

# Scenarios and models for exploring future trends of biodiversity and ecosystem services changes

## Project workshop

### The use of quantitative analysis to support political decision making (Aims and Guiding Questions)

Recent studies such as "[The Cost of Policy Inaction on Biodiversity](#)" and "[The Economics of Ecosystems and Biodiversity \(TEEB\)](#)" have revealed that biodiversity loss has widespread and substantial economic costs and impacts on human wellbeing. Such studies have taken into account a number of recent global and regional assessments that project future changes in drivers of ecosystem change and biodiversity loss. In order to support the [second phase of TEEB](#), the European Commission (DG Environment) has initiated a study to examine the use of scenarios, models, and other quantitative tools for exploring future trends in biodiversity and their impacts on ecosystem services.

#### **Aims of the workshop:**

Discussion of the draft reviews of available models and key assumptions. In particular:

1. *the modelling approaches currently available*
2. *how these can be used to assess policies*
3. *how current models and scenarios could be further developed.*

#### **Organisation of the workshop and role of invited speakers:**

The workshop will last one day. Around 30 participants are foreseen. There will be three slots for in depth discussions on specific issues. The discussions will be based on the interim report that will be circulated well in advance of the workshop to all participants. The first two slots will deal with methodological issues while the third slot will elaborate more on recommendations for the use of quantitative tools, such as models and scenarios within the TEEB. Each of the two first slots will be introduced by a speaker from the project team presenting key findings of the project and questions to be discussed. The five key-experts are asked to comment on these results in order to open the floor for an in-depth discussion. In slot three, the five key-experts are invited to give a short presentation (10 minutes) of their recommendations for TEEB II.

## **Slot 1: Review of available models,**

### **Introduction by Jan Bakkes/Tom Kram, Netherlands Environmental Assessment Agency/PBL**

The aim of the report to be reviewed is to provide an overview of models and scenarios that have been built to identify the main drivers of the loss of biodiversity and natural ecosystems and forecast their impact on the level of:

- biodiversity (in biophysical or other terms); and
- ecosystem services provided.

The focus is on models used for large-scale or global assessments.

#### **Key Questions:**

- What is the state of play, which models are available and in which areas is sufficient information for assessing future trends in biodiversity and ecosystem services available? Where are the gaps?
- Development of a set of criteria for making a structured inventory of the main models allowing an assessment of the strengths and weaknesses of these models and of the extent to which they could be used for making large-scale assessments.

#### **Further issues:**

- Which attempts exist to assess the wider economic impacts of the loss of biodiversity and ecosystems (e.g. with CGE models)?
- Which attempts exist to assess the economic costs of policies, including the opportunity costs of conservation and to what extent the costs and benefits of policies can be jointly assessed?
- To which extent can global models provide sufficient information for the different ecosystem functions.
- Which on-going model developments exist that will give a valuable input within the next 2-3 years?
- What can be learned from the Climate-Change modelling? Can there be some common modules?

## **Slot 2: Assessment of impact of key assumptions**

**Introduction by Leon Braat, Alterra, Wageningen University**

### **Key Questions:**

- To what extent do changes in key assumptions affect the results of the different models?  
Analysed assumptions should include:
  - exogenous factors (like population growth or demand for natural resources, etc) and
  - policies affecting biodiversity and ecosystems (like species and habitat protection programmes but also trade agreements or changes in key policies – agricultural, fisheries).

### **Further issues:**

- Which models include policy assumptions that are of importance and relevance to TEEB?
- How could models be adapted to better assess policies (including coupling of biophysical models with economic models to assess the wider effects on the economy)? Which models can trace back the influence of specific pressures on biodiversity and ecosystem services and from pressures to activities or sectors?
- Assessment of the usability of the scenarios and models, as well as their degree of adaptability to new scientific information and potential to up-scaling or benefit-transfer exercises.
- How to deal with substitution effects and spill-over/off-side effects caused by (non-)action in the first world.
- How to deal with risk and uncertainties. How in scenarios you accommodate for extremes.

## **Slot 3: Recommendations on the use of the models/assessments for policy development within TEEB**

**Moderation and introduction by Patrick ten Brink, IEEP**

Short presentations (10 minutes) regarding recommendations for TEEB by the five key-experts

### **Key Questions:**

- How to ensure the relevance of the results from the assessments to TEEB.
- What are priority policy options to be incorporated into the models?
- How can the necessary assumptions and simplifications involved in global modelling be made acceptable to policymakers?