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Catchment area based action model, key factor for implementation and stakeholder commitment

Catchment area based action model combines the actions and practices for improvement of the productivity of fields and improvement of water and environmental protection which can be implemented simultaneously on a catchment area or water system scale with nationwide perspective.

The drainage renovation measures should be implemented with holistic approach on a catchment area for decreasing the nutrient load to waterbodies and for providing of effective farming practices. The renovation objects should be listed, so that the actions could be targeted systematically, beginning from the objects most critical for drainage and nutrient outflow. This means wide study of the drainage system condition, first with the basic material (aerial photo, height/contour data, soil structure data) choosing the objects, and after that field study of them. The objective is to get mapping of flood risk and drainage needs assesment. Flood risk and erosion modelling could be a tool for the preliminary study, but nutrient outflow and drainage needs assesment cannot be based only on modelling, but needs additionally field measurements and studies on the site. Combined with the risk area mapping should be also found out the activity of the local drainage corporative bodies. These should be, included their drainage managers, reinstate to responsibility of organizing drainage system maintenance and renovations. This should be together with drainage planning experts and nationwide, not only concerning the risk zones.

An info system for the active farmers should be established for increasing the information dissemination on the issues: possible financial contributions, effectivity of the measures, service providers and licensing procedures. Information feed should be continuous and repetition leads to improvement of production economy and decrease of nutrient loading to natural waters. Authorities, advisory organizations and expert NGOs of the sector should provide the contents of the information feed. Information on methods and implementation of holistic drainage management should be targeted primary to the drainage corporative bodies of the risk territories.

Drainage management should become a part of normal crop planning. Crop planning applications should get a drainage planning section, including actions for basic and local drainage together with surface flow management.

Large-scale and holistic drainage management and maintenance demands a clear division of roles for different stakeholders. Planning has been relocated from authorities to private service providers and advisory together with guidance is transferring to advisory organizations. Juridical review remains to state authorities and province administration are taking over the financial subsidizing. There is a need of a clear “command chain” from the catchment area to water bodies. The links of this chain would be drainage cooperatives, authorities, fishery regions, land owner cooperatives, foundations, associations, planners, contractors, scientists, advisers, farmers and land owners. Responsibility of actions could not remain to separate actor



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of the chain, but we need an operative set. Everyone should have a clear approach, which leads the activities towards operational basic and local drainage including surface water management. As a result should be the good status of waterbodies according to the demands of Water Framework Directive. Catchment area wide cooperation groups, negotiation committees and foundations which coordinate the projects have been solutions adapting and combining the actors, enabling the formation of operative chain. Good references of these can be found from the catchment areas of Vesijärvi, Pyhäjärvi, Vanajavesi and Vantaanjoki. Recently a cooperation group / implementation committee for waterbody reconstruction is under establishment for the catchment area of Porvoonjoki.

For practical implementation of the holistic drainage management an operational model is needed, where after study of problematic sites the solutions are found with assistance of landowners, drainage cooperatives and other local stakeholders on catchment wide perspective. Advisory and information is targeted to the local stakeholders and drainage cooperatives of the most critical sites. On agricultural fields actions begin from renovation of basic drainage and surface flow management and continues to local drainage and soil structure improvements. On every step biodiversity, recreational values and fishery should be noticed.

Catchment area based operational model can be divided to the next phases:

- 1) Nationwide study on the most difficult nutrient outflow and weakest productivity risk areas by modeling, measuring and basic data studying for every province.
- 2) Establish an info system for farmers, where they can obtain knowledge on subsidies and grants for the measures together with methods and operations of drainage management, laws and acts, benefits and opportunities of the measures.
- 3) Regionally choose the catchment areas and waterbodies to renovation, based on the results of the risk assesment. Dependent on the size of the waterbody do an assesment if there should be established a cooperation group, negotiation committee or other combining organization, if there is not any. The organization should include authorities, local cooperatives, foundations, nature or water conservation NGOs, planners, contractors, scientists, advisors and local stakeholders. An organization coordinating the actions should be chosen, for example local water conservation association or other analogous. The objective is implementation of the renovation extensively and comprehensively, both on the catchment area and on the waterbody. Each member of the organization is responsible their operational part and financing for the actions and management will be applied together or separately.
- 4) The members of the organization clarify together with the municipalities, advisory organizations and local stakeholders the landowners of the most difficult risk areas, for targeted information delivery. This can be utilizing the old data and mapping of beneficiary areas of drainage corporative bodies of ELY-centers or Province archives, and also property register of the National Land Survey.



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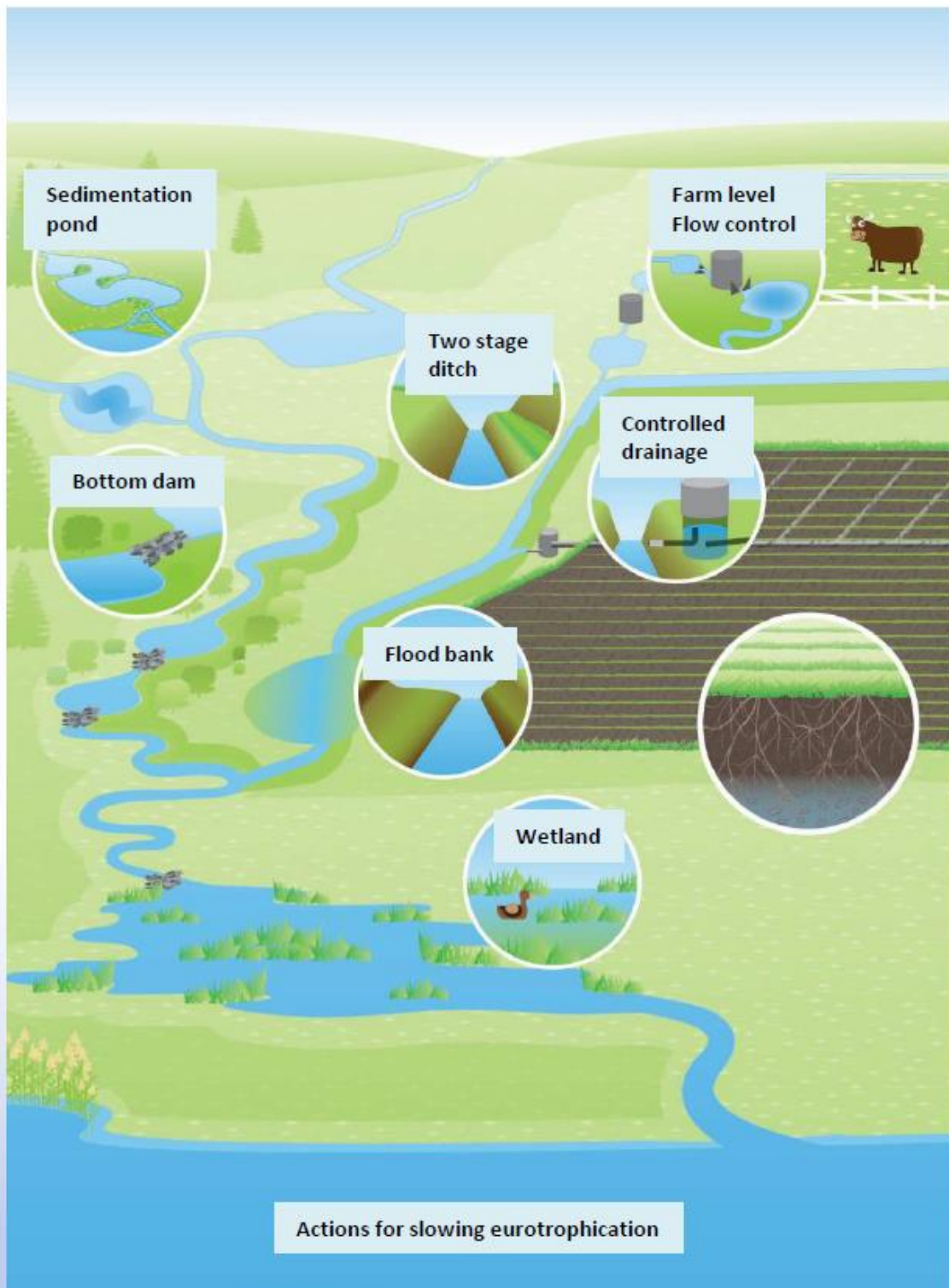


- 5) Drainage planners compose the drainage needs assesment, study on basic situation and feasibility study of possible water protection constructions together with the land owners. This includes also other possible measures, such as improvements on fishery perspective, improvement of recreational values etc.
- 6) After needed basic studies, measurements and mappings should the local drainage corporative body be activated, in the case of actions targeted to agricultural areas. For decreasing of internal loading or other water management actions should be activated some other organization who is responsible, such as joint property management association (= “landowner cooperative for water management”) or water conservation NGO and decide the implementation of the actions, needed for the renovation.
- 7) Compose the final plans, complete the needed assesment for the authorities, get needed licenses, ensure financing and do the procurement of contractors.
- 8) Exact marks to the sites, such as marker poles. Survival of the works.
- 9) Compose a wider regional action plan and maintenance plan to ensure the implementation and financing of possible needed additional actions, including also maintenance of the constructions in future.

The implementation is a joint activity of different stakeholders, based on commitment of the landowners. Drainage management of agriculture should be included to crop planning. This is a tool to introduce drainage management to farm level, as a part of normal crop production practices. Different projects can further on act with development of methods and practices, promotion of the approach and composing the regional risk assessments. Anyhow, the actual renovation work according to holistic drainage management should be implemented utilizing different and more sustainable subsidies and grants for agriculture and water protection.

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Mainostoimisto Kuke. Menetelmiä ravinteiden ja vedenpidättämiseksi osana kokonaisvaltaista pellonkuivatusta. Granholm, K., E. Lundström, H. Äijö, M. Ortamala, S. Manninen-Johansen & S. Mäkelä (2018)