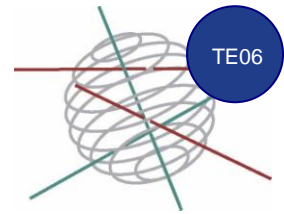


ECOFRESH



ECOsysteM services of FRESHwater systems

DURATION OF THE PROJECT
15/12/2009 – 31/01/2012

BUDGET
360.000 €

CONTEXT

Ecosystem services (ES) are the benefits humans derive from ecosystems. Since the Millennium Ecosystem Assessment (2005) many initiatives were taken to further develop this concept theoretically and to make it operational in daily policy. In Belgium there is an urgent need to gain more insight into local ES. Especially freshwater systems (FWS), one of the most threatened ecosystems in the world, need more knowledge on the many important ES they deliver (provisioning services, such as fish, shellfish, reed,...; regulating services, such as water regulation and water purification,...; supporting services, such as primary production, nutrient cycling,.. ; and cultural services, such as recreation).

PROJECT DESCRIPTION

Objectives

Within a changing environment and with increasing human demands for water, FWS might become even more important in the future. It is therefore crucial to understand which benefits FWS can deliver and how we can protect these benefits within a changing climate. The overall objective is that this study provides a methodology to study ES and benefits from FWS in Belgium that could be used for a detailed assessment. More specifically, the key objectives of this project are

- (1) to make a comprehensive overview of the ES delivered by Belgian FWS,
- (2) give a first assessment of their importance, and
- (3) develop methodologies for mainstreaming the concept of ES into policy and management.

Methodology

We conceptually work along the operational model put forward by Cowling et al. (2008) . Following methodologies are applied for the different objectives:

- **Objective 1:** The assessment of the ecosystems and their associated services. In the biophysical assessment, we will work out an operational typology of the FWS based on hydrogeomorphological and vegetation criteria in a hierarchical way. This will allow us to map these units and link them to services delivered. The social assessment will identify beneficiaries of the ES. A valuation of present ES will be made according to different methodologies.

- **Objective 2:** Quantifying the relative importance of ecosystem services and their drivers. In order to plan and manage for ES, it is important to have insight in the impact of environmental variables and/or management options on the delivery of the services. As it is impossible to develop numerical models to describe all services in detail, Bayesian belief networks will be constructed based on conceptual models that will be made for the different systems. This will allow at least to describe in a (semi) quantitative way possible changes and their socio-economic consequences. This will be an important tool in exploring opportunities, constraints and strategies to develop and optimize ES.

- **Objective 3:** A critical analysis of present policies for management of freshwater ecosystems and their associated services. This will be achieved by literature survey, analysis of policy documents, and contacts with stakeholders



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INTERACTION BETWEEN THE DIFFERENT PARTNERS

ECOFRESH is a strongly integrated project which relies on the complementary expertise of the partners. As a result, the different work packages (WP) overlap in time and will feed each other with information. This will require regular meetings of all and subsets of partners, as well as intensive electronic data and information exchange.

WP's 1 and 2 concern the biophysical assessment of FWS and their ES and will be carried out by KUL and UA. The methodologies will be developed collaboratively between the two partners. The first two WP's will provide information and insights that can serve as starting point for the research in several other WP's. WP3 deals with valuation of ES and will be coordinated by VITO. Regular exchange of small amounts of newly gained insights and information will allow the different partners to work simultaneously in time and avoid delay. WP4 concerns the development of Bayesian belief networks and is coordinated by UGent. This WP is mainly based on the development of the conceptual models in WP2. WP5 concerns the social assessment of the freshwater ecosystems and its ES and will be carried out by INBO. This WP will mainly require input from WP's 1 and 3.

EXPECTED OUTCOMES

- 1) Symposia proceedings and publications in international peer reviewed journals
- 2) Several workshops with the follow-up committee
- 3) A website will be constructed for the ECOFRESH project, describing important findings, and with a listing of all publications and links to important sites about ecosystem services. Information about future workshops/meetings will be available
- 4) For each task within the WP's one deliverable will be presented in the form of a report
- 5) A methodology will be developed for the assessment and prediction of ecosystem attributes and associated services at various scales, including the development of a Bayesian network model framework. This methodologies will be presented on the website so that it can be applied and tested by policy makers, managers and other stakeholders.

PARTNERS

Activities

UA has vast experience with work on ES. The restoration project of the Scheldt estuary is based on research done by UA. The rationale of this restoration project was the optimization of ES of the estuary. The economic valuation of this project was done by VITO and both research groups have worked together in several projects on ES.

KUL has a long standing reputation in research on stagnant waters and the relation between diversity and functioning. UGent is specialised in ecological informatics and ecological modelling.

The INBO is responsible for the reporting of the state of the nature in Flanders and has extensive databases on all biota. INBO has also experience with societal aspects of ES. For the Hautes Fagnes case we can rely on the cooperation of SPW who is responsible for the management of the area.

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Follow-up Committee

For the complete and most up-to-date composition of the Follow-up Committee, please consult our Federal Research Actions Database (FEDRA) by visiting <http://www.belspo.be/fedra> or <http://www.belspo.be/ssd>

