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## Collective action for effective environmental management and social learning in Wales

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**Abstract:** *Increasingly it is recognised that land management at a landscape-scale can deliver greater public good benefits than at the individual farm scale. Collective agri-environment schemes are one mechanism for achieving this land management, but such schemes are in the early stages of development in the UK and uncertainty exists as to their appropriate design and delivery. This paper is based on two research projects undertaken in Wales to identify key factors that might lead to successful agri-environmental co-operation. The research involved in-depth analysis of three existing farmer co-operatives in Wales, including face to face interviews and participatory workshops. Using the theory of collective action as an analytical framework, the paper identifies key factors that could be used to encourage and enhance the success of co-operative groups in delivering landscape-scale schemes. Of importance were: locally adaptable engagement strategies; working with group members previously known to each other; institutional arrangements that limited group size and which allowed groups to develop their own solutions and implementation rules; and external support offering the services of a local facilitator and funding for both planning and management stages. A clear finding from the research was the extent to which both business and social confidence can grow within such groups which opens up further development opportunities. Improving the farming community's capacity to co-operate will have far-reaching benefits for all public good provision and diversification activities.*

**Keywords:** *agri-environment scheme; collective action; farmer co-operatives; landscape-scale management*

### Introduction

Agri-environment schemes (AES) are still one of the main policy mechanisms used in Europe to deliver environmental benefits on agricultural land. These schemes have traditionally been delivered at the scale of the individual holding through agreements with the individual land manager. Whilst they are reported to have delivered some benefits for biodiversity (Boatman et al., 2008) there is increasing recognition of the greater potential that may come from managing land at larger scales than currently delivered through individual farm-level agreements. In particular, conservation experts believe that large-scale restoration and enhancement action is likely to be of far greater benefit to biodiversity than the current 'piecemeal' impact of single-farms. A large-scale project can reduce habitat fragmentation and maintain ecological networks (Adams et al., 1994; Kirby, 1995; Whittingham, 2007). Catchment-scale projects can deliver new flood storage capacity within river systems, which is of particular concern due to increased flood risk arising from climate change (Defra, 2005). Managing land at a landscape-scale offers potential to help overcome problems of cumulative and spatially diffuse environmental degradation, such as the abatement of diffuse pollution and soil erosion. This is reflected in the requirements of the EU Water Framework Directive to work at catchment level (European Union, 2000).

In the UK a number of mechanisms for achieving landscape-scale land environmental management through group or collective agri-environment schemes (see Franks and Mc Gloin, 2007) or 'collective contracts', (CRER and CJC Consulting, (2002); Hodge and Reader, (2007) have been proposed. These schemes are designed to operate through the collaboration of contiguous land managers, within a specified boundary. Some such approaches are in the early stages of development in UK; for example, in England the Higher Level Stewardship Scheme has a supplement for group applications which offers a contribution towards the costs of facilitating communal agreements. Wales is also considering the introduction of collective agri-environment schemes. The Welsh Assembly

Government (WAG) review of AES proposed the development of a targeted landscape or catchment scale option within schemes, with particular encouragement for collaborative actions to help tackle climate change issues, such as flood risk management, reductions in greenhouse gas emissions and carbon capture and water quality (Welsh Assembly Government, 2008). However, whilst the principle of these schemes is established, there remains uncertainty as to the most effective ways to design and deliver them.

## Methodology

The paper is based on the empirical results of two research projects conducted between 2004 and 2008 which aimed to seek to identify the most appropriate ways to design and implement collective AES in Wales (Mills et al., 2006; Mills et al., 2008). The research involved three phases. The first phase was an extensive literature review to critically examine behavioural change mechanisms within agriculture that are available to policy-makers to secure agri-environmental outcomes. The second phase involved a literature review of 25 co-operatives which had the aim of trying to secure environmental outcomes on farmland. For each co-operative the review identified structures and sources of funds and where these schemes had been evaluated, listed outcomes and key factors that have led to success. The third phase involved the analysis of 13 case studies using documentary sources, semi-structured interviews and participatory workshops, to seek to identify the most appropriate ways to design and implement collective AES in Wales.

The main focus of the interviews was to determine farm and farmer characteristics and their experience of co-operative working, the effect of co-operative working on the farm and the impact on group members' lives in order to ascertain the key success factors in delivering landscape-scale resource management through co-operative groups. In addition, questions were asked about the members' social networks – those people who were important to the co-operative or farm business - in order to undertake a social network analysis of each group. The research also involved a participatory workshop to which group members were invited, to discuss the appropriate design and delivery of collective agri-environment schemes based on their experiences. A SWOT analysis of each case study was undertaken to evaluate the Strengths, Weaknesses, Opportunities and Threats in respect of each group. These were revised following discussions at the workshops. The output from the case study interviews and workshops were analysed, and the benefits of co-operative working and key success factors were identified.

## Empirical Research – the case studies

In total, 13 case studies were explored, in which groups of farmers were undertaking collective action to achieve environmental outcomes. The project undertaken in 2008, which we will examine in particular depth here, looked at three case studies in detail, interviewing 28 farmers from the Pontbren Group; the Dolaucothi Group; and a collective AES agreement on commonland known as Ireland Moor. The first two case studies are examples of “bottom-up”, farmer-led co-operation, the third project represents more government-agency-led collective action. This section of the paper gives a brief pen-picture of each of these cases, in order to contextualise the analysis and discussion in section 4.

### *Pontbren Group*

The Pontbren Group is comprised of 10 hill farmers based in Powys, mid Wales. The 10 members farm a contiguous block of around 1,000 hectares of land along the Pontbren river. The farms range in size from 50 ha to 186 ha. Eight of the farms operate cattle and sheep systems, one manages a sheep only enterprise and the other is a dairy farm. The farms vary in their stocking densities and profitability. There is also a wide range in ages from 30 to 66 years of age. With the exception of the leader, all members of the group were born on their farms and were known to each other from childhood, in fact many attended the same school and chapel. The group leader was responsible for

establishing the group. Whilst motivations for joining the group differed, at the heart was the recognition that the farmers were caught on a 'productivist' treadmill and that with high stock numbers, the hedges and woodlands on their farms had become degraded. By improving their environment, the members felt that this would also help production, by providing shelter for the sheep. There was also dissatisfaction with the available AES which were considered too autocratic and inflexible and often not relevant to their farming systems. Therefore, the group sought funding which allowed them to have control over the implementation of environmental management, which has included livestock de-stocking and environmental capital works. Whilst the members had not co-operated formally before, they were known to each other through community and kinship ties.

### *Dolaucothi Group*

The Dolaucothi Group is comprised of 8 family hill farms on the Dolaucothi Estate, in Carmarthenshire, Wales. The Estate is owned by the National Trust<sup>1</sup>. The farms range in size from 80 to 140 ha, most of the farms run both sheep and cattle, with two having only sheep and one only cattle. All but one of the farm families have a source of income from outside of the farm, although for the majority of the families, income derived from the farm is their major source of income. The group has no formal leader but it was initiated by one member who was trained as a facilitator for a regional action learning initiative. The principal activity of the group to date has been a collective marketing initiative for lamb via a local abattoir, with guaranteed provenance and quality, sold to the multiple retailer, Sainsbury's. Only 6 of the group actually take part in the sales of lamb, as one member sells his lambs in May and the other has organic products, neither of which is suited to the Sainsbury's contract. The entire group reports a key motivation in involvement being that they had nothing to lose by taking part – lamb prices were at rock-bottom and co-operation was viewed as a positive way forward. This account, although genuine, masks a history of some co-operation occurring because of their National Trust tenant status, with landlord-tenant issues previously pursued by all tenants acting together. Also, there is a thread of kinship within the group – with one set of brothers, as well as three members being second cousins.

### *Ireland Moor Group*

The Ireland Moor group is comprised of over 100 rightsholders on registered common land which is also a Site of Special Scientific Interest (SSSI) collectively called Ireland Moor, but covering the 2,500 hectares of Llandilow Grapan to Glascwm commons in Powys, Wales. Of the 100 rightsholders for the common, around 45 place sheep and a few cattle on Ireland Moor. The group is comprised of a central committee of 10 people and is legally constituted. Each committee member is responsible for communicating with group members in specific geographical areas of the common. Initially, new syndicate owners bought the hill in 1989 and began to talk with the government agency Countryside Council for Wales (CCW) about ways of managing the SSSI more sensitively, claiming that the common was overgrazed. The commoners' committee was approached by CCW about the possibility of a collective Environmentally-Sensitive Area scheme agreement, which required collecting key information, including a live register of rightsholders, and gaining legal status for the association. Members viewed the main aim of the collective AES agreement as improving the management of the hill and avoiding a negative assessment of overgrazing that could potentially lead to a withdrawal of subsidy for those rightsholders placing stock on the common. For a number of interviewees this meant the introduction of carefully considered self-regulation. A secondary aim was to improve the communication within the group and to rekindle the sense of community on the hill in order to facilitate its management.

<sup>1</sup> A UK organisation concerned with preserving historic monuments and buildings and places of historical interest or natural beauty

## Analysis and discussion of findings

This paper uses the theory of collective action as an analytical framework to explore ways in which AES can encourage and enhance the success of co-operative groups in delivering landscape-scale resource management. Consideration of the theory can help in understanding how individuals come together to provide public goods, and the conditions that make this activity a success. This can then help to inform the appropriate design and delivery of collective agri-environment schemes.

A common definition of collective action is “action taken by a group (either directly or on its behalf through an organisation) in pursuit of members’ perceived shared interests” (Scott and Marshall, 2009). The theory of collective action was first discussed in 1965 (Olson, 1965) and the effectiveness of this approach was challenged by Hardin’s (1968) “tragedy of the commons”. Hardin contended that due to the inherent selfishness of humans, rational self interest will always prevail over the interest of the common good. He suggested that there will always be “free-riders” that cause collapse of the system. However, in Ostrom’s seminal work (1990) she refutes common pool resources as a problematic issue. Drawing on a large number of examples throughout the world, Ostrom identifies situations where local people have come together in an agreement to restrain their consumption of a resource that is scarce. Further research into collective action has shown that under certain circumstances, collective management can be a viable and more effective approach than a resort to individual property rights, or management by public agencies (see Ayer, 1997; Agrawal, 2001; Poteete and Ostrom, 2008).

The analytical framework presented here is based on Agrawal (2001) who cites a large number of conditions identified by Ostrom (1990), Wade (1994) and Baland and Platteau (1996) which are conducive to encouraging or facilitating collective action in the context of common-pool resources. Whilst some of these are more appropriate to collective action of true ‘common property’ resources, others would be applicable to collective action situations in respect of individual landowners undertaking collective action on contiguous areas of land. The difference between these two situations is that, under the latter type of co-operation, members may not have to restrain their consumption and use of the resources that they manage in common; they simply use them more efficiently, without necessarily using them any less (Trawick, 2006).

### Engaging farmers in collective action

The research revealed that motivations for joining the groups varied. The case studies found that whilst economic motives were important there were also social, cultural and psychological factors that motivated farmers to join. The different motivations for the groups are considered in turn.

*Access to funding:* The case studies identified various financial motives for farmers to join group schemes. The Pontbren group, for example, recognised the need for financial support to undertake extensification and environmental improvements on their land. They saw that through the formation of a group they were more likely to obtain funding which would give them some autonomy over how these improvements were implemented. The Ireland Moor group saw that through a collective AES they could gain financial help in dealing with declining levels of cooperation and governance on the common.

*Marketing advantage:* For two of the case studies, Dolaucothi Lamb and the Pontbren group, the members wished to differentiate their product in the marketplace, and were motivated to participate in a group in order to achieve branding of their products based on high environmental credentials and product quality.

*Opportunities for knowledge/information exchange:* Some of the group members also saw collective working as an opportunity for knowledge and information exchange to improve their businesses. It appears that this level of support and advice has become increasingly important as farmers have become more socially isolated (Reed et al., 2002). Whilst the Pontbren and Dolaucothi members previously assisted each other only with simple farm tasks, such as moving livestock, the level of peer support since joining the group now operates at a much more detailed farm decision-making level,

where members are now offering one another advice about regulation requirements or the prices paid for inputs.

*“I would now have a word and ask where are you buying your meal from this year, where are you buying your fertilisers, what price are you paying, do you suggest I go there?” Something I wouldn’t have asked before” (Pontbren Member).*

This mutually supportive culture provided by group membership is highly valued by individuals. This is evident in the Dolaucothi group where two members are not financially benefiting from the group marketing scheme, but value group membership for the advice and support it brings as expressed in the following quote.

*“We speak to each other more now. Before, you’d be down the road and you’d chat to your neighbour but everybody kept to their own business. Once we formed this group it’s brought us together, not only for the lamb. Somebody might know something and say do you know so and so and you’ve got to have this in by a certain deadline or talk about vaccines or blue tongue or whatever, it is a meeting point. It is personally much more important than just the lamb it’s that we meet together and share advice and support each other”. (Dolaucothi member)*

This type of knowledge exchange comes from development of social capital and trust, over time.

**Sharing and mobilising resources:** Another motive for farmers working collectively was to share and mobilise resources. By entering joint agri-environment schemes farmers are also gaining economies of scale and scope by pooling and exchanging their own resources. The Pontbren group benefits from having a machinery pool where, for example, a wood chipper, silage kit, and tools are shared. Labour can also be shared in the implementation of new fencing and tree planting activities.

**Development of diversification activities:** In joining a group some members also recognised the potential to undertake other diversification activities that go beyond achieving environmental outcomes. The Pontbren members, on forming a group, found they could access funding that would not have been available to them as individuals. As the group matures and develops greater confidence, members may be able to access funding for other activities, whether it is funding offered under the Welsh Rural Development Programme, or from non-government organisation sources. This prospect of additional funding at a later stage offers an additional incentive for farmers to become involved.

**Lobbying power:** A farmers’ co-operative has the potential to give a joint voice, greater than that of the individual. Increased credibility and legitimacy is often associated with groups and may be another reason for farmers joining. As the Pontbren group has shown, if a group can demonstrate that it works effectively, it may also be able to obtain further funding which would not be available to individuals.

*“As a group you can probably attract more funding. Everyone seems to listen to a group. If you’ve got 10 of you around the table instead of one you are more likely to get noticed. I think definitely you’ve got more clout in a group”. (Pontbren member)*

### **Group characteristics**

Certain group characteristics are important for increasing the success of collective activity (Ostrom, 1990; Wade, 1994; Baland and Platteau, 1996). These include shared norms and aims; homogeneity of ideas and interests; presence of social capital; and appropriate leadership.

**Shared norms/aims:** Whilst project goals can either be set internally or externally, ultimately they must be shared and owned by the group. For example, both the Dolaucothi and Ireland Moor groups each shared a common set of perceptions based on different reasons that there was ‘nothing to lose by joining’ and demonstrated a common identity and shared problems.

**Social capital:** The research found that the development of social capital within the groups was an important factor contributing to successful co-operative working in all of the case studies. As social capital was built within the group, members were more willing to provide advice and mutual support

to each other. Members also valued the fact that they could ask for help and welcomed opportunities for reciprocation.

*“The one thing I like more than anything is the companionship and the closeness and to be able to rely on people. You know that if you ring them you can rely on them and that they can rely on you.....And respect as well, you have to respect each other as well because there is a lot of give and take. That is one of the most important things in it all, is that we think of one another”. (Pontbren member)*

The social benefits of group membership were also highly valued, particularly by those who spend more time on the farm and have fewer social networks outside the immediate area. For some of the case studies, group membership resulted in increased social interaction and the “feeling of belonging”. This was highlighted for Pontbren members during the Foot and Mouth Disease outbreak when they were more isolated than usual, and were dependent on other members for social interaction.

*“It’s nice because you belong all of a sudden to something. It didn’t happen before although we’ve obviously been neighbours all our life, but not as close. Farming is the pits of a job and that support from others means a lot. (Pontbren member)*

**Homogeneity of identities and interests:** The case studies have highlighted the advantages of working with groups who had either worked together previously, or knew each other informally prior to the process of developing collective action. Through previous activities, these groups or networks have developed factors of trust, familiarity, and respect that can only develop through time. They also had the opportunity to learn about how the other members work, as well as their technical capability and values. With all three case studies, members were already known to each other, or part of some existing local informal social network, which predisposed them to work together.

*“We all knew each other before; most of us went to primary and comprehensive schools together. Most of us were with each other in the Young Farmers. Some of us are younger and some of us are a bit older, but we all get on very well” (Dolaucothi member).*

Social network analysis of the 3 groups found that the average length of time other group members were known to one another was over 30 years. Thus, group members might be described as ‘kith’ in the archaic sense that they are associates from the same place, rather than people joining together just for business or a particular project. A shared history in these cases therefore appears to have facilitated collective action by promoting trust and reflecting common interests.

**Appropriate leadership:** For all three case studies, success was in part due to competent and imaginative leadership. As Hodge and Reader (2007) assert, successful co-operative working relies on the action taken by individual ‘social entrepreneurs’ who are willing and able to stimulate action in their local areas. Successful leadership is often about mobilising a sufficient number of people for collective action, rather than making the initial decision (Baland and Platteau, 1996). If such leadership is not present in these situations, collective action may not occur even though every individual would actually like to co-operate with the others. The Pontbren and Dolaucothi leaders with support from other members helped to mobilise neighbours to join the group and on Ireland Moor, one member was key to getting other common graziers involved.

### **Institutional arrangements**

The research findings suggest that particular institutional arrangements can facilitate collective action. Of particular importance appear to be: group size; the degree of group autonomy enabling farmers to develop their own solutions and devise their own rules; and the degree of self-monitoring.

**Group size:** The Pontbren and Dolaucothi case study group members stressed the importance of keeping group size small, finding that it is then easier to maintain and develop good personal connections between different members. It was felt by Pontbren and Dolaucothi members that a large group would increase the time needed to establish and maintain connections. The smaller groups also facilitated the ease of monitoring, as individuals’ behaviours were more visible. The Pontbren Group started with a small group of three farmers, which grew over time once the benefits



of their actions became evident to other farmers. The current group size of ten was determined by the members as to what was manageable, enabling effective communication and monitoring.

This does not preclude larger groups from collective action. The size of the Ireland Moor group was determined by the number of rightsholders and the need for the AES agreement to include this entire group within the legal framework. Thus, all 100 commoners are group members. To ensure effective communication, the main interaction occurs between a central committee of ten members who meet regularly and deal with the business of the Moor, including the distribution of the AES payment. Each member of the committee has a group of members within their locality to whom they are responsible for consulting and communicating dates of meetings, group decisions and so on. Again, this was seen as good practice and very effective, by all those interviewed.

*“We get feedback now, we know what is going on. You need a small committee to make it work.”*  
(Ireland Moor member)

*Degree of group autonomy:* The case studies highlighted the value that farmers placed in being involved in the process of problem framing and resolution. Allowing farmers to find their own solutions resulted in stronger group ownership. In the case of Pontbren the members obtained a source of funding which allowed them to decide on the rules and standards for work when implementing the hedge and tree planting scheme. The members greatly appreciated this autonomy.

*“We were our own bosses. This is what we liked about it, being our own boss. There is nothing worse than being told by someone else how to do something and you half know that they’ve failed themselves. That really does get to you. With Pontbren no one interfered with us. We chose what we wanted to do, but there was a standard”* (Pontbren member).

With the Ireland Moor commoners, the content of the legal agreement to supplement the ESA agreement was determined by the commoners themselves and this included provision for sanctions, should any member not abide by the ESA agreement.

*Self-monitoring:* Within all case studies there was an element of self-monitoring. With the Pontbren group certain members of the group were appointed inspectors to check the quality of the work. This was evidently an effective way of monitoring, as reputation effects ensured compliance and a high standard of work.

*“The members wouldn’t even think about doing something underhand or shoddy or not up to standard, because they are not only letting themselves but they are letting the group down and this is a big thing”* (Pontbren member).

Also, one of the benefits of the Ireland Moor agreement was the self regulation and self-monitoring approach to compliance. Any compliance issues were investigated by the management group which had thus far resolved any issues internally, including the passing of sanctions on a member who broke the AES agreement. This resulted in a withdrawal of his payment for a certain period.

### **External Influence**

All three case studies had external facilitators who were important in supporting farmers to gain access to information and knowledge. For all three groups these facilitators, to varying degrees in each situation, also played an important role in assisting with group development which often required substantial amounts of time and resources. Rather than prescribing changes these facilitators assisted in developing skills required for working together, such as communication, conflict resolution and group decision-making. Importantly, the facilitators avoided “spoon-feeding” the groups, allowing them to gain in strength by resolving their own issues.

The case studies also suggested that not all agencies’ staff will make appropriate facilitators, even if they have received appropriate training. The best facilitators, in the opinion of group members, were those people who were local, respected by farmers and able to enter into dialogue with them. Effective facilitation requires defined skills and these facilitators also had the necessary personality and training to undertake their tasks.

## Conclusions and implications for AES design and delivery

The research reported here has enabled us to suggest ‘key success factors’ that can lead to collective action for environmental outcomes. This can assist policy makers by informing the design and delivery of appropriate AES for land management at a landscape scale.

**Table 1.** Key success factors in developing co-operative AES.

Engagement	Institutional arrangements
<ul style="list-style-type: none"> <li>• Adapt engagement strategies to local features and resources</li> <li>• Provide group training and learning opportunities</li> <li>• Support group product marketing, if relevant</li> </ul>	<ul style="list-style-type: none"> <li>• Limit group size</li> <li>• Allow groups to develop own solutions and implementation rules</li> <li>• Offer single payment to properly constituted group to distribute</li> </ul>
Group characteristics	External influence
<ul style="list-style-type: none"> <li>• Members with common aims and objectives</li> <li>• Members known to each other</li> <li>• Strong leadership</li> </ul>	<ul style="list-style-type: none"> <li>• Support local facilitator to assist in group development process</li> <li>• Offer financial support in 2 stages (planning and management)</li> </ul>

### Adapt engagement strategies to local features and resources

The motivation for participating in a collective scheme may be broader than those for individual schemes. As motivations will differ depending on local situation, a ‘one size fits all’ approach to engaging farmers in a collective scheme should be avoided. For instance, a model of engagement that might work on common land in the uplands might not succeed on productive lowland areas. In attempting to engage farmers in collective action it may be beneficial to identify local features or resources of value that are unique and threatened and which might be protected through their actions. The use of appropriate existing management structures, such as a commoners committee, may also be advantageous, as long as this structure is seen as legitimate. Examples of potential local features or resources around which to stimulate group actions might include the protection of particular local breeds or water resources within a water catchment area, or working with graziers’ associations on commons, more widely.

The research found that farmers also value opportunities for learning and training. The collective AES could provide group knowledge and learning opportunities. Economies of scale can arise from the provision of advice to groups of farmers, meaning that the advice can go much further and be of more benefit than if support is delivered to the individual. Collective knowledge and learning can also ensure the cultural embeddedness of any environmental message if it is picked up and discussed positively within the group.

Farmers may consider participating in a collective agri-environment scheme in order to develop an environmentally-friendly brand for their product. The group schemes could promote public awareness of the value of quality farm products and the link between product quality and the environment. Support for direct marketing is also essential as not all groups will be able to secure supermarkets contracts, such as that achieved by the Dolaucothi group.

### Group characteristics

The research suggests that for collaborative activities to work within AES, it is important to ascertain that all members of the group are actually signed up to the aims and objectives of the group. These groups also need to have common objectives and interests in relation to the environment. Because farmers have worked together co-operatively for commercial or business reasons may not necessarily mean that they have a common interest in achieving environmental outcomes. However,

it does help if members are already known to each other, or part of some existing local informal social network, as this predisposes them to work together.

### **Institutional arrangements**

A key finding from the research is that these groups should ideally start small reaching a maximum of around 10 members. This size appears to aid communication and development in the initial stages. Whilst it is possible for larger groups to succeed, they require a small central core of members who meet regularly to enable effective communication and decision-making.

Within existing individual AES there is limited scope for agreement holder participation in the preparation of agreements. Some AES farmers are rarely informed of the basis for management prescriptions and the analysis that underlies it. The prescribed management practices in schemes are often criticised for lacking sensitivity to the local conditions on the farm (Wilson, 1997). The research revealed that farmer groups value schemes which have enough flexibility to allow ideas to come from the farmers on how the group scheme is implemented. For this to work, external agencies may need to inform farmers of the issues and through an iterative process collectively develop solutions with them. Such an approach to problem-solving is likely to be lengthy but may also be more likely to succeed where farmers develop a sense of both personal relevance and self-efficacy (Dwyer et al., 2007). Having identified solutions the schemes should also enable groups to develop their own rules to meet the scheme objectives, as the research revealed that group members place a high value on retaining farm autonomy. Whilst this participatory approach is beneficial it is recognised that in the UK context the complex funding and accountancy structures of co-financed EU AES means that the ultimate decision-making power must rest with the government (Prager and Nagel, 2008). Thus, participatory approaches can only supplement, not replace government administrative decision-making processes. Also, for this approach to work there must be a certain level of trust between the farmers and Government agencies (Baland and Platteau, 1996; Franks and Mc Gloin, 2007).

Within collective schemes a single payment should, ideally, be offered to properly constituted formal groups, who are then responsible for dividing it up between members in a way that is clear, accountable and formalised. The case studies found that this approach can often lead to an equitable distribution of payments, sometimes benefitting smaller farmers. Such an approach has the advantage of reducing the amount of agency time spent on individual negotiations and leaves the responsibility for resolving any disputes between members with the group itself. However, the group may require external guidance in establishing a legal framework for allocating payments and resolving any disputes.

### **External influence**

Individual agreement holders in AES have the support of a project officer, who provides advice and can offer some flexibility in scheme prescriptions in the form of derogations. The group scheme could also provide the support of a facilitator to assist in the group development processes. The research revealed that in order to take on collective responsibility for land management and/or marketing, all three case study groups needed help in establishing a formalised structure and required legal assistance in establishing an appropriate constitution. The groups also needed to determine liability in the event of non-compliance with management prescriptions, in the event that they become formal collective participants in a public-funded land management scheme. It would be a large cost to bear early on for scheme beneficiaries, if they paid for a facilitator. Thus funds could be made available for this initial capacity building process, even if the outputs are not immediately tangible.

Adequate payments will be required to ensure engagement and should at least cover the cost of management activities associated with running and belonging to a group. The transaction costs will initially be higher for group schemes compared to individual agreements (Falconer, 2000) and these are borne by both the government agency, in respect of facilitation, and by the group in respect of the time taken in finalising the agreement and possible legal fees and developing the co-operative, often falling on a few. However, there may be cost saving later in the schemes with less government administration, due to significantly fewer individual agreement negotiations.

The group will need to have a clear idea about timescale for action. The research findings suggest that any successful group will take time to establish, to develop into maturity and then to deliver real change in land management. Ideally, a period of ten years would be advisable over which to seek a significant impact upon farming practices. The research suggests that a useful approach would be to offer seedcorn support for an initial planning stage (1 year) after which they can apply for a full formal agreement using some form of independent legal status in order to release the AES management funding. This implies two specific sorts of group funding – a phase one startup package and then a longer term AES management package, which would be based around the level of funding available to individual farmer AES agreements, but offered with more flexibility and autonomy in return for a group scheme contract and including some money to cover ongoing co-ordination, management and group activity. There may also be a requirement for some kind of group milestones to be reached in order to release grant aid. This diminishes the risk of funding social meetings with no outcome and no obvious end point. Eventually, as the group develops there may be fewer transaction costs involved in monitoring and advice provision.

The research also showed that ultimately, investment in co-operative agri-environment schemes can lead to more confident farmers, with greater cultural embeddedness of the environmental message and with greater diversification activities. A clear finding from the research is the extent to which both business and social confidence can grow within a group which opens up further development opportunities. The research found that members are more willing to try new ideas and to take on new projects, which they would not have contemplated as individuals. For example, the Dolaucothi group are in the process of taking on the tenancy of the local pub, with a view to making it a showcase for local produce, offering some accommodation and returning it to being a facility for the community. In the case of all three case studies this confidence has been reinforced by the public acknowledgement of their success and interest from outsiders, including elite actors.

### Concluding remarks

To conclude, co-operative AES could not only deliver biodiversity benefits at a landscape-scale, but could also be used as a catalyst for further social and rural development benefits. Improving the farming community's capacity to co-operate will have far-reaching benefits for all public good provision and diversification activities. To be effective this will require some decentralization of the decision-making from Government agencies, allowing greater discretion to scheme participants to determine the way in which requirements are defined and payment rates are determined. This would to some extent require a cultural change within government agencies and an increase in the level of trust between government agencies and farmers and vice versa.

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