

### Re-designing peatland conservation programs to improve their effect

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Permanent land conservation and re-wetting of peatlands is a major political goal in Denmark as this measure is perceived as a cost-effective climate mitigation option. Peatland conservation schemes however have multiple benefits as they also contribute to reductions in Nitrogen (N) emissions to downstream water bodies and potentially benefit biodiversity in the long run. The current voluntary schemes, with fixed rate payments, have yet to fulfil their target conservation area. The program developer does not know the landowners' true costs of land conservation and the relationship between costs and the multiple benefits varies across the country. It is therefore likely that a fixed rate payment scheme for land conservation is not cost-effective and that rates are not set at an effect-maximizing level, under a budget restriction.

We propose that the effect of the current scheme under budget restrictions can be improved using a ranking mechanism based on Data Envelopment Analysis (DEA). We present the results from two analyses (Olsen et al. 2023; Termansen et al. 2023a) estimating the potential improvement in effect of using this approach as well as the tradeoffs it entails. In the first analysis landowners stated reservation price originate from a survey. In the second analysis the reservation prices were estimated, based on a national data set of fields specific historical land uses. In both cases the environmental effects were estimated in three dimensions; CO<sub>2</sub>e, Nitrogen and biodiversity based on the national land use model TargetEconBES (Termansen et al. 2023b).

There are three main findings from the studies. 1) Both studies show that the mechanism based on DEA ranking of efficiency of multiple environmental outcomes potentially has large efficiency gains. 2) The analyses also indicate that there are trade-offs between the three environmental outcomes which are influenced by the scheme design. 3) The results illustrate that increasing the payment rates for conservation coupled with DEA based ranking can achieve a more spatially targeted conservation. The mechanism could also be used in a uniform price reverse auction setting with further development.