Land Use Policy 64 (2017) 1–12

Contents lists available at ScienceDirect

Land Use Policy

journal homepage: www.elsevier.com/locate/landusepol

Collaboration or fragmentation? Biodiversity management through the common agricultural policy

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ARTICLE INFO

Article history:
Received 31 March 2016
Received in revised form
25 November 2016
Accepted 6 February 2017

Keywords:
Agri-environment schemes
Conservation
Ecosystem services
European Union
Social-ecological systems
Social network analysis

ABSTRACT

We argue that the current system of agri-environment management in the European Common Agricultural Policy is ineffective at conserving biodiversity in part because it promotes fragmentation instead of collaboration of actors, thus hindering coordinated biodiversity management. Actor fragmentation is reinforced by the Common Agricultural Policy (CAP) in three ways: (1) through targeting individual farmers; (2) by creating confusion around coordination roles for increasing numbers of actors; and (3) by failing to engage with barriers to collaboration among farmers. Our findings draw on empirical evidence collected through multi-stakeholder workshops in Germany and Sweden. Our argument adds a different dimension to accepted explanations for the ineffectiveness of CAP for biodiversity management. Traditionally, explanations have focussed on low levels of farmer uptake of relevant measures, or the lack of ecological knowledge informing such measures. The level of actor fragmentation identified here suggests that a fundamental rethink of farmland biodiversity management is needed. We propose a new research agenda to identify more effective governance approaches.

1. Introduction

Agricultural and biodiversity policies in Europe face major challenges in managing farmland biodiversity. Biodiversity is declining across Europe's agricultural areas (Butchart et al., 2010; Kleijn et al., 2006). The EU has set a target of halting biodiversity loss, and restoring 15% of degraded ecosystems by 2020 (European Commission, 2011). However, intensification of agriculture across the EU continues to drive losses of semi-natural habitats and crop diversity (Firbank et al., 2008), resulting in a loss of landscape heterogeneity (Benton et al., 2003), species richness, and abundance of farmland species (Donald et al., 2001).

The Common Agricultural Policy (CAP) is the core policy instrument for agricultural development. Since 2000, the CAP has become a key framework for managing biodiversity in agricultural landscapes in Europe. Reforms in 2003 and 2013 refined biodiversity management measures with the aim of 'greening' the CAP (Hauck et al., 2014). The 2013 reform was widely communicated as seeking to promote environmental conservation, including biodiversity. Conservation outcomes were supposed to be enhanced through three routes: (1) cross compliance, whereby farmers only receive payments if they meet statutory management requirements, and their farm is in good environmental condition (pillar 1); (2) "greening payments" obliging farmers to fulfil three basic requirements (growing at least 2–3 different crops; having 5% of their land holdings as ecological focus areas (EFAs); and maintaining the amount of permanent grassland) (pillar 1); and (3) voluntary participation in agri-environment schemes, whereby farmers receive payments to offset the extra cost of implementing environmentally friendly management actions, e.g. installing hedges (pillar 2). However, the effectiveness of the most recent reform for biodiversity conservation has been questioned (Pe'er et al., 2014). Indeed, earlier conservation measures also had equivocal outcomes (Kleijn et al., 2006), failing to demonstrate increases in biodiversity (Batáry et al., 2015).

Traditionally, responses to the biodiversity failings of the CAP have focussed on issues of uptake of the voluntary measures within pillar 2. Uptake of agri-environment schemes by farmers is higher for the simpler management actions, resulting in limited posi-

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http://dx.doi.org/10.1016/j.landusepol.2017.02.009
0264-8377/

tive biodiversity outcomes (Davey et al., 2010). The more complex or difficult components are less popular, prompting research into motivation factors for uptake (e.g. Morris et al., 2000; Wilson and Hart, 2000). Uptake of agri-environment schemes tends to be geographically skewed towards areas where implementation is less costly for farmers, but where they also are less effective (Rundlöf and Smith, 2006). For example, uptake is lower in intensive areas where such interventions may be most necessary to protect biodiversity (Kleijn and Sutherland, 2003). In response, ideas have been put forward to shift pillar 2 payment schemes to being results-based rather than action-based (Reed et al., 2014).

In this article we explore how CAP facilitates (or impedes) actor collaboration for biodiversity management. Although biodiversity management at the farm scale has positive effects, biodiversity outcomes of agri-environment schemes are widely agreed to be improved when implemented across a landscape scale (e.g. Dallimer et al., 2010; Rundlöf et al., 2010). For example, by coordinating installation of landscape features, gains are made by improving the overall landscape matrix and habitat connectivity (Donald and Evans, 2006), and by increasing landscape complexity (Concepción et al., 2008). Thus landscapes can be managed for more wide-ranging species, or species that need heterogeneity across the landscape (e.g. Dorresteijn et al., 2015). At present, mismatches are common between the spatial scale of management (generally field or farm scale), and the scale of ecological processes that often span entire landscapes (Pelosi et al., 2010). Researchers have therefore advocated for collaboration, whereby farmers actively engage with each other to manage biodiversity (after Prager, 2015). Such collaboration would facilitate communication and negotiation between land managers (Prager et al., 2012). This is not to say that collaboration will automatically lead to better biodiversity outcomes; for example groups of farmers collaborating could conceivably lead to similar land use or land management choices and therefore decreased landscape heterogeneity. But well-managed collaboration offers an opportunity to facilitate more coordinated landscape scale management, thereby improving biodiversity outcomes (Prager et al., 2012; Young et al., 2013).

In this paper, we argue that CAP's effectiveness at delivering biodiversity benefits is limited at least partly because both pillars entrench actor fragmentation, defined here as farmers working in isolation to manage biodiversity at the individual farm scale. It should be noted that we do not argue that CAP initiated patterns of fragmentation; rather that by failing to facilitate collaboration, and by failing to engage with barriers to collaboration, it reinforces actor fragmentation in the system. Some researchers have examined models of collaboration in agricultural landscapes (e.g Prager, 2015), and examples of collaboration certainly exist (e.g. Steingröver et al., 2010). In particular, CAP at the EU level allows for the possibility of collaborative management and good practice examples are emerging, particularly in the Netherlands, demonstrating benefits to farmers and biodiversity (Franks and Mc Gloin, 2007). However, such examples are isolated and relate to voluntary pillar 2 schemes, meaning that there is no compulsion to collaborate. Indeed, whether or not CAP really facilitates collaboration will depend on how it is implemented in member states, and making collaboration possible still falls short of actively facilitating it.

Our paper takes a novel approach to examining collaboration by looking at the entire governance system surrounding CAP. Other authors have researched solutions to actor fragmentation by exploring collective payments as a way to improve biodiversity management. However, these have focussed on determining payment levels and types of 'collective' payment, and may in fact show negative impacts of payments through crowding-out social norms of collective action (Midler et al., 2015; Narloch et al., 2012). We take a different perspective by empirically assessing what collaboration exists in agricultural landscapes, and considering how the CAP (pillars 1 and 2) enhances or impedes collaboration. We draw on empirical findings from Saxony (Middle-Saxon Plateau) and Lower Saxony (Southern Oldenburg) in Germany, and Scania in Sweden. All three regions have relatively intensive agricultural land use and thus represent ideal locations in which to promote collaborative management, but differ in their approaches to implementing the CAP. In Germany, implementation varies between federal states (Prager and Freese, 2009), whereas Sweden implements CAP at the national level. By examining three different implementation contexts we were able to explore if differences in implementation resulted in different impacts of CAP on emerging patterns of collaboration. Our findings highlight three ways in which the CAP promotes actor fragmentation, suggesting an urgent need to radically re-design agri-environment policy.

2. Methods

2.1. Conceptual framework

To examine how CAP facilitates or impedes actor collaboration, we draw on conceptualisations of social and ecological connectivity. Bodin and Tengö (2012) outlined a range of motifs, or structures of social-ecological systems, drawing on social network theories that depict interdependencies between social actors and ecological resources. They consider the theoretical construct of two social actors and two ecological resources, and the different ways in which these four nodes could be linked. Kininmonth et al. (2015) argued for an optimal motif (Fig. 1) – in this, there is maximum connectivity between all nodes, facilitating coherence between social and ecological processes. A fifth node is present as a coordinating actor, who links the social actors managing ecological resources.

Drawing on these motifs, we created a conceptual framework of an idealised, landscape-scale system to manage farmland biodiversity (Fig. 1; Table 1). In this system, the two social nodes are farmers. Each influences (and cares for) the biodiversity (ecological resource) on her or his own farm. However, the biodiversity on one farm is also influenced by the management of the neighbouring farm. For example, the biodiversity management of farmer A to increase pollinators on his/her land is more effective if farmer B has strategically placed flower strips on his/her land. Therefore, greater biodiversity outcomes are possible when both farmers work together and also have influence on each other's biodiversity management. To facilitate this, under the optimal motif, a coordinating actor (such as a farm advisory service) is able to assist the farmers in their collaborative actions. Potentially, all links depicted in Fig. 1 are bi-directional, in that impacts and information flows can flow to a farmer, or from a farmer to a coordinating actor. For example, farmers may be affected by biodiversity changes on their own, or their neighbour's farm, through increased pollination (e.g. Breeze et al., 2014; Cong et al., 2014).

We use this optimal motif as a heuristic to conceptualise the state of collaboration and connectivity in our three case study landscapes. This differs from Kininmonth et al. (2015), who applied such motifs using a quantitative social network approach (e.g. Prell et al., 2009). They examined specific actors and their links to quantify the frequency with which the optimal motif appeared in their study area. They thus provide a numerical indication of how well social and ecological resources are aligned. Rather than 'score' the landscapes in this way, we wanted to examine the role that CAP plays in creating, or blocking, the formation of this optimal motif within a given landscape. This required rich qualitative data on the kinds of relationships between actors and on the factors that facilitate or hinder these relationships. To gather such rich data, we needed the perspectives of farmers, and of those stakeholders engaged in policy formulation and implementation. We were therefore looking at