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The Danish Ministry of Food's oversight of nitrogen emission from the application of fertiliser in the agricultural sector

1. Introduction and conclusion

1.1. Purpose and conclusion

1. This report concerns the Danish Ministry of Food, Agriculture and Fisheries' (hereinafter referred to as the Ministry of Food) oversight of nitrogen emission from the application of fertiliser in the agricultural sector.

By a royal resolution, the ministerial responsibility for overseeing nitrogen emission from the utilization of fertiliser in the agricultural sector was transferred to the Ministry of the Green Tripartite on 29 August 2024.

According to the Ministry of Environment, nitrogen emissions from the agricultural sector are the primary reason for oxygen depletion in Danish seas. The ministry estimates that well over 70% of Denmark's total nitrogen emissions are caused by fertilisation of agricultural farmland. Fertilizers contain nitrogen which stimulates plant growth. The nitrogen that is not absorbed by the plants can leach through the soil and waters and run off into the seas where it can accelerate the growth of algae and lead to oxygen depletion.

In 2021, a majority in the Danish parliament decided to reduce annual nitrogen emissions in the agricultural sector by more than 20% before 2027. The reductions are to be achieved through, for instance, two voluntary measures dealing with targeted catch crops and nitrogen projects. The targeted catch crops are intended to reduce nitrogen emission by 3,500 tons annually, and the nitrogen projects are intended to reduce emission by 1,500 tons annually. The Ministry of Food provides government funds for sowing catch crops or planting trees that can absorb nitrogen from the soil.

2. The Ministry of Food oversees the emission of nitrogen emission from the application of fertiliser in the agricultural sector. The supervision includes inspecting the utilisation of fertiliser and monitoring voluntary measures. The ministry's primary task is to ensure that the farmers do not utilise more fertilizer than they are permitted to. These checks are performed by the Danish Agricultural Agency. The farmers may have various reasons for using more fertilizer than permitted, such as maximising crop yield or disposing of excess slurry. Secondly, it is the ministry's responsibility to administer the two voluntary measures intended to reduce nitrogen emission from the agricultural sector and thereby contribute to enhancing the aquatic environment. During the investigation period, nitrogen projects were administered by the Ministry of Food in collaboration with the Ministry of Environment. It is the Ministry of Food's responsibility to inform the parties behind the nitrogen reduction agreement about how the nitrogen projects are progressing.

Two voluntary measures

1. "Targeted nitrogen adjustment". This measure absorbs nitrogen in catch crops sown on the fields. In this report, targeted nitrogen adjustment is referred to as targeted catch crops.

2. "Collective measures" are nitrogen projects aiming to establish wetlands or woods that absorb nitrogen. In this report, collective measures are referred to as nitrogen projects.

Farmers

In this report, all companies that are required to register their utilisation of fertilizer and/or receive government grants for nitrogen projects are referred to as farmers.

The Ministry of Environment provides professional assessments and measures the progress of some of the projects against the targets set. The progress of all projects is also published on the website of the Environment Protection Agency.

3. The purpose of this study is to assess whether the supervision of nitrogen emission from the utilisation of fertilizer in the agricultural sector conducted by the Ministry of Food is satisfactory. The report answers the following questions:

- Is the Danish Agricultural Agency checking the utilisation of fertilizer in a satisfactory manner?
- Have the Ministry of Food and the Ministry of Environment followed up on the targets set for the voluntary measures in a satisfactory manner?

Rigsrevisionen initiated the study in November 2023 at the request of the Danish Public Accounts Committee.



Conclusion

The Ministry of Food's oversight of nitrogen emission from the utilisation of fertiliser in the agricultural sector is unsatisfactory. The ministry is not inspecting the utilisation of fertiliser and following up on progress against the targets set for nitrogen reduction in a satisfactory manner. The consequence is a risk that excessive utilisation of nitrogen is not detected and a lack of transparency regarding the achievement of the nitrogen reductions required to enhance the aquatic environment.

The Agricultural Agency is not adequately inspecting the utilisation of fertiliser

The Agricultural Agency selects farmers for checks on the risk of excessive fertilisation, but the basis for the checks is incomplete. This implies that the checks are based on the farmers' reports which provide numerous opportunities for errors. The agency reached the same conclusion in 2021, when an internal report found that the many opportunities for errors could jeopardize the implementation of the adjustments necessary to prevent excessive utilisation of fertiliser by the farmers. According to the agency's report, none of the measures that could reduce the risk of errors in the reports have been implemented. The agency has informed Rigsrevisionen that essential elements of the measures are expected to be implemented in connection with the introduction of a new nitrogen adjustment model in 2027.

The inspection of the utilization of fertiliser by the Agricultural Agency could be enhanced. The agency has reviewed data and documents to ensure that farmers are complying with the nitrogen quotas. The agency has not conducted any physical inspections of, for example, fields and stables. The Ministry of Food has informed Rigsrevisionen that going forward the ministry will strengthen its checking practice, including physical inspection of stables. Some of the measures are not expected to be implemented before 2027.

During the period investigated, the Agricultural Agency noted 1,220 breaches of the law. The agency has imposed penalties for 492 violations of the law in the form of enjoinings, fines or criminal complaints during the investigation period. Another 728 breaches of law were considered to be trivial by the agency and therefore not sanctioned. Twenty-six of the breaches of law were time barred and could not be pursued.

The Ministry of Food and the Ministry of Environment's follow-up on the targets set for the voluntary measures is very unsatisfactory

Despite the fact that the ministry's annual checks show that more than half of the farmers are not sowing catch crops to the extent they are required to, the Ministry of Food has not followed up to ensure that the targets set for targeted catch crops have been achieved. Only in 2022, did the Agricultural Agency conduct full checks of the planting of spring crops that serve the purpose of ensuring the effect of the catch crops. This creates uncertainty about the effectiveness of the targeted catch crops.

Catch crops

The farmers have the option to plant crops that absorb excess nitrogen from the fields, like tansy-leaf phacelia. Catch crops can be sown either simultaneously with a grain crop, for instance, or immediately after the main crop harvest.

The Ministry of Food and the Ministry of Environment's measurement of the performance of the nitrogen projects lacks transparency. The ministries include ongoing as well as completed projects in the achievement of targets, but fail to describe the level of uncertainty associated with the ongoing projects. Some of the projects take up to seven years to implement and some are never implemented. This entails a risk that the reduction in nitrogen is overstated. In 2021, the nitrogen reduction target was 1,500 tons per year. According to the ministries, implemented nitrate projects have reduced nitrogen emission by 240 tons per year as of December 2023. This result can affect the aquatic environment, as the voluntary measures were intended to compensate for the effect of the permission given to the farmers in 2015 to increase the utilisation of fertiliser.