

## Abstract

Today's forests are the legacy of yesterday's societal priorities and climate. Traditionally, European forests have been managed for a final ecosystem service (ES) of wood production delivering timber, pulpwood and primary bioenergy. This focus on terrestrial biomass production has led to a relative neglect of other final ES, including aquatic services.

Appropriately managed forests can contribute to climate regulation through, e.g., rewetting or promote biodiversity through old growth and continuous cover forestry. Furthermore, forestry practices can be adapted to minimize the impacts of floods and droughts in a rapidly changing climate or to limit nutrient runoff.

New societal demands and a rapidly changing climate mean that historical baselines are no longer an adequate guide for future conditions. Thus, our overall objective is to develop new approaches needed for sustainable management of aquatic ecosystem services (ES) from Northern and Central European forest landscapes. We aim to co-create the solutions needed for resilient and multifunctional landscapes that will be sustainable under future conditions.

To achieve this aim we will:

- raise stakeholder awareness about the potential for combining terrestrial (production) and aquatic ecosystem service delivery in the forested landscape,
- articulate a new conceptual model of ES delivery to better support the realities of multi-objective, adaptive management in rapidly changing environments
- build the knowledge base, using micro- to large size case study catchments, to identify current constraints and opportunities for aquatic ES delivery from Northern and Central European forests
- develop already existing water quality models for scenario assessment and stakeholder dialogue
- co-create "climate proof" management scenarios for sustainable aquatic ES delivery
- evaluate and communicate the range of governance options for sustainable aquatic and terrestrial ES delivery.

Forestry impacts on aquatic ES delivery are typically not incorporated in catchment-scale water quality models. Understanding and modelling present and future forestry impacts on aquatic ES delivery is of high societal relevance both in Central Europe and in the Nordic countries. Models will be used to refine and articulate "what if" scenarios and communicate them to the forestry and land-use planning sector, national, regional, and European decision-makers, and the scientific community. This could provide insight and lead to dialogue regarding trade-offs and consequences that might occur if specific management actions are followed.

The project is relevant to the call since it will result in a better understanding of aquatic ecosystem services in forested landscapes from local to a national scale, and help understand and predict multiple pressures on these ecosystems now and in the future through water quality models.



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- FINNISH ENVIRONMENT INSTITUTE - FINLAND
- NORWEGIAN INSTITUTE FOR WATER RESEARCH - NORWAY
- MENDEL UNIVERSITY IN BRNO - CZECH REPUBLIC

### ► Funding organisations

AKA (FINLAND) / FORMAS (SWEDEN) / RCN (NORWAY) / TA CR (CZECH REPUBLIC)

### ► Duration

3 years

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## KEYWORDS

ecosystem service delivery  
forest landscape  
multi-functionality  
water quality models  
co-creation