may be global but is “felt” locally and differentially
3. **Challenges for the social sciences and humanities**
 - The lack of methodologies for rigorous comparative case studies
 - Reliance of economics on dynamic stochastic general equilibrium models
 - Integration of human values, environmental ethics and social justice
4. **Path-dependence of socio-ecological systems**
 - Historical inertia in institutional structures/regimes
 - Values and beliefs that are stabilized by regime components and practices
5. **Data inconsistencies**
 - Data in a resource-constrained world will be driven by practical needs
 - Data standards will become more variable; census data are under threat
 - The drive for innovation over-rides the need for continuity

10/13




Vision - Future Research Needs

RESCUE WG/TF inputs

1. **Integrate environmental dimensions fully**
 - Inter-disciplinary agenda-setting by multi-disciplinary groups
 - Provide pre-application funding for “sandpits” (cf RELU in the UK)
 - “..one should be very suspicious of claims for remote sensing of social information.. remote sensing of social data will not answer key policy questions..”*
2. **Increase capacity to engage citizens**
 - Participatory research, participatory modelling
 - Culturally-sensitive citizen-led research agendas
 - “..policy responses must therefore be constructed through a variety of different civic epistemologies (cf Jasanoff)..”*
3. **Develop analytical and interpretative tools**
 - Agent-based modelling as an experimental/emancipatory tool
 - Market research tools used in an academic research context
 - “..it is doubtful if an ABM can capture those dimensions of human experience that are the preserve of the humanities: creativity, innovation, values, meaning.”*

11/13




Vision - Future Research Needs



RESCUE WG/TF inputs

4. **Develop more rigorous methods for case-study analysis**
Facilitating comparative analysis, generalisation, transferability
5. **Historical and ethnographic studies**
Historical analysis of critical moments of change
Differential cultural reception of past environmental change
6. **Maintain/develop data streams for global change research**
Ensure international standards for census data
Develop ICT-based methods, but also the necessary quality control
(Volunteered Geographic Information - VGI; Crowd sourcing)

"..we are very good at innovation, but not so good at consistency, continuity and long-term monitoring.. all the incentives favour innovation.."

"individuals have roles that are more diverse than the binary of citizen and consumer implies.. they are creative, resilient, productive.. they cannot be conceived simply as problems to be fixed.."

12/13

Proposed Responses / Solutions

RESCUE WG/TF inputs

1. **Promote "triple-loop learning"**
Reassess underlying values, beliefs, world views
(Pahl-Wostl, 2009; Fischer, 2000)
2. **Develop shared ontology, epistemology, language**
Support long-term inter-disciplinary collaboration
Support laboratories to experiment with pluralist methodologies
Support flexible networks (Swiss 12-year "thematic networks")
3. **Review research funding mechanisms**
Ensure competence to handle inter-disciplinary proposals
Measure funding bodies' performance
4. **Support information dissemination**
"Dashboard" of information systems for experts, decision-makers,
lay persons - to support all other developments

Fischer (2000) *Citizens, experts and the environment*. Duke UP
 Pahl-Wostl (2009) *Global Environmental Change* 19, 354-65

Overall Contribution to RESCUE

Promote joint insights and recommendations to ESF and European Commission; for future Framework Programmes?

Synthesize insights from all Working Groups, and validate with evidence/views from Stakeholder meeting

Joint activities for dissemination and communication – develop joint efforts with other WGs (joint outputs and other products)

Continuing research collaboration and exchange: eg, Webinars through TIAS; development of Social-Ecological Systems Club activities

