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Organising collective action for effective environmental management and social learning in Wales

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Abstract:

Purpose: The paper explored key factors that might lead to successful agri-environmental social learning and collective action in order to deliver landscape-scale resource management within agri-environment schemes

Design/Methodology/Approach: The paper used the theory of collective action as an analytical framework to examine findings from in-depth interviews with 20 members of two co-operative initiatives in Wales and 2 participatory workshops. Consideration of the theory helped in understanding how individuals come together to provide public goods, and the conditions that make this activity a success

Findings: Factors of importance for organising and delivering collective agri-environment schemes 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.

Practical Implications: The paper identifies key factors that could be used to encourage and enhance the success of co-operative groups in delivering landscape-scale agri-environment schemes.

Originality/Value: The research findings identify appropriate mechanisms for the design and delivery of collective agri-environment schemes and environment management in the UK, which can also be applied to other parts of Europe.

Keywords: agri-environment scheme; collective action; social learning; farmer co-operatives; landscape-scale management.

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1. 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; 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. Managing land at a landscape-scale also 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 McGloin, 2007) or 'collective contracts', (see 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 (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.

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 and through a process of social learning provide public goods as a group, 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 in this paper 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).

An important element in facilitating collective action for environmental management is the process of social learning. Blackmore *et al* (2007) state that "social learning is central to non-coercive natural resource governance". Reed *et al* (2010) provide a useful definition of social learning as a process that results in:

a) a change in understanding in the individuals involved, b) a change that goes beyond the individual and is situated within the wider social unit, and c) a process that occurs through social interactions and between actors within a social network. Through this process people learn about the character and trustworthiness of others and develop social capital and norms of interaction that can enhance their capacity for collective action.

2. 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 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 addition, questions were asked about the members' social networks in order to enable an assessment of the networks of the whole group, a network 'map' to be plotted and the role of individuals within this network. In analytical terms this provided a means of understanding the dynamics of the co-operative, and the role of individuals within it. The research also involved participatory workshops 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. The output from the case study interviews and workshops were analysed, and the benefits of co-operative working and key success factors were identified.

2.1 Empirical Research – the case studies

The project undertaken in 2008, which we will examine in particular depth here, looked at three case studies in detail, interviewing 28 farmers. This paper focuses on two of these groups: the Pontbren Group; and a collective AES agreement on commonland known as Ireland Moor. This section of the paper gives a brief pen-picture of these two cases, in order to contextualise the analysis and discussion in the subsequent sections. A summary of group characteristics is provided in Table 1.

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. These hill livestock 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. Whilst the members had not co-operated formally before, they were known to each other through community and kinship ties. Whilst motivations for joining the group differed, at the heart was the recognition that the farmers were caught on a 'productivist' treadmill, with high costs and high stock numbers, causing the hedges and woodlands on their farms to become degraded. By coming together as a group and through a process of social learning the group members developed the confidence to significantly alter their farming systems and to approach WAG for funding to de-stock their sheep by 20% on average for the group which resulted in huge environmental benefits. The members began to recognise that by improving their environment, this would

also help production, by providing shelter for the sheep. They were dissatisfied with the available AES for environmental work which were considered too autocratic and inflexible and often not relevant to their farming systems. Therefore, they sought alternative funding and successfully obtained various funds, including an Enfys grant, a lottery funded programme administered by Wales Council for Voluntary Action, for environmental work which allowed them to have control over the implementation of environmental management. To date, the Pontbren group have planted 120,000 trees and 16.5 miles of hedgerows and established 12 ponds covering 2.2 hectares. Areas of wetland have been fenced off to ensure protection. The group has also established its own tree nursery where all trees and hedgerows are grown in group-produced compost from seeds gathered on the farms. In addition, offcuts and windfalls from trees and hedges are recycled into bedding for livestock or compost using a jointly purchased chipping machine part-funded by the Welsh Development Agency.

Ireland Moor Group

The Ireland Moor group is comprised of over 100 rightsholders on registered common land 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 owners bought the hill in 1989 and began to talk with the government agency, Countryside Council for Wales (CCW), about ways of managing the land more sensitively, claiming that the common was overgrazed. The commoners' committee was approached by CCW about the possibility of a collective agri-environment agreement, which required collecting key information, including a live register of rightsholders, and gaining legal status for the association. The coming together of the landowner, CCW and commoners enabled a process of social learning which resulted in a collective agreement that all were happy with. In total, 45 active graziers and around 55 commoners who are not currently exercising their rights signed the agreement, representing 92% of rights holders. The main benefit has been collective de-stocking of sheep which has reduced overgrazing pressure on the environment. This has meant the introduction of carefully considered self-regulation. Another benefit has been to improve the communication within the group and to rekindle the sense of community on the hill in order to facilitate its management. There is a sense of a wider purpose that they are acting positively to enhance the hill; that the collective agreement is something bigger than just farming.

Table 1 Summary of group characteristics

	Pontbren Group	Ireland Moor Group
Group size	10 members	100 common rightsholders members, including 10 committee members
Farm size and type	Farm sizes from 50 ha to 186 ha. 8 hill cattle and sheep farms, 1 sheep only farm and 1 dairy farm.	Farms sizes from 12.5 ha to 250 ha. Majority are hill sheep and cattle farms.
Household income	4 farms - household income solely from farm. 3 farms - spouse works off-farm. 2 group members work full-time off-farm.	2 committee members' farms - household income solely from farm. Remaining 8 farms - off-farm sources of income.
Institutional arrangements	Limited company with a	Formally constituted group with

	constitution, all members are Directors and considered equal.	a central committee of 10 members representing 9 members within 10 geographical areas.
AES activities	Sheep de-stocking, hedge and tree planting, pond creation and restoration, stream bank protection.	Livestock de-stocking, bracken control.
Other group activities	Joint purchase of wood chipper, wood chip composting and bedding, tree nursery, joint marketing of branded product.	Dealing with recreational issues on the common.

3. Analysis and discussion of findings

The following analysis identifies factors from the case studies that can lead to collective action for environmental outcomes, and can help in informing the design and delivery of appropriate AES for environmental management at a landscape scale.

3.1 Engaging farmers in social learning and collective action

The research revealed that motivations for joining the groups for environmental management varied. The case studies demonstrated 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 revealed various financial motives for farmers to join group schemes. The Pontbren group, for example, recognised the need for financial support to undertake more sustainable farming practices and environmental improvements on their land. Dissatisfied with the agri-environment schemes on offer, 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 group activities are collaborative in that the group exercises a high degree of autonomy over their activities incorporating a strong group vision and identity. The Ireland Moor group realised that through a collective AES they could gain financial help in dealing with overgrazing issues and declining levels of co-operation and governance on the common. As their management activities are prescribed by a Government-funded AES they are more co-operative rather than collaborative in nature.

Opportunities for learning: Some of the group members saw collective working as an opportunity for learning and exchanging knowledge and information to improve their businesses. Whilst the Pontbren members previously assisted each other only with simple farm tasks, such as moving livestock, peer support since joining the group now operates at a much more detailed farm decision-making level, where members are offering one another advice about regulation requirements or the prices paid for inputs.

This mutually supportive culture provided by group membership is highly valued by individuals as expressed in the following quotes.

“I think the social comfort of being in the group, you can’t value it. You’ve got somebody to talk to. I think it gives you more confidence to try things” (Pontbren member).

“I would now have a word and ask “where are you buying your feed from this year, where are you buying your fertiliser, what price are you paying, do you suggest I go there” something I wouldn’t have asked before” (Pontbren member).

The social interaction and learning within groups has led to individual changes in their understanding about the sustainable management of their land. In the Pontbren case it resulted in a critical look at the underlying assumptions on which their farm structures were based leading to widespread de-stocking, an option that most had not previously considered. The group members also sat down together with individual maps of their farms and marked on areas for environmental improvement on their land. This process resulted in a greater allocation of land for environmental management than was originally anticipated reportedly due to a feeling of collective efficacy, that by collectively changing practices on a contiguous area they were having a much greater positive impact on the environment. The feeling of collective efficacy was also a driving force for the Ireland Moor commoners who recognised that they were collectively contributing to the environmental improvements on the hill.

“When you go out on the hill and you realise that you play a part in its management, seeing all the wildlife and birds. All this is good”. (Ireland Moor member).

Sharing and mobilising resources: Another motive for farmers working collectively was to share and mobilise resources. By entering collective agri-environment schemes farmers are also gaining economies of scale and scope by pooling and exchanging their own resources. For example, the Pontbren group benefits from having a machinery pool where 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, such as the development of joint marketing products. A benefit also identified by Renting and Van De Ploeg (2001) when examining Environmental Co-operatives in the Netherlands. The Pontbren members, on forming a group, found they could access funding that would not have been available to them as individuals, such a funds to purchase a wood chipping machine which is used to produce compost and livestock bedding. 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)

3.2 Group characteristics

Once part of a group it appears from the case material that there are certain group characteristics that are important for increasing the success of social learning within the groups and facilitating 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 group members may have different perspectives and undertake different farming practices, ultimately the success of co-operative working is based on shared norms and aims. For example, the Ireland Moor

group shared a strong sense of valuing the traditional management of the hill and wanting to revert the area back to a time in their memories when there were fewer sheep and less bracken on the hill. The Pontbren group had the shared aim to develop more sustainable farming systems which would allow them and their successors to continue traditional family farming in the long term.

Social capital: The development of social capital in the groups was an important factor contributing to effective social learning and successful co-operative working in both of the case studies. The social capital manifested itself in a number of ways, including an increase in trust. A certain degree of trust already existed between Pontbren members due to existing informal social networks and kinship bonds. However, social capital on these farms had become eroded since the 1960s as production-orientated subsidies and intensification made farmers more independent and individualistic, with less time to socialise which has contributed to social isolation. Likewise, on Ireland Moor, there was some contact between graziers before the ESA agreement and an association was in place but other than agreeing dates to place stock onto the commons there was minimal contact between the graziers. Members of both groups particularly valued the increased social interaction and the “feeling of belonging” brought about by group membership.

“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.” (Pontbren member).

“The group has a feeling of solidarity, even as a new comer I feel involved and working towards a common purpose” (Ireland Moor member).

With both groups there was also an increased willingness to learn from each other and a greater embeddedness of reciprocal advice and support mechanisms based on trust and respect.

“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”. (Pontbren member)

Social network analysis revealed that the Pontbren group derived much support from their group but had sparser networks around their businesses. Due to the large size (100) of the Ireland Moor it was not as closely knit or ‘dense’, but had a number of sub-groups that were close to one another. In such a situation key brokers existed between the sub-groups, bringing groups together and helping the flow of information.

Homogeneity of identities and interests: With both case studies, members were already known to each other, or part of some existing local informal social network, which predisposed them to work together and to learn from each other.

Social network analysis of the two 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 both 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. 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 leader 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.

3.3 Institutional arrangements

The research findings suggest that whilst social learning can lead to collective action it depends in turn upon particular facilitation and institutional arrangements that can facilitate social learning and 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 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. The Pontbren members stressed the importance of keeping group size small, as this facilitated the maintenance and development of good personal connections and social learning between different members. They felt 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.

This does not preclude larger groups from collective action. All 100 commoners are members of the Ireland Moor group. However, to ensure effective communication and social learning, the main interaction occurs between a central committee of ten members who meet regularly and deal with the business of the group, 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. This was seen as 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 through a process of social learning resulted in stronger group ownership. The Pontbren 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).

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

Self-monitoring: Within all case studies there was an element of self-monitoring. Certain members of the Pontbren 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 within the Ireland Moor group 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.

3.4 External Influence

All three case studies had external facilitators who were important in supporting farmers to gain access to information and knowledge. These facilitators, to varying degrees in each situation, also played an important role in assisting with the social learning process and 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.

4. 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 2 Key success factors in developing co-operative AES

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

4.1 Adapt engagement strategies to local features and resources

The research revealed that the motivation for participating in a collective scheme may be broader than those for individual schemes. As motivations will differ depending on local situations, 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. Examples might include the protection of particular local breeds or water resources within a water catchment area.

The research found that farmers also value opportunities for group learning and training. 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.

4.2 *Group characteristics*

The research suggests that for collaborative activities to work within AES, it is important to ascertain that all members of the group share 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 learn from each other and work together.

4.3 *Institutional arrangements*

A key finding from the research is that these groups should ideally start small reaching a size that still enables effective communication, social learning 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. 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 of social learning 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 McGloin, 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.

4.4 *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 social learning and group development processes. In order to take on collective responsibility for land management, both 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 in developing the co-operative. However, there may be cost savings 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 a greater cultural embeddedness of environmental practices. With both case studies, through a process of social learning, group members changed their attitudes towards the prevailing farming practices and sought ways of changing to more sustainable farming systems. Through this process they gained in confidence and were able to establish the necessary legal entities required to obtain AES funding. Business and social confidence grew within both groups which opened up further development opportunities. For example, the Pontbren group are currently exploring opportunities for the joint marketing of a branded product to a supermarket.

4.5 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 for social learning and 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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