Trade-offs and synergies in changing farming systems: a methodological framework at the frontier between social-technical and social-ecological systems.

Jean-Marc Barbier*,†, Sylvestre Delmotte‡, Vincent Couderc§, Caroline Tardivo¶, Christophe Le Page∥2, and Santiago Lopez-Ridaura3

1INRA (INRA) – Institut national de la recherche agronomique (INRA) – France
2Centre de Coopération Internationale en Recherche Agronomique pour le Développement (CIRAD) – Centre de coopération internationale en recherche agronomique pour le développement [CIRAD] – 42, rue Scheffer 75116 Paris, France
3CIMMYT – Mexico

Abstract

This communication focus on methods for exploring trade-offs and synergies between the different functions of the farming systems contributing to local and global provisioning, regulating and cultural ecosystems services. In particular, we focus on how those methods and their results can be used as boundary objects for facilitating consultations between the various stakeholders of a given agro-ecological area.

We will emphasize (1) the theoretical background that frames the assessment of potentially more sustainable agricultural systems (based on the intensification of ecological processes) using a multi-criteria, multi-scales and multi-stakeholders perspective (2) the methodological framework used to involve stakeholders all along the investigation process, to stimulate participation and to deal with the diversity of stakeholders’ strategies, interests and visions for the future (3) the methods and tools implemented to weigh up advantages and drawbacks of new systems and to identify and discuss compromises with the stakeholders.

The communication will illustrate the implementation of such a methodology by showing results obtained in the Camargue area (south of France). It is a humid area where intensive and extensive agricultural activities and nature protection are closely intertwined; each activity being supported by different stakeholders. For this case study, we show results concerning the trade-offs between production of agricultural commodities, reduction of water pollution by pesticides, diversification of crops and mitigation of climatic changes (reduction of greenhouse gas emissions). We also show how stakeholders intend to use the tool and its results for their purposes and plans of actions.

Looking beyond the methodology and the results, the exploration of the impacts of different scenarios of changes, including technological innovations and public policies orientations, lead us to discuss the links between social-technical dynamics (type of innovations promoted or wished by various stakeholders) and the social-ecological system.

*Speaker
†Corresponding author: jean-marc.barbier@supagro.inra.fr
‡Corresponding author: sylvestre.delmotte@supagro.inra.fr
§Corresponding author: vincent.couderc@supagro.inra.fr
¶Corresponding author: caroline.tardivo@supagro.inra.fr
∥Corresponding author: christophe.le_page@cirad.fr
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