



Abstract

Lake ecosystems are vital for sustaining biodiversity and provide crucial benefits to humanity. However, these systems face significant pressures from multiple human activities. Many temperate lakes in Northern Europe exhibit gaps between their current ecological status and policy targets. Closing these gaps is challenging due to the diverse values and perspectives that stakeholders hold regarding lake ecosystems.

PLURALAKES aims to enhance lake management strategies by integrating diverse values of nature into anticipatory governance processes, ensuring the long-term provisioning of ecosystem services. At the core of the project is the 'Nature Futures Framework' (NFF), a newly developed tool by the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) to guide change processes towards desirable futures for nature and people.

We will operationalize the NFF for lake ecosystems through case studies in three catchment areas in Northern Europe (United Kingdom, Finland and The Netherlands), which encompass many of the anthropogenic pressures faced by temperate lakes globally. Together with stakeholders in the case study areas, we will develop three types of knowledge, culminating in a transferable theory of change:

- System Knowledge (what is?) – We synthesize data and use process-based modeling to analyze lake dynamics, ecosystem services, and the effectiveness of management measures under climate change and policy scenarios.
- Target Knowledge (what ought to be?) – We co-produce desired lake futures through participatory visioning and apply valuation methods to quantify stakeholder preferences.
- Transformative Knowledge (how to?) – We identify pathways to desirable lake futures using participatory workshops and target-optimizing scenario modeling, providing actionable strategies for decision-making.

While pathways are tailored to local contexts, PLURALAKES develops a tested theory of change with process design and experiential learning tools for broader application. Leveraging expertise in freshwater ecology, modeling, environmental economics, scenario planning, and water management, the project extends the NFF methodology for IPBES. Aligned with Water4All's 2023 Joint Transnational Call, PLURALAKES contributes primarily to:

- Topic 3 – Developing innovative tools for integrating ecosystem services into water management;
- Topic 2.2 – Co-designing water management strategies and evaluating management efficacy;
- Topic 1.3 – Advancing comprehensive valuation methodologies for aquatic ecosystem services.

The project comprises five interdependent work packages, covering transdisciplinary process coordination, systems knowledge development, target knowledge co-production, transformation knowledge co-production, and overall project management. By bridging policy recognition with real-world lake management, PLURALAKES delivers practical insights and tools for securing sustainable freshwater futures.



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- UK CENTRE FOR ECOLOGY & HYDROLOGY - UNITED KINGDOM
- STICHTING RADBOUD UNIVERSITEIT - THE NETHERLANDS

► **Funding organisations**
FORMAS (SWEDEN) / AKA (FINLAND) / EPSRC UKRI (UNITED KINGDOM) / NWO (THE NETHERLANDS)

► **Duration**
3 years

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KEYWORDS

lake ecosystems
water quality management
plural valuation
IPBES
scenario analysis