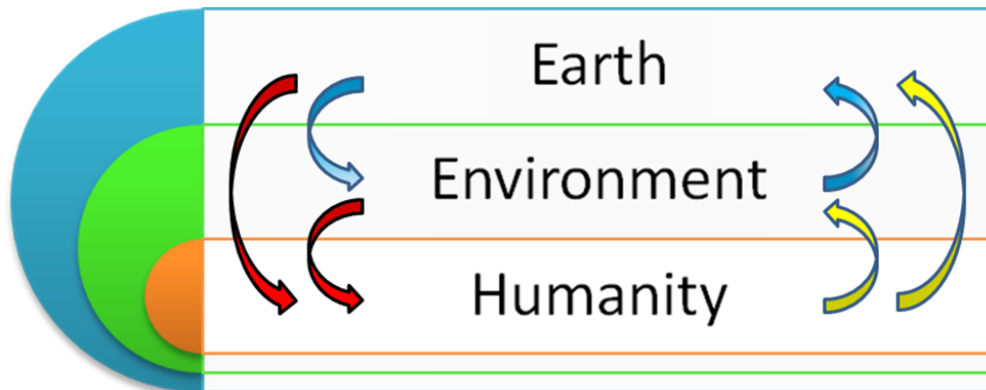


# RESCUE foresight initiative

## Responses to Environmental and Societal Challenges for our Unstable Earth

ESF-COST “*Frontier of Science*”  
initiative & ESF *Forward Look*  
*developed after a request from the French CNRS*

*September 2009 – March 2011*



[www.esf.org/rescue](http://www.esf.org/rescue)

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# RESCUE Objectives

- Strategic process for natural, social & human sciences to improve their interdisciplinary synergy and to respond efficiently to societal and policy-relevant needs;
- New scientific issues related to global change, especially those of trans-disciplinary nature or of major society-driven relevance;
- New approaches towards interdisciplinary science, & to facilitate the 'revolution' in education and capacity building it requires.

→ ensuring strategic scientific advice and approaches for global sustainable development and governance

**Chair: Prof. Leen Hordijk** (EC-JRC Institute for Environment & Sustainability, IT)

**Vice-Chair: Prof. Gísli Pálsson** (Social & Environmental Anthropology, University of Iceland, IS)

## WG “New, emerging and neglected scientific questions in RESCUE remit”

Leader: Prof. Joseph Alcamo

### Articulate scientific GCR-related issues, esp. society-driven ones:

- Identify emerging, new or neglected areas
- Develop recommendations about research & governance priorities
- Develop recommendations about the institutions and procedures for carrying out global change research
- Propose ideas for funding and support mechanisms as incentives to interdisciplinary and transdisciplinary research projects in Europe within a global context.

### Complement the ICSU Visioning Exercise (*with Delphi consultation*)

→ Focus on the needs of the European research community and goals of sustainable development

→ Take into account research concerned with the European society and environment in a global context

→ WG might be reformulated through a **dedicated effort and a Task Force**



## WG “Collaboration between the natural, social and human sciences in GCR”

Leaders: Prof. Michael Goodsite, Prof. Sierd Cloetingh and Prof. Poul Holm

Develop a strategic vision to break down individual & institutional barriers that hamper collaboration between scientific disciplines.

### Examples of key questions

- What should the balance be between “classical” discipline-based research and inter-disciplinary research?
- How is it possible to trigger effective and fruitful collaboration at the interface between different fields?
- What means exist to identify and mobilise “disciplinary” scientists, funding agencies and stakeholders to participate and contribute to this joint effort right from the start?
- How can best practices be promoted between European research organisations to fund activities that could better contribute to solving the RESCUE challenges?



## WG “Requirements for research methodologies and data”

Leaders: Prof. Claudia Pahl-Wostl; Prof. Theo Toonen

**Global change science is crucially dependent on observing and monitoring many natural, social & human processes, AND on conceptualising & modelling them at different space & time scales**

- Assess current state of methodological & data related challenges (strengths, weaknesses, inventory, standardisation, integration of the human dimension)
- Identify major gaps and alternatives/extensions and need for methodological innovation
- Identify major weaknesses and knowledge gaps in data bases available for global change research
- Develop guidance on methods and data; key requirements for design and implementation of global integrated assessments
- Develop list of priority actions to improve the current situation



## WG “Towards a ‘revolution’ in education and capacity building”

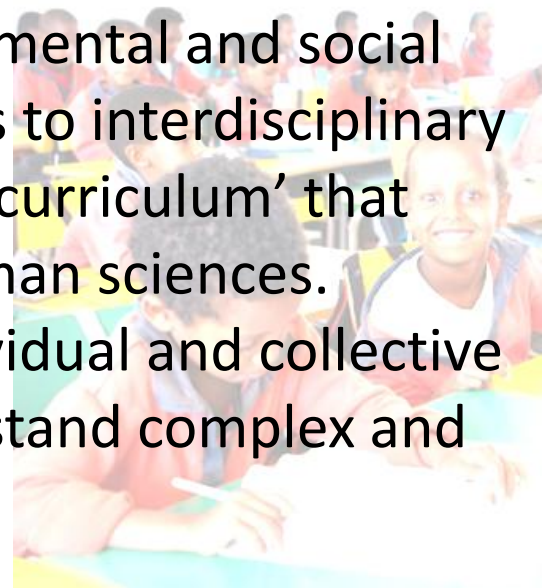
Leaders: Prof. Karen O’Brien; Prof. Jonathan Reams

In education as in science related to global change, the dualism of nature and culture is a great challenge for the next generation of researchers and citizens

→ to design, test, evaluate and diffuse a learning-by-doing process to develop a vision for a “revolution in education and capacity building” and to facilitate a sustainable future.

→ growing recognition that responses to environmental and social challenges require new and visionary approaches to interdisciplinary science, more than a new type of ‘global change curriculum’ that includes courses from the natural, social and human sciences.

→ requires transformational changes at the individual and collective levels that include enhanced capacities to understand complex and interacting processes.



## WG “Interface between science and policy, communication and outreach”

or “Opening science for a knowledge democracy”

Leaders: Dr. Jill Jäger; Prof. Frans Berkhout

Develop best practices, scientific consensus and targets that could feed into research policy development for the benefit of policy makers and other stakeholders

**Future of knowledge systems:** open; diverse; problem-oriented; implementation-oriented; transformative; responsible; accountable

### Work domains:

- Organising/running science
- Incentives for stakeholders and Metrics
- Learning and feedbacks
- The demand for and use of knowledge
- Processes of engagement
- New challenges, New problems and tensions
- Redistribution of power and authority



## RESCUE Quality Reference Group (QRG)

→ set up to ensure the optimal quality and impact of the RESCUE activities and outputs

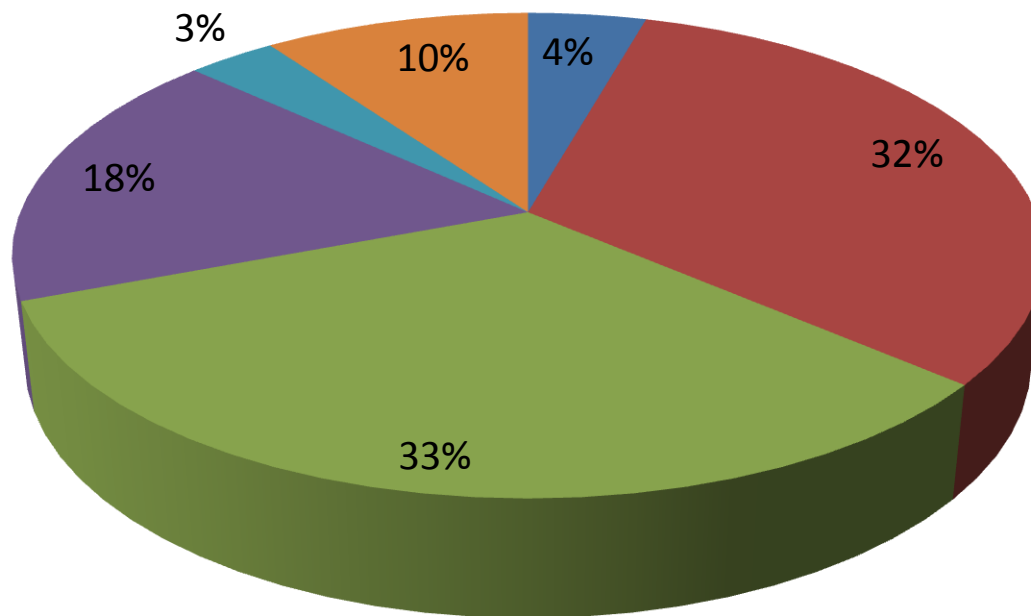
- **Dr. Patrick Monfray** (FR), initiator agency (CNRS) representative
- **Prof. Alan Jones** (IE), LESC member
- **Prof. Luisa Lima** (PT), SCSS member
- **Prof. Ulrike Landfester** (CH), SCH member
- **Prof. Ole John Nielsen** (DK); *Prof. M. Kaminska* (PL), PESC members
- **Dr. Ipek Erzi** (TK), ESSEM Vice-Chair; *J. Ingram* (UK), ESSEM member
- **Prof. Göran Collste** (SE), ISCH member
- **Prof. Giuseppe Scarascia-Mugnozza** (IT), FPS member
- **Dr. Marc Heppener** (ESF), Dir. of Science & Strategy Development
- ... (COST), Head of Science Operations

**External Links:** ICSU, ISSC, GCR programmes & ESSP, European Alliance for GCR, science funding and performing agencies, EC



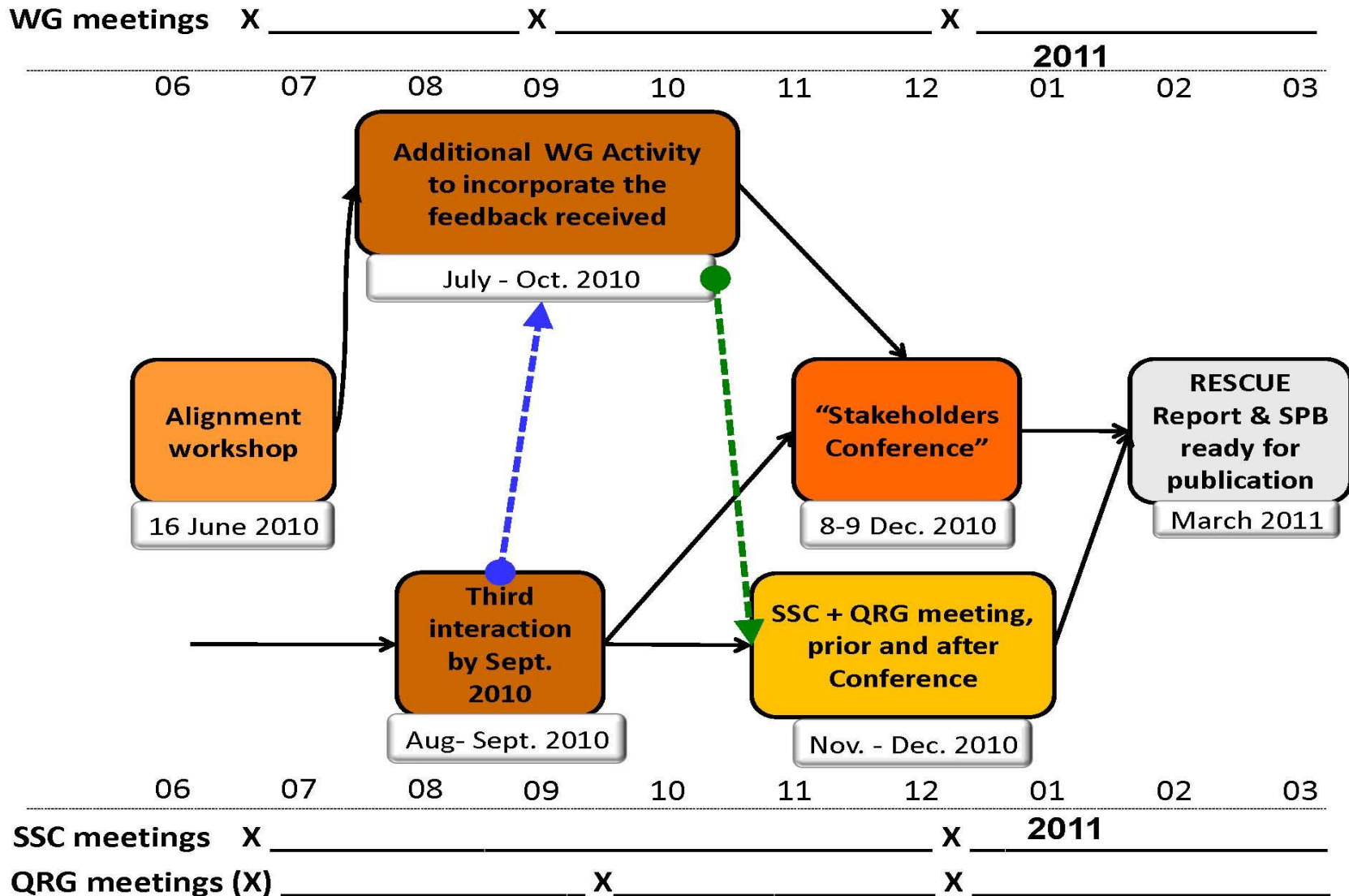
# RESCUE membership (SSC, WGs, QRG) disciplinary distribution

- Geosciences
- Environmental sciences
- Social sciences
- Humanities
- Technological sciences
- Foresight





# Provisional RESCUE timeline (2/2)



# General Forward Look Goals

- Forward Looks provide **medium to long-term authoritative visions** on science perspectives in broad areas of research bringing together ESF Member Organisations, other research institutions and the scientific community, in creative interaction.
- Forward Look reports and other outputs such as Science Policy Briefings assist **policy makers and researchers** in **setting priorities** and in defining and implementing **optimal research agendas**.



# Typical Forward Look Design

- **State-of-the-Art review**
  - Current state of research in the area and highlights of the major advances in the last years
- **Scientific challenges**
  - Impact of those advances on the research agenda
  - Indication of major knowledge gaps and potential ‘hot topics’
  - Identification of European strength and weakness
- **Vision**
  - Presentation of a vision with major goals that could provide directions for research in the medium and long term time frame
  - Implementation plan (in terms of infrastructure, institutional innovation, human resources, governance)
- **Impact and Follow-up**
  - Key stakeholders likely to play a key role in the implementation
  - Targeted recommendations
  - Follow-up mechanism to ensure delivery and avoid risks



# Typical Forward Looks Format

- Activities include preparatory study/expert groups, high level overview papers, workshops and meetings
- Main event: high visibility conference
- Outputs: Policy Briefings, major reports, action plans
- Scientific Steering Committee: 8-12 p.
- Lead time: 12-18 months
- Average budget: 120-240 k€



# *ESF-COST “Frontier of Science” initiative*

## **RESCUE Contacts**

### **European Science Foundation (ESF)**

**Dr. Bernard Avril / Ms. Celine Seewald**

Life, Earth & Environmental Sciences (LESC)

**Email:** [fl-rescue@esf.org](mailto:fl-rescue@esf.org); **Website:** [www.esf.org/rescue](http://www.esf.org/rescue)

### **European Cooperation in Science and Technology (COST)**

**Dr. Carine Petit**

Earth System Science & Environmental Management (ESSEM)

**Email:** [cpetit@cost.esf.org](mailto:cpetit@cost.esf.org)

**Forward Looks** enable Europe’s scientific community, in interaction with policy makers, to develop mid- to long-term views and analyses of future research developments with the aim of defining research agendas on national and European level.

# The "Foresight Diamond"

**Creativity**

Strongly influenced by imagination

**Qualitative (17)** relying less on numbers and statistics (i.e. subjective reports, synthesis and evaluation of ideas or documents)

**Quantitative (6)** if the activity uses or is based on reliable numerical data (i.e. statistical information)

**Semi-quantitative (10)** applying mathematical principles to process subjective knowledge (i.e. weighting ideas, systems theory)

Used in  
**RESCUE**

**Expertise**

**Interaction**

Strongly influenced by experiences and knowledge sharing

Strongly influenced by discussions and knowledge exchange

**Evidence**

Strongly influenced by facts & data

