The **CLIMSAVE** Project

Climate Change Integrated Assessment Methodology for Cross-Sectoral Adaptation and Vulnerability in Europe

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Introduction

CLIMSAVE is a European research project funded by the EU to assess climate change impacts and adaptation strategies across six key sectors in Europe: agriculture, forestry, biodiversity, urban, water and coasts. Linkages between these sectors are being represented within a series of integrated models within a user-friendly web-based Integrated Assessment Platform (IAP). The IAP is being designed so that stakeholders can use it themselves to explore and understand the interactions between climate change impacts in different sectors, building their capacity to identify cross-sectoral vulnerability to climate change and determine how it might be reduced by various cost-effective adaptation options.

This third edition of the CLIMSAVE newsletter focuses on the methodology that is being used to develop participatory scenarios at two scales: European and regional (represented through a case study in Scotland).

Participatory scenario development

A scenario is commonly defined as a story that can be told in both words and numbers offering an internally consistent and plausible explanation of how events unfold over time. CLIMSAVE emphasises the integrative potential of scenarios. They offer the potential to integrate across expertise (stakeholders and researchers), disciplines (areas of expertise within CLIMSAVE), and a wide range of factors, sectors and actors.

Involving stakeholders is a crucial aspect in the CLIMSAVE project. One of the ways in which this is realised is in the process of developing participatory scenarios through a series of stakeholder workshops. The general underlying idea is twofold. Firstly, by developing largely qualitative scenarios in the form of stories, the participation of a broad range of stakeholders is facilitated. By bringing stakeholders together in a workshop setting, we also hope to stimulate discussion and ultimately social learning. Secondly, the resulting stories will be quantified and used as input for the IAP. In this way, perspectives of stakeholders on the future of climate adaptations in Europe will be translated into model outputs. Thus, a set of qualitative and quantitative scenarios will be co-produced by stakeholders and CLIMSAVE experts.

Overall methodology

Three sets of stakeholder workshops (one set for Europe and one for Scotland) will take place throughout CLIMSAVE. The first set of workshops took place in May and June 2011 in which a first draft of the socio-economic stories was developed and stakeholders provided quantitative estimates of a small selection of parameters for the IAP. During the second set of workshops, the stories will be revised and refined based on the first draft. Importantly, this revision will also take into account the model runs of the IAP, which will illustrate the impact of the stories and climate change for a number of sectors. Based on this, a first draft will be made of a list of adaptation options that stakeholders would like to be incorporated within the IAP. The third and final workshops

will focus entirely on analysing adaptation options, actions, and strategies, through a roadmapping exercise, again using the IAP as an important source of information.

Figure 1 illustrates the various components in the CLIMSAVE scenario development approach. It shows the three products with their three main linking mechanisms that will be developed within CLIMSAVE.

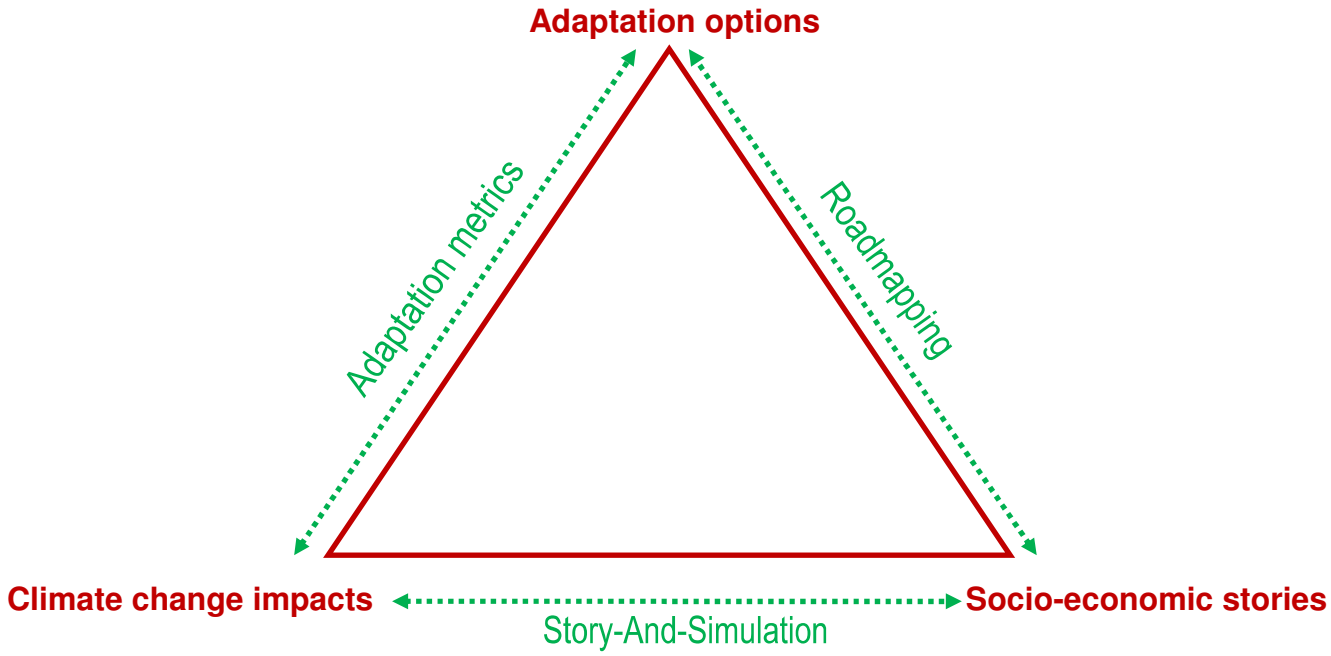

Figure 1: Components of the CLIMSAVE scenario development approach.

Storyline development and parameter quantification

The method adopted to develop stories during stakeholder workshops mostly followed the procedure that was used for the Millennium Ecosystem Assessment and is described in detail in Chapter 5 of the Millennium Ecosystem Assessment methods manual (Henrichs *et al.*, 2010). Broadly three stages are discerned, including a first stage geared towards identifying the main concerns about future developments; a second stage focusing on discussion of key uncertainties and driving forces; and a third stage during which the actual scenarios are developed. CLIMSAVE scenarios are being developed up to the 2050s, with an intermediate time slice in the 2020s. The time horizon of 2055 is sufficient to include the impacts of climate change and the effect of (some of) the adaptation options. The methodology will be developed for the European case study and tested in the Scottish case study.

Innovative elements within the methodology include:

Kick-starting the scenario development process. To kick-start the process and maximise available time for other issues, it was decided to start from a list of existing uncertainties. The list of key uncertainties for the European workshop was based on two elements: A mix of worldviews and myths of nature, and a number of megatrends as identified by the European Environment Agency (EEA). This was expanded for the regional case (Scotland) with insights from existing regional foresight studies.

Developing integrated and dynamic stories focusing on socio-economic elements. The stories contain information on socio-economic, institutional and cultural changes, in as much as they are relevant for climate change impacts and adaptation. The stories also specifically address changes in five capital forms (natural, manufactured, human, social and financial) which are being used in CLIMSAVE as measures of adaptive capacity and to determine vulnerability.

Using Fuzzy Sets to quantify model parameters. A technique called Fuzzy Sets is being used so that stakeholders can directly estimate parameter settings for the models in the IAP. This process has been improved in comparison to previous studies by integrating the method into the story-writing process, rather than undertaking it in a separate session, ensuring consistency of both products.

Producing multiple products to improve communication. The principal format for the scenarios is a story, the basic elements of which will be developed during the workshops. The stories will be analysed by the CLIMSAVE project team in order to produce a number of additional outputs, such as flow-charts and cartoons, that will help communicate the main output of the stakeholder process.

Stakeholder selection procedure

The selection of stakeholders for the participatory scenario development process is an important factor in maximising the inclusion of a wide range of stakeholders' perspectives and increasing the legitimacy and up-take of project outcomes. Stakeholder selection was complicated by the fact that highly specific input by stakeholders through intensive and direct interaction was demanded, and by the fact that only 20-30 stakeholders could participate in each workshop. The selection of individual stakeholders thus needed to be made with special care. The following categories (and minimum number of participants per category) were included in the procedure:

- Social structure – governments, civil society, businesses, research (2)
- Geographical specificity – 4 regions in Europe and Scotland (2)
- Topical diversity – 6 sectors, including urban, agriculture, forestry, water, coasts and biodiversity (3)
- Gender balance (8 women)
- Age – 4 age groups (2)

This detailed process ensured that the project took a conscious and planned approach to stakeholder identification.

Implementation

The first European workshop took place on 10-12 May 2011 in Bruges, Belgium; the first regional workshop took place on 27-28 June 2011 in Edinburgh, Scotland. As the first workshops only recently took place, it is not possible to present here a fully developed set of scenarios, but some of the main outcomes are summarised.

Photos of the plenary session from the 1st European workshop (top) and output timeline from the "Rollercoaster to Armageddon" scenario (bottom).

Three important steps in the first workshops were:

(i) a discussion of certainties and uncertainties;
(ii) a discussion of key factors in every scenario; and
(iii) drafting a set of stories.

There were also two additional goals that needed to be satisfied in order link to the IAP, namely quantifying a subset of parameters using Fuzzy Sets and soliciting feedback on a mock-up version of the IAP.

In both workshops two main uncertainties were selected out of the list of fast-track uncertainties, which in both cases led to the development of four qualitative scenarios. Stakeholders at the European workshop chose 'economic development: rollercoaster or gradual?' and 'solutions by innovation: effective or non-effective' as the two main uncertainties. This led to the development of the following four scenarios: (i) 'Icarus'; (ii) 'Rollercoaster to Armageddon'; (iii) 'We are the World'; and (iv) I-Ticket to ride. Stakeholders at the Scottish workshop chose 'resource security: surplus or deficit' and 'well-being and lifestyle: equitable or disparate' as the two main uncertainties. This led to the following four scenarios: (i) 'MacTopia'; (ii) 'Tartan Spring'; (iii) 'Mad Max'; and (iv) 'Scottish Play'.

The majority of participants at both workshops found the Fuzzy Sets exercise useful in providing greater detail to the stories and the method yielded detailed results for the models within the IAP.

Conclusions

In CLIMSAVE we have embarked upon a process to develop participatory, integrated scenarios during a series of three stakeholder workshops at two scales. Key to the overall method is the goal to closely link the resulting qualitative stories to quantitative models and adaptation options, which calls for a method with novel aspects. These include a very structured stakeholder selection procedure, a separate tool to quantify stories, and the use of an online modelling platform. The first workshops have been successfully executed and feedback from evaluation forms showed that stakeholders were satisfied with the process and enjoyed developing scenarios. The resulting sets of qualitative scenarios will be available by the end of the year.

Other project activities

The project held its second General Assembly (GA) Meeting on 28-29 March 2011 in Budapest. Progress was reported on all aspects of the project and workplans were updated in order to deliver the outcomes of the project. The GA Meeting was followed by a joint meeting with three other EU-funded projects on climate change adaptation (MEDIATION, RESPONSES and ClimateCost) to discuss opportunities for working together. Discussions focused on policy analysis, assessment of economics and costs of adaptation, vulnerability assessment, model and toolbox development, uncertainty analyses and stakeholder engagement.

CLIMSAVE has also been involved in discussions with the European Environment Agency and Alterra (The Netherlands) in relation to including project outputs, particularly the Integrated Assessment Platform, within the European Clearinghouse Mechanism on Climate Change Adaptation. Finally, the second set of stakeholder workshops have been scheduled for mid January 2012 in Prague for the European scale and late February 2012 in Edinburgh for the Scottish regional case study.

Further information on the project, including a 2-page project flyer can be obtained from the CLIMSAVE website (www.climsave.eu) or the Project Co-ordinator: Paula Harrison (paharriso@aol.com). A full report on the scenario methodology can be downloaded from the CLIMSAVE website.

Henrichs, T. et al. (2010). Scenario development and analysis for forward-looking ecosystem assessments. Chapter 5 in: UNEP (Ed.), Ecosystems and Human Well-being: A Manual for Assessment Practitioners. Island Press, Washington.

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