

# Conclusions and recommendations of the National Audit Office

## Steering, financing and effectiveness of the management of water resources and marine environments

### Reducing nutrient loading from agriculture

The objective of the audit was to examine whether the central government, through performance management, has provided good prerequisites for the achievement of the objectives set for the management of water resources and marine environments in an economic, efficient and effective manner. In addition, it was examined whether the programmes for financing the management of water resources and marine environments have succeeded in solving key challenges in the water resource and marine environment management and whether the monitoring and assessment of and reporting and communication on the water resource and marine environment management have produced sufficient high-quality information on the effectiveness of the activities.

The most important problem in Finnish water bodies and marine areas is eutrophication caused by nutrient loading. The majority of the nutrient loading comes from agriculture. Most of the central government's financing for the management of water resources and marine environments has been granted for water protection in agriculture. For these reasons, the audit focused particularly on reducing nutrient loading from agriculture.

The audit was targeted at the financing programmes that are the most significant for reducing nutrient loading from agriculture, i.e.:

- gypsum treatment of arable land and water resources management in agriculture as part of the water protection enhancement programme
- agri-environmental compensations and eco-schemes as part of the Rural Development Programme for Mainland Finland 2014–2020 and the national CAP Strategic Plan 2023–2027
- the programme for promoting nutrient recycling and improving the status of the Archipelago Sea (RAKI programme)
- the experimental programme for nutrient recycling.

### Financing of the management of water resources and marine environments is not planned and monitored as a whole

The programmes of measures for water resource and marine environment management have proposed measures to achieve a good status of water resources and marine areas and assessed the costs of these measures. However,

potential sources of financing for the implementation of the measures have only been identified on a very general level, and the costs to the central government have not been assessed comprehensively.

When the Government approves the river basin management plans and the marine strategy, it does not allocate financing for their implementation. Decisions on the financing are made separately in the state budget process, in the financial planning of different ministries and in the planning of several separate financing programmes. It is difficult to estimate the total of state funds used for the management of water resources and marine environments, as the financing is not planned and monitored as a whole. Ultimately, the implementation of measures depends on decisions made by a large number of individual actors, and the implementation of the plans is on a voluntary basis. It is uncertain what the overall steering effect of the river basin management plans and the marine strategy on other planning and decision-making processes is. For example, the target areas and actual areas of several measures under the agri-environmental compensations have been much smaller than those proposed in the river basin management plans. Next time, the programmes of measures for water resource and marine environment management and the CAP Strategic Plan will be updated at the same time, which will make it easier to harmonise their water resource management targets and measures.

## Cost-effectiveness has not been a significant criterion in the selection, planning and monitoring of measures

Based on the audit, overall cost-effectiveness from the perspective of central government finances has not played a significant role in the selection, planning and monitoring of the measures taken for water resource and marine environment management. The costs and effectiveness of measures have been assessed in the planning phase with methods that have not made it possible to establish the most cost-effective set of measures. Nor does it appear from the plans how the assessments have influenced the selection of measures.

Although the agri-environmental compensation scheme is the most significant financing instrument for water resource management, alternative combinations of measures have not been systematically assessed and compared in the planning phase from the perspective of their cost-effectiveness. The environmental compensation measures of the Rural Development Programme were targeted regionally to such an extent that their cost-effectiveness in terms of water resource management remained weak. The cost-effectiveness of riparian zones required by the environmental compensations under the CAP Strategic Plan has been improved by targeting them on the basis of the erosion and flood susceptibility of fields. The challenge of the measures related to plant cover for erosion control, in turn, continues to be the accumulation of soluble phosphorus in the topsoil, which increases its load.

In order to improve the cost-effectiveness of the agri-environmental compensation scheme in terms of water resource management, it has been repeatedly proposed and justified in various assessments that when measures are

targeted, priority should be given to high-phosphorus field parcels, that a parcel-based nutrient information system be established for this purpose and that the payment of compensations be based on impact rather than on costs and income losses. So far, none of these have been implemented.

## The lack of information based on monitoring and evaluation of impacts has also hampered reporting and communication on the results

Statutory information on the development of the status of water bodies and marine areas has been compiled in the river basin management plans and the marine strategy as well as the EU reports on their implementation. However, information on the achievement of the nutrient load targets or the actual impacts of the measures, for example, has not been compiled systematically in them. There is very little information available on the diffusion and longevity of the benefits of the audited research, development and innovation programmes and the projects financed under them, and the involved uncertainty is high. The Ministry of Agriculture and Forestry and the Ministry of the Environment are increasing the resources of the Natural Resources Institute Finland (Luke) and the Finnish Environment Institute (Syke) for environmental and water monitoring of agriculture. In future, this may also improve the information base used for assessing the impacts of measures.

The “Act for Waters” website of the environmental administration monitors the progress of the measures of the 2016–2021 programme period. However, the website does not provide information on the actual impacts and costs of the measures or on the achievement of the intended impacts of the measures. Nor does it summarise the achievement of the environmental objectives set for the water and marine management. This is partly due to the lack of monitoring information on the impacts of the financing programmes, but the website does not even utilise all available information. In future, the PISARA information system on water resource and marine environment management, which is under development, could provide a user-friendly platform for sharing information on the cost-effectiveness of the management of water resources and marine environments. It could, for example, compile information produced by impact evaluations of different financing programmes and by the environmental and water monitoring of agriculture in an understandable and illustrative format. The production of and communication on monitoring information would require sufficient resources.

## The targets set for the reduction of nutrient loading are not sufficient to achieve a good status of coastal waters

Despite significant financing programmes, a good status of water bodies and marine areas in terms of eutrophication has not been achieved. The nutrient load reduction targets defined in the river basin management plans and the marine

strategy have been achieved on average in the case of nitrogen but not in the case of phosphorus. The nutrient load ceilings defined in the marine strategy have been found to be insufficient to achieve a good status. No targets have been set in the plans and strategy for reducing nutrient loading from agriculture. The measures taken have curbed the nutrient loading from agriculture, but overall, the loading has not decreased significantly in any marine area over a longer period of time (1995–2021) or in the last 10 years (2012–2021). This is due to many factors, such as the partly low cost-effectiveness of the measures.

The new marine environment management targets set for 2024–2030 also include loading targets for agriculture. Even if the targets were met, they are not sufficient to achieve a good status of coastal waters, at least in the next 30 years.

## Although the regulation governing the use of phosphorus has been tightened, it does not provide sufficient incentives for fertilisation according to the needs of crops

The nutrient balance of arable land has decreased on average over a longer period of time, but the national phosphorus balance, in particular, has remained at a certain level. The average phosphorus content of arable land has dropped slightly in Finland over the last 20 years, but in many areas, considerably more phosphorus than the crops would need is still used. Efforts have been taken to reduce overfertilisation, especially by the largest financial measure related to environmental compensations, i.e. “Balanced use of nutrients”. It has not been possible to assess the impact of the measure on nutrient loading accurately, but its effectiveness has been undermined, for example, by fertilisation limits exceeding the needs of crops, derogations not based on the nutrient needs of crops, challenges related to the credibility of supervision and the fact that many large livestock farms have opted out of agri-environmental compensations.

The Government Decree on the use of fertiliser products and natural fertilisers containing phosphorus, which entered into force in 2023, and the fertilisation restrictions contained in it now also apply to operators outside the agricultural subsidy schemes. However, the challenges related to the adequacy of fertilisation limits, certain derogations and supervision remain unchanged.

## Nutrient recycling has been promoted, but there are still major challenges in the reallocation of manure nutrients

The use of phosphorus exceeds the needs of crops, especially in areas with a high concentration of livestock farming due to manure accumulation. Solving the problem requires the transfer of manure phosphorus from surplus areas to where it is needed. There is no monitoring information on the impacts of the agri-environmental compensation measures promoting nutrient recycling, but the mid-term reviews of the Rural Development Programme have found that the measures have not been implemented in accordance with the targets. In the CAP Strategic Plan, the terms of corresponding measures have been amended in such a manner that the feasibility and effectiveness of the measures have improved.

The research, development and communications projects funded with government grants under the RAKI programme of the Ministry of the Environment have increased awareness of the need for nutrient recycling and laid a foundation for new innovations. However, there is no systematic monitoring information on their impacts on nutrient recycling in agriculture and on nutrient loading.

In Finland, only slightly more than seven per cent of manure is processed into fertiliser products, when the amount should be at least 20 per cent to enable sufficient reallocation of manure nutrients. According to studies, sufficient results can only be obtained with large biogas plants or other recycled fertiliser production plants. The state has supported the research and development efforts and investments required by such plants, for example in the experimental programme for nutrient recycling. However, the investment financing of the programme was cut significantly in 2023, and the programme will end in 2025. The programme's impact evaluation is carried out in 2024 by the Natural Resources Institute Finland and the South Ostrobothnia Centre for Economic Development, Transport and the Environment. The prerequisites for effective nutrient recycling may be improved by the Government Decree prepared by the Ministry of Agriculture and Forestry on nutrient recycling subsidies to be granted in 2024–2026 to biogas plants for the promotion of the production of recycled fertiliser products. The decree was approved in February 2024.

## Recommendations of the National Audit Office

1. The Ministry of the Environment and the Ministry of Agriculture and Forestry, in cooperation with other relevant actors, should define targets for reducing the nutrient loading from agriculture and for promoting nutrient recycling. Clear justifications and schedules should be presented for the targets.
2. The Ministry of the Environment and the Ministry of Agriculture and Forestry should jointly ensure, in connection with the next updates of the programmes of measures for the management of water resources and marine environments and the CAP Strategic Plan, that measures aiming at reducing nutrient loading from agriculture are prioritised with clear justifications, and that they are targeted as cost-effectively as possible and provided with as long-term financing as possible. From the perspective of the management of water resources and marine environments, the most important measures would be those that reduce unnecessary fertilisation, prevent effectively the migration of nutrients from fields to water bodies and promote the transfer of manure nutrients from surplus areas to areas where they are needed in an economically and environmentally sustainable manner. In addition, opportunities to test and introduce performance-based incentives should be taken into consideration.
3. The Ministry of Agriculture and Forestry should ensure consistency of the policy instruments aiming at the use of manure nutrients according to crop needs. It would be essential that the fertilisation limits set in the phosphorus decree guided to the use of fertilisation according to the needs of crops.

Furthermore, the impacts of making the manure derogation in the phosphorous decree permanent or extending the transitional period on the achievement of the objectives of water resource and marine environment management and those of the relevant financing programmes should be thoroughly assessed before any such amendments are made to the decree.

4. The Ministry of Agriculture and Forestry, in cooperation with the Ministry of the Environment and other relevant actors, should ensure the availability and reliability of the information necessary for cost-effective targeting of measures aimed at reducing nutrient loading from agriculture and for efficient monitoring and supervision of these measures. The prerequisites for experimenting with and establishing a field-parcel-specific nutrient information system should be examined, and decisions on the system should be made without undue delay.
5. The Ministry of the Environment and the Ministry of Agriculture and Forestry should plan the procedures and appropriate indicators for monitoring and assessing the cost-effectiveness, from the perspective of central government finances, of the measures and financing programmes aimed at reducing nutrient loading from agriculture. In this connection, particular attention should be paid to monitoring and evaluation of the impacts of the environmental compensations for agriculture on water bodies and the longevity of the results and impacts of relevant research, development and innovation programmes.
6. The Ministry of the Environment, in cooperation with other ministries responsible for the management of water resources and marine environments, should plan and implement procedures and technical solutions for compiling and communicating monitoring and evaluation information on water resource and marine environment management and the relevant financing programmes, for example as part of the development of the PISARA information system.