

# Science for Environment Policy

## Study sheds light on socio-economic impacts of targets

**Environmental targets** for sustainable agriculture can usually be met in a variety of ways, but their exact impacts are rarely known. A new study has compared the social, economic and environmental impacts of different policy approaches to hitting conservation targets in Australia, to help regional governments understand the costs, benefits and trade-offs of different policy options.

**In order to achieve certain environmental goals** and protect natural resources, targets are needed. But as long as the end goal is reached, the long-term environmental, social and economic impacts of reaching the target can be overlooked. The new study modelled the outcome of different policy approaches to reaching four major environmental targets in the Lower Murray region of Australia: enhancing biodiversity and mitigating wind erosion, climate change and reducing water salinity. Extensive land clearing for agriculture has resulted in a deterioration of land, water and biodiversity resources in the region.

To address each of the four targets, a number of Natural Resource Management (NRM) measures were identified, including restoration, planting deep-rooted perennials and producing biomass for renewable energy generation. The study showed that while achieving targets can have substantial environmental benefits, it is likely to be costly, as significant changes in land use are required for implementing the NRMs. The net cost to agriculture of meeting all four targets was between \$65 and \$348.5 million per year, depending on the specific measures taken.

The study shows the importance of spatial planning, i.e. choosing where the NRMs are established. When the targets were achieved by randomly selecting locations within the region, high economic and social impacts resulted in low cost effectiveness and efficiency. Instead, region-specific spatial planning in which various stakeholders established the best locations for specific NRM measures showed the most success in achieving multiple environmental and economic objectives.

The study also considered the effects of external drivers, such as climate, commodity prices and social preferences on the cost of reaching the targets. The cost was predicted to be less if a market was established for carbon sequestration, biomass and biofuels because an income could be generated from the NRM measures. The maximum cost in this case was \$205.9 million per year and in some cases was even profitable, depending on the precise scenario. The labour requirements associated with ecological restoration work also had positive effects, contributing to an increase in the regional population, employment and the Gross Regional Product.

Many previous studies have shown the importance of either internal policy choices (spatial planning of NRMs) or external factors (climate and commodity prices), but this study is the first to compare them directly and provides a useful approach to guide regional planning decisions towards the most desirable scenarios.



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