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Can introduction of seasonal effects reduce the costs of reaching the targets in the River Basin Management Plans III?

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Abstract

The purpose is to see if the inclusion of seasonal effect in selected catchments reduces the costs of fulfilling the reduction target of 12,955 tons from the River Basin Management Plans III from 2023. The analysis include reductions in N from point sources such as sewage treatment plants, aquaculture and rain-fed discharges (RBU). As the analysis is only carried out for selected coastal water catchments, a partial approach has been chosen where new measures have to have a lower cost than the marginal costs of measures in the original analysis to be included. The seasonal effect (March to September) can if it is higher than 1,0 result in a higher effect than before. For sewage works a lower retention has been used, but also fewer cleaning steps and so the overall effect from sewage plants is lower than the baseline. Introducing the seasonal effect does increase the effect for some plants in some catchments. The costs of acquisition and closure of aquaculture costs 30 DKK per kg N in line with the compensation given in the River basin Management Plans. The low cost per kg N means, together with the seasonal effect, that this measure is now used in several catchments. For rainwater discharges (RBU) the overall change in the costs efficient solutions is limited as the costs per kg N are still high. For mini wetlands the more detailed analyses have shown a larger overall effect and an even larger effect with targeting. On the other hand, there are for mini wetlands many cases where the seasonal effects are under 1,0, which reduces the actual effect. If the seasonal effect is taken into account, the area included is similar to the starting point, but the effect is much higher. A higher effect is especially achieved in Ringkøbing Fjord.

In summary taking seasonal effects into account can help to achieve slightly cheaper reductions in some catchments where there are few alternatives.

Kilde:

Jacobsen, B. H. (2024). Omkostninger ved at nå kvælstofkrav i vandområdeplanerne 2021-2027 – Second Opinion, fase III, styrket modelgrundlag. Institut for Fødevare- og Ressourceøkonomi, Københavns Universitet. IFRO Rapport Nr. 310