

WATERWORKS 2017 RDI FUNDED PROJECTS BOOKLET

Project: Reducing the effects of forest management to inland waters

Acronym: REFORMWATER

Outcomes and expected impact:

The project will develop novel methods and protocols for decreasing the effect of forest management operations on aquatic systems and quantifies the effects of forest management operations on water quality. We will also develop supporting tools for sustainable integrative management of water resources .i.e. a model-based tool for reducing the impact of forest management on aquatic systems.

List of deliverables expected:

WP1 Deliverables: 1.1. Quantified responses and parameterized equations on the effect of water table level on DOM release from soils to be used for modelling in WP3, 1.2. Coefficients for biodegradability of DOM of different quality 1.3. Scientific manuscripts on the formation of DOM and its biodegradability in different forest management treatments.

WP2 Deliverables: 2.1. Technical report on the design and laboratory tests of the biochar filter, 2.2. Technical report on the water purification efficiency of the biochar filter in field conditions, 2.3. Scientific manuscript on the biochar filter method.

WP3 Deliverables: 3.1. Calibrated and tested model for soil DOM production, 3.2. Calibrated and updated Peatland simulator, 3.3. Technical report on the overall effects of ditch network maintenance on DOM load and greenhouse gas emissions from peatland forests, 3.4. Guidelines and protocols for management operations on forested peatlands, 3.5. Scientific manuscript on the combined effects of different harvesting methods and biochar filters on water quality

Expected research results to communicate and disseminate (in very general terms)

1. Knowledge on the effect of peatland forest management on the quality of water leaching out from peatland dominated catchment

2. Applicability of biochar filters for reducing the dissolved organic matter and nutrient emissions from forested peatland catchments

3. Supporting tools for sustainable integrative management of water resources in forested catchments

4. Recommendations on methods for decreasing the effects forest management on DOM load and associated greenhouse gas emissions in aquatic systems

Target groups for communication and dissemination activities:

Governmental and non-governmental organizations responsible for forest management, forest owners, forest companies, nature conservation organizations

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<p>Experiments / Case studies (if any): location, type of experiments: Finland: Paroninkorpi research area in Southern Finland, long-term field experiment for testing the effects of different forest management options on forest carbon balance, greenhouse gas emissions and water quality in peatlands (treatments: clear-cut, continuous cover forestry and ditch network maintenance). Column experiment for studying the effect of ditch network maintenance on soil organic matter decomposition, DOM formation and DOM quality. Columns will be collected from all sites in Finland, Sweden, Estonia and Ireland for a joint column experiment to be carried out in the laboratory in Finland</p> <p>Sweden: Krycklan catchment in Northern Sweden, long-term field experiment for testing the effects of ditch network maintenance on water quality, greenhouse gas emissions and forest carbon balance</p> <p>Estonia: Järvseljä experimental area in Southern Estonia, long-term field experiment for testing the effects of ditch maintenance on forest carbon balance, greenhouse gas emissions and water quality</p> <p>Ireland: Meeneenbog area in Western Ireland, long-term field experiment for testing the effects of ditch maintenance on water quality and greenhouse gas emissions</p>	<p>forest companies</p>
<p>Water Policy context / project contribution to policies (National, European, International – UN SDGs): The project contributes the following UN SDGs: 6. Clean water and sanitation (drinking water quality); 7. Affordable and clean energy (e.g. bioenergy); 8. Decent work and economic growth (connections to paper and pulp industry); 13. Climate action (carbon sinks, greenhouse gases); 14. Life below water (contribution to sea ecosystems through man-induced changes in catchment areas); 15. Life on land (especially wetlands and freshwater ecosystems)</p>	