

Seventh Research Framework Programme (FP7) 2007 - 2013

COOPERATION

Theme 6

ENVIRONMENT (INCLUDING CLIMATE CHANGE)

Call ENV.2008.2.1.4.3.

Increasing the integration of biodiversity research results into policy making

Annex I Part B Description of Work



Project full title

Mapping Regional Vulnerability in the Southern **A**lps -
Evaluating Trends and Developing **S**ustainable Adaptation **S**trategies **f**or the Verdon
Catchment

Project acronym:

MASSIF

Duration: 5 September 2008 - 31 October 2009

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1 Project Summary

Located in the centre of Europe, the alpine region is a hot spot for biodiversity. Its complex topography and climatic regional differences within the Alps lead to a great variety of environmental conditions with strong gradients over short distances. The richness of the natural conditions is reflected in the various cultural landscapes that have evolved through human intervention/use during the last 7000 years. Land use within the alpine region depends on the altitude, the topography, and factors like soil depth and accessibility. In history the large variety of traditional land-use forms initially increased the diversity of ecosystem types and species. However, during the last two centuries, human influence on biodiversity has become increasingly negative through land-use and -cover changes, as well as alteration of biogeochemical cycles. Alpine valleys are often densely populated with high pressure on a limited land area due to competing needs for settlements, infrastructure, agriculture and recreation. In contrast to this, up to now the higher elevations were rarely affected by direct human activities. Recently though, expansion of the recreational ski industry, with increased building activities of lifts and water reservoirs changes this situation. Moreover the Alps are particularly vulnerable to the impacts of climate change. The Alpine region already suffers from a higher increase in temperatures than the European average. Increasing pressures arising from changes in socio-economic conditions, land-use and land-management practices, resource exploitation, increase in traffic on transit routes and increased tourism aggravate the situation.

Biodiversity reflects the number, variety and variability of living organisms in an ecosystem. Besides its ethical value, biodiversity plays a vital role in ecosystem function and, thus for ecosystem services. Ecosystem services are the benefits people obtain from ecosystems. The Millennium Ecosystem Assessment (MA) divides the overwhelming abundance of different ecosystem services into four categories: providing, regulating, cultural and supporting ecosystem services. Human well-being depends notably on material welfare, health, good social relations, security, and freedom. All of these are affected by changes in ecosystem services. As biodiversity contributes to ecosystem services this opens up a number of unresolved research questions. How much biodiversity is necessary to maintain which ecosystem service? How to protect biodiversity in a changing world? How can we link biodiversity with policy and the public?

The current project MASSIF - “Mapping Regional Vulnerability in the Southern Alps - Evaluating Trends and Developing Sustainable Adaptation Strategies for the Verdon Catchment” - seeks to provide information that best supports a multi-stakeholder dialogue towards sustainable decision-making in environmental management. Within the project we identify critical ecosystem properties to sustain ecosystem services within the Verdon catchment in Southern France. At the catchment scale we assess the vulnerability for the most important sectors and evaluate the resilience of the human-environment system, using ecological and socio-economic modeling, and a set of plausible future scenarios.

The project does not seek to amass new data, but to use existing studies and experiences to develop new management strategies and gain insight into how research discoveries can better inform policy-making processes.

2 Objectives

We analyze the current status of the area and develop multiple plausible scenarios for future changes in socio-economy, land-use and climate. The different scenarios for the specific region will be delineated based on the Millennium Ecosystem Assessment (MA) scenarios and on the Intergovernmental Panel of Climate Change (IPCC) Special Report on Emissions Scenarios (SRES), as a basis for further development. The sectors agriculture, nature conservation and tourism are among the most important topics in the largest part of the catchment. Ecosystem services on which these sectors rely will be identified and their inter-relations will be disclosed. For all three sectors the impacts of the expected changes under different scenario conditions will be identified and discussed with stakeholders, such as municipal planners, policy advisors, and farmers. The outcome of this assessment will be used to develop adaptation strategies to provide and sustain services for all users.

In addition to the sectoral working groups an integration and synthesis group is set up with four permanent members and three members delegated by the other working groups. The integration and synthesis group will collect and discuss the most important questions and issues for the Verdon catchment, paying close attention to possible interactions between sectors. The synthesis group will provide a project summary especially for stakeholders and policy-makers, including the main conclusions integrated across the region and all sectors. The final results will include a set of potential management practices which safeguard human wellbeing and biodiversity for the Verdon catchment in Southern France.

The study area is the catchment of Verdon, a 166 km long river in south-eastern France, left tributary of the Durance. Its source is at an altitude of ± 2400 m, in the south-western Alps (Maritime Alps), near the Col d'Allos, in the Trois Evesches mountain range, south of Barcelonnette. It is a catchment of about 2770 km² on the southern border of the region Alpes de Haute Provence. It includes 5 artificial lakes (Castillon, Chaudanne, Sainte-Croix, Quinson and Esparron) created by EDF (a leading player in the European energy industry) between 1949 and 1974 along the two Verdon rivers, the Gorges du Verdon and the Valensole plateau. The Verdon regional natural Park is a major hotspot for biodiversity and covers two thirds of the catchment. Agriculture, tourism and nature conservation play a major role in this area. MASSIF wants to evaluate future impacts and to develop adaptation strategies and to manage biodiversity for a sustainable future in this region.

3 Detailed Implementation Plan

The final product of the vulnerability assessments will be a short final report, which the students should largely design and compile themselves and a press release.

- a) The final report will be (1) presented by the working groups in plenum in the “final project meeting” (simple PowerPoint presentations); and (2) included in written form in the Summer School Book.
 - b) The press release should be not more than one page and written for scientific and non scientific audience. It should focus on the major findings and the synthesis for each topic.
- a) The report should be structured including *title page with the name of all collaborators, introduction, results, discussion, conclusions and references*. The maximum length per working group chapter is 4-5 pages. Additional figures and tables may be put into an Annex. The Synthesis group should deliver a summary for policy makers in the form of 10-12 bullet points (i.e. 1-2 pages). The report should include the **crucial elements of the assessment**, such as:
- the three elements of vulnerability:
 - exposure to multiple stresses
 - sensitivity
 - differential adaptation within and between population and adaptation strategies
 - the coupled human-environment system: “social” and “natural systems” are no separate entities, but one tightly interwoven evolving system;
 - analyzing historical and prospective quantitative and qualitative data;
 - addressing biodiversity in a broad sense, using the concept of “ecosystem services”;
 - the stakeholder perspective;
 - the design of *practical* adaptation strategies, complete with *appraisal of risks and opportunities* of the implementation of these strategies;
 - the sustainability perspective: ecological, social and economic well-being is important;
- b) The press release should consider the following:
- structure the text for non expert readers;
 - translate complex evidence based ideas into plain language;
 - shorten writings to satisfy different audiences;
 - use analogies to build mental pictures of complex processes.

3.1. Work Packages

	Working group	Tutor	Title
1	Agriculture	Martin Wildenberg	Trends in the agriculture sector: What changes will be likely to impact this sector? How can agriculture sustain and provide livelihoods and biodiversity in a changing environment?
2	Nature conservation	Eric Arets	Trends for nature conservation: How to conserve the natural and cultural ecosystem services in the Verdon catchment?
3	Tourism	Diana Reckien	Trends in regional tourism: What changes will be likely to impact this sector? How to develop tourism sustainably, safeguarding local livelihood and biodiversity?
4	Synthesis and Integration	Brooke Wilkerson	Synthesis for policy makers: Integration of the findings of all sectoral working groups into management and adaptation strategies to sustain livelihood and biodiversity in the study area.

3.2. Tutors - Scientific Advisors

Five tutors who act as scientific advisors to MASSIF project will guide the four work packages of the project. These scientific advisors will facilitate and moderate the working group sessions. They will help to understand what is expected from each group, they can answer questions about the organisation of the summer school and about its content. Each of the scientific advisors has scientific experience and experience from previous summer schools. They want to play a proactive role and give support to the working groups. Scientific advisors are: Eric Arets, Uta Fritsch, Diana Reckien, Martin Wildenberg and Brooke Wilkerson.

3.3. Stakeholders

A stakeholder is a person, group, organization, or system who is interested in the topic or who might be affected by the outcome of the research. Stakeholders are essential for this type of environmental assessment by providing special, often practical expertise about the human-environment system, and specifying their needs for scientific information. The stakeholders of the MASSIF project are impersonated by the summer school tutors and not real stakeholders because of the language barrier. Each tutor has a double role and acts as (1) scientific advisor to MASSIF, and (2) stakeholder of MASSIF. The stakeholders have commissioned the MASSIF project and have a vital interest in its outcome. The specific roles of each tutor (e.g. planner, farmer...) will be announced and further elaborated during the summer school.

4 Milestones and Deliverables

Deliverable	Title	Due	Nature
Nr. 1	Kick-off meeting	Day 5 10/ 09/ 2009	Meeting
Nr. 2	Mid-term meeting	Day 9 13/ 09/ 2009	Presentation of progress in the working groups
Nr. 3	Final meeting	Day 13 17/ 09/ 2009	Presentation of the final results
Nr. 4	Draft of a final report	Day 13 17/ 09/ 2009	Draft report
Nr. 5	Final version of the MASSIF project report	End of October 31/ 10/ 2009	Report

5 Glossary

Reference: Intergovernmental Panel on Climate Change (IPCC), 2007: Fourth Assessment Report Working Group II, Appendix I.

Adaptive Capacity

The ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages to take advantage of opportunities, or to cope with the consequences

Catchment

The area that collects and drains rainwater.

Climate change scenario

A plausible and often simplified representation of the future climate, based on internally consistent set of climatological relationships and assumptions of radiative forcing, typically constructed for explicit use as input to climate change impact models. A “climate change scenario is the difference between a climate scenario and the current climate.

Ecosystem services

Ecological processes or functions having monetary or non monetary value to individuals or society at large. There are supporting services such as productivity or biodiversity maintenance, provisioning services such as food, fibre or fish, regulating services such as climate regulation or carbon sequestration and cultural services such as tourism or spiritual and aesthetic appreciation.

Resilience

The ability of a social or ecological system to absorb disturbances while retaining the same basis structure and ways of functioning, the capacity for self organisation and the capacity to adapt to stress and change.

Scenario

A plausible and often simplified description of how the future may develop, based on a coherent and internally consistent set of assumptions about driving forces and key relationships. Scenarios may be derived from projections, but are often based on additional information from other source, sometimes combined with a “narrative storyline”.

Sensitivity

Sensitivity is the degree to which a system is affected, either adversely or beneficially, by climate variability or change. The effect may be direct (e.g. a change in crop yield in response to a change in the mean, range or variability of temperature) or indirect (e.g. damages caused by an increase in the frequency of coastal flooding to sea-level rise).

Stakeholder

A person or an organisation that has a legitimate interest in a project or entity or would be affected by particular action or policy.

Sustainable development

Development that meets the cultural, social, political and economic needs of the present generation without compromising the ability of future generations to meet their own needs.

Vulnerability

Vulnerability is the degree to which a system is susceptible and unable to cope with adverse effects of climate change, including climate variability and extremes. Vulnerability is a function of the character, magnitude, and rate of climate change and variation to which a system is exposed, its sensitivity, and its adaptive capacity.