



# TESS: A transactional “glocal” approach to biodiversity monitoring (and not only monitoring)

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## Introduction

For the past 50 years, subsidies and market forces have encouraged intensive use of a few crop species in Europe. Land-uses, whose previous diversity engendered rich culture, livelihoods and nature, have been homogenised. Ecosystem services that sustained us for centuries have been degraded. Species with special niches or low ability to re-colonise have disappeared widely through habitat loss and fragmentation; biodiversity has declined drastically at local

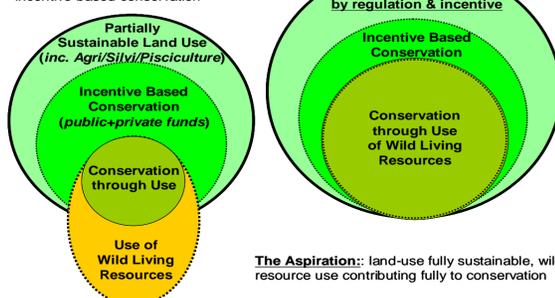
Over the same 50 years, human ability to predict has increased through the use of computers; we can now predict the development of habitats and species populations in space and time. Environmental Impact Assessments (EIA) and Strategic Environmental Assessments (SEA) have been using such predictions to constrain adverse developments (Treweek 1999). Together with regulations at EU level, including protecting 17% of Europe's area in Natura 2000, formal assessment systems may help halting biodiversity loss by 2010 at continental level.

However, current formal assessment systems are bottlenecked by dependence on experts, which limits application and can also create conflicts (Therivel 2004). Moreover, formal assessment systems do not cover the myriad decisions made by individuals at local level, on what to remove or plant and how and when to manage it. Decisions that are made for farm fields and gardens are small-scale and are left out of formal assessment systems, but do summate to change our environment.

Work across Europe further shows that private spending on biodiversity for wildlife-related activities is at least €40 billion annually in the EU (Kenward et al. in press). An opportunity therefore exists for this private spending to be combined with public funding for conservation of biodiversity in Europe. This was foreseen in the Convention on Biological Diversity (CBD), in which an emphasis on sustainable use of biodiversity (in 13 of 19 substantive articles) aimed at giving “incentive-based conservation” a strong boost (Hutton & Leader-Williams 2003).

We contend that the internet offers the way to implement commitments of CBD parties towards incentive based conservation. Thus we are designing an internet based decision support system for environment & land use that will enable policy makers to integrate knowledge from the regional & local level into the decision making process, while also encouraging local people to maintain & restore biodiversity ecosystem services.

**The Present:** land-use not fully sustainable, wild resource use not contributing fully to incentive-based conservation



**The Aspiration:** land-use fully sustainable, wild resource use contributing fully to conservation

## Methodological approach

TESS contends that local communities can restore environments if they are enlightened, empowered and aided by policy-makers and society as a whole. This provides scope for a transaction between governments and local communities: In order for governments to conduct complex assessments through EIAs and SEAs for developing policy and high-level plans, they need to consider the results of local decisions. In order for individuals to make small-scale assessments and decisions, they need complex knowledge that government can provide to local communities. In summary:

- Central government can produce complex knowledge by collating local knowledge.
- But to do this, central government needs to guide local actions and know their results.
- Communities and individuals have local knowledge & capabilities (skill, cash, time).
- But they need complex knowledge to guide their actions for long-term sustainability.

The internet is the key both to the collation of local knowledge and the automatic distribution of decision support to communities and individuals. However, a system for knowledge exchange will work only if it meets social requirements, by being not merely user-friendly but also user-attractive and socially integrated both at local and at central levels. To achieve this, we will:

1. Identify the information needs of policy makers and assess how this information is currently obtained.
2. Identify practical needs and stakeholder perspectives in relation to decision making at the local and regional level.
3. Assess existing data and modelling capabilities for aiding decision making at the local and regional level.
4. Apply available information and bio-socio-economic models in case studies across Europe by planning projects to benefit biodiversity and livelihoods together with local people who wish to aid their environment because they make use of it.
5. Survey 27 EU member states (plus some candidate states) for best practice incorporating biodiversity and wider environmental information into decision-making on land-use.

A Transactional Environmental Decision Support System (TESS) will then be designed to support transaction of environmental information between central & local levels. TESS will:

- (a) mobilize local communities to collect information on the state of biodiversity in their areas, collate all ways to leverage biodiversity enhancement, use models to predict economic & biodiversity impacts of small-scale actions, and deliver context-adaptive decision support, so that local people can optimise incomes from ecosystem services, in exchange for information on their decisions, and monitored results, which integrate to support decisions of central assessors for adaptive governance (regulations & fiscal incentives) and thus to guide central policy in relation to biodiversity conservation.

The ultimate aim is to aid restoration and maintenance of biodiversity and natural resources by reversing the processes that caused so much degradation. TESS is therefore more ambitious than merely supporting central policy. At local level, baseline monitoring and continuing assessment over wide areas could solve several problems with EIA and enable ‘pay by results’ to replace ‘pay for process’ subsidies (Ferrano & Kiss 2002).

## Results

A report will be available in 2009

- (i) describing information flows from local and regional to central,
- (ii) assessing local decision making processes, including the use of participatory approaches,
- (iii) bringing these together for EIA, SEA, and other environmental decision making at all levels.

A number of reports will be issued towards the end of the project (2011) to make available all the analytical evidence and results from individual case studies, together with a pan-European survey of assessment processes, including recommendations and guidelines based on how biodiversity trends relate to the different practices across Europe.

A report at the end of the project (2011) will present a design for the proposed Transactional Environmental Support System, which will support government commitments in many areas of the Convention of Biological Diversity (especially the Ecosystem Approach) and will be accompanied by a booklet of simple policy guidelines to present all the results for policy makers.



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- Institute of Sustainable Technology at Tallinn University of Technology (Estonia, [www.ttu.ee](http://www.ttu.ee))
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