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Collective agri-environment schemes: How can regional environmental cooperatives enhance farmers' intentions for agri-environment schemes?

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ABSTRACT

The effectiveness of agri-environment schemes (AES) in enhancing biodiversity on farmland and creating a long-lasting change in farmers' motivation towards a more environmental-friendly practice is still strongly debated. Applying a regional approach has been advocated widely to make AES more ecologically and socially sustainable. In the Netherlands, some AES are performed collectively by large regional groups of farmers called Environmental Cooperatives (EC). We hypothesise that these cooperatives enhance farmers' intention to participate by facilitating the application of AES, but also by generating group pressure. In the study at hand, we used an extended version of the Theory of Planned Behaviour (TPB) to investigate which factors are associated with farmers' intention to participate in two kinds of collective AES (ditch bank management and the protection of meadow birds). Our results demonstrate that attitude and perceived personal ability to participate in these AES are associated with the intention of farmers to participate in ditch bank management. However, for the protection of meadow birds, social pressure, self-identity and facilitation by the EC also relate to the intention of farmers. We conclude that the facilitation undertaken by ECs positively relates to farmers' intention to participate in collective AES.

Introduction

Biodiversity is declining worldwide at a vast rate due to the loss of natural areas (Millennium Ecosystem Assessment, 2005). The European Union, after having failed to halt biodiversity loss in Europe by 2010, has set the goal to halt biodiversity loss by 2020 (EEA, 2006; Maes et al., 2012). One of the main drivers of biodiversity loss in Europe is the intensification of agricultural practice over recent decades (Stoate et al., 2001, 2009). Farmland covers about 45% of rural areas in Europe and many threatened species are associated with agricultural habitats (Kleijn et al., 2011). In order to realise enough area to stop biodiversity decline, integration of agriculture within EU nature conservation policy is necessary (Balmford et al., 2012; Siebert et al., 2006). This integration has been sculpted by implementing agri-environment schemes (AES) on European farmland. In Europe €5 billion is annually spent on AES (Balmford et al., 2012; Kleijn et al., 2011). This amount is similar to the costs of the European-wide Natura 2000 Network of nature reserves (Gantioler et al., 2010), despite the common notion that AES are cheaper (Jongeneel et al., 2012). However, the results of AES in conserving biodiversity vary widely (Kleijn et al., 2001, 2011; Kleijn and Sutherland, 2003; Kuiper et al., 2013).

Environmental cooperatives

One of the major points of criticism to current AES is that a landscape approach is required in order to make AES effective (Kleijn et al., 2011; Tscharntke et al., 2012; van Dijk et al., 2013). In order to perform AES in a landscape context two factors are crucial: farmers' willingness to cooperate (Beedell and Rehman, 2000), and a

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landscape-wide organisational structure to coordinate the implementation of AES. In current policies, the expected cooperation of farmers is often based on a solely economic rationale. This may be too simplistic; farmers make decisions in an economic context, but also in social and cultural ones (Burton, 2004; Sutherland, 2010). Previous research has demonstrated that farmers' intention to participate in AES is influenced not solely by finance, but also by psychological determinants such as self-identity and attitude towards AES (Fielding et al., 2008; Lokhorst et al., 2011, 2014; Wauters et al., 2010).

In the Netherlands, where some forms of AES started as early as 1980 (Berendse et al., 2004), the first farmer cooperatives coordinating agri-environmental measures were established in 1991 (Oerlemans et al., 2006). These so-called Environmental Cooperatives (ECs) originated from the growing concern amongst farmers about the direction the Dutch agri-environment programme was heading. Their main points of criticism were the exclusion of farmers' opinions, a top-down approach and farmers' alleged lack of responsibility for the environment (Franks and Mc Gloin, 2007a; Groeneveld et al., 2004). From 2000 on, the Dutch Agri-environmental program (*Programma Beheer*) created possibilities for ECs to apply for two regional agri-environmental schemes; the nature-friendly management of ditch banks and the protection of meadow birds. These AES often cover more than 100 hectares and involve multiple farmers (Oerlemans et al., 2007). In 2006 the area covered by collective AES made up 39% of the total area of AES and its expenses covered 34% of the total Dutch expenditure on AES (Oerlemans et al., 2006). This strengthened the mediating role that the ECs played between the government and individual farmers in the application for collective AES (Glasbergen, 2000). Similar cooperatives facilitating cooperation in environmental management have been established in other countries such as Germany and Australia (Emery and Franks, 2012; Prager and Vanclay, 2010), however the Dutch ECs are focussed specifically at AES.

In the Western part of the Netherlands a payment by result approach on collective AES has been applied in the Netherlands between 1998 and 2009 for both for meadow bird management and ditch bank management. In this system the EC applied for the subsidy from the government and based on the collective funds from the subsidy, farmers were reimbursed based on the number of nests of meadow birds in their fields or the number of designated plant species per kilometre of ditch bank, as monitored by farmers (Musters et al., 2001; van Dijk et al., 2013). The objective of the payment by results approach was to increase the visibility of the outcomes of the management for farmers, possibly affecting their motivation (Clausman, 1996; Musters et al., 2001; van Strien et al., 1988). The EC served in this system as a regional agent to coordinate individual behaviour and verify the numbers of nests and meadow birds as monitored by farmers (Ferraro and Kiss, 2002).

ECs can benefit the government in various ways: they lower administration costs, and they form a single contact point, essential for advice and representation of their members (Franks and Mc Gloin, 2007a). Previous research demonstrated that individual farmers labelled these ECs as the most influential stakeholder involved in AES, while for instance nature conservation agencies were graded lowest (Noordijk et al., 2009). Due to these benefits the concept of Dutch farmers cooperatives has been proposed in the UK (Emery and Franks, 2012; Franks and Mc Gloin, 2007a; Mills, 2012; Mills et al., 2011), Europe-wide (Burton and Schwarz, 2013) and in other continents (Attwood et al., 2009; McKenzie et al., 2013). Current reforms of the European Common Agricultural Policy also include the introduction of AES at a regional level, after successful pilots in the Netherlands with ECs (European Commission, 2011; IEEP, 2012). This will likely lead to a wider implementation of collective regional AES all over Europe.

The advantages of performing collective AES in ECs have been discussed in a large body of literature (de Snoo et al., 2010, 2012; Franks and Emery, 2013; Mills, 2012; Mills et al., 2011). For an overview see Franks and Mc Gloin (2007a). Such advantages include the support of a group of environmentally minded farmers to resist pressure of other farmers that are more production minded (Burton and Paragahawewa, 2011; Mills et al., 2011), but also help with application for participation in the schemes (Franks and Mc Gloin, 2007a). Most of these studies apply a qualitative research approach, which makes comparative analyses difficult. Moreover, while these studies shed light on possible advantages of collective AES as experienced by farmers, they do not test how these advantages actually influence farmers' willingness to participate in AES. Hitherto, no quantitative empirical study on the influence of ECs on individual members' intentions to participate in collective AES has been performed. The goal of the current paper is to study how ECs affect individual farmers' intentions to participate in agri-environmental measures. To do so we will use an adapted and extended version of the Theory of Planned Behaviour (Ajzen, 1991) as a framework.

Conceptualising intention to participate in collective agri-environment schemes

The Theory of Planned Behaviour (TPB) states that the intention to perform a certain behaviour is determined by three factors: (1) attitudes one has towards this particular behaviour, (2) subjective norms (the perceived social pressure that one feels from significant other people to perform this behaviour), and (3) perceived behavioural control (the perceived ability that one feels to perform this behaviour). These three variables are driven by evaluations and beliefs about the results of the behaviour (attitude), the groups and persons who are regarded as significant others (subjective norm) and the skills and barriers one thinks support or oppose the performance of the behaviour (perceived behavioural control). The TPB has been demonstrated to provide a structured yet flexible model that can explain the cognitions that underlie individual farmers' willingness to participate in AES (Burton, 2004; Fielding et al., 2005; Lokhorst et al., 2011; Sutherland, 2010; Wauters et al., 2010). The TPB is flexible because it is "in principle, open to the inclusion of additional predictors if it can be shown that they capture a significant proportion of the variance in intention or behaviour after the theory's current variables have been taken into account." (Ajzen, 1991).

One of the most prominent additions to TPB is the inclusion of self-identity as a predictor of intention (Conner and Armitage, 1998; Terry et al., 1999). The effect of self-identity on intention derives from identity-theory (Stryker, 1968). This theory states that the self consists of various identities based on the social role that one occupies. In different situations, different identities may be most salient to affect behaviour. In TPB self-identity is defined as the extent to which a certain behaviour is considered to be part of the self (Terry and Hogg, 1996; Terry et al., 1999). Self-identity has been demonstrated to play a significant role in farmers' intention to participate in AES (Fielding et al., 2008; Lokhorst et al., 2011; Mastrangelo et al., 2013), such that the more farmers see conservation as part of the self, the more likely they are to intend to engage in AES.

Previous research has also shown that a number of predictors related to membership of a group can have an effect on one's intention to perform a certain behaviour (Terry and Hogg, 1996; Terry et al., 1999). In the current study, we will investigate how the membership of an EC explains variation of intention to participate in AES and how this is incorporated in TPB.

The most prominent addition to measure the influence on behaviour of relevant groups is the inclusion of constructs from social-identity theory, namely group norms and group