

Externalities from the Danish agriculture production

Author and affiliation: Andreas Lund Jørgensen & Anders Gotfredsen, Kraka

Danish agricultural policy is currently centered around issues of greenhouse gas emissions. This is a central externality of agricultural production, but it is not the only one. We assess the social costs stemming from four different externalities associated with agriculture production. The externalities in question are 1) environmental damages from greenhouse-gas emissions, 2) damage to aquatic environments due to nitrogen emissions, 3) health hazards from ammonia evaporation and 4) loss of nature for recreation due to agricultural land usage.

To assess the costs, we use two different approaches. The externalities from greenhouse gas and nitrogen-emissions are calculated as the social costs from meeting targets in the Danish “climate law” and the EU Water Framework Directive respectively. The externality from ammonia evaporation is based on estimates of the associated health costs from the literature. Finally, the externality associated with loss of nature for recreation is based on municipality level valuations of the recreational value of additional nature areas, made by the Danish Ministry of Environment.

Our results indicate that the four chosen externalities from agriculture production impose a yearly social loss in the range 18,7-26,5 billion DKK. The largest externalities are greenhouse gas emissions and displacement of nature for recreation. If planned nitrogen reductions are in fact carried out, the remaining externality from nitrogen emissions are negligible

We also examine how the social costs would change, if some or all the Danish livestock farming were replaced by agriculture production consumed directly by humans. We find that a total transformation from livestock farming to plant-based farming would decrease yearly social costs with 12,5 billion DKK. This is mainly due to a significant reduction in the costs associated with greenhouse gas emissions.