

Evaluating the spatial targeting and planning effectiveness of policies: the example of an agri-environmental measure application in a multifunctional system.

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Abstract

Over the last few years, economic instruments for biodiversity conservation have been gradually implemented in conservation policy frameworks to address the degradation of ecosystems in targeted areas. In this context, several attempts have been undertaken to investigate how spatial analysis tools can be used to target the most suitable geographical areas for specific environmental policy interventions and to design more effective policies.

This work investigates how the use of these tools, more concretely Marxan with Zones (MARZONE), can support the evaluation of the cost-effectiveness of biodiversity conservation policies, using the case of the incentive-based agri-environmental measures (AEM) in a human shaped Portuguese multifunctional system (montados) as an illustrative example. The selected AEM aims to enhance agro-pastoral systems, while protecting the habitats for threatened species, e.g. *Felis silvestris*.

Based on the spatial distribution of the conservation features identified by the nature conservation authorities as relevant for that ecosystem (e.g. species distribution), as well as on the map of estimated opportunity costs for the selected AEM, MARZONE provides the best set of areas to apply this specific measure, maximizing its cost-effectiveness.

The Portuguese agri-environmental program, to be reviewed in 2014, can be improved in several aspects (e.g. instrument design and stakeholder participation), but one of the top priorities is to maximize the cost-effectiveness of the provided subsidies, as the funds available on following Programs will be increasingly lower. The selection of the most cost-effective policies to be implemented in a region is crucial to the success of both protected areas and socio-economic development of populations. The effectiveness of AEM can be enhanced through their specific allocation to sites identified as priority areas for conservation, supporting biodiversity values, habitat connectivity and ecological processes, while minimizing opportunity costs for landowners.

This work discusses the target areas identified by MARZONE at the landscape scale and how the design and targeting of areas could be enhanced by conducting this kind of testing in an ex-ante analysis. It concludes that, despite the effort, time and data requirements to perform these analyses they provide useful insights and improved information for policy design. If available to all stakeholders, MARZONE results can also guide landowners in deciding which measures can be more suitable to their properties, improving the landscape-scale design of existing land use schemes.

'Abstract teaser'

This work investigates how the use of spatial analysis tools can be used to target the most suitable geographical areas for specific environmental policy interventions, in the context of AEM. Using a multifunctional system as an illustrative example, MARZONE gave insights to the spatial distribution of the relevant benefits and opportunity costs and on the importance of conducting these tests in ex-ante analysis.