BESTMAP

BEHAVIOURAL, ECOLOGICAL AND SOCIO-ECONOMIC TOOLS FOR MODELLING AGRICULTURAL POLICY

Ecosystem services, Biodiversity and Socio-Economic factors of Agri-Environmental Practices in BESTMAP case studies

Cambridge Econometrics

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Background

The European Union's Common Agricultural Policy (CAP) provides fiscal subsidies and other support to farmers. This support, mainly in the form of direct payments to farmers, aims at ensuring food security, tackling climate change, and mitigating agricultural production's impact on environment, landscapes, and biodiversity. This support comes mainly in a form of agri-environmental practices (AEP), which help farmers farm in a more environmentally friendly way. For example, ecological focus areas and organic farming are common AEP. AEP account for a large part of the CAP budget, but their effectiveness is consistently questioned. BESTMAP is an EU Horizon 2020 project concerned with redesigning rural policies towards sustainable agriculture. One of the main objectives of BESTMAP is to estimate and map the effectiveness of selected AEP on biodiversity, socio-economic, and ecosystem services outputs across five case studies. This article summarises the findings of these case studies.

Case Studies and methodology

BESTMAP conducted research on the effectiveness of AEPs using biophysical models, comparing the environmental outcomes of current AEP adoption level with a hypothetical scenario with no AEP. The case studies researched by BESTMAP were the Humber region in the UK, the Mulde river basin in Germany, South Moravia in Czechia, Catalonia in Spain, and the Bačka region in Serbia. The specific AEPs assessed included buffer areas, cover crops, extensive grassland management, fallow land, and organic farming. Below is a summary of findings from three different models that were applied: a food and fodder model, which mapped the effects of AEP on crop production; a carbon sequestration model, which estimated how the adoption of AEP effected soil carbon capture; and the Nutrient Delivery Model (NDR), which assessed AEP impacts on water nutrient pollution.

Key findings and policy implications

The food and fodder model showed that AEP would have a positive outcome on crop production in Serbia, but has no, or minor negative, impacts in other case study regions. AEP effects on soil carbon capture proved more positive across all case studies but were dependent on farm type and size in some countries. Across all case studies, slight reductions in water nutrient pollution were also observed under the AEP adoption scenario. In Czechia, bigger changes were seen in cattle and mixed farms. However, it should be noted that in all modelling the impact of AEPs on food and fodder output, water quality and soil carbon capture were relatively small compared to baseline levels. This suggests that at current adoption levels, AEPs play a small role in determining these outcomes and the underlying properties of the sites are much more important.

The BESTMAP tools can provide policymakers and private organisations detailed insights into the potential impacts of AEPs on ecological systems, and feed into the design of better AEPs in the future. To understand more about the capabilities of our tools, please contact Guy Ziv, G.Ziv@leeds.ac.uk.

References

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