

Structuring wicked problems in transdisciplinary research using the Social–Ecological Systems framework: an application to the *montado* system, Alentejo, Portugal

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Maria Helena Guimarães, Nuno Guiomar, Diana Surová, Sérgio Godinho, Teresa Pinto Correia, Audun Sandberg, Federica Ravera, Marta Varanda

ABSTRACT

The aspiration to establish an effective dialogue between science and society has inspired some ground breaking examples of transdisciplinarity (TD). The core idea of TD is that different academic disciplines work jointly with practitioners to solve common problems. The first step of TD implies a contextualization that requires holistic and systemic thinking. To achieve this contextualization, we applied the Social–Ecological Systems (SES) framework with the aim of developing TD to deal with the recorded decline in area and tree density of the *montado* land-use system located in the Alentejo region, Portugal. The study was based both on a literature review and on the analysis of qualitative and quantitative data collected in a number of research projects on the *montado*. The results show that the lack of consensus regarding the system boundaries, the diverse range of mental models, and the disconnection between policymaking and system singularities are some of the conditions that can hinder TD efforts. The framework allowed the identification of knowledge gaps that limit the understanding of the problem complexity to be dealt with by a TD research process. There is a need to gain a better understanding of the governance system, and to characterize the different types of agro-silvo-pastoral combinations that can be designated as *montado*. With this detailed understanding, a tailored TD process can be designed. This work argues for the active use of the SES framework in TD in environmental management. Future research could focus on the framework's utility in developing tools to assess and monitor transdisciplinary research.