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Find more information at www.ecochange-project.eu!

# Integrating project results for projecting future developments

Work Description of EcoChange Activity 6

Activity 6 is the EcoChange project's central activity. This activity will assure that the findings from all EcoChange Activities can and will be integrated and combined. On the other hand, the activity will develop a new generation of global change impact forecasts and related assessments of impacts on biodiversity, conservation issues (e.g. the role of reserves like Natura2000), ecosystem functioning and societal implications. Activity 6 will make use of all the improvements developed in the different activities to come up with the most up-to-date and reliable risk assessments.

The EcoChange Project

Aim and Focus

The aim of EcoChange is to assess and forecast changes in terrestrial biodiversity and ecosystems. The project assesses the ability of biodiversity and ecosystems to supply humans with required goods and services and to buffer against climate and land use change.

The project concentrates on the improvement of models and the generation of new data. It also integrates the findings with socio-economic analysis. Project work is organised into six activities.

Project information

EcoChange - "Challenges in assessing and forecasting biodiversity and ecosystem changes in Europe" is an Integrated Project with 22 Partners from all across Europe. It is supported by the 6th Framework Programme of the European Union. Contract number: FP6-036866

Project duration: January, 2007 - December, 2011The consortium of EcoChange is led by the National Center for Scientific Research (CNRS), Grenoble, France. Project Co-ordinator: Pierre Taberlet, pierre.taberlet@ujf-grenoble.fr

EcoChange Briefing Sheet

Activity 6
Integration, projections, conservation & ecosystem services

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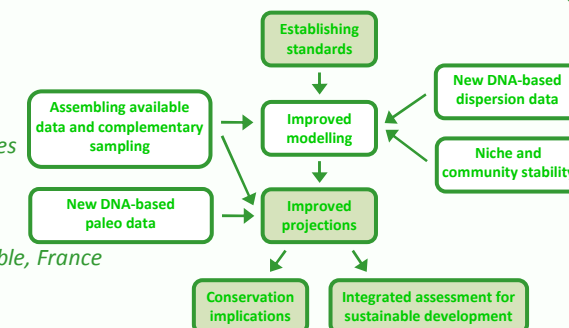
Overview

This EcoChange Activity is devoted to combine several results from the other activities in order to better explain how mankind might be affected by biodiversity and climate change and what difference human behaviour can make. From this, conclusions for policy can be drawn.

Objectives

The workflow diagram on the previous page shows that Activity 6 (dark boxes) has an important role (a) in the beginning of the project by establishing standards for integration, and (b) in the second half of the project when first results from other activities are available to be integrated in common tools.

The four main objectives of Activity 6 are:
1. to establish conceptual and technical standards;
2. to develop integrated modelling and web tools, and to use them in order
3. to address issues of conservation and of ecosystem services; and
4. to assess possible impacts of environmental changes on humans.

In this way, this part of the project explicitly links the results of EcoChange to the human socio-economic system.

Approaches

Objective 1 is met by setting up theoretical frameworks and working standards from the very beginning of the project in order to ensure that the outcomes of the "basic" research are finally relevant and useable for those who will further work with them.

Moreover, the activity aims at developing modelling and web tools (*Objective 2*) allowing the user to generate species distribution patterns under current and future environmental change scenarios. This objective will be met by producing an open-source version of an integrative modelling tool and by establishing a website interface to grant public access to EcoChange deliverables (results, courses, tools).

The modelling tool will be based on the existing BIOMOD framework implemented in the open-source statistical package R (R-CRAN). This new version will include the improvements made during the course of the project (incl. dispersal modelling) and

will be made compatible to an open-source geographical information system (e.g. GRASS).

The tools will address major conservation issues (*Objective 3*), such as the role of fragmentation and decreased connectivity of ecosystems on climate change induced migration throughout Europe. They will also be used to evaluate the risk of disruption of services provided from ecosystems to mankind, which might result from forecasted changes in species diversity. It should thus be possible to evaluate the degree to which existing European conservation areas (e.g. NATURA 2000 sites, national protected areas) are able to maintain species distribution under a range of climate and land use change scenarios.

In order to evaluate which impacts biodiversity and land use changes might have on human social systems an integrated sustainability assessment (ISA) will be set up (*Objective 4*). The ISA will build on the concept of ecosystem services, i.e. services provided to humans by the ecosystem such as timber, recreation areas, pollination, etc. The ISA will be developed on the scale of three regional case studies located in Belgium, Switzerland and Romania. Biodiversity data and modelling will serve as an input for the land use scenarios that are going to be developed for these scales. Local stakeholders will be integrated in order to define the main problems and challenges, to think about sustainability visions and scenarios, and to draw conclusions from the ISA process.

In order to couple human behaviour and land use / biodiversity changes an Agent Based Modelling (ABM) will be set up which will show how human behaviour can influence ecosystem development and vice versa.

Expected results

- A new set of biodiversity assessment tools using the latest developments in climatology, land use modelling and biodiversity modelling.

- An integrated sustainability assessment in three case study areas to explore sustainable solutions of development.