



## **Participatory modelling the effects of global change on biodiversity and multiple ecosystem services in viticultural landscapes across Europe**

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In agroecosystems, multiple ecosystem services such as soil fertility, pest regulation, crop production and biodiversity conservation need to be balanced to achieve both sustainable development goals and biodiversity targets. The main global change drivers of biodiversity and ecosystem services in viticultural landscapes are climate change, the invasion of alien (pest) species, land management changes, wine markets and policies. These drivers influence land use decisions at the local and regional level which affect multiple dimensions of biodiversity and the delivery of ecosystem services (ES).

We will develop and test model frameworks which integrate different scenarios of land use across spatial scales for future management in viticultural regions from Spain, to France, Germany, Austria and Romania. First, we will organise workshops in each project region to develop stakeholder-driven scenarios which will be used as input for the agent-based models. Second, we will utilize existing knowledge from different European countries to build a predictive model for ES provision in viticulture. Third, the model will be validated using field measurements of above- and below-ground biodiversity plus the multiple ecosystem services that it provides.

This will be done along gradients of landscape complexity and management options in five European case-study regions. The outcomes of the project will be (i) a conceptual model of the tradeoffs and synergies between multiple biodiversity-related ES in viticulture in relation to local and regional management and landscape structure which informs (ii) a spatially-explicit model integrating winegrowers as agents which influence land use decisions and consequently ES provision in response to different land-use scenarios and (iii) a software decision-support tool for stakeholders in viticulture that provides information on how to manage their crop to enhance biodiversity and multiple ES.