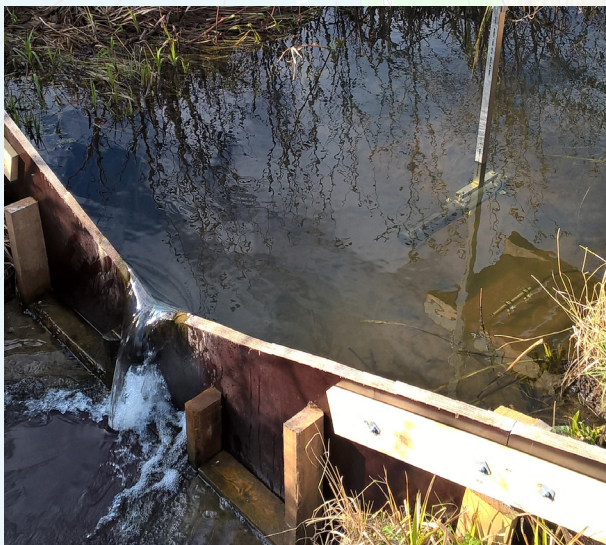


GOVERNMENT
KEY PROJECT

LOHKO II

defines the field-scale nutrient loading modeling and estimates abatement costs for reduction of nutrient load

Nutrients and suspended solids may be leached from the field. But when and how much? And how can the risk of the load be reduced, and how much does it cost? Since real load measurements cannot be done on all fields, emissions must be estimated by using nutrient load models. Combining load and economic information will specify the costs of reducing loads.



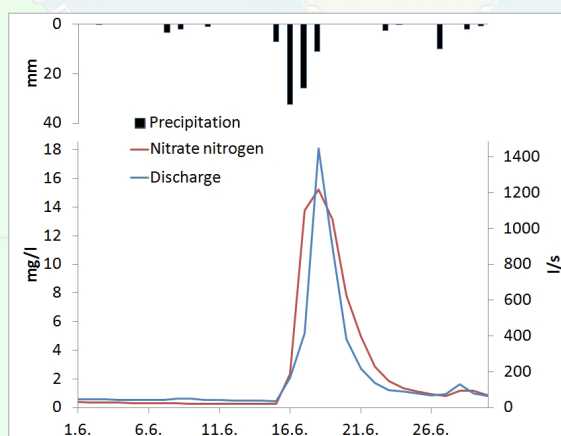
The field-scale load model VEMALA/ICECREAM was developed further in the LOHKO project (Field specific nutrient load modeling and its development), and the work continues in LOHKO II. As a new project part is estimated the economic impact of measures to reduce nutrient load.

The aim of the project is to describe the load of nutrients and suspended solids from different types of fields in current state, the effect of different farming practices on loading, and the cost impact of load reducing measures on the economy of the farms. As accurate knowledge as possible, concerning the load and the factors affecting it, helps to dimension and focus more accurately and cost-effectively the nutrient reduction targets set to agriculture.

Data for load modeling

Water quality is measured in five catchments located in Uusimaa and Southwest Finland. Automated sensors are used to monitor actual, often rapidly changing water quality and discharge. The measurement results can be followed almost in real time on the project website. In addition, soil samples are taken and soil temperature is monitored. Farmers are asked for field specific information (e.g. crops, fertilization, yield, soil quality). The collected data will be used for developing the model.

The field characteristics, i.e. soil type, field slope distribution, and P value, are used as an input data in the model. Utilizing this data, the model simulates the risk of the annual erosion and nutrient load on the field, when weather conditions and farming practices vary. The harvested crop yield and used fertilization affect the risk of nutrient leaching. Also, in this respect, the model is being developed to become even better. This way, the data collected in the measurements and surveys can be converted to a form, which a farmer can easily utilize in the cultivation planning on his farm.



The automatic on-line sensors can detect fast changes in water quality. This defines the overall load estimation.

Information to farmers for decision-making

The farms in the project areas will receive parcel specific estimates, concerning the impact of different farming practices on nutrient leaching and erosion on their farms. In addition, the economic impact of the measures on a plant species basis, as well as on a farm level, will be calculated. A new tool is also being developed, for farmers to be able to estimate the load in different circumstances.

Implementation and funding

LOHKO II project (1 Jan 2017 - 31 Dec 2018) is implemented by the Central Union of Agricultural Producers and Forest Owners (MTK), The Water Protection Association of the River Vantaa and Helsinki Region (VHVSY), Centre for Economic Development, Transport and the Environment for Uusimaa (ELY), Pyhäjärvi Institute (PJI), Natural Resources Institute Finland (LUKE) and the Finnish Environment Institute (SYKE).

LOHKO II is one of the Government's key projects, which enhance implementation of the marine environment management, as well as management of the waters. It receives about half of its funding from the Ministry of Environment; rest is covered by the project partners.

The economic impact is important to know

When farms are required to change production, in order to reduce nutrient load, this has an impact on the farm's financial result. Cost-effectiveness of measures is also important, when setting regional nutrition reduction targets and selecting appropriate measures.

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