



Climate Change Complex

At a glance

Title: Knowledge Based Climate Mitigation Systems for a Low Carbon Economy

Instrument: COLLABORATIVE PROJECT FP7-ENV-2012-two-stage

Total Cost: € 6,982,677.07

EC Contribution: € 5,428,606.00

Duration: 48 months

Start Date: 01/10/2012

Consortium: 17 partners from 11 countries

Project Coordinator: International Centre for Cultural and Historical Studies, Newcastle University (United Kingdom)

Project Web Site:
<http://www.complex.ac.uk/>

Key Words: Energy, agriculture, forestry, environment

The challenge

The transition to a low carbon economy by 2050 will involve irreversible step-changes in the cultural, economic and natural domains, with qualitatively different socio-economic configurations before and after. By the time the low carbon economy has emerged, many vested interests and culture-clashes will have been resolved and socio-natural systems will have changed irreversibly. It is imperative that these transformations be managed in a way that maintains social cohesion, prosperity and good governance.

Project Objectives

COMPLEX will develop new modeling techniques for exploring non-linear, i.e. step-change dynamics of socio-natural systems. This work will require an integration of the 'soft' (human) and the 'hard' (natural) approaches.

A suite of modelling tools and decision-support systems will be developed to inform national and supra-national policy and support communities across Europe working to make the transition to a low-carbon economy.

We will deal with real-world complexity, with stakeholder engagement and upscaling and downscaling problems. These differences in perspective become manifest as links with different stakeholder communities. Their task will be to fine-tune problem specifications to facilitate system flips and innovation cascades consistent with the shift to a low carbon economy.

Our vision is to create an interlinked modelling system, which operates at different geographical scales (supra-national, national and regional) and allows us to take full account of regional and national specificities related to technology, behaviour and ecosystem.

Methodology

Our approach is to mount two parallel types of research; one will be focussed on the realities of regional life, the impacts of mitigation policies and issues of receptivity and will pay particular attention to climate related technologies and carbon emission. The other will be focussed on economic and systems modelling. The level of integration between these two themes will develop as the project proceeds and each set of studies works to meet the other.

We will design a flexible system of integrated models and components that can be further modified and expanded to facilitate case studies. Each regional case-study will undertake an initial stakeholder engagement exercise and produce a *case-study scoping statement*. These scoping statements will feed into a process of 'model-stakeholder fusion.'

The integration platform will help stakeholders communicate their knowledge, conceptual and mental models towards a synchronized and shared vision of a climate mitigation policy.

Expected Results

Improved accessibility and better integration of existing databases and approaches to produce important cost savings. Besides the representation of Economic, Energy, Climate and Ecological systems the modelling suite will allow policy measures to be prioritized according to the probability of critical climatic events and the likelihood of their acceptance to be evaluated.

Reduction of the costs that could result from the penetration of various low carbon technologies as well as from behavioural change in energy markets.

Development of knowledge-based mitigation policy options designed to de-couple economic growth from resource consumption and

environmental degradation.

Build confidence in mitigation strategies by a better representation of economic, energy, climate and biota in modelling systems.

Project Partners

BC3 Basque Centre for Climate Change - ES	SINTEF Energy Research-NO
CNRS National Centre for Scientific Research - FR	Stockholm University - SE
EDF Energy - FR	SLU Swedish Agricultural University - SE
IRSTEA National Research Institute of Science and Technology for Environment and Agriculture - FR	University of Padova - IT
IIASA International Institute for Applied Systems - AT	University of Newcastle - GB
MPG Max Planck Institute for Meteorology - DE	University of Sussex - GB
TNO Dutch Organisation for Applied Scientific Research - NL	University of TWENTE - NL
OCT Observatory for a Culture of the Territory - ES	
NIERSC Scientific Foundation Nansen International Environmental and Remote Sensing Centre - RU	
SIGTUNA Foundation - SE	