



The **CLIMSAVE** Project

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

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What is CLIMSAVE?

CLIMSAVE is a pan-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. It aims to put science in the service of stakeholders and policy-makers by providing a common platform that will enable them to explore and understand the interactions between climate change impacts in different sectors. This will build the capacity of decision-makers to identify cross-sectoral vulnerability to climate change and determine how it might be reduced by various cost-effective adaptation options.

The CLIMSAVE approach

A range of sectoral models are being developed and integrated within a common assessment platform that is user-friendly, interactive and web-based. Simplified models (meta-models) are being derived from detailed state-of-the-art models to replicate the latest results on impacts of, and vulnerability to, climate change. These linked meta-models will allow the rapid simulation of climate change impacts across these key European sectors at multiple spatial scales.

Outputs from the linked models will be translated into ecosystem services in order to link climate change impacts directly to human well-being. Ecosystem services are the benefits that people obtain from ecosystems. They support, directly or indirectly, their survival and quality of life.

They include provisioning services (e.g. food, timber and water), regulating services (e.g. climate regulation and pollination), cultural services (e.g. recreation and aesthetic experiences), and supporting services which are needed to maintain all other ecosystem services (e.g. water and nutrient cycling).

The linked sectoral models within the integrated assessment platform can be used to assess whether different climate and socio-economic scenarios have a negative or positive effect on ecosystem services. The nature of the impact is assessed using metrics which allow evaluation of cross-sectoral benefits, conflicts and trade-offs. The integrated assessment platform will use these metrics to identify hotspots of climate change vulnerability.

The integrated assessment platform will also enable users to investigate different adaptation strategies for reducing these vulnerabilities. The cost-effectiveness and cross-sectoral benefits of different response options, e.g. changing water consumption, restricted development and conservation measures can be tested by perturbing the pressure variables and assessing the consequences for the impacts. Iteration of this approach may be needed to explore the effects of multiple response options and uncertainties, determine the adaptive capacity of the system and optimise adaptation strategies.

Methods for reducing uncertainties and increasing the transparency of model and scenario assumptions are being implemented to inform the development of robust policy responses.

CLIMSAVE structure

CLIMSAVE consists of five scientific work packages (WPs; Figure 1):

WP1: Policy and governance context: stakeholder engagement

WP1 is assessing the policy and governance context for adaptation through an analysis of selected national and sectoral adaptation strategies. A literature review and document analysis is being undertaken to evaluate existing policy mechanisms for adaptation. Expert interviews and various group techniques are being used to identify the main

institutional barriers and opportunities for sectoral adaptation and to understand the interplay of policies produced at the EU and national levels.

WP1 also ensures the establishment and use of a proper and effective interface with policy-makers and stakeholders. The diverse set of stakeholders of relevance to CLIMSAVE in the areas of climate change impacts and adaptation is being identified and analysed. It also coordinates and synthesises the work of other WPs as it relates to stakeholders and policy-makers and is organising and professionally facilitating six stakeholder workshops (three European and three regional).

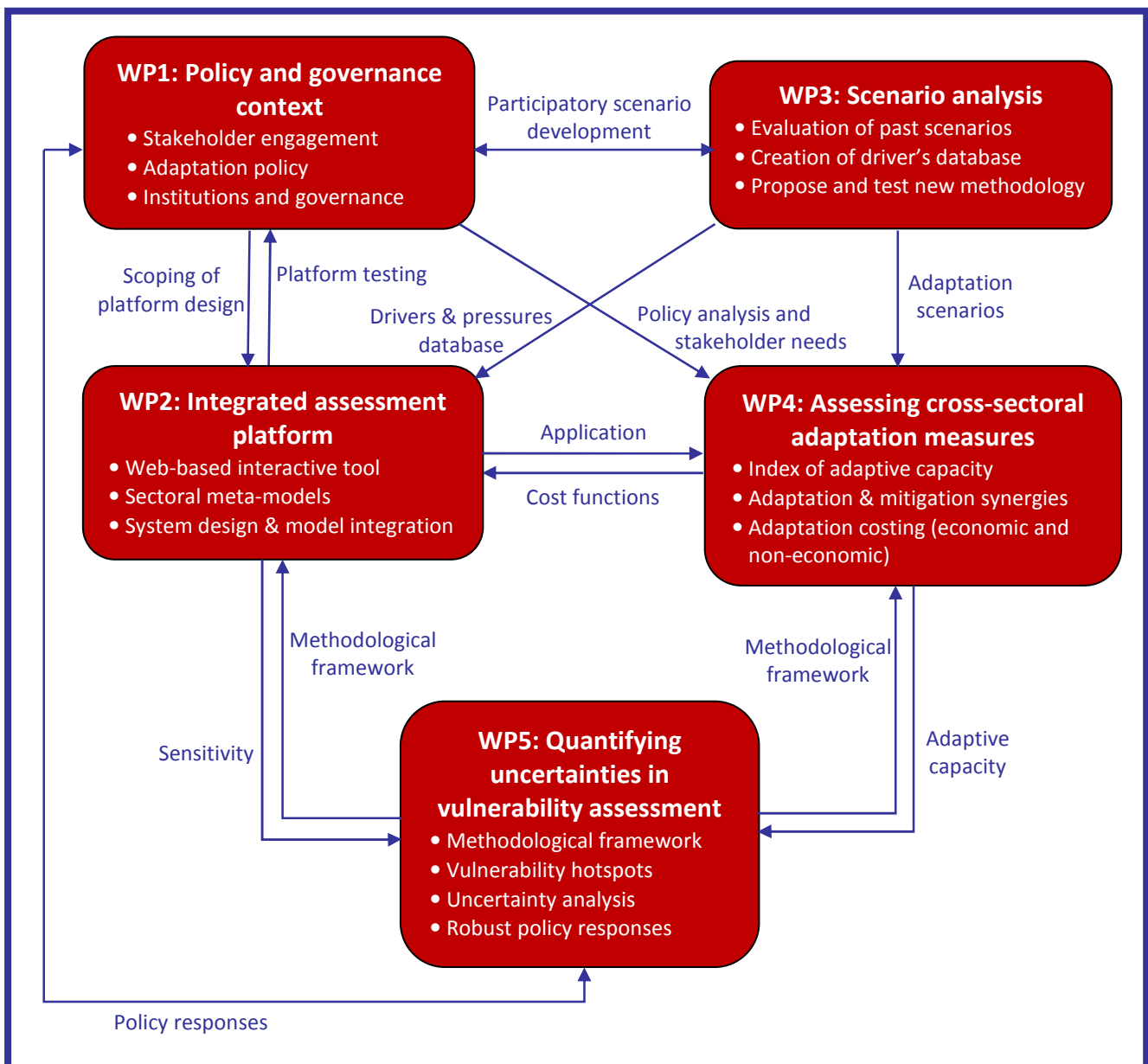


Figure 1: CLIMSAVE Work Package (WP) structure and WP interdependencies.

WP2: Integrated assessment platform.

WP2 is developing an interactive web-based platform for the integrated assessment of climate change impacts and vulnerability. The platform will be openly accessible to stakeholders, will allow investigation at the multiple scales (up to the European scale) relevant for implementing adaptation measures, and will enable multiple rapid simulations of future climate and socio-economic conditions to capture uncertainties.

A series of meta-models for key European sectors (agriculture, forests, biodiversity, urban, water and coasts) will be developed and validated. These will be vertically and horizontally integrated within the integrated assessment platform to take cross-sectoral benefits and dis-benefits into account.

WP3: Scenario development and analysis.

WP3 is developing an innovative methodology for scenario development and analysis as an integral part of climate impact and adaptation assessment. Initial work involves reviewing and evaluating recent scenario exercises to identify their weak points and opportunities for improvement, and analysing the role of scenarios in current adaptation decisions.

The new scenario methodology will include procedures for generating “reproducible” qualitative scenarios, building a consistent, scientifically-credible bridge between qualitative and quantitative scenarios, maximising the participation of stakeholders in scenario exercises and identifying key questions which should be addressed. The methodology will be tested and applied by stakeholders in the two sets (European and regional) of three workshops being organised by WP1.

WP4: Assessing cross-sectoral adaptation measures.

WP4 is identifying those sectors (and their components) which are most exposed and sensitive to climate change and developing metrics for cross-sectoral comparison.

These will be used to identify win-win strategies (economic and environmental gains) between sectors.

Social, economic and environmental indicators for the assessment of adaptive capacity (both autonomous and planned, proactive and reactive) are being reviewed and selected. These will be combined to develop an index of adaptive capacity at different management scales. The index will be responsive to management strategies and policy options, and take account of institutional barriers, ancillary benefits and possible trade-offs between different routes for achieving adaptive capacity.

The implications of cross-sectoral adaptation options for mitigation are also being explored to identify synergistic and antagonistic interactions.

The cost-effectiveness of adaptation strategies (on project and policy levels) are being determined by valuing the net cost of adaptation options under climate uncertainty. A range of economic techniques and concepts (both deterministic and probabilistic) will be used, taking into account cross-sectoral benefits, including environmental and social impacts.

WP5: Quantifying the uncertainty of impacts and vulnerability.

WP5 is developing a methodology for identifying vulnerability hotspots and exploring robust policy options. Mapped outputs from the integrated assessment platform will be used to identify regions for which either the potential impacts are great and/or the capacity to adapt to these impacts is low (hotspots of vulnerability).

The platform will also be used to analyse uncertainties in impacts, such as model uncertainties, error propagation in integrated systems, and scenario uncertainties. This will identify whether different representations of the future lead to divergence or convergence of vulnerability outcomes and inform judgements about appropriate policy options.



Figure 2: The six sectors that will be represented in the Integrated Assessment Platform.

CLIMSAVE workshops

CLIMSAVE will run two sets of three professionally facilitated workshops throughout the lifetime of the project. The workshops will effectively integrate stakeholder views into the project and link stakeholders' views with the climate change impact and adaptation research. The workshops will be participatory and highly interactive, focusing on the development of long-term scenarios on climate change and adaptation as well as on strategies for action. The outcomes of the workshops will be made part of the integrated assessment platform. A main scientific aim in this undertaking is to further develop and test scenario development methodology.

Workshops will be organised at two levels, the European level and the regional level, in order to test CLIMSAVE

methodologies at different scales. Scotland has been selected as the regional case study. If you are interested in being informed about the programme and agenda of the workshops, please complete the form at <http://www.climsave.eu/climsave/workshops.html>.

The CLIMSAVE partnership

The CLIMSAVE project is coordinated by the Environmental Change Institute at the University of Oxford and involves 18 partners from 13 countries.

Further information, contact details for all partners and details on how to become involved in the project can be obtained from the project's website (www.climsave.eu) or by contacting the Project Coordinator: Dr. Paula Harrison (paharriso@aol.com).



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