

## NordForsk, Nordic Centre of Excellence: Nordic Bioeconomy Programme

### An Integrating Nexus of Land and Water Management for a Sustainable Nordic Bioeconomy (BIOWATER).



BIOWATER will serve as the first Nordic science center and platform that provides solutions for land, environmental and water resources management in the face of potential and competing demands for biomass, land and water resources related to the green shift and concurrent bioeconomic development. BIOWATER consists of 8 Nordic partners and 5 non-Nordic external collaborating research institutions, and includes 19 stakeholder representatives across countries and relevant sectors. From the onset, we bring together scientists and stakeholders for optimal interaction and exchange where e.g., contrasting scenarios for bioeconomic development will be jointly developed. Potential impacts of land use change and climate change on water, elemental cycles and ecosystem services will be assessed from data-rich, experimental sites and intensively monitored catchments and up-scaled to larger river basins and Nordic regions. Assessment of the opportunities and limitations for a green bioeconomy in the Nordic countries (stakeholder integration, policy instruments and governance models considerations) will be based on the scenario outcomes from elemental budgets and ecosystem service accounting exercises. The center will interact with policy makers and stakeholders on the opportunities and limitations of the green, bioeconomic shift for the rural North.

BIOWATER gathers a critical mass of prominent Nordic scientists jointly covering a wide range of scientific disciplines, especially around freshwater catchment processes, ecosystem functions and ecosystem services. BIOWATER will provide an integrated understanding of how land use and climate changes will influence water resources including water quality and ecosystem services dependent on water flows. By evaluating the impact of various land use scenarios and options on hydrology, biogeochemistry, inland water quality, ecology, ecosystem services, as well as socio-economic costs and benefits, BIOWATER will strengthen the available knowledge base to identify the window of opportunities for sustainable bioeconomic development in the Nordic countries. BIOWATER has a clear goal and workplan to provide the input needed for future policies and actions related to these subjects. BIOWATER will have a long-lasting effect on Nordic water research in the bioeconomy context by linking key research institutes and scientists and by developing a program of doctoral education cooperation, in addition to the end-user involvement from the onset of the Centre. This will provide opportunities for collaboration between experienced researchers as well as form a platform for post-doctoral and other young researchers.

Finnish partners in BIOWATER are University of Oulu, Finnish Environment Institute (SYKE) and Natural Resources Institute Finland (Luke). In Finland, the planned two PhD thesis works at University of Oulu, in research units of Water Resources and Environmental Engineering (Professor Klöve) and Ecology & Genetics (Professor Muotka), will be related to studies on water related impacts of peatland use on future bioeconomy.

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