

## **Social Indicators for Agri-environment Schemes**

### **Final Report**

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November 2019

## **Acknowledgements**

We would like to thank, Beth Brockett, the Natural England project officer and other members of the Project Steering Group: Sima Sandhu (Defra), Liz Finch (Defra), and Phil Smith (Environment Agency) for their insightful comments and suggestions on the report. Jilly Hall (Natural England) for contributions and original inspiration. Also, a huge thanks to the Natural England advisers and the farmers and land managers, along with the Environmental Land Management Social Science Expert Panel members, who gave their valuable time to provide feedback on the indicators and the survey questions and particularly the two external reviewers.

# Executive Summary

## 1. Introduction

Natural England and Defra operate a monitoring and evaluation programme aimed at providing evidence for the effectiveness of agri-environment schemes (AES). This monitoring and evaluation work has largely focused on identifying the environmental outcomes and the economic impacts of the schemes. Less attention has been placed on understanding the intentional or unintentional social outcomes of AES as they relate to the social world of the agreement holders. A better understanding of these social outcomes is salient as there is increasing evidence that they have important impacts on environmental outcomes and, in particular, the agreement holder's willingness to undertake environmental activities in the longer-term.

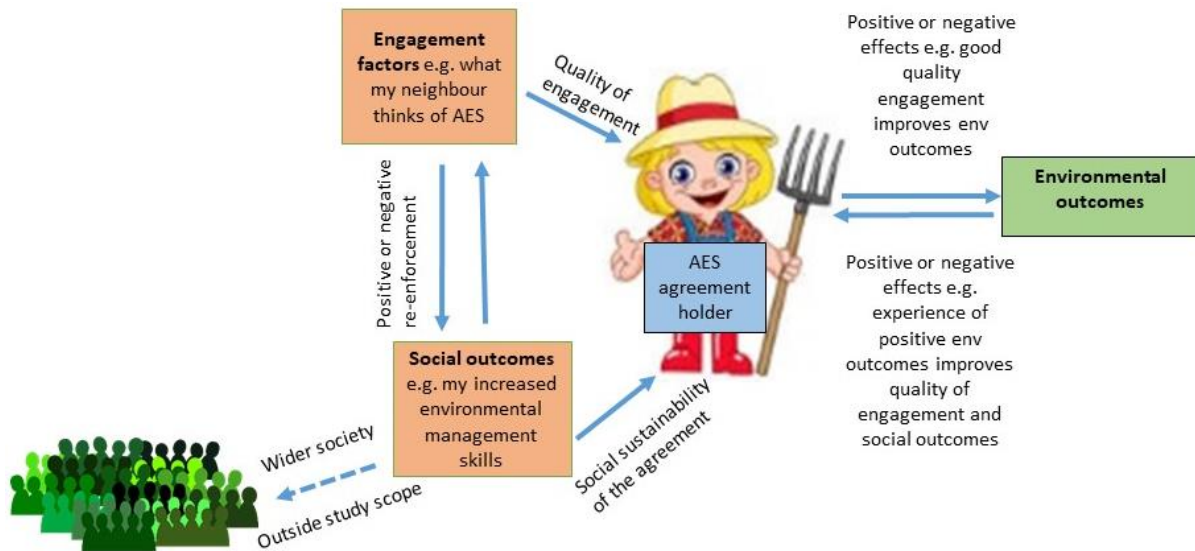
The Countryside and Community Research Institute (CCRI) and the University of Exeter were contracted to undertake a comprehensive review of relevant literature from which to select and then test indicators which could be used to provide an enhanced understanding of how the quality of engagement with and social outcomes from AES can be monitored and evaluated. In addition, the project provides an improved understanding of how these engagement factors and social outcomes link to environmental outcomes.

To achieve the aims of the project two types of social indicators were identified:

**Engagement factors** which measure the nature and 'quality' of farmer (or other land managers) engagement with their agreement within an AES. For example, we can measure the agreement holder's level of interest in wildlife which is likely to reflect their level of engagement with AES. The evidence suggests that improved quality of engagement can lead to long-term and long-lasting environmental behavioural changes, manifesting in, for example, land managers' voluntarily undertaking unsubsidised environmental management practices.

**Social outcomes** which measure outcomes, such, new skills, job satisfaction and mental health and wellbeing. These social outcomes can all contribute to the social sustainability of an AES. They can be positive (e.g. increased pride or confidence) or negative (e.g. increased stress or reduced motivation to engage in future AES). Other social outcomes from an AES might relate to the contribution of AES to wider society and quality of life in the rural community (e.g. employment provision or cultural ecosystem services), rather than to the individual. However, as the possibility of monitoring these wider impacts at the farm-level during aftercare visits is unlikely, this impact type was considered outside the scope of the project.

A simplified visual representation of these types of indicators and their links to environmental outcomes is provided below.



The project was structured in 3 stages:

- **Stage 1:** A systematic literature review to identify a set of social indicators that are empirically and conceptually sound and can be used to assess the quality of engagement with an AES agreement, the social outcomes from an agreement and their link to environmental outcomes, and the wider social sustainability of a scheme. See the Evidence Review report.
- **Stage 2:** The development of a method (focused on survey questions) that can operationalise the monitoring and evaluation of these social indicators.
- **Stage 3:** Small-scale qualitative testing of the proposed method on farms with existing Countryside Stewardship (CS) or Environmental Stewardship (ES) agreement-holders to provide a 'ground truth' of practicality and validity.

## 2. Evidence Review and Social Indicators

An extensive search of the literature was undertaken between October and November 2018 using specific search terms, resulting in the identification of 142 relevant documents. These documents were subjected to a full-text analysis to identify relevant indicators which were then rated for their level of impact; strength of the link between social and environmental outcomes; and strength of evidence. This process led to a long-list of 33 indicators. Following a ranking exercise by five members of the Natural England/Defra Environmental Land Management (ELM) Social Science Expert Panel (SSEP) and 6 Natural England Farm Conservation Advisers, based on the indicator's relevance and feasibility of implementation, a final short-list of indicators was produced containing the following 20 high-level indicators and their sub-indicators.

**Table 3.1 Short-list of higher-level and sub-indicators**

	High-level Indicators	Sub-indicators
<b>Theme 1. Quality of engagement – Willingness to Engage</b>		
WE_01	Interest in (and awareness of) environment	<ul style="list-style-type: none"> <li>• Awareness of and interest in wildlife (species and habitats)</li> <li>• Extent of environmental knowledge</li> <li>• Extent of unsubsidised environmental activity</li> <li>• Sense of environmental responsibility</li> <li>• Awareness of and interest in cultural and landscape assets</li> <li>•</li> </ul>
WE_02	Attitudes and beliefs about farming (self-identity)	<ul style="list-style-type: none"> <li>• Attitudes to farming and self-identity</li> <li>• Attitudes and beliefs about the future of farming</li> </ul>
WE_03	Engagement with advice and training	<ul style="list-style-type: none"> <li>• Level of engagement with environmental advice</li> <li>• Level of rapport with advisor*</li> <li>• Level of engagement in training</li> </ul>
	Level of AES experience	<ul style="list-style-type: none"> <li>• Length of previous AES experience</li> <li>• Confidence in environmental skills/abilities</li> <li>• Understanding of AES rationale (Indicators of Success)</li> </ul>
<b>Theme 2. Quality of engagement – Capacity to Engage</b>		
CE_01	Succession	<ul style="list-style-type: none"> <li>• Planning for succession</li> </ul>
CE_02	Lifecycle	<ul style="list-style-type: none"> <li>• Stage in lifecycle</li> </ul>
CE_03	Land manager education	<ul style="list-style-type: none"> <li>• Level of formal education</li> </ul>
CE_04	Farm tenure	<ul style="list-style-type: none"> <li>• Tenure status</li> </ul>
CE_05	Resilience	<ul style="list-style-type: none"> <li>• Response to challenging situations</li> </ul>
CE_06	Agency	<ul style="list-style-type: none"> <li>• Control over agreement</li> </ul>
<b>Theme 3. Quality of engagement – Level of engagement with others</b>		
LE_01	Bonding social capital	<ul style="list-style-type: none"> <li>• Extent of group working</li> <li>• Extent of information and knowledge sharing</li> <li>• Level of social trust</li> </ul>
LE_02	Bridging social capital	<ul style="list-style-type: none"> <li>• Extent of engagement in non-agricultural networks</li> <li>• Engagement with general public</li> <li>• Public acknowledgement</li> </ul>
LE_03	Linking social capital	<ul style="list-style-type: none"> <li>• Ability/desire to form positive relationships with government agency staff</li> <li>• Level of social trust with government</li> </ul>
LE_04	Cultural (symbolic) capital	<ul style="list-style-type: none"> <li>• Respect amongst peers</li> <li>• Advising other land managers</li> </ul>
<b>Theme 4. Social outcomes – Quality of life</b>		
QL_01	Employment and working conditions	<ul style="list-style-type: none"> <li>• Holidays taken</li> <li>• Off farm working</li> <li>• Average Peak working hours</li> </ul>
QL_02	Job satisfaction	<ul style="list-style-type: none"> <li>• Work-life balance</li> <li>• Being a farmer</li> <li>• Freedom of decisions</li> </ul>
QL_03	Quality of life	<ul style="list-style-type: none"> <li>• Satisfaction with quality of life</li> </ul>
<b>Theme 5. Social outcomes - Health and well-being</b>		
HW_01	Happiness	<ul style="list-style-type: none"> <li>• Happiness</li> <li>• Worthwhile</li> </ul>
HW_02	Physical and mental health	<ul style="list-style-type: none"> <li>• Physical health</li> <li>• Mental health</li> </ul>
HW_03	Stress levels due to AES	<ul style="list-style-type: none"> <li>• Workload</li> <li>• Administration &amp; bureaucracy</li> <li>• Inspections</li> <li>• Financial issues</li> <li>• Environmental enjoyment</li> </ul>

\*Not tested in survey

### 3. Survey design

Survey questions were designed to capture information for each of the indicators and sub-indicators.

Two types of questions were designed:

- 1) Those questions that can be used to measure, assess or record the distance travelled by the agreement holder during the life of their AES agreement in terms of their willingness and capacity to engage, level of engagement with others, quality of life and health and wellbeing. The idea being that, with the roll-out of the monitoring scheme, questions would first be asked at the start of the agreement to establish a baseline, then at various points throughout the agreement, including at the end of the agreement. Such data could be used to gather evidence to further assess the causal link between social and environmental outcomes.
- 2) Those questions that can be used to measure, assess or record a snapshot in time in terms of the social outcomes currently delivered by their AES – the changes that have occurred as a result of their AES agreement. With the potential to link these data to environmental outcomes and the agreement trajectory.

The questions were tested on 19 agreement holders and 10 Natural England advisers through face-to-face interviews. The detailed responses to these questions are reported in Chapters 4 to 8 of the report.

### 4. General feedback on questions

- Overall, the value of asking questions about the social outcomes of AES was recognised by farmers and advisers alike. However, it was recommended that for future use the reasons why this information was valuable in terms of AES and how it will be fed in and used should be clearly stated.
- The advisers, in particular, found the interviews very informative and a useful exercise in learning more about the agreement holders, particularly in terms of their farm history, individual values and future plans; all of which would help in tailoring their advice.
- Suggestions were made by respondents on the re-wording of questions or additional questions that could have been included. These changes are captured in Appendix 3 of the report.

### 5. Maximising and sustaining positive social outcomes from future AES

Two key issues were identified as a way in which positive social outcomes could be maximised and sustained for future AES.

- **Ensuring the smooth administration of the schemes and timely payments.** Some agreement holders were owed payments which they indicated was affecting their farm decision-making, family relationships and trust in the scheme and government agencies. There was also a sense of frustration from some advisers who felt the issues with the scheme administration were undermining the trust and rapport that they had built up with agreement holders.
- **Providing positive feedback at a personal level and public or formal recognition for their AES work.** Whilst all respondents reported confidence in their environmental skills, they were not always convinced that their changed practices were producing the

desired environmental outcomes. They were looking for a more personal level of positive feedback and also for some public or formal recognition that they are benefitting the environment and making a positive contribution that is publicly valued.

## 6. Data collection issues

- **Length of survey:** The current survey is too long and the number of questions should be reduced so that the survey takes 30 minutes to administer.
- **Multiple respondents:** The questions are designed for responses from an individual but in a number of interviews two people were present, either husband and wife, father and son or farm manager and land owner. The survey could be designed to allow multiple sets of answers for some questions.
- **Sensitive questions:** All the respondents were willing to answer the health and wellbeing questions, although it was thought that some land managers, particularly the older generation, might feel less inclined to respond, or to provide honest answers. The majority of advisers felt uncomfortable asking these questions face-to-face. Suggestions for alternative ways of collecting responses for the more sensitive questions included: i) leaving these specific questions and a stamped-addressed envelope with the agreement holders to self-complete and return, although the return rate might be low; and ii) allowing the agreement holder to answer the more sensitive questions at the time of the interview, using a paper copy which they put in an envelope or directly into a tablet.

## 7. Alternative data collection methods

A number of potential alternative (including novel and innovative) means of collecting and managing indicator data methods were identified by the advisers, agreement-holders and the research team:

**Smartphone or tablet App:** Development of a user-friendly and intuitive App, with versions tailored to various land manager types and / or those on various schemes. Analyses of App data could take the form of snapshot data at various points in time, together with measures of distance travelled in the social indicators contained within the App. Periodic notifications on the user's device would prompt the agreement holder to log in to complete the question fields in order to gather the data seamlessly and efficiently. One disadvantage of the method is that it relies on the agreement holder's ability to use the phone app. Another, is that the method may miss the context in which the response is being made and the factors that are most likely to be attributable to AES.

**On-line survey:** AES agreement holders complete a series of questions using an on-line survey form which could be accessed via a computer, smartphone or tablet. A link to the online survey is emailed to AES agreement holders. A disadvantage of this method is that response rates are likely to be low. It also requires the agreement holder to have access to a personal computer and the internet and for them to be computer-literate and computer-active.

**Telephone survey:** The AES agreement holder would respond to questions over the phone and the interviewer would be able to clarify any questions. The agreement holder may be reluctant to answer sensitive questions over the telephone but if the interviewer is well trained and able to establish a good rapport with the respondent this reluctance could be overcome.

**SMS questionnaires:** SMS questionnaires could be sent to AES agreement holders at regular intervals to record snapshot data at various points in time to capture, for example, their current sense of wellbeing, satisfaction with farming, sense of connection to the community. The agreement holders are sent a link in a text message which allows them to directly answer survey question on their mobile phone. The main disadvantage of this approach is that only a limited number of questions could be asked.

**Uploading short 'social CVs':** Uploading short 'social CVs'; of meetings attended, positions held and participation in the industry to a personal portfolio highlighting the achievements of the agreement holder and the AES. This could also include indicators of community participation and appreciation collected from environmental groups, educational visitors or those assisted by the farm business. This information could also be used to communicate the contribution that the agreement holders make to civic society.

## **8. Future research – further testing of indicators and possible applications**

The report strongly recommends that further testing of the indicators in a larger pilot survey is required. This pilot survey should aim to collect sufficient data to ensure confidence in the questions and the process of administering the survey, and to examine correlations between sub and composite indicators to reduce them into a more parsimonious set for future application. A stratified randomised sample should to be drawn up for the pilot survey, to ensure that it was representative of the population from which it is drawn. A minimum sample size of around 400 would be required to undertake the survey and subsequent statistical validation. Data collection could be undertaken by phone, post, via an online survey or a mix of all three. The results would be a robust set of social indicators that can be used to measure and assess the quality of an agreement holders' engagement, the social outcomes and sustainability of AES which will provide a good indicator of the long-term AES environmental outcomes. These indicators could be developed for the following uses:

- Development of an index of indicators to provide a relative score for the social sustainability of a given scheme.
- To test the indicators': i) ability to predict agreement trajectory; ii) as proxies for environmental outcomes, including long-term and 'hidden' outcomes; and iii) as part of a wider monitoring and evaluation programme, their utility in assessing the success of a given scheme and in identifying how to improve social and environmental outcomes.
- Development of a suite of indicators which could be used by advisers to help them assess the quality of engagement an advisee has with their agreement, identify the trajectory of an agreement, as a way of learning about their advisee and so better support the advisee to improve delivery of environmental outcomes.
- As part of adviser training to help advisers understand the social world of agreement holders, the impact of agreements and how this influences the success of an agreement (including links to pro-environmental behaviour change).
- As a basis for how to develop schemes to maximise and sustain positive social outcomes to increase pro-environmental behaviour.

## **9. Knowledge transfer and dissemination plans**

Awareness of the project was raised during the first phase of the project through a Natural England intranet article and a Natural England Webinar. Two more Webinars will be used to present the findings of the final report alongside a further Natural England intranet article. The report will be widely promoted on the authors website and in their newsletter. Findings will also be published in a peer-reviewed journal article.



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# 1 Introduction

Agri-environment schemes (AES) were introduced in England with the 1986 Agricultural Act following concerns about the negative environmental impacts of agriculture, the need to support existing environmentally valuable farming practices, and to enhance habitats and landscapes. The original scheme, Environmentally Sensitive Areas (ESAs), was introduced in 1987 and offered incentives to encourage farmers to adopt or maintain agricultural practices which would protect and enhance particular areas of the country. This scheme was followed by the geographically wider Countryside Stewardship scheme (CSS). These 'classic schemes' were then replaced by the Environmental Stewardship (ES) scheme in 2005. This scheme adopted a multi-tier approach delivering outcomes through Entry Level Stewardship (ELS), a broad and shallow scheme, Organic Entry Level Stewardship (OELS) and, a targeted and more demanding, Higher Level Stewardship (HLS). This scheme was then replaced by Countryside Stewardship (CS), which was launched in 2015, and brings together a range of environmental protection measures, formerly delivered as three separate schemes: ES; Catchment Sensitive Farming Capital Grant Scheme and Woodland Grant Scheme.

A requirement of the schemes run under the Rural Development Programme of the Common Agricultural Policy (CAP) is to gather evidence that can contribute to the overall evaluation of the programme. Natural England and Defra operate a monitoring and evaluation programme aimed at providing evidence for the effectiveness of AES. This monitoring and evaluation work has largely focused on identifying the environmental outcomes and the economic impacts of the schemes. Less attention has been placed on understanding the intentional or unintentional social outcomes of AES as it relates to the social world of the agreement holders. A better understanding of these social outcomes is salient as there is increasing evidence that they have important impacts on environmental outcomes and, in particular, the agreement holder's willingness to undertake environmental activities in the longer-term.

The comprehensive review of evidence and the selection and testing of indicators undertaken in this project provides an enhanced understanding of how social outcomes of AES can be monitored and evaluated. Furthermore, it leads to an improved understanding as to how these social outcomes link to environmental outcomes. For example, there is evidence that a good advice relationship improves the quality of engagement a land manager has with their agreement. The evidence suggests that improved quality of engagement can lead to long-term and long-lasting environmental behavioural changes, manifesting in, for example, farmers' voluntarily undertaking unsubsidised environmental management practices. This project provides the tools to test these review findings more comprehensively and in the context of AES monitoring. In particular, the project highlights and evidences ideas for how to maximise and sustain (i) positive social outcomes from future AES to increase pro-environmental behaviour and (ii) how to assess the quality of engagement a land manager has with their agreement with the aim of delivering improved social and environmental outcomes.

## 1.1 Aims and Objectives

The overall aim of the project was to identify and test a set of social indicators based on an evidence review that can be used by farm advisors during aftercare visits and by scheme evaluators to assess:

- the agreement holder's quality of engagement with their AES agreements;
- the social outcomes of agreements; and
- their link to environmental outcomes.

The project was structured in 3 stages:

- **Stage 1:** A systematic literature review to identify a set of social indicators that are empirically and conceptually sound and can be used to assess the quality of engagement with an AES agreement, the social outcomes from an agreement and their link to environmental outcomes.
- **Stage 2:** The development of a method (focused on survey questions) that can operationalise the monitoring and evaluation of these social indicators.
- **Stage 3:** Small-scale testing of the proposed method on farms with existing CS or ES agreements to provide a 'ground truth' of practicality and validity.

## 1.2 Report Structure

The remainder of the report is divided into ten chapters. Chapter 2 provides a summary of the approach used for the Stage 1 evidence review and the resulting long list of indicators. Chapter 3 explains the process used in Stage 2 of the project for short-listing the indicators and the development of the data collection questionnaire. Chapter 4 provides details of the testing of the indicator data collection method undertaken in Stage 3, explaining the approach to the survey, the analysis of the data and a description of the respondents. In Chapters 5 to 9, the detailed findings from the interviews are presented with the survey responses and feedback on the questions. Further issues relating to the survey design is discussed in Chapter 10. Finally, Chapter 11 draws out some key recommendation for further development of the indicators.

## 2 Stage 1: Evidence Review

The overall aim of the evidence review was to identify a set of social indicators based on a systematic literature review. This aim was achieved through the following specific objectives, by providing:

- 1) A review of the literature on the linkages between social and environmental outcomes (with particular references to AES), including an indication of evidence gaps.
- 2) An understanding of how social factors affect the nature or 'quality' of land manager engagement with AES (attitudes, 'ownership', motivation, etc.) and associated behaviour change (long-term).
- 3) A recommended list of key, testable, social indicators, based on the evidence review – which have the potential for evaluating the quality of land manager engagement and the social sustainability of agreements. The focus was on indicators that:
  - are applicable at the farm-level,
  - are conceptually sound,
  - have potential for evaluating the social sustainability of agreements,
  - can be measured, either quantitatively or qualitatively,
  - are repeatable, and
  - are technically feasible and easy to gather data on during Natural England aftercare visits.

Below is a summary of the approach taken to the literature review and the long-list of indicators that emerged from the review. A comprehensive report on the evidence review was produced and should be referred to for more details<sup>1</sup>.

### 2.1 The Conceptual Framework

In this project, **we define a social (or socio-psychological) indicator as something that points to, measures or otherwise provides a summary overview of a specific social or psychological concept.** For example, we can measure if the farmed land is owner-occupied in order to gauge the possible level of agency<sup>2</sup> the land manager has with regard to making decisions about the agri-environment management of their farm. Alternatively, we can measure their level of interest in wildlife which is likely to reflect their level of engagement with AES. **Social outcomes, in relation to AES, are intentional or unintentional outcomes of the agreement which relate to the personal social world of the agreement holder.** They could be positive (e.g. increased pride or confidence) or negative (e.g. increased stress or reduced motivation to engage in future AES). Other social outcomes from an AES might relate to the contribution of AES to wider society and quality of life in the rural community (e.g. employment provision or cultural ecosystem services), rather than to the individual. However, as the possibility of monitoring these wider impacts at the farm-level during aftercare visits is unlikely, this impact type was considered outside the scope of the project.

To achieve the aims of the project two types of social indicators are required, those that measure engagement factors and those that measure social outcomes.

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<sup>1</sup> Mills et al (2019) Social Indicators for Agri-environment Schemes: Evidence Review

<sup>2</sup> Capacity of farmers to act independently and to make their own free choices.

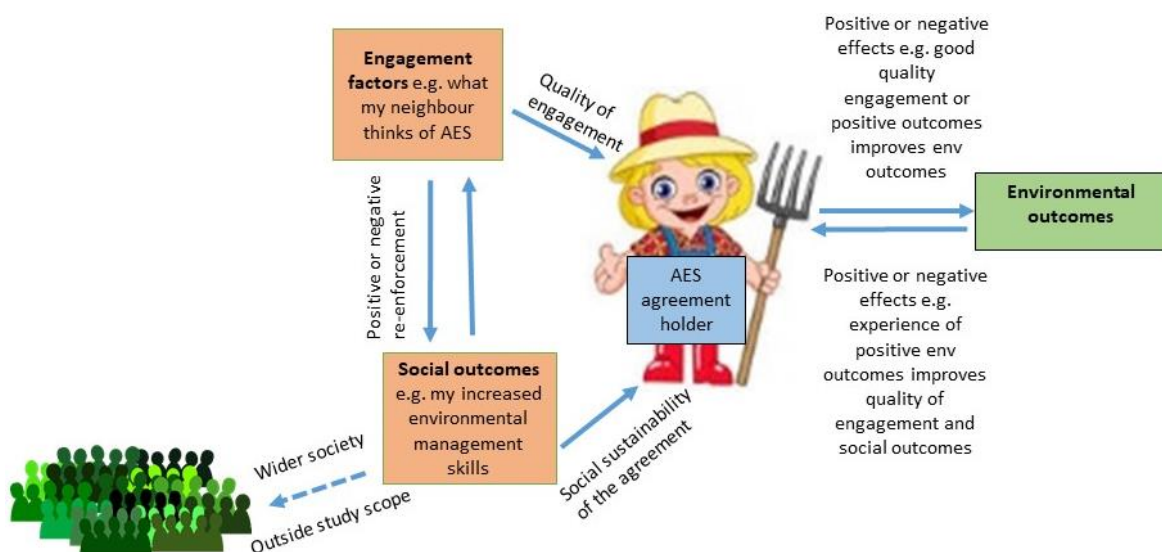
## Engagement factors

The first set of indicators measure the nature and ‘quality’ of land manager engagement with their agreement within an AES. This relates to the Government’s process evaluation in understanding the ‘how’ and ‘when’ of good quality land manager engagement. In the report we call these ‘**engagement factors**’. For example, engagement factors could include a personal interest in wildlife, the level of land manager agency on their farm, or the influence of social norms on the way a land manager thinks about AES and their agreement. All of these factors can affect the land manager’s quality of engagement with an AES. The quality of land manager engagement with AES can affect the quality of the environmental outcomes. In turn, this can have a negative or positive reinforcing effect on the factors influencing the quality of engagement – a reinforcement/feedback loop (see Fig. 2.1).

## Social outcomes

The second type of social indicator measures the social outcomes which result from land manager involvement in an AES. We call these ‘**social outcomes**’. These indicators can be used in impact and effectiveness evaluations to understand the ‘what’ (outcomes) and ‘where’ these occur (HM Treasury, 2011). Such social outcomes could include increased social networks, increased confidence as a result of gaining new skills and knowledge, or increased stress due to demands on time. Land manager engagement with an AES may have positive or negative social outcomes for the land manager and hence impact on the scheme’s social sustainability. In the context of this research, our definition of social sustainability is based on Bostrom’s (2012) definition as including quality of life, social justice, social cohesion, cultural diversity, democratic rights, gender issues, human rights, participation, social capital development and human capability.

These social outcomes can have a negative or positive effect on environmental outcomes which in turn can affect the engagement factors and quality of engagement. Thus, it is recognised that there may be overlap between these indicators and potential for mutual reinforcement/feedback loops. Figure 2.1 provides a simplified visual representation of these two types of indicators and their links to environmental outcomes.



**Figure 2.1 Diagram of conceptual framework showing links between AES engagement factors, social outcomes from AES and AES environmental outcomes and feedback loops**

This conceptual framework influenced the literature review which looked to identify the two sets of social indicators in the literature; the engagement factors that affect the nature and quality of engagement with AES and the social outcomes that relate to the social sustainability of AES. Overall, we identified more literature that focused on the engagement factors than social outcomes, which is a relatively new field of study.

## 2.2 Evidence Review: Methodology

A systematic review of the literature was undertaken using both the Web of Science and Google Scholar and the following three search strings:

### **Willingness to engage:**

Farmer (or land manager, forester) AND “agri environment” (or conservation, biodiversity, agriculture and environment, woodland) AND attitude (or behaviour, awareness, self-identity, mental health, wellbeing, mood disorder, depression, stress, loneliness)

### **Capacity to engage:**

Farmer (or land manager, forester) AND “agri environment” (or conservation, biodiversity, agriculture and environment, woodland) AND knowledge (or training, skills, labour, employment, time, finance, capacity, resilience)

### **Level of farmer engagement with others:**

Farmer (or land manager, forester) AND “agri environment” (or conservation, biodiversity, agriculture and environment, woodland) AND social capital (or cooperation, groups, collaboration, advice, public, access, antisocial behaviour, sheep worrying)

All three search strings included the word ‘farmer’ to ensure that farmers were likely to be the study subjects of the articles. Two further search terms were used, land manager and forester, to ensure other potential study subjects were not excluded. For the same reasons we also included the term “agri environment”, but also added alternative terms, such as ‘conservation’, ‘biodiversity’, ‘agriculture and environment’, ‘woodland’, in recognition that not all regions of the world use the term agri-environment and to capture evidence related to woodland schemes. These words were then followed by terms identified in previous studies that relate to factors affecting environmental decision-making.

The initial search was conducted between 29<sup>th</sup> October 2018 to 5<sup>th</sup> November 2018. The search terms yielded 262 articles, which were uploaded to the reference management software, EndNote. In addition, relevant draft or unpublished reports suggested by the Steering Group were also added, which resulted in a total of 352 documents.

A further search of the literature was also undertaken to identify indicators of the social sustainability of AES and agriculture more broadly.

Following a screening process, 175 documents remained for full-text analysis. In a final step, after a more thorough reading of the full-text, a further 33 articles were excluded due to reasons outlined below in Figure 2.2, leaving 142 documents remaining for full-text analysis. A summary of the figures is included in Figure 2.2.



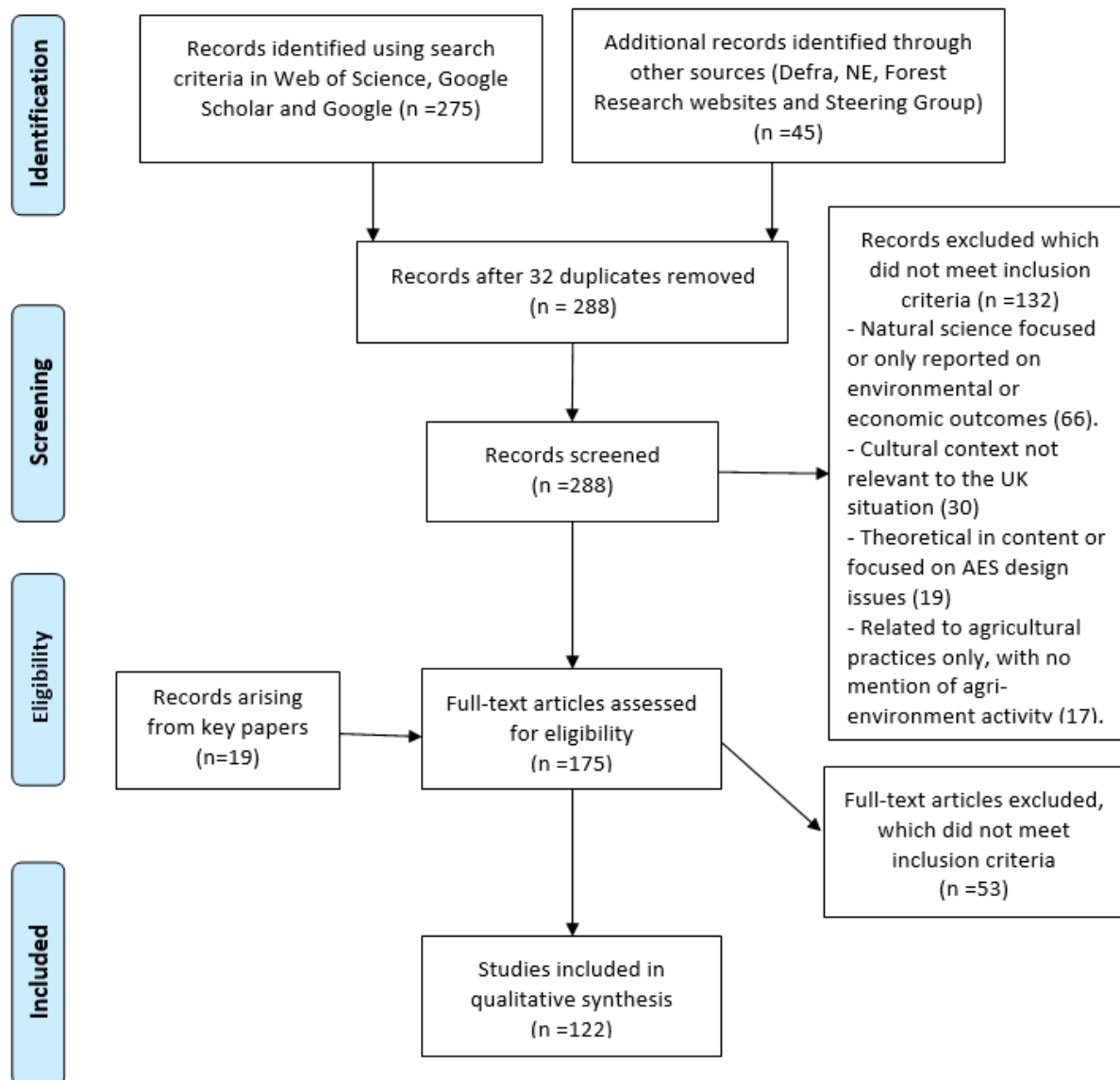


Figure 2.2 PRISMA flow diagram for systematic review

### 2.3 Evidence Review: Literature Analysis

The literature analysis was undertaken using the qualitative data analysis software, QSR NVivo 11. The same 4 team members who undertook the literature search and screening also conducted the analysis. A protocol was provided to aid consistency and each paper was analysed according to the following criteria:

- Purpose/objective of study.
- Main methods use - including sample size.
- Main engagement factors affecting quality of engagement with AES.
- Social outcomes.
- Environmental outcomes.

Each document was read thoroughly and the salient segments coded to a succinct label (a 'node'). Some nodes were created prior to the analysis, whilst new nodes were also added.

These nodes were then used to produce indicator variables which formed the basis of the indicators. Using expert judgement, some variables were combined to produce composites in order to present a more robust indicator.

One team member checked a 10% sample of the papers analysed to assess the consistency of the noding and ratings. Very few differences in analysis were identified, providing confidence in the approach taken.

For each engagement factor or social outcome identified, a rating for level of impact was assigned based on the 5-point scale in Table 2.1.

**Table 2.1 Rating for level of impact of factor on quality of AES engagement or social outcomes**

++	substantial positive impact of factor on AES engagement/social outcomes
+	some positive impact but not substantial
0	no impact
-	small negative impact
--	substantial negative impact

Also, for each engagement factor or social outcome identified, a rating for strength of link between social and environmental impact was assigned based on the 5-point scale in Table 2.2.

**Table 2.2 Rating for strength of link between social and environmental outcomes**

++	substantial positive link between social and environmental outcomes
+	some positive link
0	no link
-	small negative link between social and environmental outcomes
--	substantial negative link

A rating was also based on the strength of the evidence provided based on the design of the study based on the 3-point scale in Table 2.3.

**Table 2.3 Rating for strength of evidence**

High	well-designed study providing clear evidence
Medium	study design not ideal but still producing useful evidence of success or failure, with reasons
Low	poorly designed study not producing conclusive evidence; and/or small sample resulting in low strength of evidence

In total, 122 papers and reports met the criteria and were reviewed according to the protocol presented above (see Appendix 1 for a full list of reviewed papers and reports). The studies

were mainly focused on economically-advanced countries. The top five countries were: UK (56%); Netherlands (8%); Ireland (6%); Australia (5%) and USA (3%).

In Table 2.4 the first column presents engagement factors and social outcomes identified in the review and are included in order of level of evidence for positive impact on quality of engagement with AES or social outcomes of AES (with most positive impact first).

The third column in Table 2.4 represents an assessment of the number of papers that mention a particular factor as having a substantial positive impact, some positive impact, some negative impact or a substantial negative impact on the quality of AES engagement and social outcomes. In general, the literature focused on the positive impacts of engagement factors or social outcomes in relation to AES, with far fewer studies identifying the negative impacts, as illustrated in Table 2.4. It is worth noting that a high occurrence of papers mentioning a factor may simply reflect particular research interests, rather than a reflection of the importance of the factor in affecting quality of engagement and social outcomes.

The final column shows the strength of the causal link identified between social outcomes and environmental outcomes for individual papers. Generally, there was a paucity of evidence explicitly identifying the link between social factors and environmental outcomes. For example, for the factor 'Attitude to environment', out of the 29 papers mentioning this factor, only ten papers referred to a causal link between social factors and environmental outcomes, and these papers all identified a positive link.

The factors identified most often as having a substantial positive impact on the quality of engagement with AES or social outcomes resulting from AES, related to: attitudes to environment; skills; advice and farmer-adviser relationship; self-identity; and different forms of social capital.

**Table 2.4 No. of papers mentioning factors with positive or negative impacts on quality of engagement and social outcomes and strength of causal link**

Factor affecting quality of engagement and social outcomes	No. of sources	No. of papers mentioning level of impact of factor on both quality of engagement and social outcomes				No. of papers identifying strength of causal link between social factors & environmental outcomes			
		Substantial positive impact	Some positive impact	Some negative impact	Substantial negative impact	Substantial positive link	Some positive link	Some negative link	Substantial negative link
Attitude to environment	45	17	27	1		2	22		
Advice	26	16	10			8	8		
Self-identity/business orientation	26	9	8	3	1	2	5		
Knowledge/skills	21	6	11	3	1	2	10		
Bridging social capital	18	6	10	1		3	3		
Bonding social capital	16	8	7	1		2	6	1	
Farmer age	22		13	1	2		3		1
Experience of AES	13	7	4			1	4		
Farm income	12	1	8	2			4		
Level of education	15	2	9				9		
Social trust	14	1	8	2		1	4	1	
Time/labour availability	14	1	4	6			3	2	
Agency	11	1	4	3	2		3		

Paperwork	11			4	6	11		1	1
Social norms	10		6	3			4		
Succession status	16	1	6	2			1	2	
Risk aversion	10		3	5			1	2	
Training	8	5	3			2	5		
Farm size	14		6				5		1
Farm type	8	1	2	2			2		
Attitude to public	5	1	2	2			2		
Peer pressure	5		3	2			3	1	
Mental health	6	1	3	1			2	1	
Entrepreneurial attitudes	4		4						
Farm tenure	7	1	2	1			2	1	1
Public access	4	2	1		1			2	
Public recognition	5		4				2		
Farm size		1	2				2	1	
Environmental responsibility	2	2							
Gender	5	1	1				1		
Information sharing	2	1	1						
Stress levels	3	2							
Linking social capital	1					1			

Papers were excluded from ratings if impact was ambiguous (e.g. mentioned both negative and positive impacts) which means totals may not equal number of paper sources

## 2.4 Long-List of Indicators

The number of high-level and sub-indicators derived from the review of evidence as having the most impact in terms of quality of AES engagement and social outcomes were as follows:

- Engagement factors (under 3 themes) – **19** indicators (36 sub-indicators)
- Social outcomes – **14** indicators (38 sub-indicators)

Resulting in a total of 33 high-level indicators. These indicators are presented in Table 2.5.

**Table 2.5 Long-list of high-level indicators and sub-indicators**

High-level Indicators	Sub-indicators
<b><i>Theme 1. Quality of engagement – willingness to engage</i></b>	
Interest in (and awareness of) the environment	<ul style="list-style-type: none"> <li>• Awareness of and interest in wildlife (species and habitats)</li> <li>• Awareness of and interest in cultural and landscape assets</li> <li>• Extent of environmental knowledge</li> <li>• Extent of unsubsidised environmental activity</li> <li>• Sense of environmental responsibility</li> <li>• Interest in game shoots</li> <li>• Experience of on-farm environmental issue</li> <li>• Gender – female farmers more environmentally orientated</li> </ul>

Engagement with advice and training	<ul style="list-style-type: none"> <li>• Level of engagement with environmental advice</li> <li>• Level of rapport with advisor</li> <li>• Level of engagement in training</li> </ul>
Attitudes and beliefs about farming (self-identity)	<ul style="list-style-type: none"> <li>• Profit maximisation-focused</li> <li>• Food production-focused</li> <li>• Custodianship-focused</li> </ul>
Level of AES experience	<ul style="list-style-type: none"> <li>• Length of previous AES experience</li> </ul>
Interest in experimentation	<ul style="list-style-type: none"> <li>• Evidence of experimentation</li> </ul>

### ***Theme 2. Quality of engagement – capacity to engage***

Farmer age	<ul style="list-style-type: none"> <li>• Farmer age</li> </ul>
Succession	<ul style="list-style-type: none"> <li>• Presence or absence of successor</li> </ul>
Lifecycle	<ul style="list-style-type: none"> <li>• Stage in lifecycle</li> <li>• Planned future trajectory</li> </ul>
Financial stability	<ul style="list-style-type: none"> <li>• Financial stability</li> </ul>
Farmer education	<ul style="list-style-type: none"> <li>• Level of formal education</li> </ul>
Farming system and farm type	<ul style="list-style-type: none"> <li>• Intensity of farming system</li> <li>• Quality of agricultural land</li> </ul>
Farm tenure	<ul style="list-style-type: none"> <li>• Tenure status</li> </ul>
Farm size	<ul style="list-style-type: none"> <li>• Farm size</li> </ul>
Resilience	<ul style="list-style-type: none"> <li>• Business security</li> <li>• Labour availability</li> </ul>
Agency	<ul style="list-style-type: none"> <li>• Control over agreement</li> <li>• Incorporation of farmer knowledge</li> </ul>

### ***Theme 3. Quality of engagement – level of engagement with others***

Bonding social capital (strong relationships between people who have the same values)	<ul style="list-style-type: none"> <li>• Extent of group working</li> <li>• Extent of information and knowledge sharing</li> <li>• Level of social trust</li> </ul>
Bridging social capital (social relationship between individuals with dissimilar characteristics, including the general public)	<ul style="list-style-type: none"> <li>• Extent of engagement in non-agricultural networks</li> <li>• Public acknowledgement</li> </ul>
Linking social capital (relationship with people characterised by power differences; the links between farmers and institutions/landlords)	<ul style="list-style-type: none"> <li>• Ability/desire to form positive relationships with government agency staff</li> <li>• Level of social trust with government</li> </ul>
Cultural (symbolic) capital (knowledge, behaviours, and skills that demonstrate competence and thus social status or standing amongst farming community/ society)	<ul style="list-style-type: none"> <li>• Respect amongst peers</li> <li>• Advising other land managers</li> </ul>

### ***Theme 4. Changes in social outcomes of AES***

Change in Attitude to (interest in) environment	Change in: <ul style="list-style-type: none"> <li>• Environmental awareness</li> <li>• Sense of environmental responsibility</li> <li>• Attitudes due to knowledge about ease or difficulty of implementing</li> <li>• Attitudes due to experience of environmental success or failures</li> </ul>
Change in Knowledge & Skills	Change in: <ul style="list-style-type: none"> <li>• Confidence and abilities</li> <li>• Understanding of AES rationale (Indicators of Success)</li> </ul>
Change in Connectedness (levels of social interaction)	Change in: <ul style="list-style-type: none"> <li>• Levels of social interaction</li> <li>• Levels of social isolation</li> <li>• Learning capacity</li> </ul>
Change in Social capital (trusting and reciprocal relationships/networks)	Change in: <ul style="list-style-type: none"> <li>• Levels of social trust</li> <li>• Extent of collaborative working and information sharing</li> <li>• Social and cultural norms</li> </ul>
Change in Cultural capital (prestige and respect from other farmers)	Change in: <ul style="list-style-type: none"> <li>• Level of respect/social standing with peers</li> </ul>
Public image	Change in: <ul style="list-style-type: none"> <li>• Extent of public acknowledgement and appreciation</li> </ul>
Change in Agency – (sense of control over agreement, management of land)	Change in: <ul style="list-style-type: none"> <li>• Control over land</li> </ul>
Change in Resilience	Change in: <ul style="list-style-type: none"> <li>• Business security</li> <li>• Business structure</li> </ul>
Labour availability	Change in: <ul style="list-style-type: none"> <li>• Workload</li> </ul>
Mental health and subjective wellbeing	Change in: <ul style="list-style-type: none"> <li>• Stress levels due to workload</li> <li>• Stress levels due to AES administration</li> <li>• Stress level due to financial issues</li> <li>• Stress levels due to conflicts with associates or family members</li> <li>• Stress levels due to enjoyment of environmental outcomes.</li> </ul>
<b>Theme 5. Social outcomes – Quality of life</b>	

Employment and working conditions	<ul style="list-style-type: none"> <li>• Holiday days</li> <li>• Free days per week</li> <li>• Off farm working</li> <li>• Spouse off farm working</li> <li>• Average Peak working hours</li> </ul>
Social engagement	<ul style="list-style-type: none"> <li>• No. of organisation participates with</li> <li>• No. of events participated in</li> </ul>
Job satisfaction	<ul style="list-style-type: none"> <li>• Daily job tasks</li> <li>• Work-life balance</li> <li>• Being a farmer</li> <li>• Freedom of decisions</li> <li>• Overall</li> </ul>
Quality of life	<ul style="list-style-type: none"> <li>• Satisfaction with quality of life</li> <li>• Overall quality of life</li> <li>• Happiness</li> </ul>

### 3 Stage 2: Short-listed Indicators and Survey Design

The second stage of the project involved an exercise to short-list the indicators and the design of a survey to facilitate the monitoring and evaluation of these indicators.

#### 3.1 Short-listing the Indicators

The short-listing of the indicators was informed by two sets of ranking exercises. One set of exercises was undertaken by five AES researchers during a meeting of the Natural England/Defra Environmental Land Management (ELM) Social Science Expert Panel (SSEP). The other ranking exercises were conducted by six Natural England Farm Advisers. Eleven Natural England advisers were emailed the exercises with instructions, alongside a glossary of terms, a summary of the evidence review report and the full report and six completed exercises were returned.

Both sets of exercises required a ranking of the high-level indicators on a 1-5-point scale. The indicators were rated for their usefulness or relevance in assessing quality of AES engagement, social outcomes/social sustainability and the feasibility of implementing the indicators. Where 1 was very low usefulness/ feasibility, 2 was low usefulness/ feasibility, 3 was medium usefulness/ feasibility, 4 was good usefulness/ feasibility, 5 was very useful/ feasibility.

The second exercise, undertaken by the AES researchers, required a scoring out of 100 for each sub-level indicator according to their relative importance in capturing change in the respective high-level indicator based on their knowledge. Following the feedback received from completing this exercise, it was simplified for the Natural England Farm Advisers to a ranking on a 1 to 5-point scale. Drawing on their experience, the Natural England advisers ranked the sub-indicators based on how relevant they thought they were for capturing changes in the associated high-level indicator, where 1 was very low relevance, 2 was low relevance, 3 was medium relevance, 4 was good relevance, 5 was very relevant. The Natural England Farm Advisers were also asked to offer suggestions on how to capture and record the sub-indicators.

Where only one sub-indicator was provided both the AES researchers and Natural England Farm Advisers were invited to offer suggestions for additional sub-indicators.

For each indicator the mean and mode of the range of scores provided by the AES researchers and Natural England Farm Advisers were calculated. Those indicators that received a low score were recommended for removal from the indicator list.

The short-listing resulted in the removal or merger of some of the high-level indicators, two of which were suggested as independent variables instead<sup>3</sup>. Also, the removal of 14 sub-indicators, with 3 suggested as independent variables. In addition, based on the suggestions provided in the exercises, 3 additional indicators were proposed. The final indicator list of 20 high-level indicators is presented in Table 3.1.

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<sup>3</sup> An independent variable is a factor that is not changed by other variables. In this context, we could say that an agreement holder's age is not changed by the level of engagement with an AES.



**Table 3.1 Short-list of higher-level and sub-indicators**

	High-level Indicators	Sub-indicators
	<b>Theme 1. Quality of engagement – Willingness to Engage</b>	
WE_01	Interest in (and awareness of) environment	<ul style="list-style-type: none"> <li>• Awareness of and interest in wildlife (species and habitats)</li> <li>• Extent of environmental knowledge</li> <li>• Extent of unsubsidised environmental activity</li> <li>• Sense of environmental responsibility</li> <li>• Awareness of and interest in cultural and landscape assets</li> </ul>
WE_02	Attitudes and beliefs about farming (self-identity)	<ul style="list-style-type: none"> <li>• Attitudes to farming and self-identity</li> <li>• Attitudes and beliefs about the future of farming</li> </ul>
WE_03	Engagement with advice and training	<ul style="list-style-type: none"> <li>• Level of engagement with environmental advice</li> <li>• Level of rapport with advisor*</li> <li>• Level of engagement in training</li> </ul>
WE_04	Level of AES experience	<ul style="list-style-type: none"> <li>• Length of previous AES experience</li> <li>• Confidence in environmental skills/abilities</li> <li>• Understanding of AES rationale (Indicators of Success)</li> </ul>
	<b>Theme 2. Quality of engagement – Capacity to Engage</b>	
CE_01	Succession	<ul style="list-style-type: none"> <li>• Planning for succession</li> </ul>
CE_02	Lifecycle	<ul style="list-style-type: none"> <li>• Stage in lifecycle</li> </ul>
CE_03	Farmer education	<ul style="list-style-type: none"> <li>• Level of formal education</li> </ul>
CE_04	Farm tenure	<ul style="list-style-type: none"> <li>• Tenure status</li> </ul>
CE_05	Resilience	<ul style="list-style-type: none"> <li>• Response to challenging situations</li> </ul>
CE_06	Agency	<ul style="list-style-type: none"> <li>• Control over agreement</li> </ul>
	<b>Theme 3. Quality of engagement – Level of farmer engagement with others</b>	
LC_01	Bonding social capital	<ul style="list-style-type: none"> <li>• Extent of group working</li> <li>• Extent of information and knowledge sharing</li> <li>• Level of social trust</li> </ul>
LC_02	Bridging social capital	<ul style="list-style-type: none"> <li>• Extent of engagement in non-agricultural networks</li> <li>• Engagement with general public</li> <li>• Public acknowledgement</li> </ul>
LC_03	Linking social capital	<ul style="list-style-type: none"> <li>• Ability/desire to form positive relationships with government agency staff</li> <li>• Level of social trust with government</li> </ul>
LC_04	Cultural (symbolic) capital	<ul style="list-style-type: none"> <li>• Respect amongst peers</li> <li>• Advising other farmers</li> </ul>
	<b>Theme 4. Social Outcomes – Quality of life</b>	
QL_01	Employment and working conditions	<ul style="list-style-type: none"> <li>• Holiday days</li> <li>• Off farm working</li> <li>• Average Peak working hours</li> </ul>
QL_02	Job satisfaction	<ul style="list-style-type: none"> <li>• Work-life balance</li> <li>• Being a farmer</li> <li>• Freedom of decisions</li> <li>• Overall</li> </ul>
QL_03	Quality of life	<ul style="list-style-type: none"> <li>• Satisfaction with quality of life</li> <li>• Overall quality of life</li> </ul>

<b>Theme 5. Social outcomes – Health and well-being</b>		
HW_01	Happiness	<ul style="list-style-type: none"> <li>• Happiness</li> <li>• Worthwhile</li> </ul>
HW_02	Physical and mental health	<ul style="list-style-type: none"> <li>• Physical health</li> <li>• Mental health</li> </ul>
HW_03	Stress levels due to AES	<ul style="list-style-type: none"> <li>• Workload</li> <li>• Administration &amp; bureaucracy</li> <li>• Inspections</li> <li>• Financial issues</li> </ul>

\*not tested in survey

The indicator list was also presented to 73 Natural England staff during a Webinar held on 20<sup>th</sup> March 2019. Using two polling questions they were asked to identify their top 5 high-level indicators for measuring the quality of AES engagement and any additional indicators that should be considered (see Appendix 2 for response). The highest ranked indicators closely matched those identified through the evidence review but with more emphasis on farm types and financial security. Suggestions for additional indicators were identified and it is recommended that these are explored in any follow-up study.

### 3.2 Survey design

Using previous surveys, the research teams' own experience and knowledge of designing and implementing land manager social science surveys and the Project Steering Group's input, survey questions were designed to capture information for each of the indicators and sub-indicators.

Two types of questions were designed:

- 1) Those questions that can be used to measure, assess or record the distance travelled by the agreement holder during the life of their AES agreement in terms of their willingness and capacity to engage, level of engagement with others, social sustainability and health and wellbeing. The idea being that, with the roll-out of the monitoring scheme, questions would first be asked at the start of the agreement to establish a baseline, then at various points throughout the agreement, including at the end of the agreement.
- 2) Those questions that can be used to measure, assess or record a snapshot in time in terms of the social outcomes currently delivered by their AES – the changes that have occurred as a result of their AES agreement.

When devising each question consideration was given to the following factors:

- Is this the most direct way of asking the question?
- Is this the most robust way of asking the question?
- Is the question really linked to the quality of AES engagement or to social outcomes of AES?
- Is the question measuring something that will change as a result of AES involvement?
- Is the question taking too much for granted?
- Is the question unambiguous?
- Is the question in plain English?

The questions used to measure the indicators related to Theme 4 in the long-list, 'Social Outcomes of AES', that aim to capture a snapshot in time, were merged with other related indicators to streamline the survey form. The final questionnaire that was used for testing in the next stage of the project is provided in Appendix 1.

## 4 Stage 3: Testing of Indicator Data Collection Method

### 4.1 Approach

Testing of the indicators was undertaken through 19 face-to-face interviews with agreement holders and 10 interviews with their advisers. The interviews took place on the agreement holder's farm and in 13 of the 19 interviews the adviser was present. Often the presence of the adviser helped the interview as they were able to clarify the question for the agreement holder. The interviews lasted on average 1.15 hours (ranging from 45 mins to 2.5 hours). The length of time for the interviews varied depending on how much the respondent wished to provide context for their answers. All the interviews were audio recorded following the respondents signed written consent. Completion of the consent form (which included the privacy notice) in itself was a lengthy process, taking half an hour in one instance.

The data for testing the indicators was collected through face-to-face interviews, undertaken mainly as part of Natural England aftercare monitoring visits. In most cases the Natural England advisers were known to the agreement holder, although in three of the interviews it was the adviser's first visit.

For questions with scale responses, the respondents were presented with show cards to facilitate their choices. In four cases the agreement holder filled in their responses directly onto the survey form. Respondents were encouraged to provide feedback on any questions which were unclear or ambiguous. Also, at the end of the survey respondents were asked the following questions:

1. Were there any questions that you struggled to answer? Were there any questions that other farmers might struggle to answer?
2. Were there any questions you found awkward/uncomfortable answering? Were there any questions that other farmers might find awkward to answer? Would those questions have been better asked as self-completion questions?
3. Are there additional questions that we could have asked?

Following the interview with the agreement holder, a separate interview was held with the Natural England adviser off-farm. The key questions asked were:

1. Were there any questions that you felt the agreement holder found difficulty in answering, or other farmers might find difficult answering?
2. Were there any questions that you would feel uncomfortable asking?
3. We previously had a question asking to what extent the agreement holder trusted the advice of their main adviser. We realise that this might be an awkward question for an adviser to ask! Is there another way of asking this question?
4. Are there additional questions that we could have asked?

### 4.2 Analysis

The survey form was uploaded as a Bristol Online Survey form (<https://www.onlinesurveys.ac.uk/>) which enabled the 3 researchers undertaking the interviews to input the responses into a centralised survey form. This software was then used to produce tables and graphs from the data. Due to the small sample size, no attempt was made to conduct cross-tabulation analyses, but with a larger dataset such an analysis could reveal useful relationships between different variables, such as social outcomes based on farm and farmer characteristics.

The recorded feedback captured during the interviews was transcribed and imported into the qualitative analytical software, NVivo 12. The transcripts were coded using the individual survey questions and additional codes were created to capture any missing questions or issues raised about the process.

Of the 75 questions in the questionnaire, respondents had no comments to make on 31% of the questions. 30% of the questions received additional feedback from between 1 to 3 respondents, whilst 17 questions received feedback from between 4 to 7 respondents. The remaining 10 questions, presented below, received feedback from 8 or more respondents, indicating that they caused the most issues.

**Table 4.1 Questions receiving the most feedback responses**

Question	No. of respondents
Q51. Could you tell me for each whether you trust people from this group: Your family; Other farmers in the local area; Your landlord (if applicable); Your local community; Defra/Natural England; Political parties (completely; somewhat; not very much; not at all)	14
Q14. How, if at all, do you think agriculture affects the environment...in the country?; in your local area?; on you farm? (a significant positive effect; some positive effect, neither positive, nor negative effect, some negative effect, a significant negative effect)	10
Q24. To what extent has your attitude to AES changed due to the environmental benefits achieved on your farm?	10
Q28. How much formal environmental training have you undertaken in the last 3 years?	10
Q50. Generally speaking would you say people can be trusted? People can almost always be trusted People can usually be trusted You usually need to be careful in dealing with people You almost always need to be careful in dealing with people Can't choose	10
Q32. How confident would you be in managing options without prescriptions?	9
Q42. As a result of joining an AES has there been a change in response to how you bounce back from challenging situations? (Harder to bounce back; Easier to bounce back; No change in ability to bounce back; Don't know/not sure)	9
Q52. To what extent has joining the AES changed your level of trust towards the following groups: Your local community; Defra/Natural England; Political parties	9
Q38. Which of these statements reflect your current business stage?: I am reducing the size/intensity of the business; I am maintaining the business without major changes; I am growing/intensifying the business; I am diversifying the business; I am selling the business; I don't know	8
Q58. Do you, or have you ever, engaged with the general public in relation to any of these activities: Open Farm Sunday; Social media (farming-specific); Tourism accommodation – camping, B&B etc; Tourism activity – tours, workshops etc; School visits; Other educational events e.g. BioBlitz, bird watching groups; Public rights of way; "Face time a farmer"; Helping out at local events with farming-related activities; Provision of facilities (e.g. meeting rooms); Been interviewed for a podcast, radio programme, article etc; Farm gate sales; Shooting events; Other (Please specify)	8

### 4.3 Sample

The Natural England project officer recruited Natural England advisers to assist with the project. These Natural England advisers identified agreement holders who would be willing to test the indicator questions, often as part of a scheme after-care visit. In five cases, the agreement holders were recruited by the researchers through their own contacts.

The agreement holders and advisers were distributed across England, with a higher proportion recruited from the East Midlands (see Table 4.2).

**Table 4.2 Location of interviewees and advisers**

Region	South West	West Midlands	East Midlands	East of England	Yorkshire & Humberside	North East	Total
No of agreement holders	2	2	8	3	1	3	19
No. of advisers	1	1	4	3	0	1	10

The respondents managed a variety of farm types, with the majority having upland sheep and/or beef farms (Table 4.3)

**Table 4.3 No. of respondents by farm type**

Farm type	No. of respondents
Mainly cereals	2
Arable and beef	3
Mainly dairy	1
Lowland sheep and/or beef	3
Upland sheep and/or beef	8
Mixed	1
Lowland sheep and poultry	1
Total	19

The average farm size was 262 ha, ranging from 47 ha to 1,214 ha, with most farms falling in the 100-200 ha farm size grouping (Table 4.4).

**Table 4.4 No. of respondents by farm size**

Farm size grouping (ha)	No. of respondents
0-100	4
100-200	9
200-300	2
300+	4

The average respondent age was 52, ranging from 26 to 77 years of age (Table 4.5).

**Table 4.5 No. of respondent by age**

<b>Age grouping</b>	<b>No. of respondents</b>
20-39	3
40-49	6
50-59	3
60+	7
Total	19

The majority of the respondents had been involved in an AES for more than 10 years (see Table 4.6)

**Table 4.6 No. of respondents by length of experience in an AES**

<b>Length of experience in AES</b>	<b>No. of respondents</b>
<10 years	2
10-19 years	8
20+ years	8
Not sure	1

## 5 Results: Quality of Engagement Indicators (Willingness to Engage)

The next five chapters provide details of the agreement holders' responses to each of the survey questions, by indicator and sub-indicator. They also detail any feedback on questions received and suggested alternative wording for questions. Each chapter represents one of the five indicator themes.

The first 6 questions in the questionnaire captured information on the independent variables relating to the agreement holder and their farm type, as presented in Tables 4.3 to 4.6 above.

The Willingness to Engage Indicator theme contains five high-level indicators.

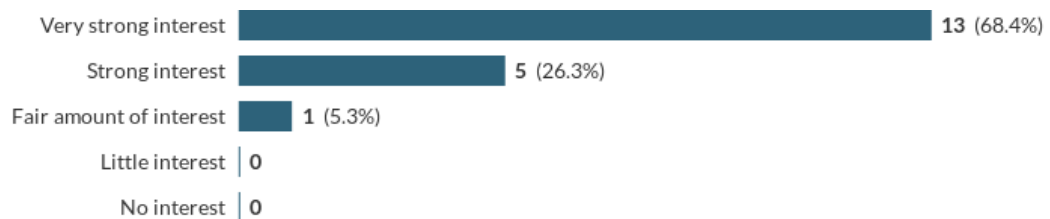
### Indicator WE\_01: Interest in and awareness of the environment

Interest in the environment affects land managers' attitudes towards the environment and is most commonly identified as a factor affecting land managers' quality of engagement with agri-environment activities. This indicator contains 5 sub-indicators that were identified in the literature as influencing land managers' interest in and awareness of the environment: Awareness of and interest in wildlife; Extent of environmental knowledge; Extent of unsubsidised environmental activity; Sense of environmental responsibility; Knowledge of cultural and landscape assets.

#### 1.1 Awareness of and interest in wildlife (species and habitats)

Four questions were asked that measured the level of the land managers' awareness and interest in wildlife.

Q7 How strong is your interest in the wildlife on your farm?



As a self-selecting sample of interviewees, it is unsurprising that the majority of respondents indicated a strong or very strong interest in the wildlife on the farm. The respondents were recruited by advisers and voluntarily agreed to the interview out of their own personal interest in the research.

Q8 Do you have an active interest in wildlife, such as being a member of any environmental or conservation organisations, or do you have any relevant hobbies, such as bird-watching etc?

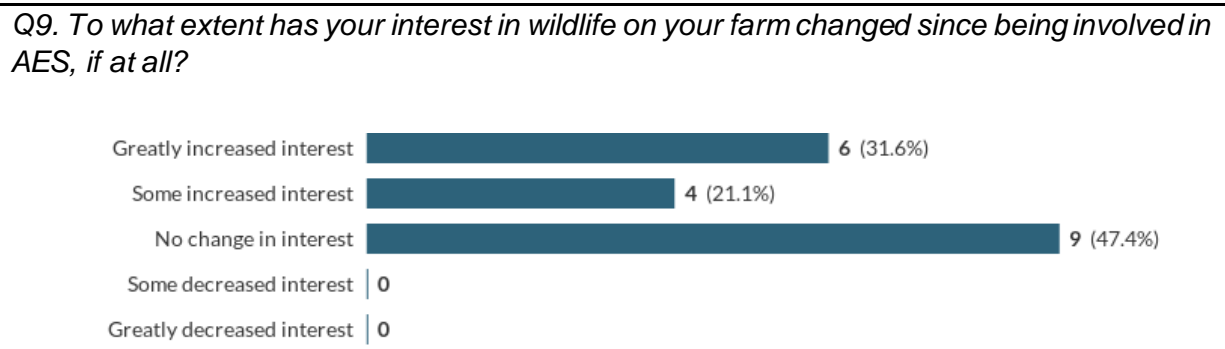




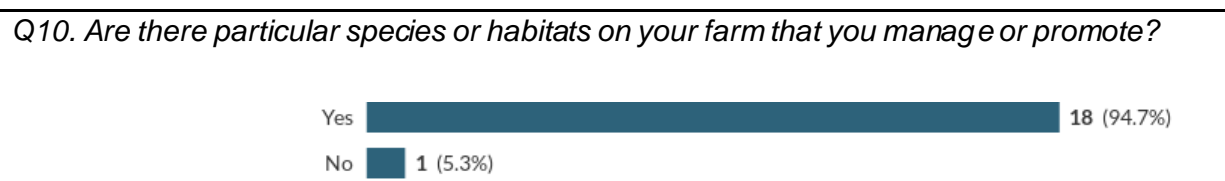
Just under half of all land managers interviewed followed-up this interest in wildlife with membership of any environmental or conservation organisations or hobbies. Those that did have a membership belonged to Wildlife Trusts (2), FWAG (1), RSPB (1), British Deer Society (1) or had birdwatching (1) or wildlife photography (1) hobbies. However, feedback received from land managers and advisers was that the lack of active interest in wildlife did not necessarily reflect the agreements holder’s lack of interest, but rather their lack of time to become actively involved. It was also argued by some that the lived experience of farming may include an active interest in nature, but it is not expressed through membership of organisations or hobbies. The following quotes illustrate this point well.

“I am interested in wildlife, but I would not say birdwatching is a hobby, I wouldn’t come out and sit to deliberately watch birds, but it’s part of your life, it’s what we do. You know, you see it in all the seasons and one of the nicest things towards the end of March is when the Lapwings come back onto your farm and Curlews descend and you can listen to their calls. In a way, you are birdwatching but not in the way you said.”

“It’s funny, when you are here all the time you don’t perhaps notice it. You can take it for granted. But, when you hear the birds in Spring it’s like a wake-up call, that spring is on its way. On a quiet night when everything is still, it’s special. Because it is around you all the time, you probably don’t pay as much attention as somebody who comes from the town and never sees it until they come out in the countryside. It will be far more special for them in some respects than it is for us.”

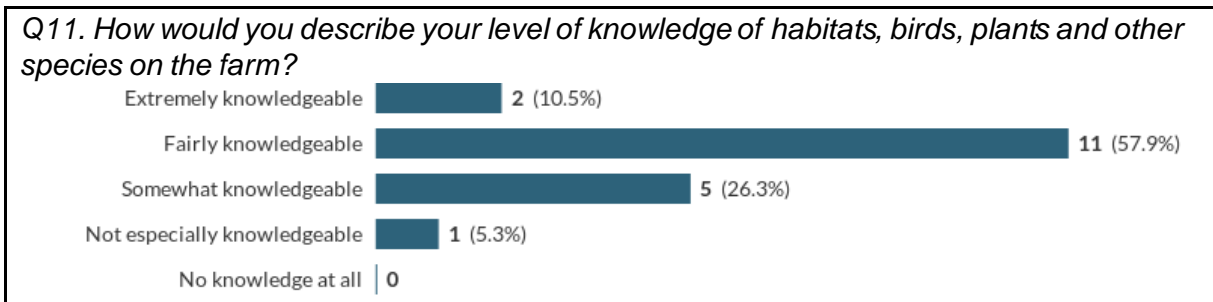


Most of those who responded that involvement in AES resulted in ‘no change in their interest’ in wildlife on their farm stated that was because they were already interested in the wildlife on their farm prior to joining an AES. Some were concerned that stating “no change in interest” might be interpreted as a negative reflection on their quality of engagement with AES. This response suggests asking the question in two parts may be a better way of capturing any changes in interest – “What was your level of interest in wildlife on the farm before being involved in your current AES? – What is your level of interest in wildlife on your farm since being involved in your scheme?”. As younger farmers may not recall a time when there was no AES on the farm, the question has been rephrased to refer to the current AES.



Nearly all of interviewees responded positively to this question and therefore the question itself may not be particularly discerning. However, the follow-up question asked for detail of the particular species or habitats and the responses gave an indication of the agreement holder's level of knowledge about their agreement and aspects of their agreement they particularly valued. Respondents were particularly able to give details of species that they were trying to manage and promote (such as brown-hairstreak butterflies, curlews, lapwings, grey partridge, water voles) and for some, particular habitats (such as parkland, reedbeds, wet woodlands, grassland). In a few cases the adviser had to remind the respondent of some of the particular species or habitats that their management practices were promoting.

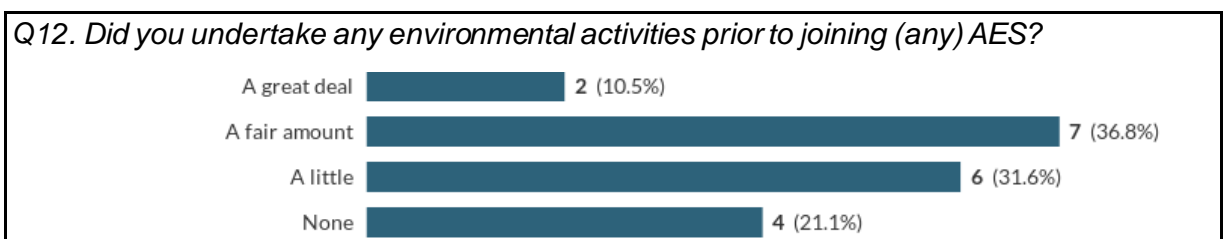
## 1.2 Extent of environmental knowledge



The majority of respondents considered themselves 'somewhat' or 'fairly knowledgeable' of the habitats, birds, plants and other species on the farm. There was a suggestion that 'somewhat' and 'fairly' were similar scales. Also, there was a suggestion to clarify the point in time to which the question refers, whether it was current level of knowledge or at the start of the scheme. Two different questions could also be asked: one relating to the farmers current state of knowledge, and one probing as to whether this had changed since committing to an AES.

## 1.3 Extent of unsubsidised environmental activity

Two questions were asked to measure this sub-indicator with each question asking respondents to provide details of the environmental activities undertaken.

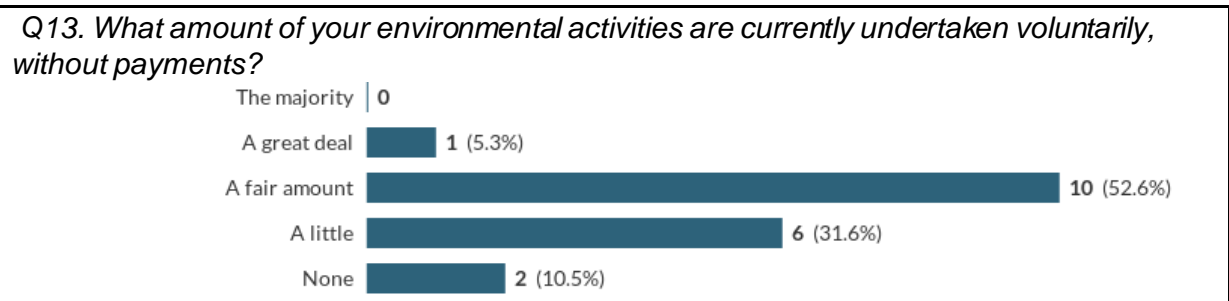


This question first introduced the term environmental activities and it was suggested by some that a definition of the term is required. Whilst the term is understood by agency staff and academics, some land managers might interpret the term differently. They might, for example, relate the term to good farming practice or protecting the traditional landscape. One way of addressing this issue it is to have a statement at the start of the survey explaining how the term environment is interpreted in the context of the questions. The term could, for example be defined broadly relating to all the objectives of the AES, or focus on a particular aspect of the environment, such as wildlife conservation, and exclude all the other objectives of AES. It was also suggested by one peer reviewer that to avoid this problem of

definition, this question could be changed to “Did you undertake any environmental activities you now do as part of AES prior to joining?”

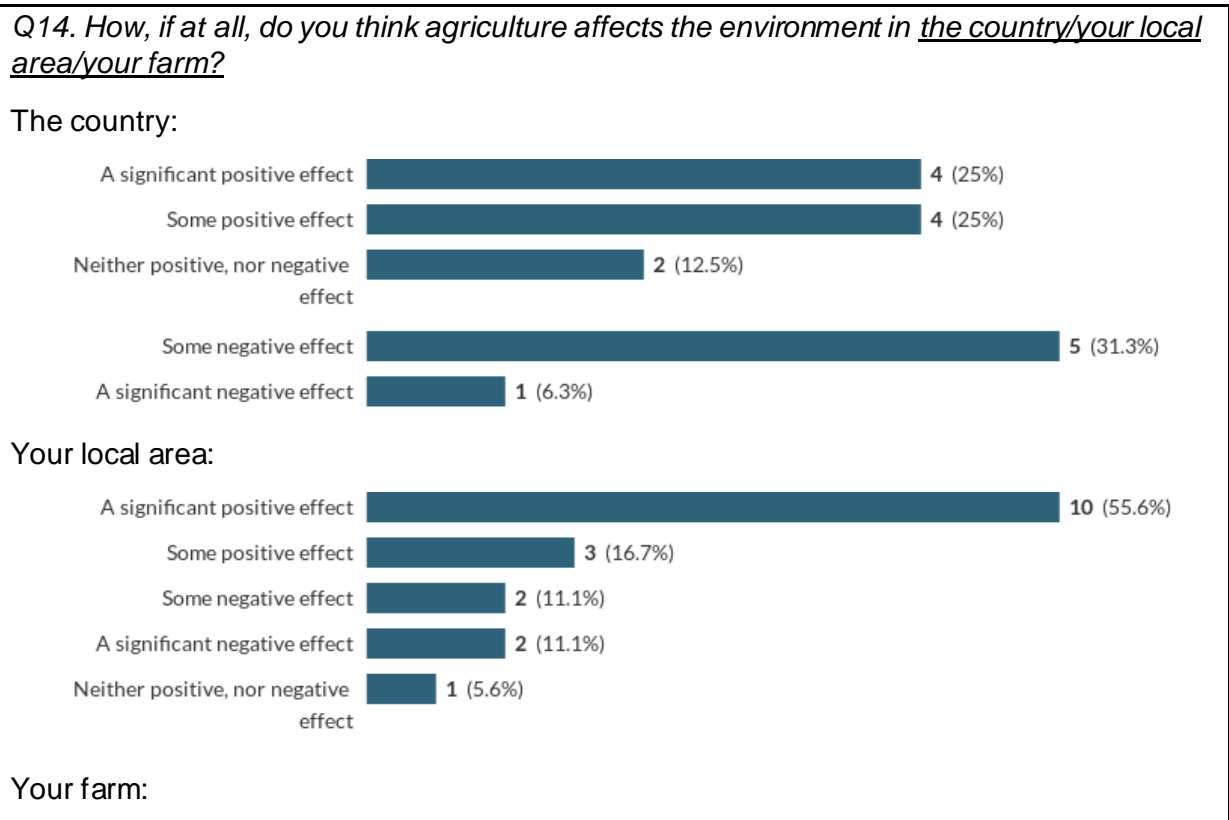
Another issue with the question is that younger agreement holders had no memory of environmental activities undertaken on the farm prior to the first AES. As one advisor stated:

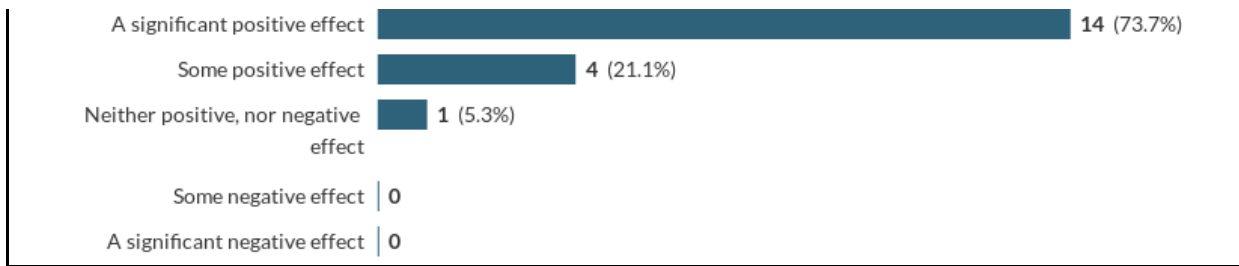
“Farmers around here have generally been in schemes for 3 decades. 30 years ago he was 21. It is difficult for people to think back that far and what the changes would be. They don’t remember, it is a long time.”



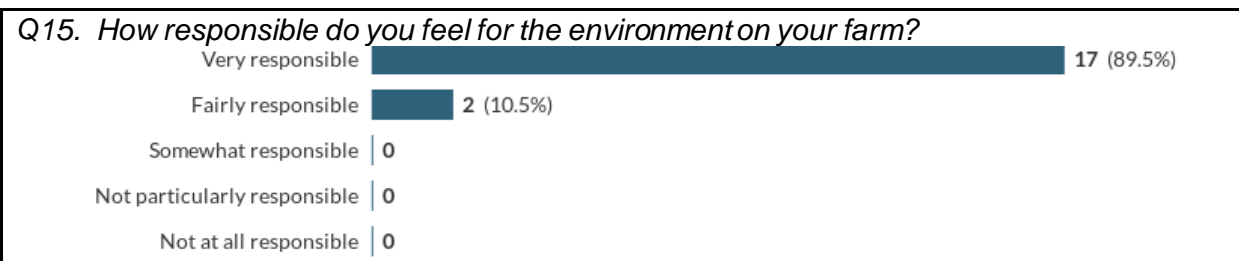
The majority of respondents undertook a fair amount or a little environmental activity without payments and were able to provide details of the activities, such as woodland management, leaving field margins, rush management, hedge laying, avoiding poaching, avoiding disturbing nests, avoiding over-stocking.

#### 1.4 Sense of environmental responsibility

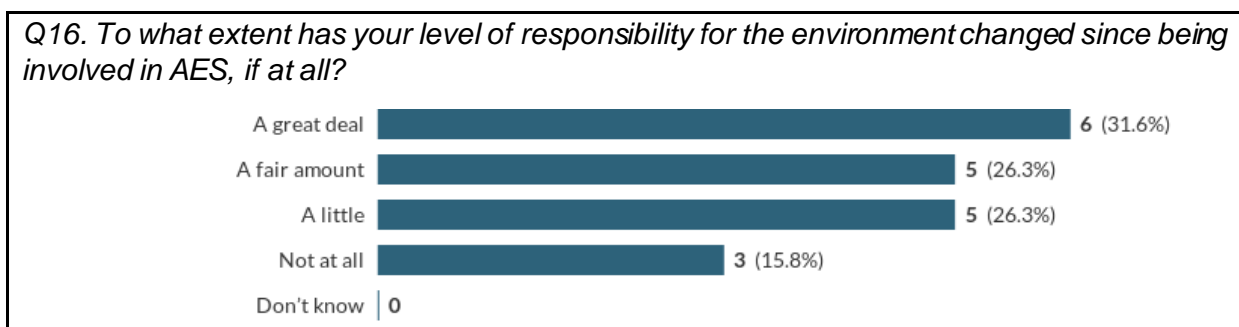




As Table 4.1 indicates, many feedback comments were received on this question. A number of respondents were reluctant to give a response to this question stating that giving a view on how agriculture affected the environment in the country, as a whole, was too general a question often dependent on the farming system in the region, with some parts of the country farmed more intensively than others. Those that did give a response highlighted that when farmers think about the negative effects of agriculture on the environment, they consider them to occur far from home. More respondents thought that agriculture had a 'significant positive effect' or 'some positive effects' on the environment on their farm (95%), compared to the country as a whole (50%).



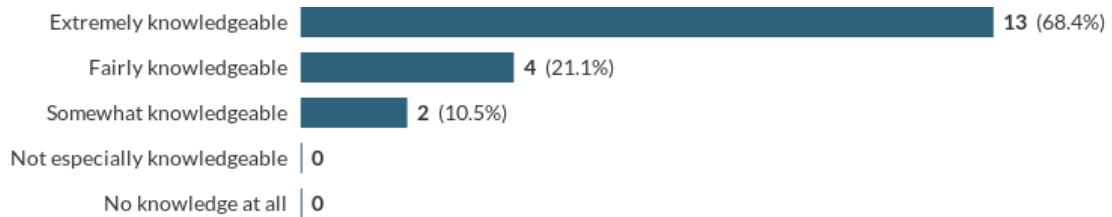
Most agreement holders responded that they felt 'very responsible' for the environment on their farm. Several advisers suggested that they would expect the majority of respondents to answer this question positively. This question should possibly be replaced with a more nuanced question and a scale that does not include both 'fairly' and 'somewhat' as these are considered too similar.



Similar to Q9, the respondents who stated 'Not at all' to this question did so because they felt they already had a high level of responsibility for the environment prior to joining AES. Again, this question may be better asked as a two part-question. "How responsible did you feel for the environment on your farm before joining AES?" and "How responsible do you feel for the environment on your farm since joining AES?"

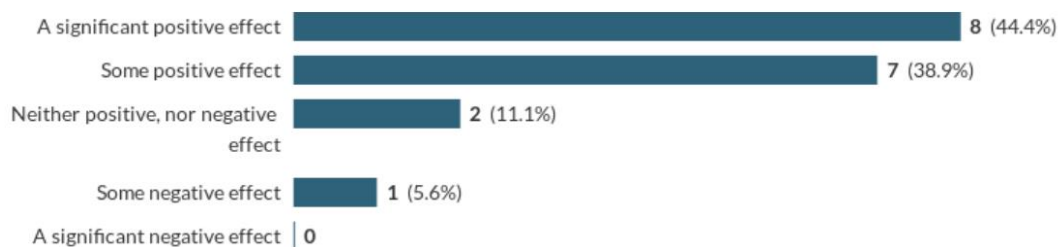
## 1.5 Awareness and interest in cultural and landscape assets

*Q18. How would you describe your level of knowledge of landscape and historic features, such as stone walls or traditional farm buildings, on your farm?*



The focus of this question was not always clear and there was a suggestion to provide more examples, particularly in terms of landscape features.

*Q19. To what extent, if at all, does the agricultural activity on your own farm affect the landscape or historic features, such as stone walls or traditional farm buildings?*



Some respondents had difficulty generalising for this question, especially if they had a number of different landscape or historic features. Consider replacing this question, with one that asks for the respondent's level of interest in the landscape or historic features on their farm since joining the scheme and add to sub-indicator 1.1 Interest in and awareness of the environment.

### **Indicator WE\_02: Attitudes and beliefs about farming (self-identity)**

Self-identity is the extent to which behaviour is considered to be part of the self and can relate to the social group that the land manager identifies with. It reflects the land manager's personal value system and worldview based on their own experiences and moral values and acts as an internal frame of reference. The image land managers have of themselves contributes to their extent of engagement with AES. A number of different types of land manager self-identify based on underlying values and their impact on environmental behaviour have been identified in the literature and broadly equate to: Profit maximisers; food producers; and custodians. This indicator has two sub-indicators: Attitudes to farming and self-identity and attitudes and beliefs about the future of farming.

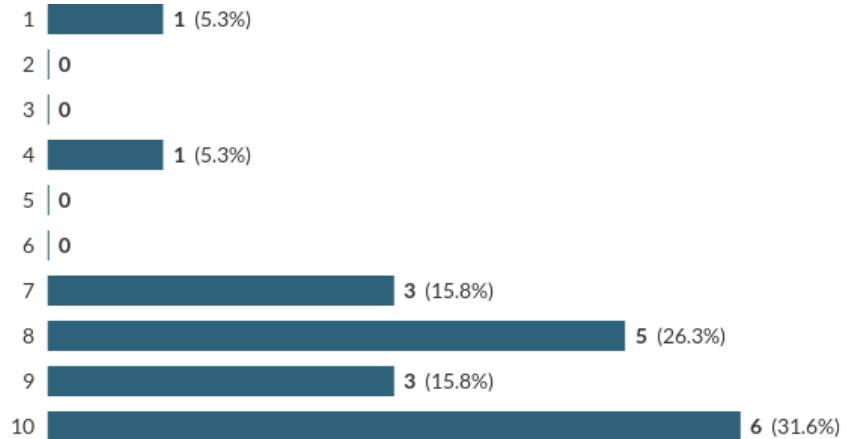
## 2.1 Attitudes to farming and self-identity

Q19. How do you see your role as a farmer? (Open question)

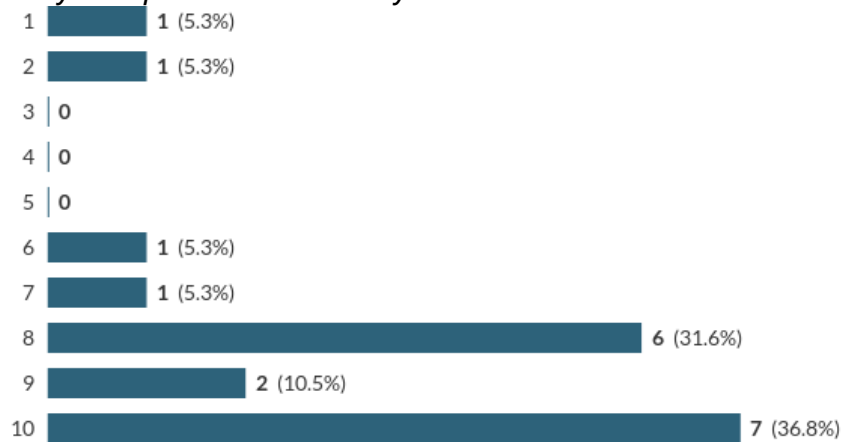
This open question allowed the respondent to self-identify in terms of their farming role.

*On a scale of 1 to 10, with 1 being Unimportant and 10 Very important*

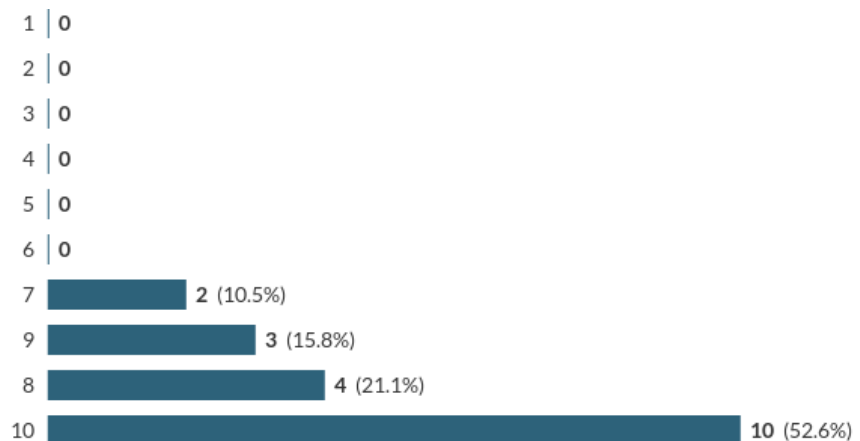
**Q20. How important is it for you to make maximum profit from the farm?**



**Q21. How important is it for you to produce food from your farm?**



**Q22. How important is it for you to look after the environment on your farm?**



Two respondents placed little importance on producing food from their farm, whilst all respondents placed importance on looking after the environment on their farm.

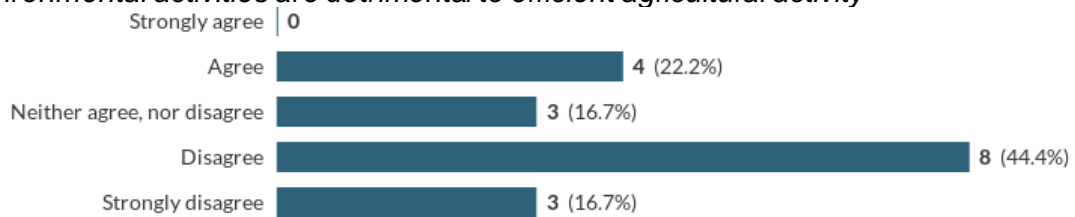
Some respondents needed clarification as to whether these questions were referring to the farming activities or the whole farm business, whilst one respondent suggested that Q21 should be broadened to include other agricultural commodities, not just food. One adviser commented that they found the responses to these questions particularly interesting, revealing the respondent's underlying values towards their land management and their associated priorities.

**Q23. How much do you agree or disagree with these statements concerning the nature of the relationship between environment and agriculture?**

**a. Environmental activities should be an integral part of agricultural activity**



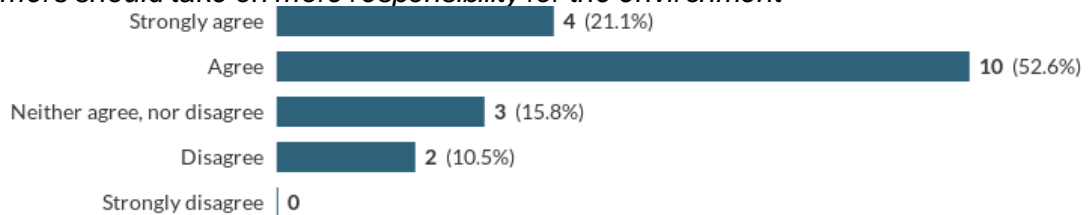
**b. Environmental activities are detrimental to efficient agricultural activity**



**c. Environmental activities should not affect farm profits**

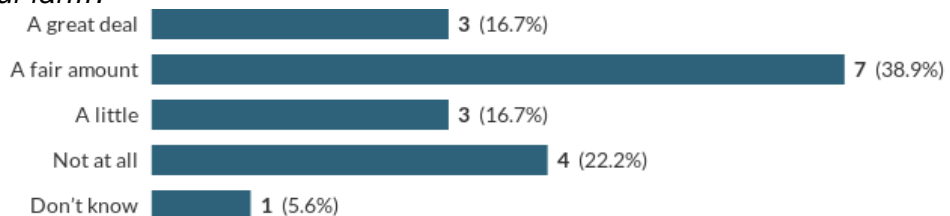


**d. Farmers should take on more responsibility for the environment**



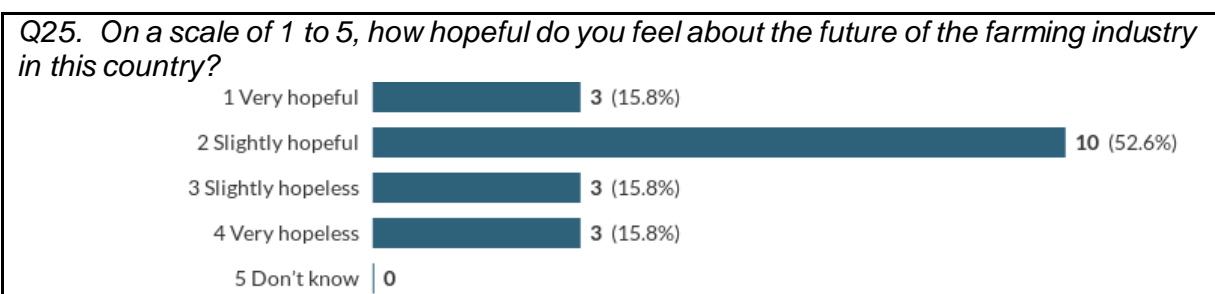
With this question there was a general sense that the statements were too broad and might be interpreted differently by farmers depending on the context in which the individual framed the statements.

**Q24. To what extent has your attitude to AES changed due to the environmental benefits achieved on your farm?**



As Table 4.1 shows, a number of comments were received on this question as the wording was considered confusing. The question also assumes that agreement holders knew whether any environmental benefits had been achieved. This was not always the case as many of the land managers had received no feedback on the environmental benefits that their agreement was delivering. It was suggested that the question is split into two. “Have you achieved any environmental benefits on the farm as a result of your AES?” and “Has this outcome changed your attitudes to your scheme?”. Also, it is recommended that a further question is added which asks whether they have received any feedback on their environmental outcomes from conservation advisers or other scheme professional.

## 2.2 Attitudes and beliefs about the future of farming



The majority of respondents were ‘slightly hopeful’ about the future of the farming industry. In responding to this question, most respondents referred to the uncertainty with the current political situation.

## Indicator WE\_03: Engagement with advice and training

There is evidence that the quality of AES engagement and environmental outcomes are enhanced when agreement holders have received on-farm advice, engaged in an open and constructive dialogue with their adviser and attended training courses. This indicator contains two sub-indicators: Level of engagement with environmental advice; and Level of engagement with environmental training.

### 3.1 Level of engagement with environmental advice

*Q26. Who do you mainly go to for advice about your AES? (open question)*

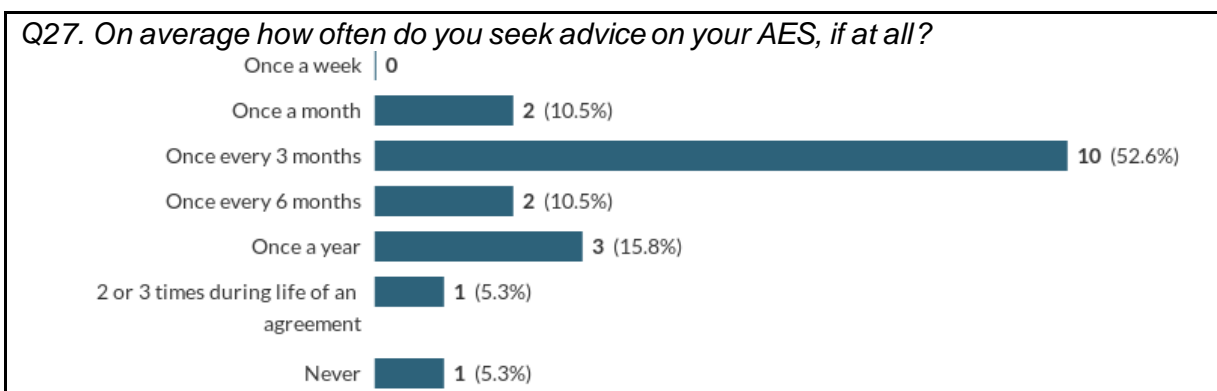
As an open question, the respondents identified all those that they go to for advice on their scheme. One respondent suggested that the question should be worded so that it does not assume advice on AES is always sought, and a ‘no-one’ option should be included.

Table 5.1 shows, as would be expected, that the Natural England advisers dominate the advice landscape, but a variety of other actors are involved.



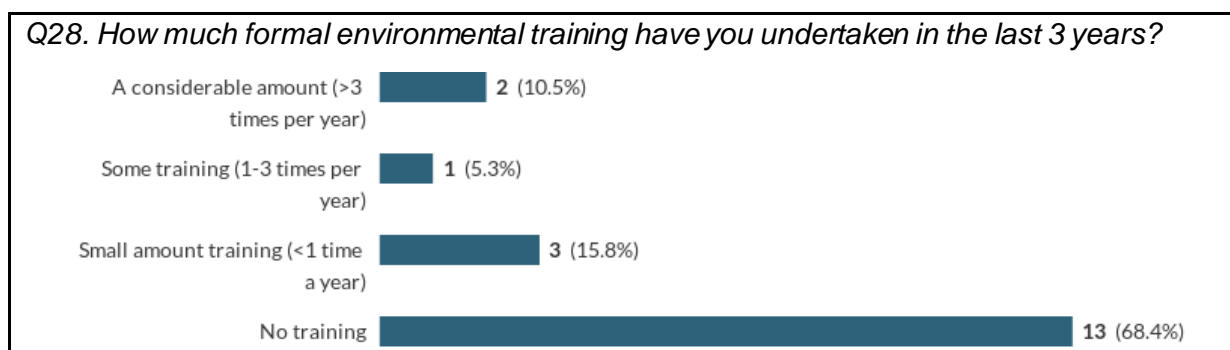
**Table 5.1 Advisers used by respondents**

Adviser	No. of respondents
Natural England – Farm conservation adviser	11
Land agent	4
Natural England - CSFO	3
FWAG	3
Wildlife Trust	1
Kings seeds	1
Parents	1
Environmental consultant	1
Yorkshire Dales NPA	1
North Pennines AONB	1
RSPB	1
Total	28



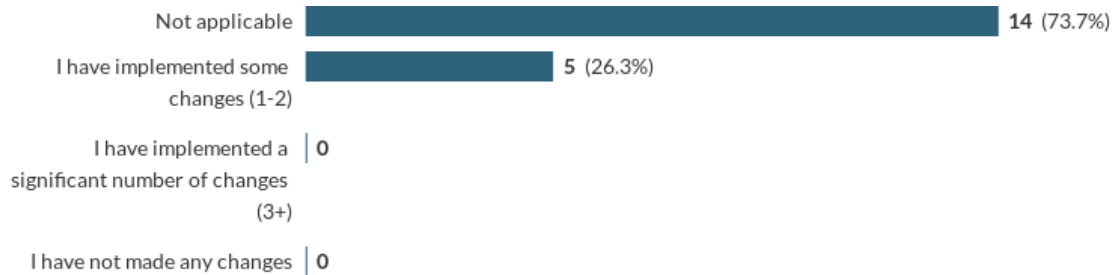
The majority of respondents sought advice ‘once every 3 months’, with only 1 never seeking any advice. There was acknowledgement that the frequency of advice sought depended on the stage of the AES. For example, more advice was sought at the beginning of the agreement than during the rest of the agreement. Consider re-phrasing the question to “On average, since your scheme began, how often have you sought advice on your scheme, if at all?”

### 3.2 Level of engagement with environmental training



The general response from land managers and advisers to this question is that very little environmental training exists which made the question irrelevant. Some respondents suggested broadening the question to include farm walks/demonstration events and other informal learning opportunities.

**Q29. To what extent have you implemented environmental changes following a training event?**



## Indicator WE\_04: Level of AES experience

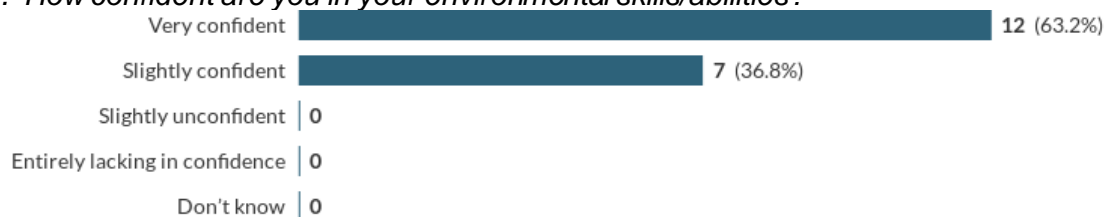
Studies have found that the length of experience within an AES can positively affect future AES engagement. Experience is believed to increase the level of skills and knowledge of a particular practice which, in turn, increases the efficacy of the behaviour. Undertaking AES practices for a number of years may lead to greater environmental success or benefits increasing the likelihood of continued involvement. This indicator contains 3 sub-indicators: Length of previous AES experience, Confidence in environmental skills and abilities; and Level of understanding of AES rationale

### 4.1 Length of previous AES engagement

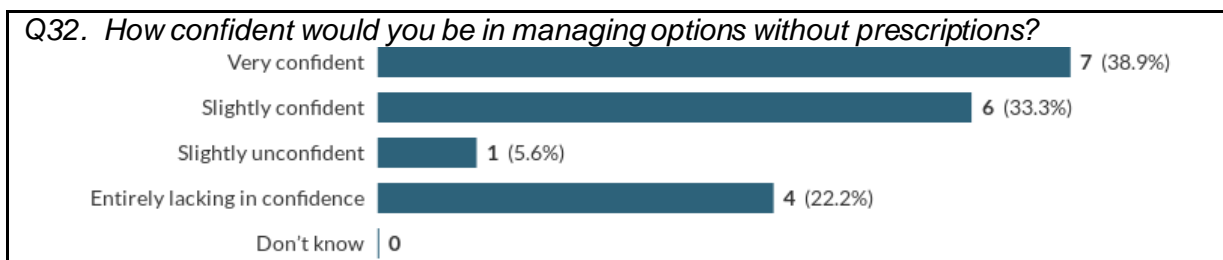
The question was asked “How long have you been involved in AES?” As identified in Table 4.6 the majority of respondents have had over 10 years involvement in AES.

### 4.2 Confidence in environmental skills/abilities

**Q31. How confident are you in your environmental skills/abilities?**

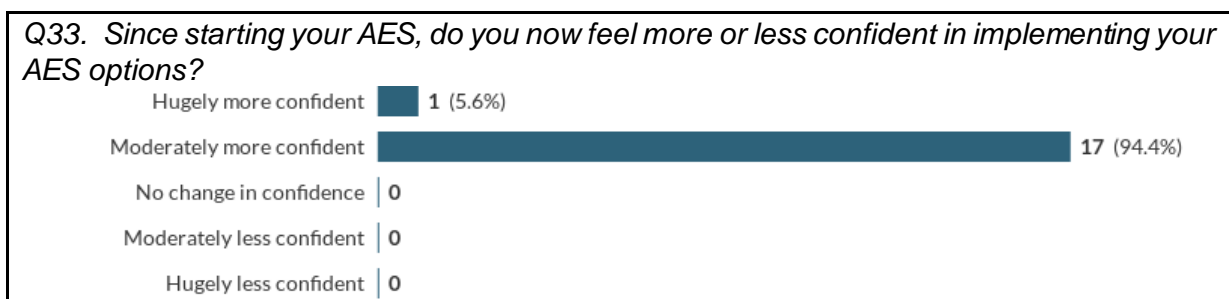


All the agreement holders had some level of confidence in their environmental skills/abilities, with none feeling unconfident. A number of respondents suggested there should be another category between ‘very confident’ and ‘slightly confident’.

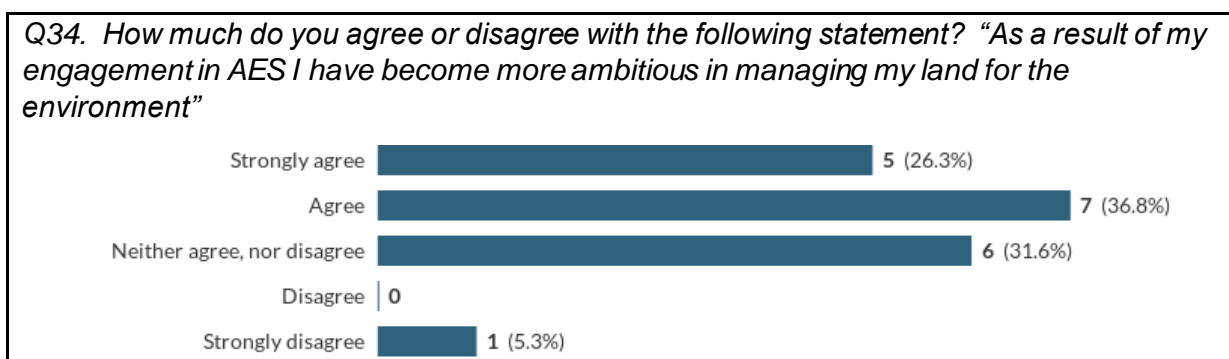


This question usually needed explaining as most were unaware of the payments by results approach and the outcome focused trials. Some who answered positively explained that this was only the case because they had been following prescriptions for years so they were confident with what they were doing. One adviser suggested alternative wording: “Do you need prescriptions to achieve the outcomes of the scheme – yes or no”, If no, “Is this because you have the history of knowing what the prescription says and are used to doing it or do you genuinely have your own new ideas”.

### Change in confidence/abilities



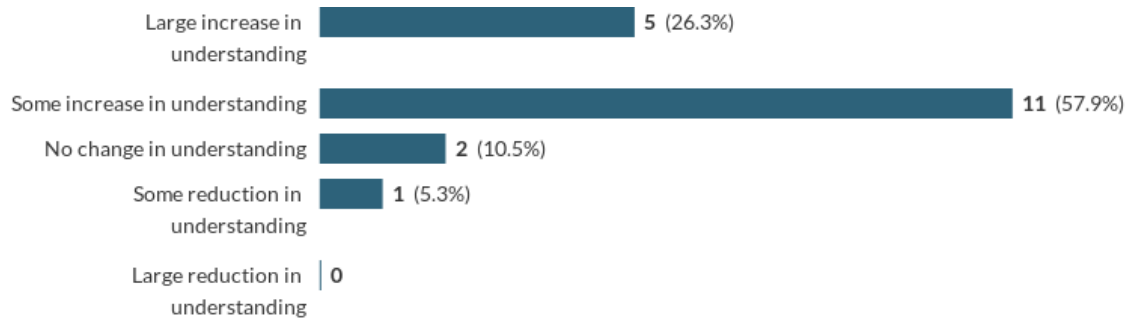
All agreement holders felt more confident in implementing their scheme options since starting the scheme, indicating evidence of experiential learning.



Around two thirds of agreement holders now felt more ambitious in managing their land for the environment as a result of the scheme. The respondent who strongly disagreed with this statement explained that they had not received payment for their scheme work resulting in a loss of trust and curtailment of their ambition.

### 4.3 Change in understanding of AES rationale

Q35. To what extent has your understanding changed of what the AES options are trying to achieve



The majority of respondents had an increased understanding of what their AES options were trying to achieve over the life of the agreement. The respondent who had a reduction in understanding explained this was because he had not witnessed the large increase in farmland birds that he had anticipated. This agreement holder also had received no advice and there was evidence that the responses to this question were linked to the level of engagement with advisers, confirming the importance of advice.

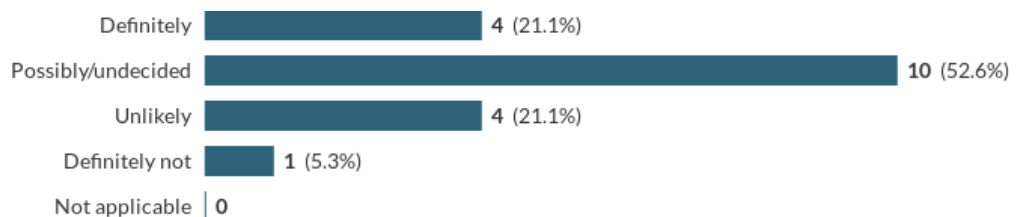
## 6 Results: Quality of Engagement Indicators (Capacity to Engage)

Under the theme of Capacity to Engage the questions related to 6 indicators: Succession; Lifecycle stage; Farmer education; Farm tenure status; Resilience; and Agency.

### Indicator CE\_01: Succession

The evidence on succession and its effects on environmental behaviour is often contradictory. For example, some evidence suggests that land managers without successors are more likely to disengage from full-time agriculture and extensify using AES. However, others have found a lack of a successor was often a reason for farmers not to enter land into a conservation agreement due to a winding down, poor labour availability or wanting the flexibility to sell the land.

Q36. If a family farm, will a member of your family take on the management of the farm after you retire? *(If not planning to retire enter 'unknown', for holdings with manager or succession not possible use 'Not Applicable')*



The majority of respondents either definitely or possibly had a successor for the farm business. Five of the respondents were unlikely or definitely did not have a successor.

Q37. To what extent does your succession situation affect your current environmental decision-making?

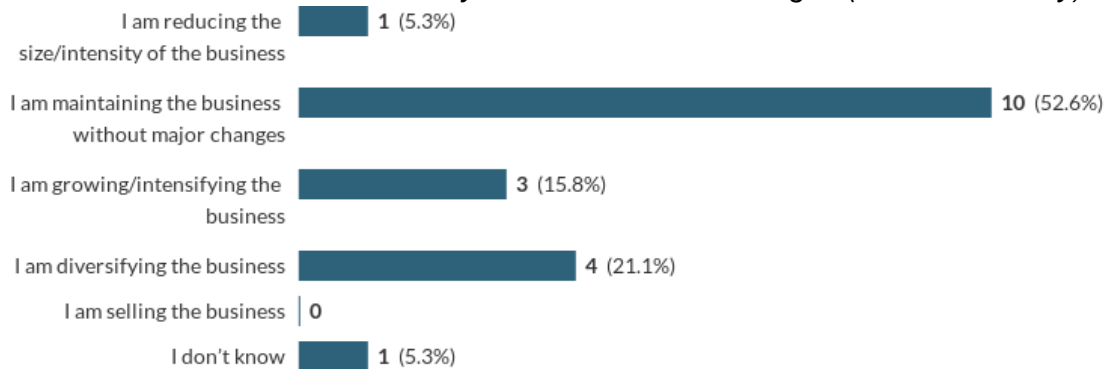


Overall, the succession situation had no effect on current environmental decision-making. One respondent felt that there should be a scale between 'High effect' and 'Low effect', whilst another did not understand what was meant by 'environmental decision-making'. One peer reviewer suggested that the question could be more closely focused on decision-making relating to joining or remaining in AES.

### Indicator CE\_02: Lifecycle stage

Many of the strategic decisions farming families make depend on their family's stage in life or 'life-cycle', with expansion and retrenchment 'switched on and off' at different times in the farming family life cycle. Thus, lifecycle stages can be indicative of different motivations and pathways that have a direct impact on environmental decision-making

**Q38. Which of these statements reflect your current business stage? (choose one only)**



Several respondents mentioned that more than one of the question options applied to their business, although they were only allowed to select one option. Also, some options could be contradictory, for example, someone might be growing the business, but not intensifying, or reducing the size of the business but not the intensity. It is recommended that the choices are simplified and made more distinct. The following quote illustrates this point well.

“The question is slightly confusing because growing the business can involve different ways of achieving this. In the past the business grew by diversifying into equestrian activities but also included changes in area and stocking. You could grow the size of the business by increasing land area and extensifying stocking. This is very common in the uplands, especially where there are grouse shooting estates.”

**Indicator CE\_03: Formal education**

In many studies, farmers’ formal education has proven to be one of the strongest variables determining conservation behaviour. It is generally argued that farmers with comparatively low formal education (i.e. left school without exams) are less likely to participate in agri-environmental schemes or to adopt environmentally-friendly farming practices.

**Q39. What is your level of formal education?**



The respondents undertook a mix of formal education, with the nearly half undertaking higher education. Although the numbers are low to draw any firm conclusions, 78% of land managers with Higher Education compared to 20% of land managers with Full Secondary Education responded positively to the Q8 about having an active interest in wildlife. Also, 80% of those with Full Secondary Education were ‘very confident’ in their environmental skills, knowledge and abilities, compared to only 44% with Higher Education.

## Indicator CE\_04: Tenure status

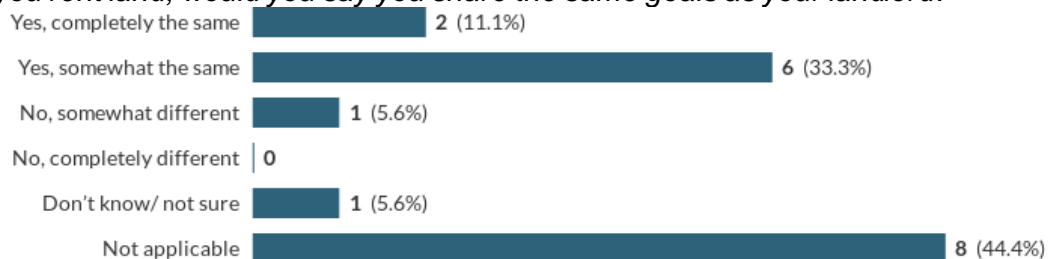
In the literature, it is generally expected that tenant farmers will show a lesser degree of involvement in AES than landowners, partly because they did not always receive the financial benefits from participation.

10 out of the 19 respondents rented land and for 2 of the respondents all of their farmed land is rented.

**Table 6.1 Area of rented land (ha)**

Area of rented land (ha)	No. of respondents
<20	1
20-50	1
50-100	4
100-200	2
200+	2

**Q40. If you rent land, would you say you share the same goals as your landlord?**



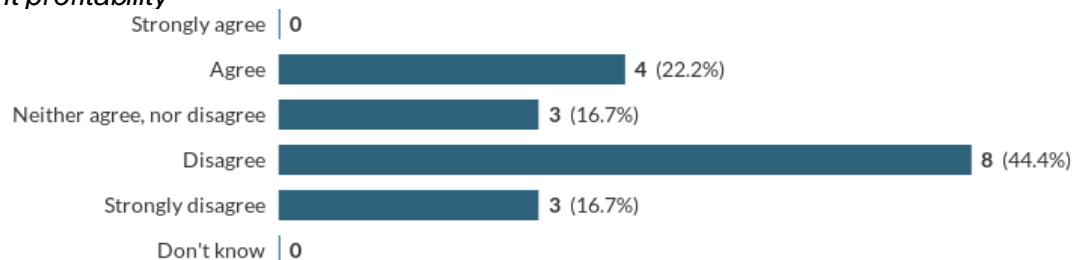
For some respondents this was considered a rather blunt question because they had multiple landlords with different levels of goal compatibility.

## Indicator CE\_05: Resilience

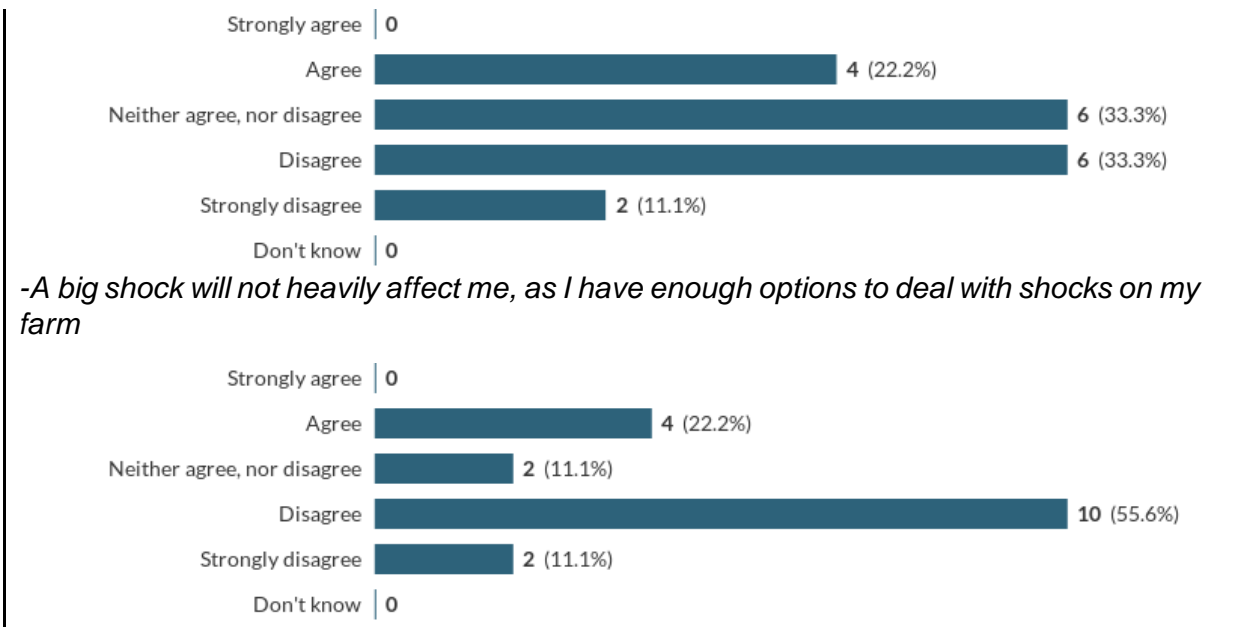
Resilience refers to the ability of farm businesses to recover quickly following difficulties and can affect the quality of AES engagement.

**Q41. Please answer on a scale of 1 (strongly disagree) to 5 (strongly agree) how much you agree with the following statements.**

*-After something challenging has happened, it is easy for my farm to bounce back to its current profitability*

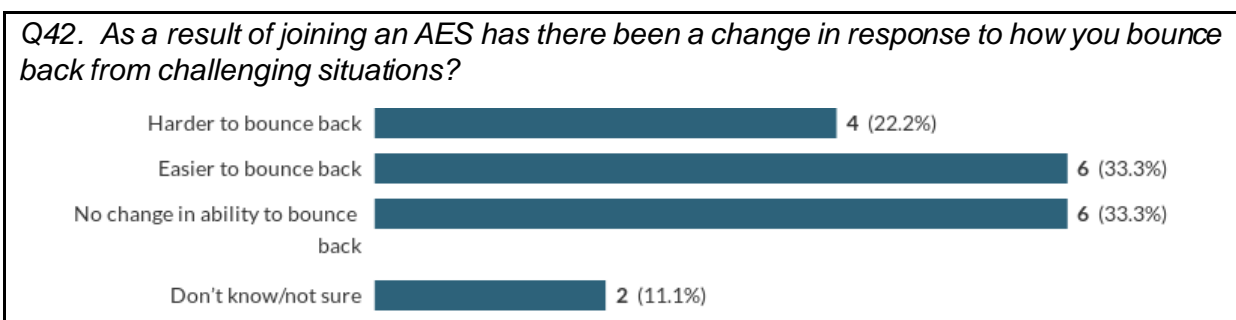


*-I find it easy to get back to normal after a set back*



The majority of respondents indicated that they would struggle to bounce back after a challenge or a big shock indicating that their levels of resilience were low.

A number of respondents suggested the statements were quite abstract and some examples of particular challenges, set backs or shocks would be helpful. Clarification was needed on the scale of the setback, “Does it mean Brexit or a complete failure of a crop or flooding” and whether the setbacks are personal, environmental, economic, political. Furthermore, some farmers answered this question referring to past events, such as BSE and it was difficult to determine whether their response reflected their current situation.



This question prompted some mixed responses. It is worth noting that several respondents were experiencing delays with AES payments which they felt made their business less resilient. Had they been paid they would have given a different response. Others mentioned that the security of income offered by AES helped with challenging situations, as the following quote illustrates:

“It eases the situation because you have an income that is independent from the farming. That is the beauty of the agri-environment schemes, it is not dependent on what is happening with animals etc etc it’s quite a big help, it is an independent income from farming.”

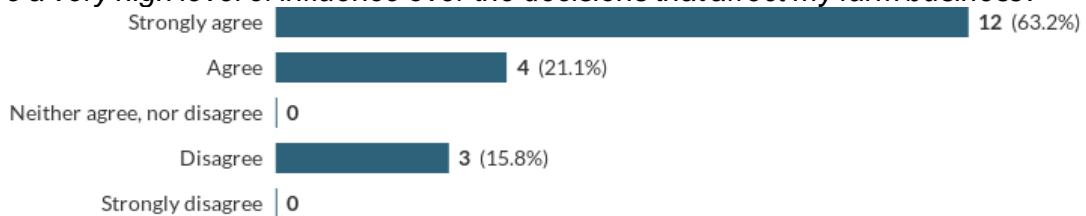


## Indicator CE\_06: Agency

In social science, agency is the capacity of individuals to act independently and to make their own free choices. In the context of AES, agency refers to the capacity for land managers to make their own decision as to how they manage their land within an AES. One outcome from AES where management practices are heavily prescribed with limited flexibility, is a sense that prescriptions are imposed in a top-down way with little consideration given to local or tacit knowledge. Land managers can feel that they have lost some control over the management of their land and even resulted in dispossessed feelings which can affect environmental outcomes.

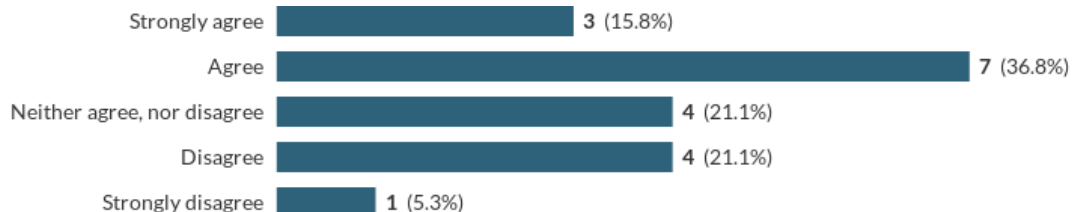
Q43. How much do you agree or disagree with the following statement?

*“I have a very high level of influence over the decisions that affect my farm business?”*



The majority of respondents felt they had a high level of influence over their farm business decision-making.

Q44 *“As a result of joining an AES my level of influence over the decisions that affect my farm business has decreased?”*



Whilst most respondents agreed that joining an AES had affected their level of influence over their farm business decisions, a number wanted to qualify their response by explaining that they had voluntarily chosen this situation by signing up to the agreement and therefore did not mind the decrease in influence.

## 7 Results - Level of Engagement with Others Indicators

### Indicator LE\_01: Bonding social capital

Bonding social capital is characterised by strong relationships within groups or families and between like-minded people. Strong bonding social capital can result in information sharing and collaborative working which can improve environmental outcomes. Four sub-indicators were identified that may reflect the presence of bonding social capital: Extent of group working; Extent of collaborative working; Extent of information and knowledge sharing (farmers' group); and Level of social trust

#### 1.1 Extent of Group Working

Q44 How many farming groups or networks are you a member of?

**Table 7.1 Membership of farming groups or networks**

No. of memberships of farming group or network	No. of respondents
0	3
1	4
2	4
3	3
3+	5
Total	19

Three of the respondents had no membership of a farming group or network. One respondent wanted to know whether this question just included formal farming groups and networks or whether informal group, such as farming forums on social media counted.

Q 45. In how many of these farming groups or networks do you have any responsibility, such as being a committee member, raising funds, organizing events or admin work?

**Table 7.2 Role in a farming group or network**

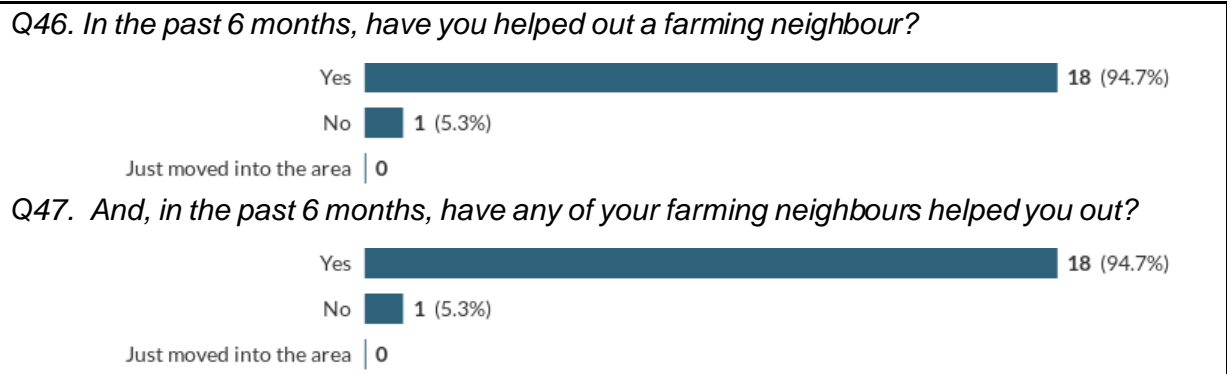
No. of groups or networks with a role	No. of respondents
0	7
1	4
2	1
3	1
4	1
Total	14

Half the respondents who were a member of a farming group or network also held some role within the group. The social advantages of involvement in a group are highlighted by the quote below:

“The best thing about it is that you meet people that you wouldn’t normally meet up here, we’re so isolated, our nearest neighbour is 2.5 miles away. There are getting to be fewer and fewer farmers in the dale, Foot and Mouth took a lot out, they retired, there are not

many sons around to take farms on. It's going to be a big problem in 20 years. ... Socially if you go to the pub you'll never meet a farmer to chat to... you do get to know a lot of people and do a lot of different things on these groups, you become famous, or is it infamous, I don't know which".

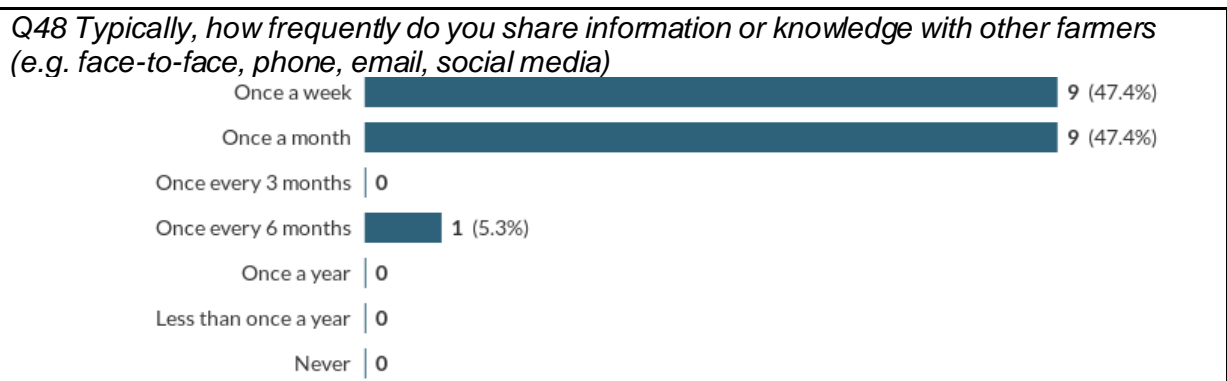
## 1.2 Extent of Collaborative Working



All but one of the respondents stated that they had helped out a farming neighbour in the last 6 months and their farming neighbours had helped them out. Given the high positive response rate, this question might be better asked as a scale question. "In the past 6 months, how many farming neighbours have you helped out, if any?" "In the past 5 months, how many farming neighbours have helped you out, if any?" etc.

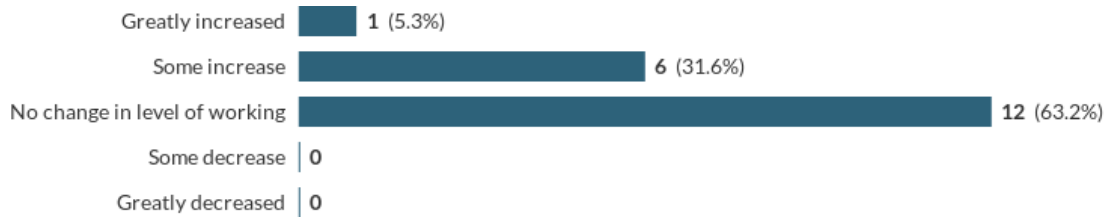
Two of the respondents needed clarification as to whether 'helping out' referred only to farm work and another whether 'helping' meant paid work. It was explained that the term related to any voluntary assistance offered to their farming neighbours.

## 1.3 Extent of information/knowledge sharing



For this set of respondents, information sharing mostly occurred frequently, at least one a month.

*Q49 As a result of joining AES, to what extent, if at all, has the level of working with other farmers increased or decreased:*

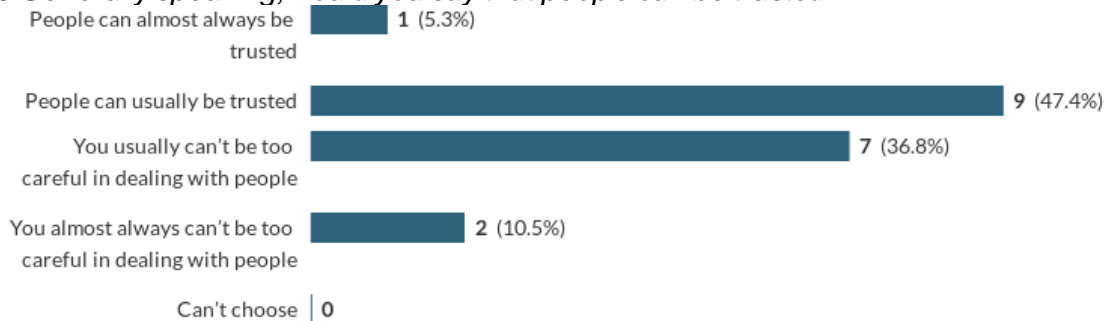


For the majority of respondents, their scheme had not resulted in any change in the level of working with other farmers.

It was suggested the question is re-worded to “As a result of joining AES, to what extent, if at all, has **your** level of working with other farmers increased or decreased” to emphasise that the question refers to the respondent’s experience in particular.

#### 1.4 Level of social trust

*Q50 Generally speaking, would you say that people can be trusted?*



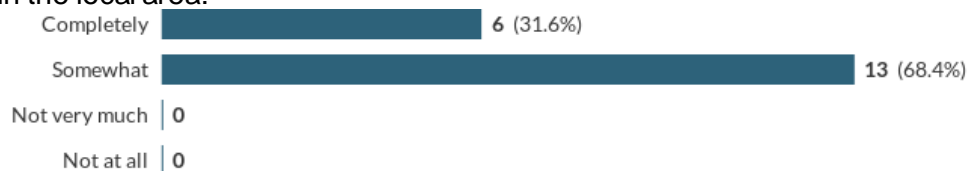
Many respondents asked for clarification as to which “people” the statements were referring to, was it the farming community, local people or people in general?

*Q51 Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all?*

Your family:



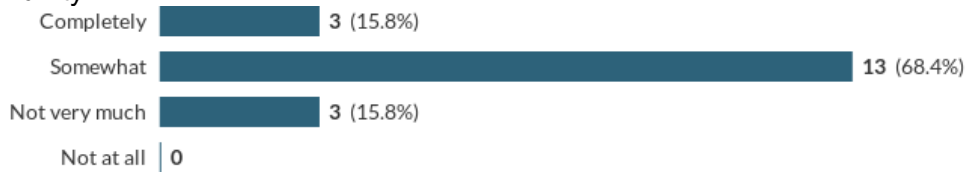
Other farmers in the local area:



Your landlord (if applicable)



Your local community:



As Table 4.1 reveals, this question received the largest number of feedback responses. A number of respondents appeared uncomfortable in answering these questions and queried their usefulness. Others, when asked, did not find the questions too obtrusive, although some advisors said they might feel awkward asking these questions as the following quote highlights:

“I might struggle to ask the question whether you trust your family. As I know in some families there is very little trust. It is fine to ask the question if it is going to produce a useful outcome that will help to shape ELMS. I would rather find out this information in a half an hour cup of tea and a chat”.

*Q52. To what extent has joining the AES changed your level of trust towards the following groups*

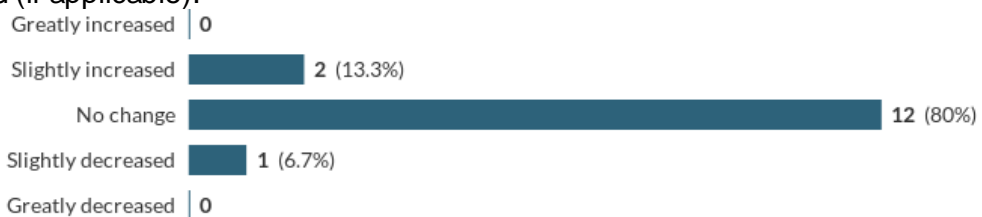
Your family:



Other farmers in the local area:



Your landlord (if applicable):



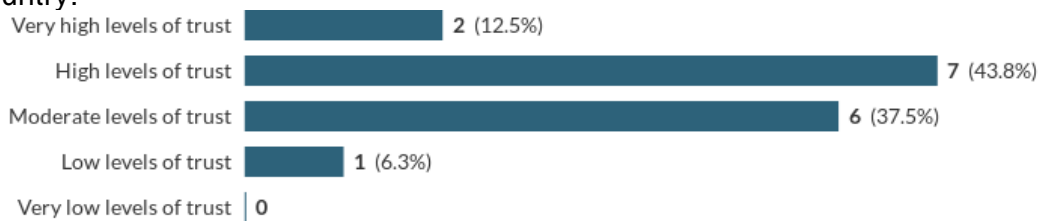
**Your local community:**



For the majority of respondents AES involvement had not resulted in any change in their level of trust towards these various groups. Some respondents found it quite abstract to try and measure the effects of AES involvement on trust and wanted to understand the context for the questions in relation to AES.

**Q53. How much trust do you feel there is between farmers**

**in the country:**



**in your local area:**



Some respondents felt that this was a difficult question to answer as it was hard to generalise about farmers, particularly at the country level.

**Indicator LE\_02: Bridging social capital**

Bridging social capital refers to social connections between individuals who are dissimilar with respect to socio-economic and other characteristics. The relationships between people in these networks tend to be weaker, and less sustained than those demonstrating bonding social capital but contributes advantage through new information and introductions to new networks. The extent of bridging social capital appears to have a positive effect on AES engagement. This indicator is represented by 3 sub-indicators: Extent of non-agricultural networks; Engagement with general public; and Public recognition.

## 2.1 Extent of non-agricultural networks:

Those who are frequently engaged in non-agricultural networks are thought to more likely be involved in AES as these land managers feel a greater social responsibility.

Q54. *How many non-farming groups or networks are you a member of?*

**Table 7.3 Membership of non-farming groups or networks**

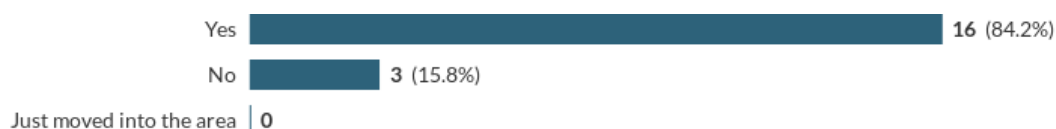
No. of memberships of non-farming groups or networks	No. respondents
0	11
1	4
2	4
Total	19

The majority of respondents were not members of any non-farming groups or networks. Examples of those that were members were a chair of a village initiative, member of village fete committee, member of local show and, chair of local show. There was a suggestion to broaden out the question to include the term organisation as well as groups or networks.

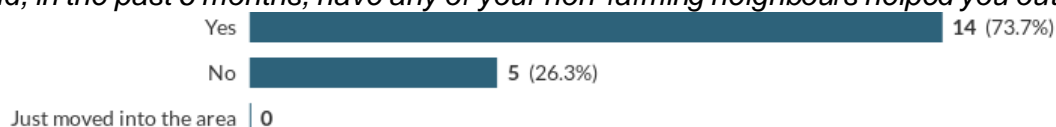
Q55. *In how many of these non-farming groups or networks do you have any responsibility, such as being a committee member, raising funds, organizing events or admin work?*

No. of non-farming groups or networks with a role	No. of respondents
0	1
1	4
2	3
Total	8

Q56. *In the past 6 months, have you done a favour for a non-farming neighbour?*

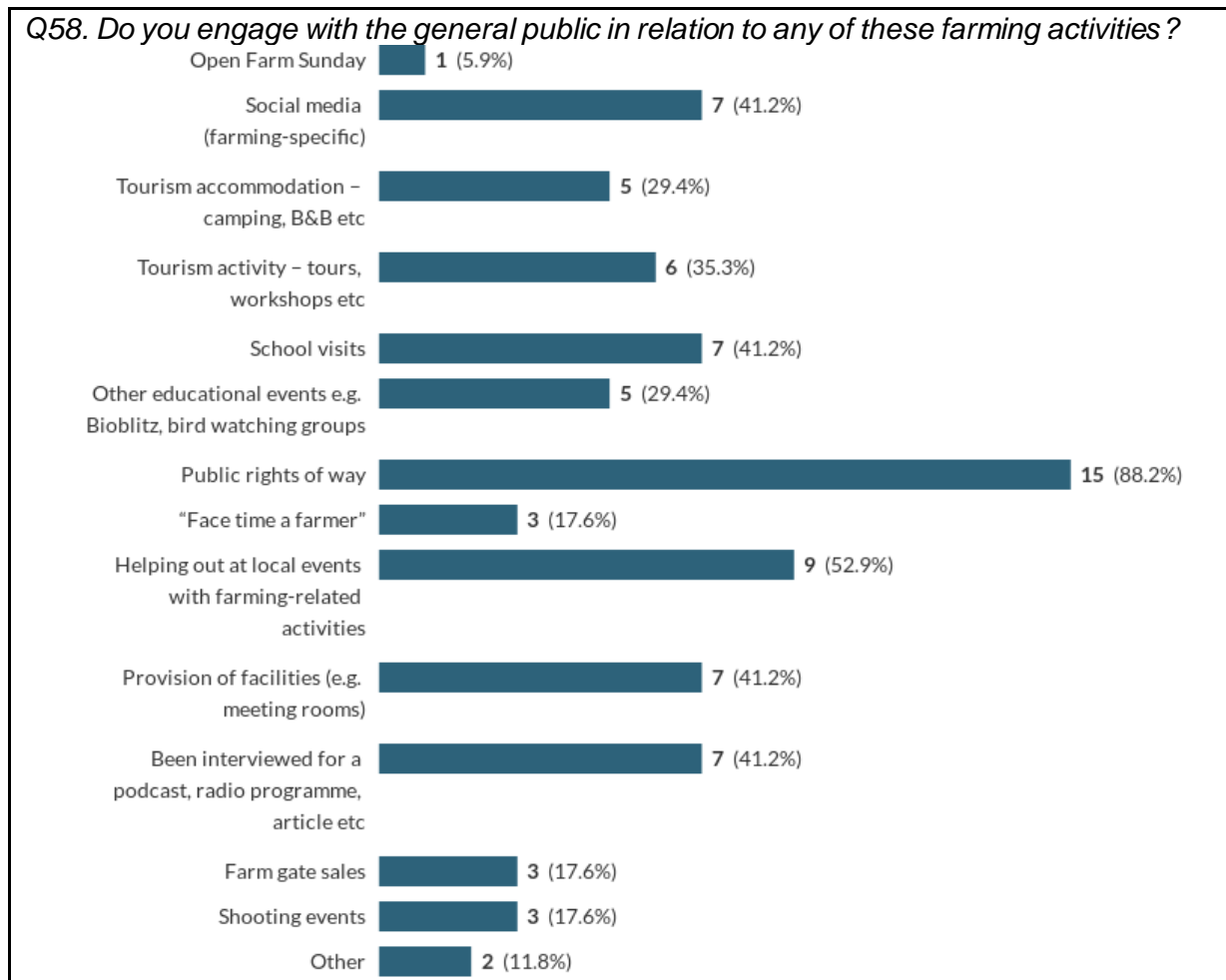


Q57. *And, in the past 6 months, have any of your non-farming neighbours helped you out?*

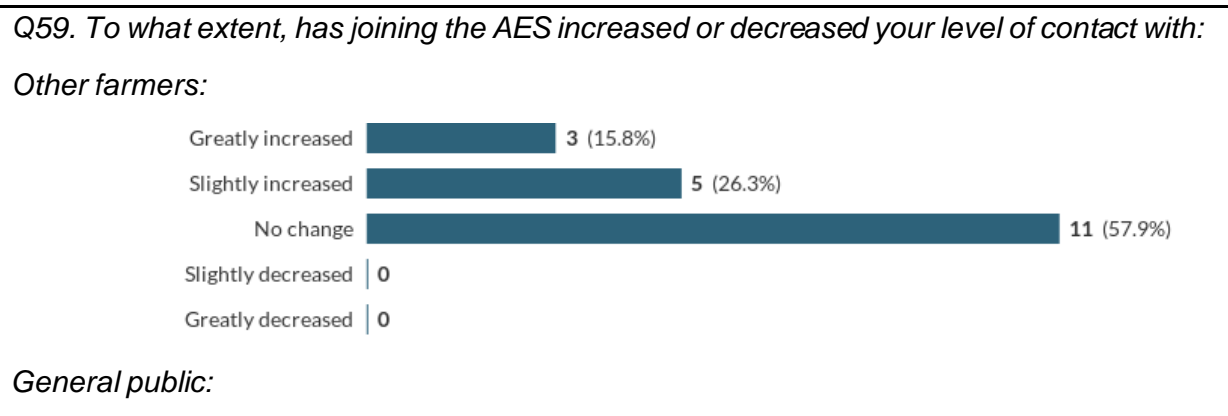


The majority of respondents had undertaken a favour for a non-farming neighbour and usually this was reciprocated. As with the questions 46 and 47, these questions would be better asked as scale questions.

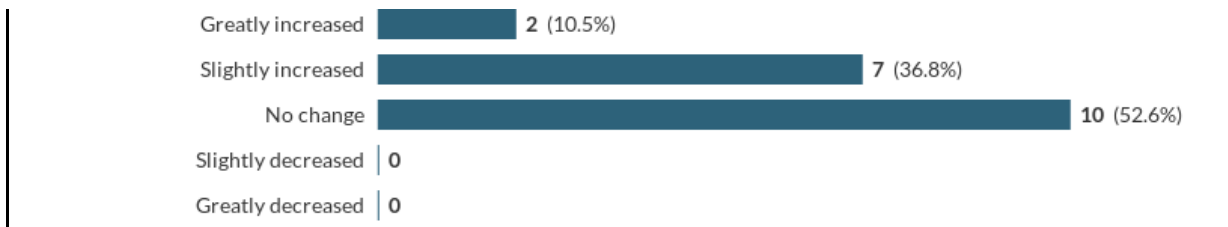
## 2.2 Engagement with general public



In terms of engagement with the general public, the majority of respondents had Public rights of way (88.2%), followed by helping out at local events with farming-related activities (52.9%). The “Other” category included, Wwoofers (World Wide Opportunities on Organic Farms initiative) and a High School allotment group.



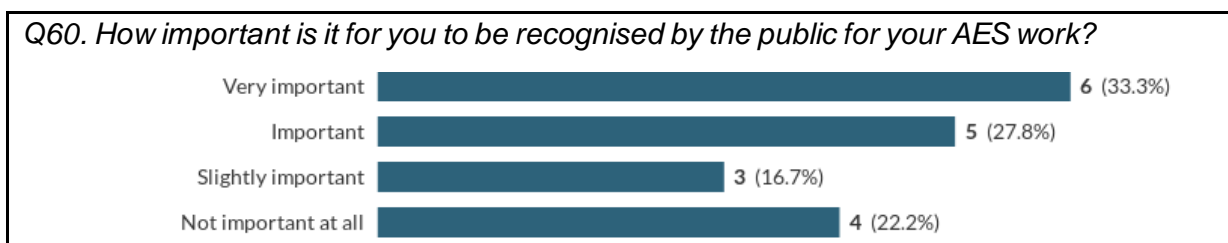




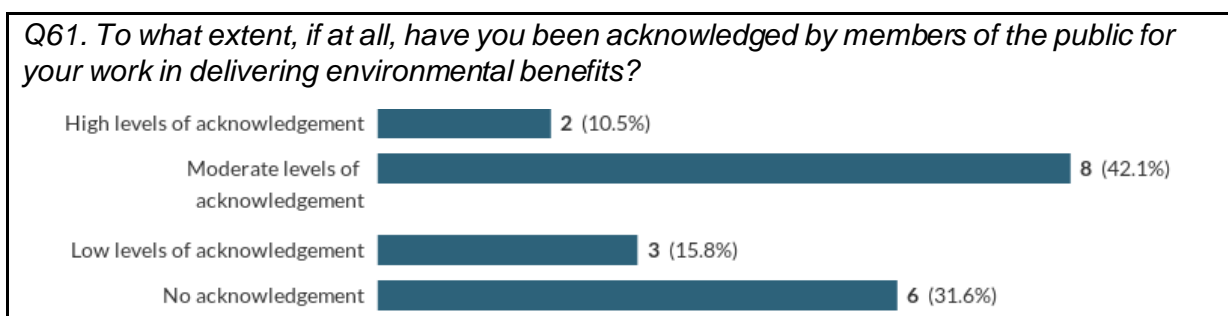
Some farmers wanted to emphasise that although there had been an increase in contact with the general public as a result of their AES, this was not always a positive experience. Some who had established permissive access under AES had issues such as dogs worrying livestock, gates left open, walking on wildlife margins. There was a suggestion to try and capture this negative experience in the questioning.

### 2.3 Public acknowledgement

The literature suggests that gaining social recognition for AES activities is a strong motivator for some land managers to engage in AES. Also, land managers who experience acknowledgment for their contribution to the protection of the environment are more likely to maintain the adopted practices even in the absence of payment.



The majority of respondents felt it was important or very important to be recognised for their AES work. The younger agreement holders in particular emphasised the increasing importance of ensuring the public were aware of the public goods that farming delivered.



The responses indicate a mixed level of acknowledgement by the public for their AES work. Some felt there was little awareness from the general public about their work, as the quote below illustrates:

“They don’t know, there should be a big plaque saying this farm is part of an agri-environment scheme. That would be helpful. You are informing the general public of a situation that they are not aware of.”

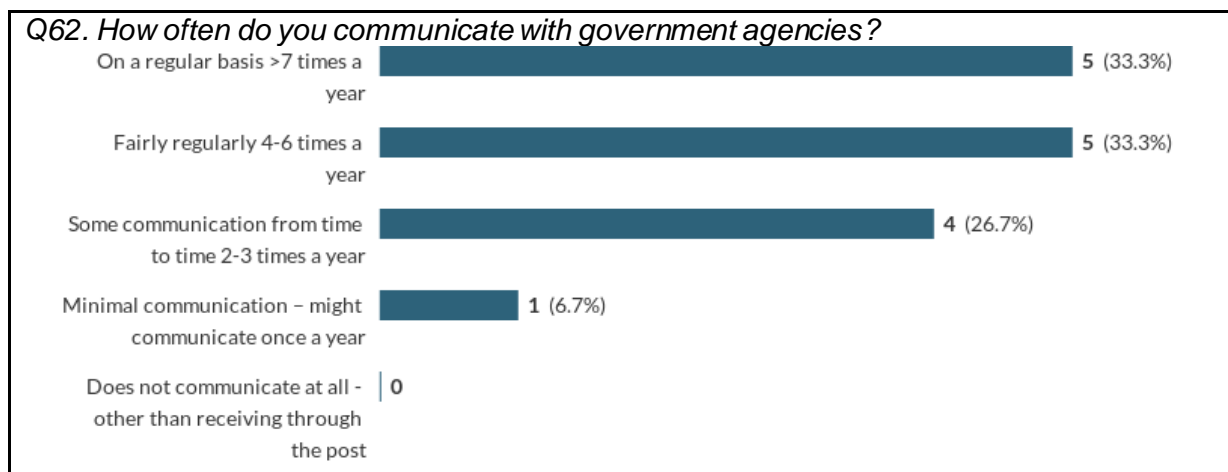
Others gave examples of positive feedback from the public, including from local walkers, which clearly had a positive impact on attitudes. The quote below from an adviser illustrates this point well:

“I have a farmer just outside [town name]. He has a huge field that he has put down as wild bird mix voluntarily at the back of a new housing estate. Someone had posted on [county name] Wildlife Trust Facebook how amazing that the farmer was doing this thing. He wrote a long piece about it. We emailed it to him. For him it is the most acknowledgment he’d ever had and he printed it out and put it in a frame. It had a huge impact on him.”

### Indicator LE\_03: Linking social capital

Linking social capital is used to describe networks of people characterised by power differences; such as the links between farmers and institutions. Such connections are important for accessing support from formal institutions through personal contacts. This indicator is comprised of 2 sub-indicators: Communication with government; and Level of social trust with government.

#### 3.1. Communication with government

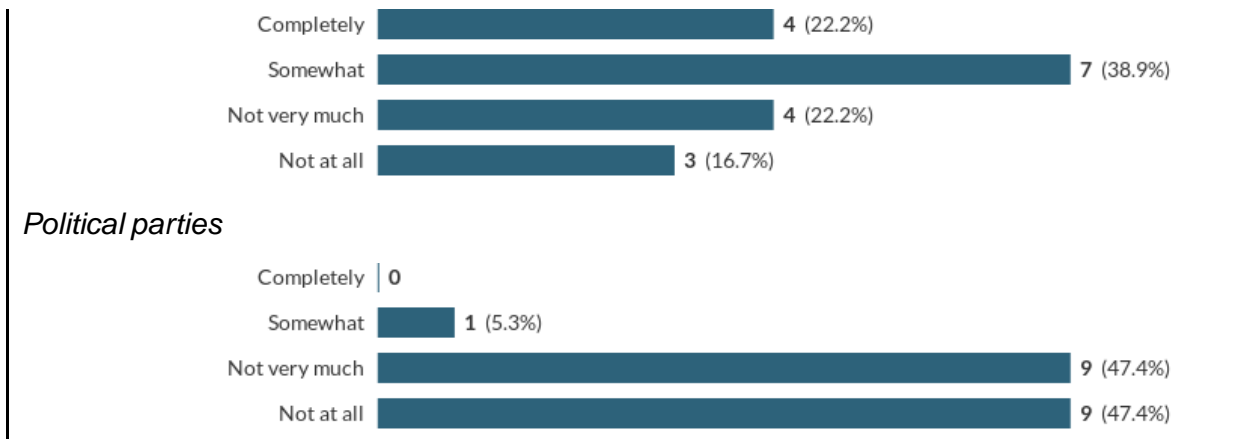


Clarification was required as to what was meant by government agencies, with a feeling that the question needed to be more specific. This question was aimed at capturing evidence of linking social capital by identifying the respondent’s ease at communicating with government agencies. However, several respondents at the time were communicating with RPA on a weekly basis as a result of problems with AES payments and therefore the question did not truly reflect the quality of the linking.

#### 3.2 Level of social trust with government

*Q51 Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all?*

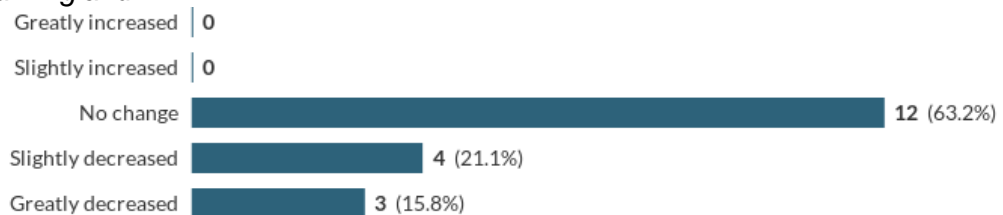
*Defra/Natural England:*



Opinions about trust in Defra and Natural England were mixed, with both negative and positive responses, whilst a clear majority of respondents had little trust in political parties.

*Q52. To what extent has joining the AES changed your level of trust towards the following groups*

*Defra/Natural England:*



*Political parties*



Whilst for the majority of respondents joining AES had not changed their level of trust in Defra/Natural England (63.2%), for over a third of respondents, levels of trust had decreased. One suggestion from many respondents was to separate out Natural England from Defra/RPA and also to separate the local Natural England from the national organisation as these different organisations and different levels within the same organisation would elicit different responses.

A number of advisers expressed a little unease about having to ask a question about trust in Natural England, as one adviser commented

“I felt a little bit awkward when asking that one. It was the first time I’d met him and I know he’s had some contact with Natural England. Going from the unknown, with no relationship, it is not as tricky if it’s someone you have worked with for 10 years. Even if it’s 10-15 years it’s still always going to be a professional relationship. There could be damage to the relationship if they said they don’t trust you. If someone did it to me who I have worked with for years and years I would think why am I trying so hard for this person if they don’t trust me?”

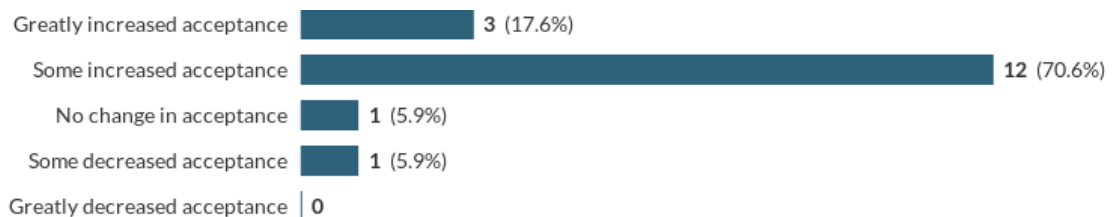
## Indicator LE\_04: Cultural (symbolic) capital

Cultural capital is a form of symbolic capital that refers to the accumulation of knowledge, behaviours, and skills that demonstrates a farmer's competence, and thus his/her social status or standing in society. This social outcome can be represented by changes in levels of respect as a result of AES participation. Evidence of gains in cultural capital are apparent if farmers are approached for advice about their AES management practices, for example. On the contrary, if the AES management is not considered part of "good farming" practices and the benefits are not clearly visible, cultural capital can be lost. This indicator incorporates two sub-indicators: Respect amongst peers; and Advising other farmers.

### 4.1 Respect amongst peers

Q63. How do you think your involvement in AES is perceived by other farmers? (Open question)

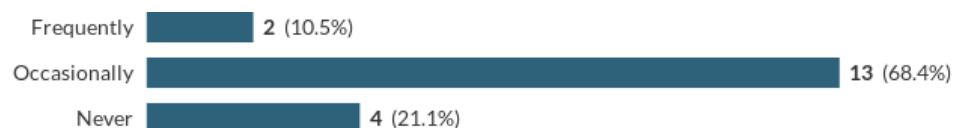
Q64 Since you joined, has engagement in an AES become more or less acceptable within the farming community?



The majority of respondents felt there had been an increase in acceptance of AES with the farming community since they joined the scheme which suggests that it was now more culturally acceptable to have an AES agreement.

### 4.2 Advising other farmers

Q65. Since joining AES, to what extent, if at all, do other farmers come to you for advice about AES implementation?



Nearly all respondents were either frequently or occasionally approached by other farmers for advice about AES implementation. This high number may reflect the self-selecting sample who voluntarily were willing to help test the survey and therefore more likely to be individuals who gave advice to other farmers.

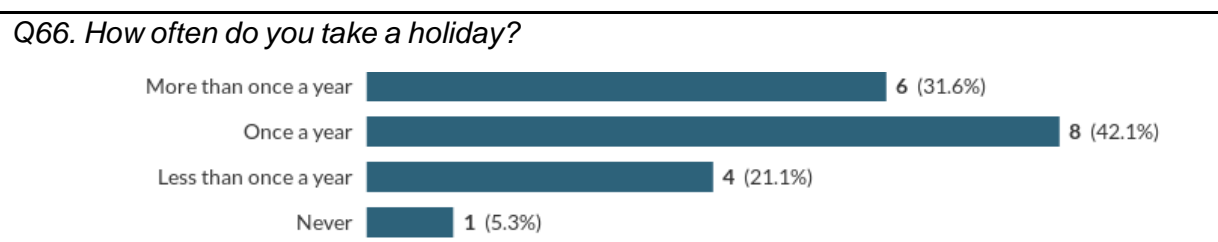
## 8 Results - Indicators of Quality of life

The study undertook a review of on-farm indicators that could measure the agreement holder's quality of life as a result of AES involvement. As no studies explicitly considered the impact of AES on quality of life, the review focused on emerging studies looking at the issue of quality of life within the context of the social sustainability of agriculture. Three high-level indicators were identified.

### Indicator QL\_01: Employment and working conditions

This indicator is comprised of 3 sub-indicators: Holidays taken; off-farm working; and average peak working hours.

#### 1.1 Holidays taken



The majority of respondents took a holiday at least once a year. An alternative question would be to ask how many days of holiday a year the agreement holder took, or how often they get away from the farm.

#### 1.2 Off-farm working

Q67. How many hours a year do you work off farm? (hours)

Hours working off farm	No. respondents
0	14
40	1
90	1
100	1
280	1
500	1

Most of respondents were not working off-farm. For some this was a difficult question to answer as they undertook piecemeal seasonal contracting on other farms that was difficult to quantify in terms of time. It is recommended that this question is removed.

### 1.3 Average peak working hours

Q68. On average, during peak times, how many hours do you work on farm a day? (hours/day)

Avg. hours	No responses
8	3
13	1
14	2
15	1
16	4
17	1
18	6
Total	18

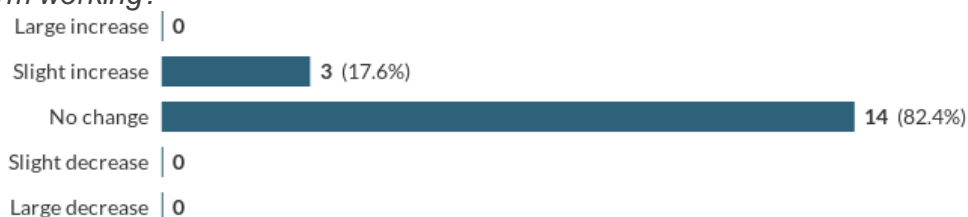
The average across the respondents for average day working hours during peak times was 14.94, which is more than the average for farmers across Europe of 11.64 calculated by the FLINT<sup>4</sup> study.

Q69. To what extent, if at all, has your involvement in AES increased or decreased:

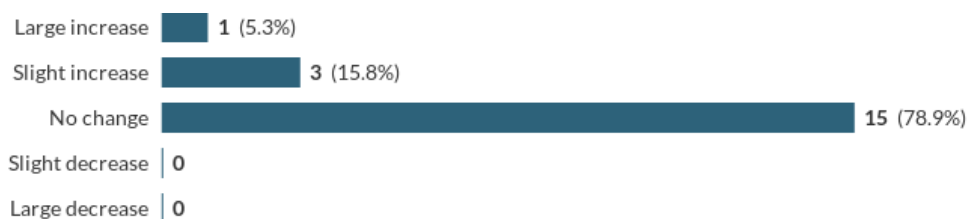
Number of holidays you've taken?



Extent of off farm working?



Average Peak working hours on the farm



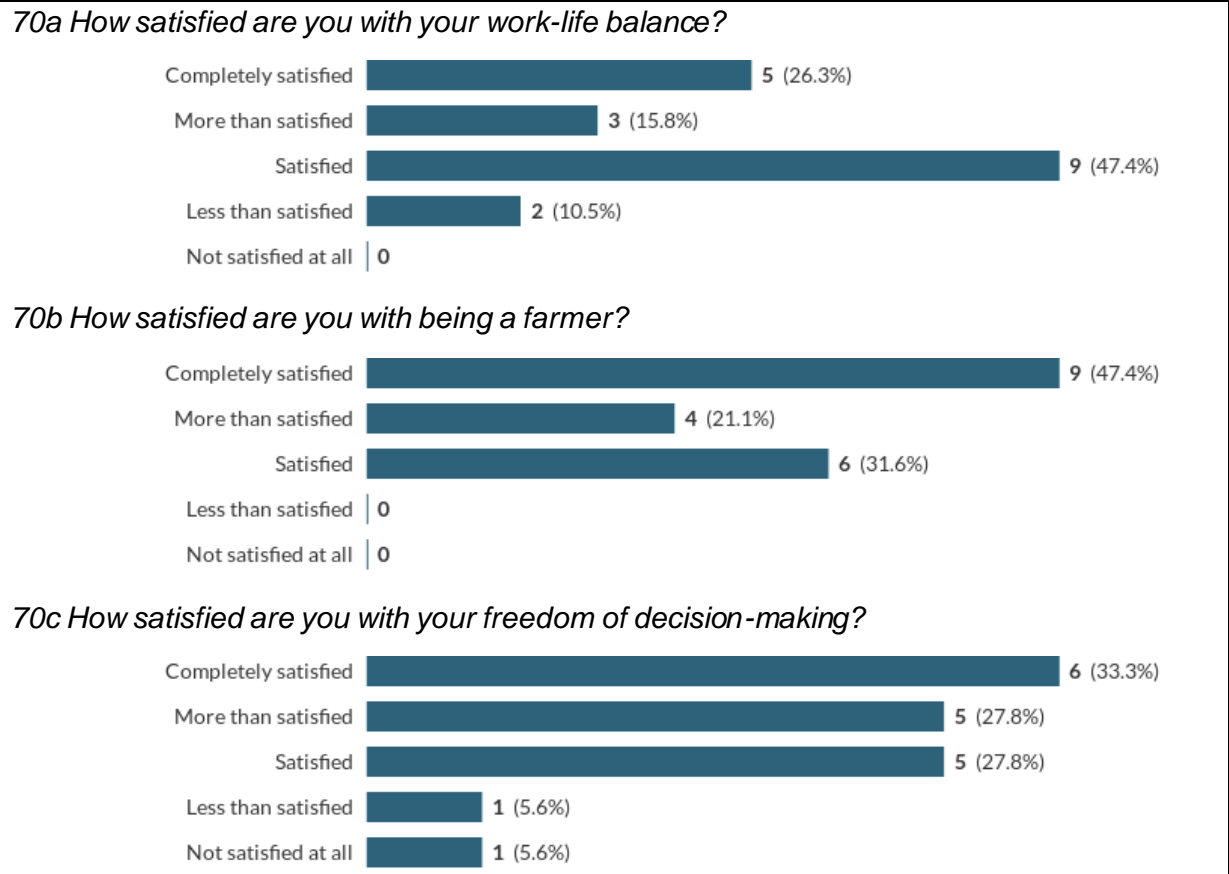
For the majority of respondents AES involvement had no effect on employment and working conditions. Two respondents experienced a slight increase in the number of holidays taken

<sup>4</sup> Herrera, B., Gerster-Bentaya, M. and Knierim, A., 2016. Social indicators of farm-level sustainability. *FLINT Deliverable D, 5*. <https://www.flint-fp7.eu/downloads/reports/D5.2e.pdf>

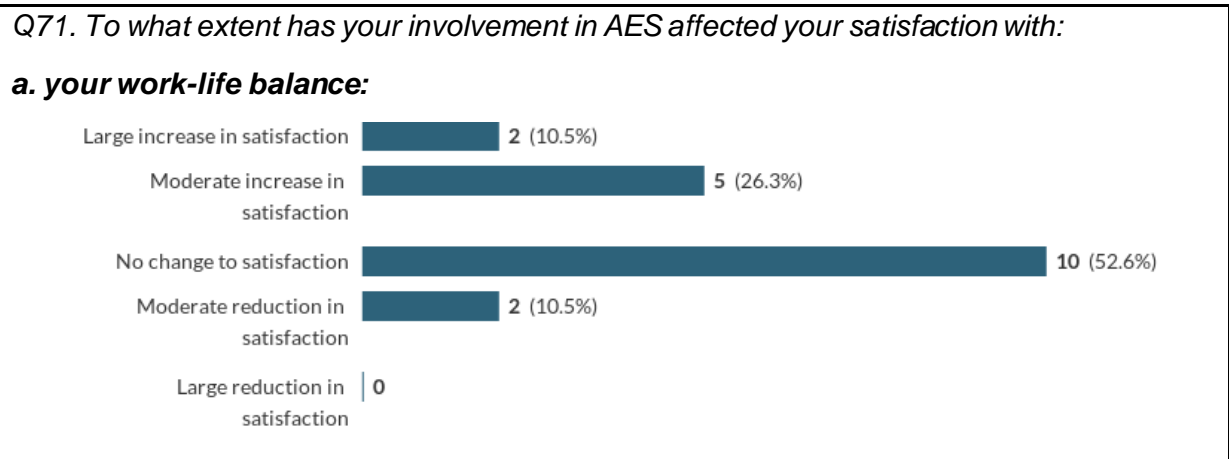
and cross-tabulating this question with Q38 revealed that one was reducing the size of their business and the other was diversifying the business giving them more time to take holidays.

### Indicator QL\_02: Job satisfaction

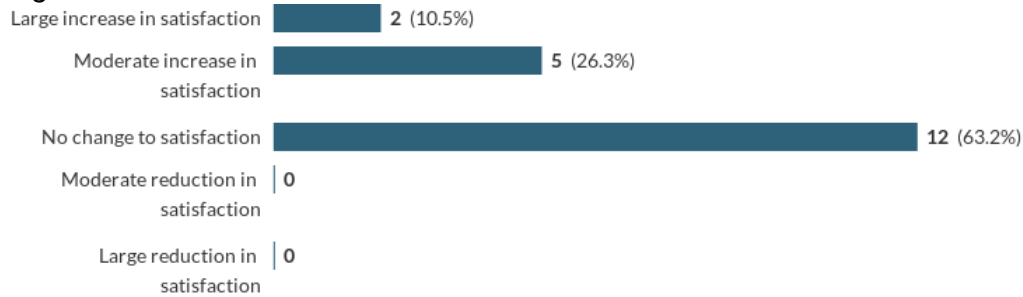
The indicator for job satisfaction is comprised of sub-indicators: Work-life balance, Being a farmer; and Freedom of decisions.



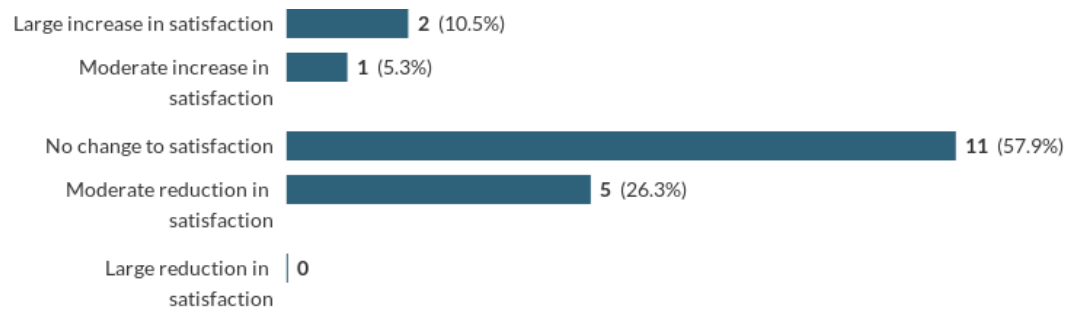
It was suggested by one respondent that a term other than 'farmer' should be used, as not all agreement holders considered themselves farmers, therefore the suggestion is to use 'land manager'.



**b. being a farmer:**



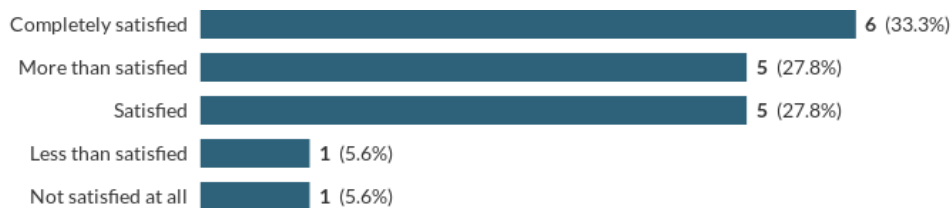
**c. Your freedom of decision-making**



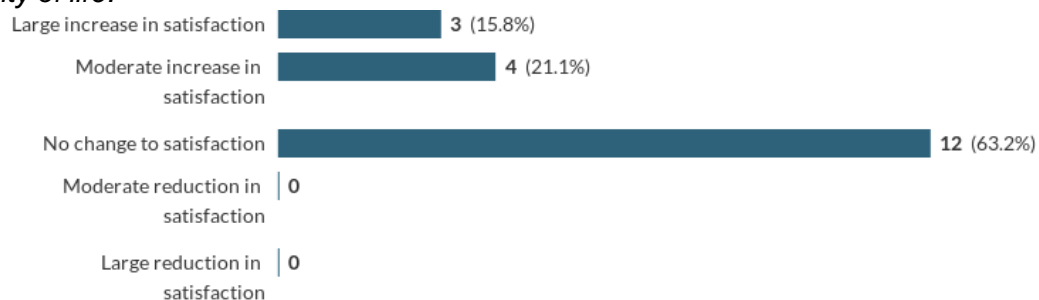
These questions were able to identify changes to job satisfaction as a result of AES involvement. On average there was a positive impact on job satisfaction for a fifth to a third of agreement holders, with around a quarter experiencing a decrease in satisfaction. One respondent suggested that if he had received his delayed AES payments his responses would have been more positive.

**Indicator QL\_03: Quality of life**

**70d. How satisfied are you with your quality of life?**



**71d. To what extent has your involvement in AES affected your satisfaction with your overall quality of life:**



For the majority of respondents AES involvement had not affected their satisfaction with their overall quality of life and for over a third of respondents it had increased their satisfaction.

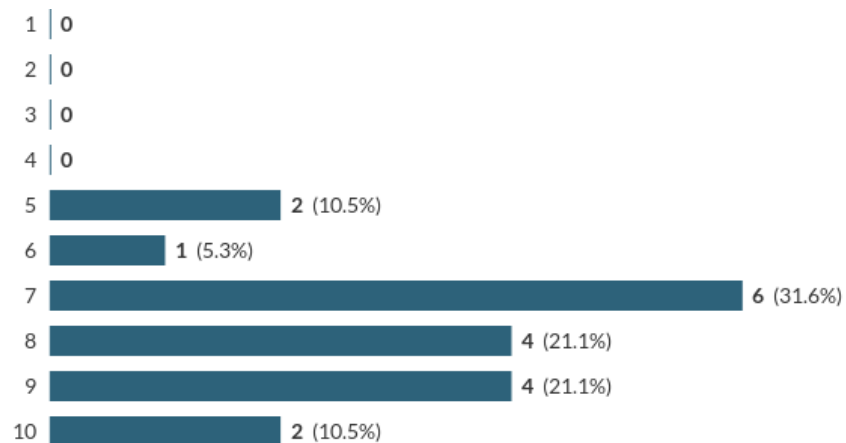


## 9 Results: Health and Wellbeing Indicators

In the literature review only two studies were identified that looked at the interlinkages between mental health and wellbeing and AES participation. Further studies had looked at the quality of life and mental health and well-being effects of agriculture more generally and we have drawn on both sets of literature to make inferences about the impact of AES participation on health and wellbeing based on 3 indicators: i) happiness, ii) physical and mental health and iii) stress levels.

### Indicator HW\_01 Happiness

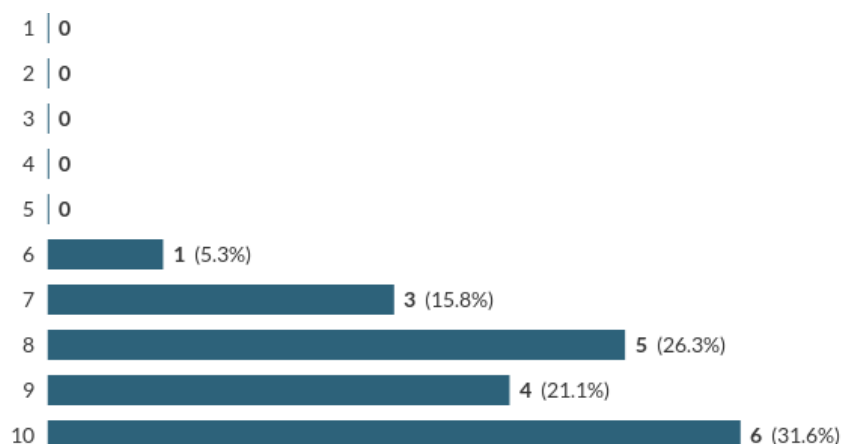
Q72. Taking all things together, how happy would you say you are at the moment? With 1 being Extremely unhappy to 10 Extremely happy.



The average happiness score across the respondents was 7.68, compared with the UK population average of 7.53 (April to June 2019)<sup>5</sup>. This higher than average score may reflect the characteristics of this particular self-selected group of farmers rather than a reflection of the wider farming community's level of happiness

<sup>5</sup><https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/personalandeconomicwellbeingintheuk/november2019>

**Q73. Overall, to what extent do you feel that the things you do in your life are worthwhile? With 1 being Not at all Worthwhile to 10 Completely Worthwhile.**

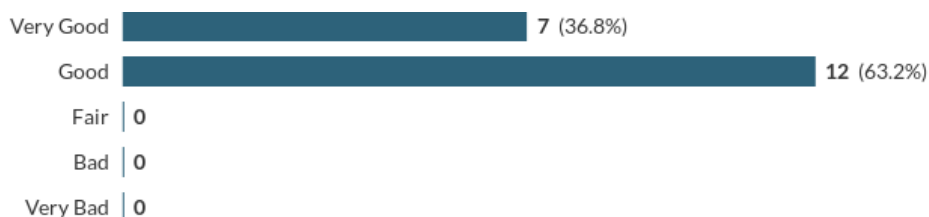


The average worthwhile score for the respondent was 8.58, which is higher than the latest UK average score of 7.88 (April to June 2019)<sup>6</sup>.

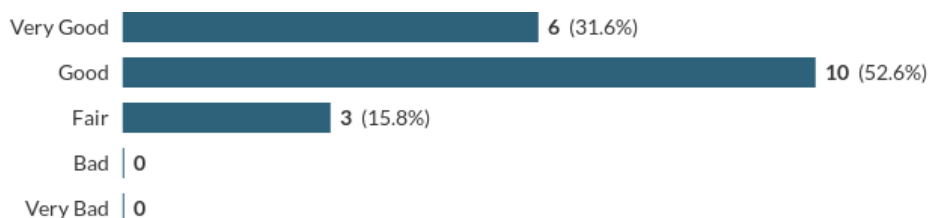
It was suggested by one adviser that these questions should be prefaced with an explanation that they are standard Office of National Statistics questions in order to provide context for the questioning.

### Indicator HW\_02: Physical and mental health

**Q74. a. How is your physical health in general, would you say it is:**



**b. How is your mental health in general, would you say it is:**



Overall, the respondents had good physical and mental health. However, one farmer did feel that if anyone was struggling they might find this question difficult to answer. He

<sup>6</sup>

<https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/bulletins/personalandeconomicwellbeingintheuk/november2019>

suggested giving them an option not to answer the question first with “a prefer not to answer” option.

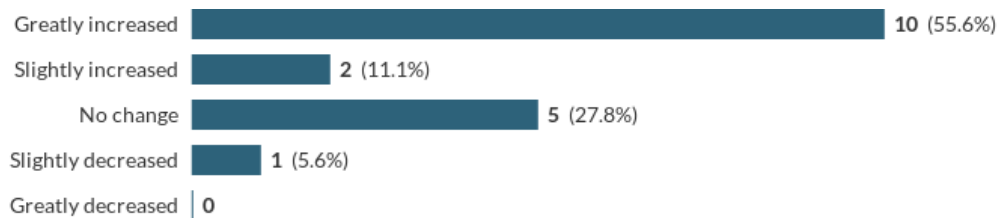
## Indicator HW\_03 Stress levels

Q75. To what extent, if at all, have your stress levels increased or decreased as a result of:

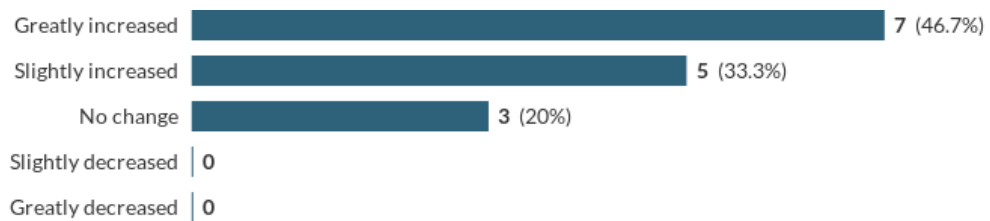
### Workload due to your AES agreement?



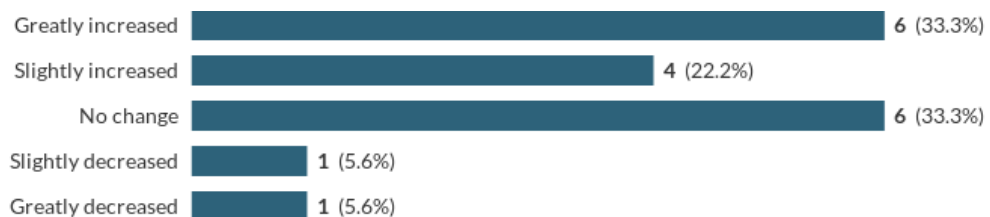
### AES administration and bureaucracy?



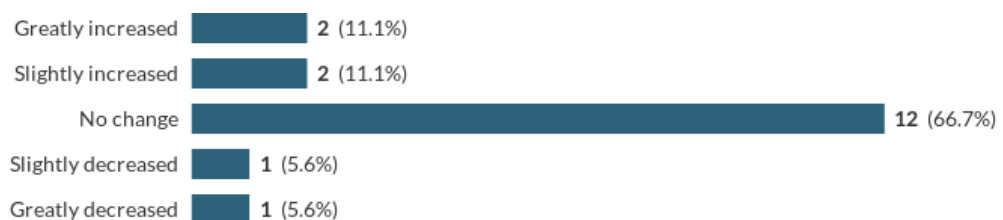
### AES inspections



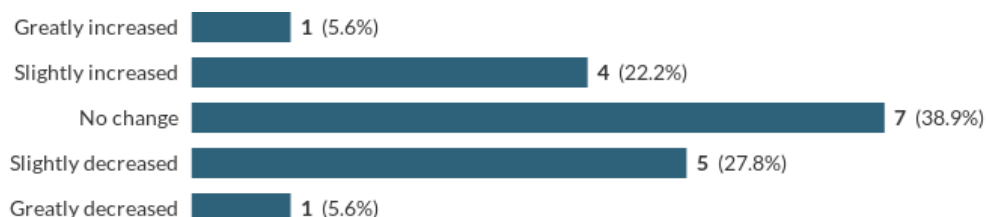
### Financial issues as a result of your AES agreement



### Family conflicts as a result of your AES agreement



### *Environmental enjoyment as a result of your AES agreement*



A key message that emerged from these questions was the extent to which the scheme’s administration and bureaucracy, inspections and financial issues were increasing the agreement holder’s stress levels. Nearly two-thirds of respondents reported increased stress levels due to the scheme’s administration and bureaucracy and over 50% reported increased stress levels due to financial issues with the scheme.

Generally, there were no issues with these questions, although the wording of the final question was considered confusing as reflected in the five responses that stated that the environmental enjoyment as a result of the scheme had increased their stress levels! It is recommended that this final question is asked separately to avoid confusion and rephrased to “Environmental enjoyment as a result of undertaking activities that are part of AES”.

## 10 Discussion

This section discusses additional issues that arose during the interviews in relation to the questions and also the survey process.

### 10.1 Additional Feedback

Overall, the value of asking questions about the social outcomes of AES was recognised by farmers and advisers alike, although it was emphasised by some that explaining clearly why the information was useful in terms of AES and how it will be fed in to the programme and be used were important. There was concern that if the context is not clear, the respondent might become frustrated and give evasive responses.

The advisers in particular found the interviews very informative and a useful exercise. Many reported that they had learnt more about the agreement holder as a result of their responses, particularly in terms of their farm history, individual values and future plans. This information would be helpful in tailoring advice to the individual.

As well as feedback on individual questions, the agreement holders and advisers also provided suggestions for additional questions that could be asked, listed below. Some of these questions have been incorporated into the revised questions presented in Appendix 2.

- Although questions were asked about increased levels of confidence, a question could be included that asks about increases in the knowledge of the wildlife on the farm as a result of AES and a question that asks whether their knowledge of the management required to look after their habitats has improved through the schemes.
- A question that specifically asks the extent to which they have derived enjoyment from their AES.
- Extent to which they have discussed the wildlife on their farm with other people, or with other farmers.
- Extent to which they have discussed the management of their habitats with other farmers.
- A question that ascertains whether they enjoy showing people the work they are doing for wildlife?
- A question that asks: Has your participation in the schemes made your job more interesting / enjoyable / rewarding?

### 10.2 Maximising and sustaining positive social outcomes from future AES

Some of the agreement holder responses clearly signalled ways in which positive social outcomes could be maximised and sustained for future AES.

## **Scheme administration**

Delays in scheme payments caused many of respondent's considerable distress. At this point in time, one of the clearest ways of maximising positive social outcomes and reducing stress levels would be to ensure the smooth administration of the schemes and timely payments. Agreement holders reported being owed considerable sums of money which for some were affecting their farm decision-making, family relationships and trust in the scheme and government agencies. There was also a sense of frustration from some advisers who felt the issues with the scheme administration were undermining the trust and rapport that they had built up with the agreement holders.

## **Acknowledgement and feedback**

Another issue that arose was the lack of feedback that respondents were receiving on the AES activities that they were undertaking. Whilst all respondents reported confidence in their environmental skills, they were not always convinced that their changed practices were producing the desired environmental outcomes. They were looking for a more personal level of positive feedback and also for some public or formal recognition that they are benefitting the environment and making a positive contribution that is publicly valued.

## **10.3 Data Collection Issues**

A number of issues arose with the data collection process which are presented below:

**Length of survey:** The aim of the testing was to identify the questions that worked best and therefore included more questions than would be needed for the final survey form. The interviews took between 45 minutes to 2.30 hours depending on how much the respondents wanted to explain their responses and discuss the questions. The aim would be to have a survey form that takes 30 minutes to administer.

**Multiple respondents:** The questions are designed for responses from an individual but in a number of interviews two people were present, either husband and wife, father and son or farm manager and land owner. To overcome this situation, it was requested that the one person was delegated to answer the more personal questions, although this was not always considered a satisfactory situation. Another option would be to allow multiple sets of answers for some questions, or interview respondents separately, if possible.

**Sensitive questions:** All the respondents were willing to answer the health and wellbeing questions, although some suggested that other farmers, particularly the older generation, might feel less inclined to respond, or to provide honest answers. The majority of advisers mentioned that they would feel uncomfortable asking these questions face-to-face, as the quotes below illustrate:

"I did think that some of the questions were quite personal and if I was going through a bad time I don't know if I'd want my Natural England representative to hear this. You don't know until you've asked the question whether someone's family member is unwell or someone is struggling for whatever reason."

"From my point of view, as somebody who would be asking these questions on my own, whether it's yourself or many of the other farmers that I see, I would feel really uncomfortable, it's none of my business what your personal health is. I would feel, in this situation, very uncomfortable about asking that question"

“They are quite personal and I would very much understand farmers saying “it’s none of your business that I’m not feeling really happy today”. I’d entirely understand that, particularly if it someone that you’ve never met before or even if it is someone who I’ve met seven times a year!”

In earlier drafts of the survey a question was included that aimed to identify the level of the agreement holder’s rapport with their adviser, but was removed due to the anticipated awkwardness of answering this question in the presence of their Natural England adviser. Such a question is still relevant as there is strong evidence that a good farmer-adviser relationship can lead to positive social outcomes, but ways need to be found to collect the data anonymously.

Several discussions during the interviews focused on alternative ways of collecting the more sensitive questions. One suggestion was to leave these specific questions and a stamped-addressed envelope with the agreement holders to self-complete and return. However, both farmers and advisers felt the return rate would be low.

An alternative suggestion was to allow the agreement holder to answer the more sensitive questions directly at the time of the interview using a paper copy which they put in an envelope. As one adviser suggested

*“If it was me what I could do is give those personal questions to the farmer whilst I look around the fields and then do the less personal questions after.”*

Alternatively, it was suggested that the agreement holder could complete the questions using a tablet. Although there were concerns that some of the older farmers might experience difficulties using the technology.

One of the drawbacks of using self-completion as a collection method is that it risks missing the context in which the response is being made and therefore the factors that are most likely to be attributable to the AES.

## **10.4 Alternative Data Collection Methods**

The aim of this section is to consider alternative (including novel and innovative) means of collecting and managing indicator data. Due to the sensitive nature of health and wellbeing data, in particular, there is a need to consider some self-reporting methods of data collection. A number of potential methods are described below and some of the advantages and disadvantages of different data collection approaches presented in Table 10.1.

### **Smartphone or tablet App**

One option would be to develop an Application (App) that could facilitate data collection via the use of a Smartphone or tablet.

It should be possible to develop a user friendly and intuitive App, with versions tailored to various farmer types and / or those on various schemes. On freely downloading the App from iTunes or Google Play, an agreement holder would first register for the App, agree to its terms and conditions and provide a range of contextual and baseline information that would not be asked for again (such as farm type, ES scheme, farm size, age etc). One of the T&Cs would be that all data collected via the App is held centrally (by CCRI for example) and used to inform periodic analyses of App data that in turn be used to inform government policy and scheme management. The App would require investment in technological expertise – to design and develop it, and also to provide on-going management and maintenance of the App’s online platform.

Analyses of App data could take the form of snapshot data at various points in time, together with measures of distance travelled in attitudinal and behavioral indicators contained with the App. Periodic notifications on the user’s device would prompt the farmer to log in to complete the question fields again in order to gather such data seamlessly and efficiently. Completion of indicator questions would most likely take place via easy to use drop down menus, and depending on the level of technological investment, completion could also take place pictorially, diagrammatically or via voice recognition. The App would facilitate the seamless periodic collection, analyses and reporting of social indicator data, and in turn provide a form of on-going monitoring and evaluation of all schemes that featured in the App.

### On-line questionnaire

An alternative to a smartphone app is an on-line questionnaire. AES agreement holders complete a series of questions using an on-line survey form which could be accessed via a computer, smartphone or tablet. An online survey form is designed using available software and a link emailed to AES agreement holders giving access to the survey.

### SMS questionnaires

SMS questionnaires could be sent to AES agreement holders at regular intervals to record snapshot data at various points in time to capture, for example, their current sense of wellbeing, satisfaction with farming, sense of connection to the community. The agreement holders are sent a link in a text message which allows them to directly answer survey question on their mobile phone, although this could only be done for a limited number of questions.

### Uploading short ‘social CVs’

Uploading short ‘social CVs’; of meetings attended, positions held and participation in the industry to a personal portfolio highlighting the achievements of the farmer and the AES. This could also include indicators of community participation and appreciation collected from environmental groups, educational visitors or those assisted by the farm business. This information could also be used to communicate the contribution that farmers make to civic society. However, there is a danger this activity could also increase administrative burden.

**Table 10.1 Advantages and disadvantages of data collection methods**

Type of collection methods	Advantages	Disadvantages
Self-completion of paper copy of survey returning using sae	-Avoids respondent having to share responses with adviser -Avoids using technology	-Return rate likely to be low -May miss the context in which response is being made and the factors that are most likely to be attributable to AES
Self-completing using an on-line survey in own time	Avoids respondent having to share responses with adviser -Inexpensive -Data entered directly into database	- Response rate likely to be low - Requires AH to have access to personal computer and internet and for them to be computer-literate and computer-active -May miss the context in which response is being made and the factors that are most likely to be attributable to AES



Self-completion of sensitive questions using paper copy and placing in envelope whilst adviser on-farm	<ul style="list-style-type: none"> <li>-Avoids respondent having to share responses with adviser</li> <li>-Adviser can ensure questions are completed.</li> <li>-Adviser available to clarify any questions</li> <li>-Can be completed on the day of the visit</li> </ul>	-Respondent might feel adviser could still see the responses
Self-completion of sensitive questions using a tablet whilst adviser on-farm	<ul style="list-style-type: none"> <li>-Avoids respondent having to share responses with adviser</li> <li>-Adviser can ensure questions are completed.</li> <li>-Adviser available to clarify any questions</li> </ul>	Respondent might have difficulty using a tablet
Self-completion of sensitive questions using a phone App	<ul style="list-style-type: none"> <li>-Avoids respondent having to share responses with adviser</li> <li>- Responses entered directly into database</li> </ul>	<ul style="list-style-type: none"> <li>-Respondent might have difficulty using the phone App</li> <li>-May miss the context in which response is being made and the factors that are most likely to be attributable to AES</li> </ul>
Self-completion of sensitive questions SMS (text) questionnaire	<ul style="list-style-type: none"> <li>-Avoids respondent having to share responses with adviser</li> <li>-Inexpensive</li> <li>-Responses entered directly into database</li> <li>-SMS messaging widely available</li> </ul>	-May miss the context in which response is being made and the factors that are most likely to be attributable to AES
Telephone interview	<ul style="list-style-type: none"> <li>-Interviewer can ensure questions are completed</li> <li>-Interviewer able to clarify any questions</li> <li>-Avoids respondent having to share responses with adviser</li> </ul>	<ul style="list-style-type: none"> <li>-Respondent reluctance to answer sensitive questions over the phone unless interviewer well trained in establishing interview rapport.</li> <li>-May miss the context in which response is being made and the factors that are most likely to be attributable to AES</li> </ul>
Face-to-face interview	<ul style="list-style-type: none"> <li>-Adviser can ensure questions are completed.</li> <li>-Adviser available to clarify any questions</li> <li>-Able to understand the context in which response is being made and the factors that are most likely to be attributable to AES</li> </ul>	-Respondent reluctance to answer sensitive questions with adviser present.

# 11 Recommendations

## 11.1 Revised questions

As a result of the testing of the questionnaire with 19 agreement holders and obtaining feedback from 10 advisers, as well as suggestions from two peer reviewers of the report, a number of recommendations for re-wording of questions, providing alternative questions or removing questions are provided in Appendix 3.

## 11.2 Indicator Scoring

Some form of measurement (quantification) needs to be applied to the social indicators if a meaningful assessment is to be gained. For some indicators or questions the scores can be weighted if they are considered more important than others.

In order to provide a single measure for composite indicators (i.e. those made up of various sub-indicators) it is suggested that all scale data is transformed into an appropriate functional range of 0-1<sup>7</sup> and the mean of all sub-indicators taken as the single proportional measure. Thus, the highest maximum score for a composite indicator would be 1. It is recommended where appropriate that a 5-point scale is used for each question.

An example of proposed scoring is provided below, for the Interest in (and awareness of) environment composite indicator.

### Sub-indicator: Awareness of/interest in wildlife - Mean score = 0.64

1. How strong is your interest in wildlife on your farm?

		Score
Very strong interest	<input type="radio"/> 1	1
Strong interest	<input checked="" type="radio"/> 2	0.75
Fair amount of interest	<input type="radio"/> 3	0.50
Little interest	<input type="radio"/> 4	0.25
No interest	<input type="radio"/> 5	0

2. Do you have an active interest in wildlife, such as a member of any environmental or conservation organisations, or hobbies, such as bird-watching etc?  Yes/No 1/0

2a If yes, please provide details

3. Are there particular species or habitats on your farm that you manage or promote?  Yes/No 1/0

3a. If yes, please provide details

### Sub-indicator: Level of environmental knowledge/confidence in abilities

4. How would you describe your level of knowledge of birds, plants and species on the farm?

		Score
Extremely knowledgeable	<input type="radio"/> 1	1
Fairly knowledgeable	<input type="radio"/> 2	0.75

<sup>7</sup> Scale data is transformed into an appropriate functional range of 0-1, whereby scaled variables are transformed in the form  $(X - \min[X]) / (\max[X] - \min[X])$ . This produces a transformation of the ordinal codes 1 through 5 (i.e. Strongly Disagree through Strongly Agree): 1=0; 2=0.25; 3=0.50; 4=0.75; 5=1.0.

Somewhat knowledgeable	<input checked="" type="radio"/> 3	0.50
Not especially knowledgeable	<input type="radio"/> 4	0.25
No knowledge at all	<input type="radio"/> 5	0

**Sub-indicator: Level of unsubsidised environmental activity**

5. What amount of your environmental activities are currently undertaken voluntarily, without payments?

		Score
The majority	<input type="radio"/> 1	1
A great deal	<input type="radio"/> 2	0.75
A fair amount	<input type="radio"/> 3	0.50
A little	<input checked="" type="radio"/> 4	0.25
None	<input type="radio"/> 5	0

**Sub-indicator: Sense of environmental responsibility**

6. How, if at all, do you think agriculture affects the environment in the local area

		Score
A significant positive effect	<input type="radio"/> 1	0
Some positive effect	<input type="radio"/> 2	0.25
Neither positive, nor negative effect	<input type="radio"/> 3	0.50
Some negative effect	<input checked="" type="radio"/> 4	0.75
A significant negative effect	<input type="radio"/> 5	1

.7 How, if at all, do you think agriculture affects the environment in on your farm

		Score
A significant positive effect	<input type="radio"/> 1	0
Some positive effect	<input type="radio"/> 2	0.25
Neither positive, nor negative effect	<input checked="" type="radio"/> 3	0.50
Some negative effect	<input type="radio"/> 4	0.75
A significant negative effect	<input type="radio"/> 5	1

8. How responsible do you feel for the environment on your farm?

		Score
Very responsible	<input checked="" type="radio"/> 1	1
Fairly responsible	<input type="radio"/> 2	0.75
Somewhat responsible	<input type="radio"/> 3	0.50
Not particularly responsible	<input type="radio"/> 4	0.25
Not at all responsible	<input type="radio"/> 5	0

**Sub-indicator: Level of knowledge in landscape and cultural assets**

9. How would you describe your level of knowledge of landscape and historic features, such as stone walls or traditional farm buildings, on your farm?

		Score
Excellent	<input type="radio"/> 1	1
Very good	<input checked="" type="radio"/> 2	0.75
Good	<input type="radio"/> 3	0.50
Fair	<input type="radio"/> 4	0.25
Poor	<input type="radio"/> 5	0

10. To what extent, if at all, does the agricultural activity on your own farm affect the landscape or historic features, such as stone walls or traditional farm buildings?

		Score
A significant positive affect	<input type="radio"/>	0
Some positive affect	<input type="radio"/>	0.35
Neither positive, nor negative affect	<input type="radio"/>	0.50
Some negative affect	<input checked="" type="radio"/>	0.75
A significant negative affect	<input type="radio"/>	1

The equivalent functional transformation can be extended to all single item indicators to provide a consistent and harmonious measurement scale across the entire set. This approach will also help facilitate the application of various analyses of indicators, via statistical procedures or Social Return on Investment (SROI), for example.

Whilst the identification of a single score for each composite indicator is of great value, it will also be important to capture and retain the explanation that is given for the scores provided. During the interviews the respondents spontaneously offered an explanation for the scores given and this level of detail is important in understanding the underlying reasons and motivations for the scores.

### 11.3 Recommendations for further work and possible applications

#### Further testing of the indicators

There are two basic requirements for the questions that are devised to measure outcomes and distance travelled. These are: reliability and validity. The questions should obtain consistently robust results over time, with different land manager groups and with different advisers asking the questions, and the questions asked must measure the outcomes for which they were intended. Thus, it is strongly recommended that further testing of the indicators in a larger pilot survey is required.

The aim of the pilot survey would be to collect sufficient data in order to be confident about the questions and the process of administering the survey, and to examine correlations between sub and composite indicators in order that they might be reduced into a more parsimonious set for future application. The resulting set of operational indicators would be statistically validated through application of appropriate tests and models, and this work would be peer reviewed through publication in an international journal. The indicators would also be validated through an expert panel of stakeholder interests.

The pilot survey would also provide opportunity to examine the underlying dimensions of farmer engagement in AE schemes, and their social outcomes (using factor analysis for example), which in turn would allow a possible segmentation of farmers (using cluster analysis) to begin to understand the social issues in more depth. Thus, in addition to yielding a statistically validated set of social indicators, the pilot survey would in itself produce some valuable results.

A stratified randomised sample would need to be drawn up for the pilot survey, to ensure that it was representative of the population from which it was drawn. A minimum sample size of around 400 would be required to undertake the survey and subsequent statistical validation. Data collection could be undertaken by phone, post, via an online survey or a mix of all three.

## **Possible application of the social indicators**

Once a robust set of social indicators has been identified they could be developed for the following uses:

- Development of an index of indicators to provide a relative score for the social sustainability of a given scheme.
- To test the indicators': i) ability to predict agreement trajectory; ii) as proxies for environmental outcomes, including long-term and 'hidden' outcomes; and iii) as part of a wider monitoring and evaluation programme, their utility in assessing the success of a given scheme and in identifying how to improve social and environmental outcomes.
- Development of a suite of indicators which could be used by advisers to help them assess the quality of engagement an advisee has with their agreement, identify the trajectory of an agreement, as a way of learning about their advisee and so better support the advisee to improve delivery of environmental outcomes.
- As part of adviser training to help advisers understand the social world of agreement holders, the impact of agreements and how this influences the success of an agreement (including links to pro-environmental behaviour change).
- As a basis for how to develop schemes to maximise and sustain positive social outcomes to increase pro-environmental behaviour.

## Appendix 1 Agreement holder questionnaire

### Social Indicators - Pilot Survey Questions

[Please explain that the aim of these questions is to understand the factors that affect a farmer's level of engagement in an AES and how AES involvement affects the farmer and their farm business]

[Please explain that these are pilot questions and we are looking for their feedback on the questions, in particular if there is anything they struggled to answer or felt uncomfortable answering]

[Please explain that the survey is longer than the intended final version. Questions in italics indicate those that would normally be asked as a separate survey as part of an evaluation of AES, but for the purposes of testing in this pilot, the questions have been combined into one survey]

[Please refer the interviewee to the Showcards where indicated]

Unique identifier (Interviewer initials followed by number e.g. JM01) .....

*"Firstly, some general questions about you and your farm"*

1. How much involvement do you have in the day-to-day management of the farm?

#### Independent variables

2. Please can you tell me the total size of the whole area that you farm?

Ha	Acres

3. Please can you tell me the main farming system on your farm holding:

- Mainly cereals <sup>1</sup>
- Other arable <sup>2</sup>
- Mainly horticulture <sup>3</sup>
- Mainly dairy <sup>4</sup>

- Lowland sheep and/or beef  5
- Upland sheep and/or beef  6
- Mainly pigs & poultry  7
- Mixed  8
- Other  9

4. Please tell me the area of land that you farm:

	Ha	Acres
Owner occupied		
Rented in – tenanted (at least 1 year)		
Rented in (short-term agreements, less than 1 year)		
Contract or share farming		

5. Is this a:

- Family farm  1
- Council farm  2
- Charity-owned farm  3
- Other  4

6. Please can you tell me your age?

## (1) Interest in (and awareness of) environment

"The next set of questions is aiming to identify your interest and awareness of the environment on your farm"

### SHOWCARD A

7. How strong is your interest in wildlife on your farm?

- Very strong interest <sup>1</sup>
- Strong interest <sup>2</sup>
- Fair amount of interest <sup>3</sup>
- Little interest <sup>4</sup>
- No interest <sup>5</sup>

8. Do you have an active interest in wildlife, such as being a member of any environmental or conservation organisations, or having any relevant hobbies, such as bird-watching etc? Yes/No

8a. If yes, please provide details

### SHOWCARD B

9. To what extent has your interest in wildlife on your farm changed since being involved in AES, if at all

- Greatly increased interest <sup>1</sup>
- Some increased interest <sup>2</sup>
- No change in interest <sup>3</sup>
- Some decreased interest <sup>4</sup>
- Greatly decreased interest <sup>5</sup>

10. Are there particular species or habitats on your farm that you manage or promote? Yes/No

10a. If yes, please provide details



SHOWCARD C

11. How would you describe your level of knowledge of habitats, birds, plants and other species on the farm?

- Extremely knowledgeable <sup>1</sup>
- Fairly knowledgeable <sup>2</sup>
- Somewhat knowledgeable <sup>3</sup>
- Not especially knowledgeable <sup>4</sup>
- No knowledge at all <sup>5</sup>

12. Did you undertake any environmental activities prior to joining (any) AES?

- A great deal <sup>1</sup>
- A fair amount <sup>2</sup>
- A little <sup>3</sup>
- None <sup>4</sup>

12a. Please, provide details of the environmental activities undertaken?

13. What amount of your environmental activities are currently undertaken voluntarily, without payments?

- The majority <sup>1</sup>
- A great deal <sup>2</sup>
- A fair amount <sup>3</sup>
- A little <sup>4</sup>
- None <sup>5</sup>

13a Please can you provide details of the type of voluntary activities currently undertaken.

SHOWCARD D

14. How, if at all, do you think agriculture affects the environment ...	A significant positive effect	Some positive effect	Neither positive, nor negative effect	Some negative effect	A significant negative effect
<u>In the country?</u>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
... <u>in your local area?</u>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
... <u>on your farm?</u>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

SHOWCARD E

15. How responsible do you feel for the environment on your farm?

- Very responsible <sup>1</sup>
- Fairly responsible <sup>2</sup>
- Somewhat responsible <sup>3</sup>
- Not particularly responsible <sup>4</sup>
- Not at all responsible <sup>5</sup>

16. To what extent has your level of responsibility for the environment changed since being involved in AES, if at all?

- A great deal* <sup>1</sup>
- A fair amount* <sup>2</sup>
- A little* <sup>3</sup>
- Not at all* <sup>4</sup>
- Don't know* <sup>5</sup>

SHOWCARD F

17. How would you describe your level of knowledge of landscape and historic features, such as stone walls or traditional farm buildings, on your farm?

- Extremely knowledgeable <sup>1</sup>
- Fairly knowledgeable <sup>2</sup>
- Somewhat knowledgeable <sup>3</sup>
- Not especially knowledgeable <sup>4</sup>
- No knowledge at all <sup>5</sup>

SHOWCARD G

18. To what extent, if at all, does the agricultural activity on your own farm affect the landscape or historic features, such as stone walls or traditional farm buildings?

- A significant positive affect <sup>1</sup>
- Some positive affect <sup>2</sup>
- Neither positive, nor negative affect <sup>3</sup>
- Some negative affect <sup>4</sup>
- A significant negative affect <sup>5</sup>

## (2) Attitudes and beliefs about farming (self-identity)

*“The next set of questions is aiming to identify your attitudes and beliefs about farming”*

19. How do you see your role as a farmer?

20. On a scale of 1 to 10, how important is it for you to maximise profit from the farm?

Unimportant  1  2  3  4  5  6  7  8  9  10 Very important

21. On a scale of 1 to 10, how important is it for you to produce food from your farm?

Unimportant  1  2  3  4  5  6  7  8  9  10 Very important

22. On a scale of 1 to 10, how important is it for you to look after the environment on your farm?

Unimportant  1  2  3  4  5  6  7  8  9  10 Very important

### SHOWCARD H

	23 To what extent do you agree or disagree with the following statements?	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
a	“Environmental activities should be an integral part of agricultural activities”	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
b	“Environmental activities are detrimental to efficient agricultural activity”	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
c	“Environmental activities should not negatively affect farm profits”	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
d	“Farmers should take on more responsibility for the environment”	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

24. To what extent has your attitude to AES changed due to the environmental benefits achieved on your farm?

- A great deal <sup>1</sup>
- A fair amount <sup>2</sup>
- A little <sup>3</sup>
- Not at all <sup>4</sup>
- Don't know <sup>5</sup>

**SHOWCARD I**

25. On a scale of 1 to 5, how hopeful do you feel about the future of the farming industry in this county?

- Very hopeful <sup>1</sup>
- Slightly hopeful <sup>2</sup>
- Slightly hopeless <sup>3</sup>
- Very hopeless <sup>4</sup>
- Don't know <sup>5</sup>

### (3) Engagement with advice and training

The next set of question is aiming to identify your level of engagement with advice and training”

26. Who do you mainly go to for advice about your AES

#### SHOWCARD J

27. On average, how often do you seek advice on your AES, if at all?

- Once a week  <sup>1</sup>
- Once a month  <sup>2</sup>
- Once every 3 months  <sup>3</sup>
- Once every 6 months  <sup>4</sup>
- Once a year  <sup>5</sup>
- 2 or 3 times during life of an agreement  <sup>6</sup>
- Never  <sup>7</sup>

#### SHOWCARD K

28. How much formal environmental training have you undertaken in the last 3 years?

- A considerable amount (>3 times per year)  <sup>1</sup>
- Some training (1-3 times per year)  <sup>2</sup>
- Small amount training (<1 time a year)  <sup>3</sup>
- No training  <sup>4</sup>

#### SHOWCARD L

29. To what extent have you implemented environmental changes following a training event?

- I have implemented a significant number of changes (3+)  <sup>1</sup>
- I have implemented some changes (1-2)  <sup>2</sup>
- I have not made any changes  <sup>3</sup>
- Not applicable  <sup>4</sup>

## (4) Level of AES experience

*“The next set of questions aims to identify your level of AES experience and your level of confidence in delivering their AES*

30. How long have you been involved in AES? ..... years

### SHOWCARD M

	Very confident	Slightly confident	Slightly unconfident	Entirely lacking in confidence	Don' t know
31. How confident are you in your environmental knowledge/skills/abilities?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
32. How confident would you be in managing options without prescriptions?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

33. Since starting your AES, do you now feel more or less confident in implementing your AES options? Why is this?

- Hugely more confident*      <sup>1</sup>
- Moderately more confident*      <sup>2</sup>
- No change in confidence*      <sup>3</sup>
- Moderately less confident*      <sup>4</sup>
- Hugely less confident*      <sup>5</sup>

### SHOWCARD N

	<i>Strongly agree</i>	<i>Agree</i>	<i>Neither agree, nor disagree</i>	<i>Disagree</i>	<i>Strongly disagree</i>
34. <i>“As a result of my engagement in AES I have become more ambitious in managing my land for the environment”</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

35. To what extent has your understanding increased or decreased in terms of what your AES options are trying to achieve Why is this?

- Large increase in understanding* <sup>1</sup>
- Some increase in understanding* <sup>2</sup>
- No change in understanding* <sup>3</sup>
- Some reduction in understanding* <sup>4</sup>
- Large reduction in understanding* <sup>5</sup>

## (5) Succession

*“The next set of questions (5-8) aims to identify some further information about you and your farm businesses”*

36. If a family farm (see Q5) will a member of your family take on the management of the farm after you retire? (For holdings with non-familial manager or where succession not possible use 'Not Applicable')

- Definitely <sup>1</sup>
- Possibly/undecided <sup>2</sup>
- Unlikely <sup>3</sup>
- Definitely not <sup>4</sup>
- Not applicable <sup>5</sup>

37. To what extent does your succession status affect your current environmental decision-making?

- High effect <sup>1</sup>
- Low effect <sup>2</sup>
- No effect <sup>3</sup>
- Don't know <sup>4</sup>

## (6) Lifecycle stage

### SHOWCARD O

38. Which of these statements reflect your current business stage? (please select only one)

- I am reducing the size/intensity of the business <sup>1</sup>
- I am maintaining the business without major changes <sup>2</sup>
- I am growing/intensifying the business <sup>3</sup>
- I am diversifying the business <sup>4</sup>
- I am selling the business <sup>5</sup>
- I don't know <sup>6</sup>

## (7) Farmer education

39. What is your highest level of formal education?

- Full Secondary Education <sup>1</sup>  
(up to 14/16 years old)
- Further Education <sup>2</sup>  
(16 years old+, incl. BTEC, City & Guilds, NVQ3+ or HNC)
- Higher Education <sup>3</sup>  
(18 years old+, incl. HND, Degree, MSc Degree or PhD)



## (8) Farm tenure

40. If you rent land, would you say you share the same goals as your landlord?

- Yes, completely the same <sup>1</sup>
- Yes, somewhat the same <sup>2</sup>
- No, somewhat different <sup>3</sup>
- No, completely different <sup>4</sup>
- Don't know/ not sure <sup>5</sup>

## (9) Resilience

The next set of question aims to identify your view on the ability of the farm business to recover quickly following difficulties.

### SHOWCARD P

	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
<b>41. How much do you agree or disagree with the following statements?</b>					
a      “After something challenging has happened, it is easy for my farm to bounce back to its current profitability”	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
b      “I find it easy to get back to normal after a set back”	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
c      “A big shock will not heavily affect me, as I have enough options to deal with shocks on my farm”	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

42. As a result of joining an AES has there been a change in response to how you bounce back from challenging situations?

- Harder to bounce back <sup>1</sup>
- Easier to bounce back <sup>2</sup>
- No change in ability to bounce back <sup>3</sup>
- Don't know/not sure <sup>4</sup>

## (10) Sense of Control

*“This next set of questions aims to identify your view on your capacity to act independently and to make their own free choices”.*

### SHOWCARD Q

	Strongly agree	Agree	Neither agree, nor disagree	Disagree	Strongly disagree
<b>43. How much do you agree or disagree with the following statement?</b>					
<b>a</b> <i>“I have a very high level of influence over the decisions that affect my farm business?”</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<b>b</b> <i>“As a result of joining an AES my level of influence over the decisions that affect my farm business has decreased?”</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

[At this point, suggest asking for feedback on the questions asked so far]

## (11) Bonding social capital

*“This next set of questions aims to understand how being part of an AES might affect how interact with other farmers and people, and might affect your farm business and yourself”*

44. How many farming groups or networks are you a member of?

45. In how many of these farming groups or networks do you have any responsibility, such as being a committee member, raising funds, organizing events or admin work?

46. In the past 6 months, have you helped out a farming neighbour?

- Yes <sup>1</sup>  
No <sup>2</sup>  
Just moved into the area <sup>3</sup>

47. And, in the past 6 months, have any of your farming neighbours helped you out?

- Yes <sup>1</sup>  
No <sup>2</sup>  
Just moved into the area <sup>3</sup>

48. Typically, how frequently do you share farming information or knowledge with other farmers (e.g. face-to-face, phone, email, social media)

- Once a week <sup>1</sup>  
Once a month <sup>2</sup>  
Once every 3 months <sup>3</sup>  
Once every 6 months <sup>4</sup>  
Once a year <sup>5</sup>  
Less than once a year <sup>6</sup>  
Never <sup>7</sup>

49. As a result of joining AES, to what extent, if at all, has the level of working with other farmers increased or decreased:

- Greatly increased <sup>1</sup>
- Some increase <sup>2</sup>
- No change in level of working <sup>3</sup>
- Some decrease <sup>4</sup>
- Greatly decreased <sup>5</sup>

**SHOWCARD R**

50. Generally speaking, would you say that people can be trusted?

- People can almost always be trusted <sup>1</sup>
- People can usually be trusted <sup>2</sup>
- You usually need to be careful in dealing with people <sup>3</sup>
- You almost always need to be careful in dealing with people <sup>4</sup>
- Can't choose <sup>5</sup>

51. Could you tell me for each whether you trust people from this group	Completely	Somewhat	Not very much	Not at all
Your family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other farmers in the local area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your landlord (if applicable)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your local community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defra/Natural England	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

52. To what extent has joining the AES changed your level of trust towards the following groups	Greatly increased	Slightly increased	No change	Slightly decreased	Greatly decreased
Your family	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Other farmers in the local area	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your landlord (if applicable)	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Your local community	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Defra/Natural England	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
Political parties	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

53. How much trust do you feel there is between farmers?	Very high levels of trust	High levels of trust	Moderate levels of trust	Low levels of trust	Very low levels of trust
<u>In the country as a whole?</u>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
... in <u>your local area?</u>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

## (12) Bridging social capital

54. How many non-farming groups or networks are you a member of?

55. In how many of these non-farming groups or networks do you have any responsibility, such as being a committee member, raising funds, organizing events or admin work?

56. In the past 6 months, have you done a favour for a non-farming neighbour?

- Yes <sup>1</sup>  
No <sup>2</sup>  
Just moved into the area <sup>3</sup>

57. And, in the past 6 months, have any of your non-farming neighbours helped you out?

- Yes <sup>1</sup>  
No <sup>2</sup>  
Just moved into the area <sup>3</sup>

### SHOWCARD S

58. Do you, or have you ever, engaged with the general public in relation to any of these activities

- |  |                                     |
|--|-------------------------------------|
| Open Farm Sunday   | <input type="radio"/> <sup>1</sup>  |
| Social media (farming-specific)                              | <input type="radio"/> <sup>2</sup>  |
| Tourism accommodation – camping, B&B etc                     | <input type="radio"/> <sup>3</sup>  |
| Tourism activity – tours, workshops etc                      | <input type="radio"/> <sup>4</sup>  |
| School visits  | <input type="radio"/> <sup>5</sup>  |
| Other educational events e.g. BioBlitz, bird watching groups | <input type="radio"/> <sup>6</sup>  |
| Public rights of way   | <input type="radio"/> <sup>7</sup>  |
| “Face time a farmer”   | <input type="radio"/> <sup>8</sup>  |
| Helping out at local events with farming-related activities  | <input type="radio"/> <sup>9</sup>  |
| Provision of facilities (e.g. meeting rooms)                 | <input type="radio"/> <sup>10</sup> |
| Been interviewed for a podcast, radio programme, article etc | <input type="radio"/> <sup>11</sup> |
| Farm gate sales  | <input type="radio"/> <sup>12</sup> |
| Shooting events  | <input type="radio"/> <sup>13</sup> |
| Other (Please specify)                                       | <input type="radio"/> <sup>14</sup> |

<i>59. To what extent, has joining the AES increased or decreased your <u>level of contact with:</u></i>	<i>Greatly increased</i>	<i>Slightly increased</i>	<i>No change</i>	<i>Slightly decreased</i>	<i>Greatly decreased</i>
<i>Other farmers?</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<i>General public?</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

60. How important is it for you to be recognised by the public for your AES work?

- Very important <sup>1</sup>
- Important <sup>2</sup>
- Slightly important <sup>3</sup>
- Not important at all <sup>4</sup>

61. To what extent, if at all, have you been acknowledged by members of the public for your work in delivering environmental benefits?

- High levels of acknowledgement* <sup>1</sup>
- Moderate levels of acknowledgement* <sup>2</sup>
- Low levels of acknowledgement* <sup>3</sup>
- No acknowledgement* <sup>4</sup>

### (13) Linking social capital

#### SHOWCARD T

62. How often do you communicate with farming government agencies?

- On a regular basis >7 times a year <sup>1</sup>
- Fairly regularly 4-6 times a year <sup>2</sup>
- Some communication from time to time 2-3 times a year <sup>3</sup>
- Minimal communication – might communicate once a year <sup>4</sup>
- Does not communicate at all - other than receiving through the post <sup>5</sup>

## (14) Cultural capital

63. How do you think you are perceived by other farmers?

64. *Since you joined, has engagement in an AES become more or less acceptable within the farming community?*

- Greatly increased acceptance* <sup>1</sup>
- Some increased acceptance* <sup>2</sup>
- No change in acceptance* <sup>3</sup>
- Some decreased acceptance* <sup>4</sup>
- Greatly decreased acceptance* <sup>5</sup>

65. *Since joining AES, to what extent, if at all, do other farmers come to you for advice about AES implementation:*

- Frequently* <sup>1</sup>
- Occasionally* <sup>2</sup>
- Never* <sup>3</sup>

## (15) Wellbeing – employment conditions

*“This final set of questions (15-18) relates to your wellbeing in relation to employment conditions, job satisfaction and quality of life”*

66. How often do you take a holiday?

- More than once a year <sup>1</sup>
- Once a year <sup>2</sup>
- Less than once a year <sup>3</sup>
- Never <sup>4</sup>

67. How many hours a year do you work off farm? ..... hours



68. On average, during peak times, how many hours do you work on farm a day? ..... hours/day

69. To what extent, if at all, has your involvement in AES increased or decreased:	<i>Large increase</i>	<i>Slight increase</i>	<i>No change</i>	<i>Slight decrease</i>	<i>Large decrease</i>
<i>Number of holidays you've taken?</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<i>Extent of off farm working?</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<i>Average Peak working hours on the farm</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

**(16) Wellbeing – job satisfaction**

70. How satisfied are you with...	Completely satisfied	More than satisfied	Satisfied	Less than satisfied	Not satisfied at all
<b>a</b> your work-life balance?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<b>b</b> being a farmer?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<b>c</b> your freedom of decision-making?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<b>d</b> your quality of life?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

71. To what extent has your involvement in AES affected your satisfaction with:	Large increase in satisfaction	Moderate increase in satisfaction	No change to satisfaction	Moderate reduction in satisfaction	Large reduction in satisfaction
your work-life balance?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
being a farmer?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
your freedom of decision-making?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
your overall quality of life?	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

**(17) Wellbeing – quality of life**

72. Taking all things together, how happy would you say you are at the moment?

Extremely Unhappy  1  2  3  4  5  6  7  8  9  10  10 Extremely Happy

73. Overall, to what extent do you feel that the things you do in your life are worthwhile?

Not at all Worthwhile  1  2  3  4  5  6  7  8  9  10  10 Completely Worthwhile

74. How is your...	Very Good	Good	Fair	Bad	Very Bad
a. physical health in general, would you say it is:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
b. mental health in general, would you say it is:	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>

**(18) Social Outcomes – Mental health and subjective wellbeing**

75. To what extent, if at all, have your stress levels increased or decreased as a result of:	Greatly increased	Slightly increased	No change	Slightly decreased	Greatly decreased
<i>Workload due to your AES agreement?</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<i>AES administration and bureaucracy?</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<i>AES inspections</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<i>Financial issues as a result of your AES agreement</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<i>Family conflicts as a result of your AES agreement</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>
<i>Environmental enjoyment as a result of your AES agreement</i>	<input type="radio"/> <sup>1</sup>	<input type="radio"/> <sup>2</sup>	<input type="radio"/> <sup>3</sup>	<input type="radio"/> <sup>4</sup>	<input type="radio"/> <sup>5</sup>

## Feedback from agreement holder.

Please ask these questions at the end

1. Were there any questions that you struggled to answer? Were there any questions that other farmers might struggle to answer?
2. Were there any questions you found awkward/uncomfortable answering? Were there any questions that other farmers might find awkward to answer? Would those questions have been better as self-completion questions?
3. Are there additional questions that we could have asked?

## Feedback from adviser

Please ask the adviser these questions off-farm after the interview with the agreement holders

1. Were there any questions that you felt the agreement holder found difficult to answer, or other farmers might find difficult answering?
2. Were there any questions that you would feel uncomfortable asking?
3. We previously had a question asking to what extent the agreement holder trusted the advice of their main adviser. We realise that this might be an awkward question for an adviser to ask! Is there another way of asking this question?
4. Are there additional questions that we could have asked?

## Appendix 2 Webinar Poll Responses

**Poll question 1: Which are your top 5 high-level indicators for measuring the quality of AES engagement? (n =74)**

Indicator	% of respondents
Interest in environment	65
Engagement with advice and training	59
Attitudes and beliefs about farming	50
Farming system and farm type	41
Financial stability	28
Level of AES experience	24
Bonding social capital	18
Bridging social capital	14
Agency	12
Cultural capital	12
Tenure status	11
Linking social capital	11
Interest in experimentation	9
Succession	9
Formal education	9
Mental health and wellbeing	9
Lifecycle stage	7
Resilience	7
No Answer	18

**Poll open question: Are there any additional indicators that should be considered?**

- How good Government is at paying farmers in terms of timeliness
- Attitudes and beliefs about the farmers role in providing public benefits, attitudes about "polluter pays" principle, attitudes about the entitlement of farmers to receive public funding as a right
- Length of time they have had the same NE adviser
- This might be part of Farming system - whether the agreement holder is a conservation organisation eg Wildlife Trust (expect more engagement/knowledge from these).
- Experience of regulation inspection?
- Good coverage - but then I would say that!
- Use of technology - applying and managing schemes without internet access and being PC literate is difficult. Trust in gov agencies (RPA, EA, NE) is also an important factor.
- Economics, e.g. livestock and grain prices, exchange rate of pound, unemployment levels, etc.
- Would it be useful to have an indicator around use of technology (including mobile devices) both for advice and guidance and training and related to Social Capital in engaging with other farmer and sharing knowledge and experience?
- In terms of advice. How important is having one-to-one advice from a named adviser? eg. Is engagement poorer now many agreement holders do not have a specific adviser to call.
- Is there anything around proximity to nature reserve/urban area etc?





- Flexibility within the scheme, to make own modifications depending on their farm and resources.
- Interest in, and awareness of, non-biodiversity elements of 'environment', such as our historic environment and heritage, our landscape, our geology, etc. Too often, 'environment' is interpreted as meaning 'biodiversity only' and I wonder how broadly this term was interpreted by the various studies you consulted which might have resulted in inconsistent definitions of the term 'environment'.
- Engagement/experience with monitoring/support officials or quality of information provided by external support?
- Pressure from the accountant ref. need to make a profit, pressure / interest from members of the family, time spent in off farm work and social activities, engagement with other funding schemes e.g. forestry, diversification etc.
- Language - important with multi-lingual countries - Like Wales & possibly N & W Scotland ? Physical Health as well as Mental Health? Is there anything about Rural, Rural Fringe/ Urban ?
- The type of people. Behavioural aspects, social aspects, business aspects etc. It doesn't matter if you are dealing with farmers or any other type of business person, it is what type of person they are that dictates how you pitch your communication and engagement as an adviser.
- This may be part of wider cultural capital but 'presence of public on the farm' eg recreation on public rights of way, visiting features of interest etc may have a bearing on delivering public goods such as AE outcomes - and in particular ones related to public access
- Link with compliance with regulation and engagement with regulators. The corresponding benefits of agri-environment options to the farm business and income.
- Probably falls within points already listed but socio-economic background might be a factor.
- 1. Delays in receipt of AES payments - numerous farmers have chosen not to continue with AES due to significant delays to receiving payments - sometimes > 2 years 2. Perceived risk of compliance failure - the risk is not worth the reward as rigid RPA checks, and lack of ability to apply discretion can lead to severe penalties. 3. Schemes prescriptions are too rigid (an EU issue I believe) and do not provide sufficient flexibility to maximise conservation outcomes.
- Attachment to the place/landscape. Family ties to the land and length of time occupying the farm/holding. These may influence quality of engagement

### Appendix 3 Suggested revisions to questions





Each question in the survey has been assigned the following recommended actions:




😊 = retain question; 😐 = revise question or additional question; 😞 = remove question




	Independent variables	Question	Suggested changes to question	Action
		2. Please can you tell me the total size of the whole area that you farm?		😊
		3. Please can you tell me the main farming system on your farm holding  Mainly cereals <input type="radio"/> <sup>1</sup> Other arable <input type="radio"/> <sup>2</sup> Mainly horticulture <input type="radio"/> <sup>3</sup> Mainly dairy <input type="radio"/> <sup>4</sup> Lowland sheep and/or beef <input type="radio"/> <sup>5</sup> Upland sheep and/or beef <input type="radio"/> <sup>6</sup> Mainly pigs & poultry <input type="radio"/> <sup>7</sup> Mixed <input type="radio"/> <sup>8</sup> Other <input type="radio"/> <sup>9</sup>		😊
		4. Please tell me the area of land that you farm:  Owner occupied Rented in – tenanted (at least 1 year) Rented in (short-term agreements, less than 1 year) Contract or share farming		😊
		5. Is this a:  Family farm <input type="radio"/> <sup>1</sup>	Add a box to capture 'Other' farm types	😐







		Council farm <input type="radio"/> <sup>2</sup> Charity-owned farm <input type="radio"/> <sup>3</sup> Other <input type="radio"/> <sup>4</sup>		
		6. Please can you tell me your age?		
	Sub-indicators - <i>Quality of AES engagement – willingness to engage</i>	Question (scores in brackets)	Suggested changes to question	Action
WE_01	Interest in (and awareness of) environment			
1.1	Awareness of/interest in wildlife (e.g. particular species and habitats)	7. How strong is your <u>interest</u> in wildlife on your farm? Very strong interest (1) Strong interest (0.75) Fair amount of interest (0.50) Little interest (0.25) No interest (0)		
		8. Do you have an active interest in wildlife, such as being a member of any environmental or conservation organisations, or have any relevant hobbies, such as bird-watching etc? Yes/No (0/1)  8a. If yes, please provide details	<ul style="list-style-type: none"> <li>Are you a member of any environmental or conservation organisations, or do you have any environmental-related hobbies, such as bird-watching, wildlife photography?</li> </ul>	
		9. To what extent has your <u>interest</u> in wildlife on your farm changed since being involved in AES, if at all  Greatly increased interest <input type="radio"/> <sup>1</sup> Some increased interest <input type="radio"/> <sup>2</sup>	Recommend removing question as no change in interest does not necessarily reflect a lack of interest, as may have already had a very strong interest prior to AES	






		No change in interest <input type="radio"/> <sup>3</sup> Some decreased interest <input type="radio"/> <sup>4</sup> Greatly decreased interest <input type="radio"/> <sup>5</sup>		
		10. Are there particular species or habitats on your farm that you manage or promote? Yes/No (0/1)  10a. If yes, please provide details		
1.2	Level of environmental knowledge	11. How would you describe your level of <u>knowledge</u> of birds, plants and species on the farm?  -Extremely knowledgeable (1) -Fairly knowledgeable (0.75) -Somewhat knowledgeable (0.5) -Not especially knowledgeable (0.25) -No knowledge at all (0)	How would you describe your current level of <u>knowledge</u> of birds, plants and species on the farm?  -Excellent -Very good -Good -Fair -Poor	
1.3	Level of unsubsidised environmental activity	12. Did you undertake any environmental activities prior to joining (any) AES? A great deal A fair amount A little None  12a. Please, provide details of the environmental activities undertaken?	<ul style="list-style-type: none"> <li>Recommend removing as some agreement holders may be too young to remember the start of the schemes or re-word to</li> </ul> Did you undertake any environmental activities <i>you now do as part of AES</i> prior to joining?  A great deal A fair amount A little None	
		13. What amount of your environmental activities are <u>currently</u> undertaken voluntarily, without payments?  The majority (1) A great deal (0.75) A fair amount (0.5)	<ul style="list-style-type: none"> <li>Instead of term 'environmental activity' consider using 'wildlife/soil and water protection/historic environment activities'</li> </ul>	




		<p>A little (0.25) None (0.25)</p> <p>13a Please can you provide details of the type of voluntary activities currently undertaken</p>		
1.4	Sense of environmental responsibility	<p>14. How, if at all, do you think agriculture affects the environment in the country/local area/on your farm /</p> <p>A significant positive effect (1) Some positive effect (0.75) Neither positive, nor negative effect (0.50) Some negative effect (0.25) A significant negative effect (0)</p>	<ul style="list-style-type: none"> <li>How, if at all, do you think agriculture affects the wildlife/soil and water quality etc in the local area/on your farm /</li> </ul> <p>A significant positive effect Some positive effect Neither positive, nor negative effect Some negative effect A significant negative effect</p> <p>Difficult to score the question, so consider removing</p>	
		<p>15. How responsible do you feel for the environment on your farm?</p> <p>Very responsible (1) Fairly responsible (0.75) Somewhat responsible (0.50) Not particularly responsible (0.25) Not at all responsible (0)</p>	<ul style="list-style-type: none"> <li>How much, if at all, do you think farmers are responsible for the decline in farmland bird numbers/water pollution etc?</li> </ul> <p>Completely responsible Mainly responsible Somewhat responsible Not particularly responsible Not at all responsible</p>	
		<p>16. To what extent has your level of responsibility for the environment changed since being involved in AES, if at all?</p> <p>A great deal A fair amount A little Not at all</p>	<ul style="list-style-type: none"> <li>Recommend removing question as a little change in level of responsibility does not necessarily reflect a lack of responsibility, as may have already had a very strong level of responsibility prior to AES.</li> </ul>	




		<i>Don't know</i>		
1.5	Level of knowledge in landscape and cultural assets	<p>17. How would you describe your level of knowledge of <u>landscape and historic features</u>, such as stone walls or traditional farm buildings, on your farm?</p> <p>Extremely knowledgeable  Fairly knowledgeable  Somewhat knowledgeable  Not especially knowledgeable  No knowledge at all</p>	<ul style="list-style-type: none"> <li>How would you describe your current level of knowledge of <u>landscape and historic features</u>, such as hedges, stone walls, traditional farm buildings, parkland and rivers on your farm?</li> </ul> <p>-Excellent (1)  -Very good (0.75)  -Good (0.50)  -Fair (0.25)  -Poor (0)</p>	
		<p>18. To what extent, if at all, does the agricultural activity on your own farm affect the landscape or cultural features, such as stone walls, traditional farm buildings?</p> <p>A significant positive affect (1)  Some positive affect (0.75)  Neither positive, nor negative affect (0.50)  Some negative affect (0.25)  A significant negative affect (0)</p>		
WE_02	<b>Attitudes &amp; beliefs about farming (self-identity)</b>			
2.1	Self-identity e.g. profit maximisation, food production, custodian	19. How do you see your role as a farmer?		

		On a scale of 1 to 10 (0.1 – 1) 20. How important is it for you to make maximum profit from the farm?		
		21. How important is it for you to produce food from your farm?	<ul style="list-style-type: none"> <li>How important is it for you to produce food or other agricultural goods from your farm?</li> </ul>	
		22. How important is it for you to look after the environment on your farm?	<ul style="list-style-type: none"> <li>How important is it for you to look after the wildlife or other environmental features on your farm?</li> </ul>	
		23. How much you agree or disagree with statements concerning the nature of the relationship between environment and agriculture: Strongly Agree / Agree / Neither agree or disagree / Disagree / Strongly Disagree.  a. Environmental activities should be an integral part of agricultural activity  b. Environmental activities are detrimental to efficient agricultural activity  c. Environmental activities should not affect farm profits  d. Farmers should take on more responsibility for the environment	<p>Consider removing this question, or alternatively re-wording using 'looking after nature and environment' in place of environment.</p> <ul style="list-style-type: none"> <li>How much you agree or disagree with statements concerning the nature of the relationship between wildlife and agriculture: Strongly Agree (1) / Agree (0.75) / Neither agree or disagree (0.50) / Disagree (0.25) / Strongly Disagree (0)</li> </ul> <p>a. Wildlife conservation activities should be an integral part of agricultural activity b. Wildlife conservation activities are detrimental to efficient agricultural activity c. Wildlife conservation activities should not affect farm profits d. Farmers should take on more responsibility for wildlife conservation</p>	 
2.2	Attitude to AES	24. To what extent has your <u>attitude</u> to AES changed due to the <u>environmental benefits</u> achieved on your farm?	Reword:	


		<p>A great deal A fair amount A little Not at all Don't know</p>	<ul style="list-style-type: none"> <li>• Have you achieved any wildlife conservation benefits or other environmental benefits on your farm under your scheme? Yes/No/Don't Know</li> <li>• Has this outcome changed your attitude towards the scheme?</li> </ul> <p>A huge amount (1) A great deal (0.75) A fair amount (0.50) A little (0.25) Not at all (0)</p> <ul style="list-style-type: none"> <li>• How much feedback have you received from conservation advisers on your environmental achievements?</li> </ul> <p>A huge amount (1) A great deal (0.75) A fair amount (0.50) A little (0.25) Not at all (0)</p>	
2.3	Attitudes and beliefs about the future of farming	<p>25. On a scale of 1 to 5, how hopeful do you feel about the future of the farming industry in this county?</p> <p>Very hopeful (1) Moderately hopeful (0.75) Slightly hopeless (0.50) Moderately hopeless (0.25) Very hopeless (1)</p>		
WE_03	Engagement with advice and training			



3.1	Level of engagement with environmental advice	<p>26. Who do you mainly go to for advice about your AES</p> <p>27. On average, how often do you seek advice on your AES, if at all?</p> <p>-Once a week -once a month -once every 3 months -Once every 6 months -Once a year -Never</p>	<p>Additional question:</p> <ul style="list-style-type: none"> <li>Do you find the environmental advice about your AES coming to mind in daily farming tasks? Always/nearly always/occasionally/rarely/never</li> </ul> <p>On average, how often do you seek advice on your AES, if at all?</p> <p>-More than once a month (1) -Once every 3 months (0.75) -Once every 6 months (0.50) -Once a year (0.25) -2 or 3 times during the life of an agreement (0) -Never (0)</p>	
3.2	Level of rapport with adviser			
3.3	Level of engagement with environmental training	<p>28. How much formal environmental training have you undertaken in the last 3 years</p> <p>A considerable amount (&gt;3 times per year) Some training (1-3 times per year) Small amount training (&lt;1 time a year) No training</p>	<p>Consider splitting question in two:</p> <p>How many formal training events to acquire environmental management skills have you attended in the last 3 years?</p> <p>A considerable amount (&gt;5 times per year) (01) A moderate amount (2-5 times per year) (0.75) Some learning events (1-2 times per year) (0.50) Small amount of learning event (&lt;1 time a year) (0.25) No events (0)</p> <p>How many farm demonstrations and/or farm walks have you attended to learn about environmental practices in the last 3 years?</p> <p>A considerable amount (&gt;5 times per year) (01) A moderate amount (2-5 times per year) (0.75)</p>	



			Some learning events (1-2 times per year) (0.50) Small amount of learning event (<1 time a year) (0.25) No events (0)	
		29. To what extent have you implemented environmental changes following a training or demonstration event?  I have implemented a significant number of changes (3+) (1) I have implemented some changes (1-2) (0.50) I have not made any changes (0) Not applicable (0)		
<b>WE_04</b>	<b>Level of AES experience</b>			
4.1	Length of previous AES engagement	30. How long have you been involved in AES	[Obtain information from scheme data]	
4.2	Confidence in environmental skills/abilities	31. How confident are you in your environmental knowledge/ skills/abilities -Very confident -Slightly confident -Slightly unconfident -Very unconfident Don't know	31. How confident are you in your environmental knowledge/ skills/abilities -Very confident (1) - Moderately confident (0.75) -Slightly confident (0.50) -Slightly unconfident (0.25) -Unconfident (0)	




	<p>32. How confident would you feel in managing options without prescriptions</p> <p>Very confident (1)</p> <p>- Moderately confident (0.75)</p> <p>- Slightly confident (0.50)</p> <p>- Slightly unconfident (0.25)</p> <p>- Unconfident (0)</p>	<ul style="list-style-type: none"> <li>• This question needs further explanation of the payments by result approach</li> <li>• A follow up question was suggested if response was “confident” or “slightly confident”</li> <li>• Are you confident because you have the history of knowing what the prescription says and are used to doing it? Yes/No</li> <li>• Are you confident because you have your own new ideas for managing your options? Yes/No</li> </ul>	
	<p>33. Since starting your AES, do you now feel more or less <u>confident</u> in implementing your AES options?</p> <p>Hugely more confident (1)</p> <p>Moderately more confident (0.75)</p> <p>No change in confidence (0.50)</p> <p>Moderately less confident (0.25)</p> <p>Hugely less confident (0)</p>		
	<p>34. How much do you agree or disagree with following statement:</p> <p>Strongly Agree / Agree / Neither agree or disagree / Disagree / Strongly Disagree</p> <p>As a result of my engagement in AES I have become more ambitious in the options/management undertaken</p>		




	Understanding of AES rationale (Indicators of Success)	<p>35. To what extent has your understanding increased or decreased in terms of what your AES options are trying to achieve</p> <p>Large increase in understanding Some increase in understanding No change in understanding Some reduction in understanding Large reduction in understanding</p>	<ul style="list-style-type: none"> <li>Since the start of the scheme, to what extent has your understanding increased or decreased in terms of what your AES options are trying to achieve</li> </ul> <p>Large increase in understanding Some increase in understanding No change in understanding Some reduction in understanding Large reduction in understand</p>	
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	Sub-indicators - Quality of AES engagement – capacity to engage	Questions	Suggested changes to question	Action
CE_01	Succession			
1.1	Planning for succession	<p>36. Will a member of your family take on the management of the farm after you retire? <i>(If not planning to retire enter 'unknown', for holdings with manager or succession not possible use 'Not Applicable')</i></p> <p>Definitely (1) Possibly / undecided (0.75) Unlikely (0.50) Definitely not (0) Not applicable (0)</p>		
		37. To what extent does your succession situation affect your current environmental decision-making?	37. To what extent does your succession situation affect your current environmental decision-making in relation to joining/continuing in AES?	





		<ul style="list-style-type: none"> <li>-High effect</li> <li>-Low effect</li> <li>-No effect</li> <li>-Don't know</li> </ul>	<ul style="list-style-type: none"> <li>-High effect</li> <li>-Moderate effect</li> <li>-Low effect</li> <li>-No effect</li> <li>-Don't know</li> </ul>	
<b>CE_02</b>	<b>Lifecycle stage</b>			
2.1	Lifestage of farmer	<p>38. Which of these statements reflect your current business stage? (<i>choose one only</i>)</p> <ul style="list-style-type: none"> <li>I am reducing the size/intensity of the business</li> <li>I am maintaining the business without major changes</li> <li>I am growing/intensifying the business</li> <li>I am diversifying the business</li> <li>I am selling the business</li> <li>I don't know</li> </ul>	<ul style="list-style-type: none"> <li>I am reducing the intensity of the business (1)</li> <li>I am diversifying the business (0.75)</li> <li>I am maintaining the business without major changes (0.50)</li> <li>I an intensifying the business (0.25)</li> <li>I am selling the business (0)</li> </ul>	
<b>CE_03</b>	<b>Farmer education</b>			
3.1	Level of formal education	<p>39. What is your level of formal education?</p> <ul style="list-style-type: none"> <li>-Full Secondary Education (up to 14/16 years old) (0)</li> <li>-Further Education (16 years old plus) (BTEC, City and Guilds, NVQ 3+ or HNC) (0.50)</li> <li>-Higher Education (18 years old plus) (HND, Degree, Master Degree or PhD) (1)</li> </ul>		
<b>CE_04</b>	<b>Farm tenure</b>			





4.1	Tenure status	<p>What proportion of the land that you farm is:</p> <table border="1" data-bbox="595 268 1144 628"> <thead> <tr> <th data-bbox="595 268 978 325">Tenure</th> <th data-bbox="978 268 1144 325">%</th> </tr> </thead> <tbody> <tr> <td data-bbox="595 325 978 381">Owner-occupied</td> <td data-bbox="978 325 1144 381"></td> </tr> <tr> <td data-bbox="595 381 978 477">Rented in - Tenanted (at least 1 year)</td> <td data-bbox="978 381 1144 477"></td> </tr> <tr> <td data-bbox="595 477 978 572">Rented in - Short-term agreements (less than 1 year)</td> <td data-bbox="978 477 1144 572"></td> </tr> <tr> <td data-bbox="595 572 978 628">Contract / share farming</td> <td data-bbox="978 572 1144 628"></td> </tr> </tbody> </table> <p data-bbox="551 668 1310 735">40. If you rent land, would you say you share the same goals as your landlord?</p> <p data-bbox="517 767 824 940">Yes, completely the same Yes, somewhat the same No, somewhat different No, completely different Don't know/ not sure</p>	Tenure	%	Owner-occupied		Rented in - Tenanted (at least 1 year)		Rented in - Short-term agreements (less than 1 year)		Contract / share farming			
Tenure	%													
Owner-occupied														
Rented in - Tenanted (at least 1 year)														
Rented in - Short-term agreements (less than 1 year)														
Contract / share farming														
CE_05	Resilience													
5.1	Response to challenging situations	<p data-bbox="501 995 1285 1062">41. Please answer on a scale of 1 (strongly disagree) to 5 (strongly agree). (0-1)</p> <ul data-bbox="501 1062 1285 1246" style="list-style-type: none"> <li>-After something challenging has happened, it is easy for my farm to bounce back to its current profitability</li> <li>-I find it easy to get back to normal after a set back</li> <li>-A big shock will not heavily affect me, as I have enough options to deal with shocks on my farm</li> </ul>	<ul data-bbox="1330 995 1991 1278" style="list-style-type: none"> <li>-After something challenging has happened, such as poor crop yield/flooding/etc, it is easy for my farm to bounce back to its current profitability</li> <li>- I find it easy to get back to normal after a set back, such as a health issue</li> <li>- A big shock on the farm, such as for example a fall in crop prices/disease issue, will not heavily affect me, as I have enough options to deal with shocks on my farm</li> </ul>											
		<p data-bbox="501 1283 1308 1350">42. As a result of joining an AES has there been a change in response to how you bounce back from challenging situations?</p>												





		Harder to bounce back Easier to bounce back No change in ability to bounce back Don't know/not sure		
<b>CE_06</b>	<b>Agency</b>			
6.1	Sense of control over your agreement	43. How much do you agree or disagree with the following statement?  a. "I have a very high level of influence over the decisions that affect my farm business?"  b. "As a result of joining an AES my level of influence over the decisions that affect my farm business has decreased?"	b. "I have concerns about how my scheme affects the level of influence over the decisions that affect my farm business"  Strongly agree Agree Neither agree or disagree Disagree Strongly disagree	

	Sub-indicators - <i>Quality of engagement – level of engagement with others (LC)</i>	Questions	Suggested changes to question	
<b>LE_01</b>	<b>Bonding social capital</b>			





1.1	Extent of group working	44. How many farming groups or networks are you a member of?		
		45. In how many of these farming groups or networks do you have any responsibility, such as being a committee member, raising funds, organizing events or admin work?		
1.2	Extent of collaborative working	46. In the past 6 months, have you helped out a farming neighbour? -Yes / No/ Just moved into the area  47. And, in the past 6 months, have any of your farming neighbours helped you out?  -Yes /No/ Just moved into the area	In the past 6 months, how many farming neighbours have helped you out, if any?  And, in the past 6 months, how many of your farming neighbours have helped you out, if nay?  4+ (1) 3 (0.75) 2 (0.50) 1 (0.25) 0 (0)	
1.3	Extent of information/knowledge sharing	48. Typically, how frequently do you share information or knowledge with other farmers (e.g. face-to-face, phone, email, social media)  Once a week Once a month Once every 3 months Once every 6 months Once a year Less than once a year Never		
		49. As a result of joining AES, to what extent, if at all, has the level of working with other farmers increased or decreased:  Greatly increased (1) <b>Some increase (0.75)</b>	<ul style="list-style-type: none"> <li>As a result of joining AES, to what extent, if at all, has <b>your</b> level of working with other farmers increased or decreased</li> </ul>	

		<i>No change in level of working (0.50)</i> <i>Some decrease (0.25)</i> <i>Greatly decreased (0)</i>		
1.4	Level of social trust	50. Generally speaking, would you say that people can be trusted?  -People can almost always be trusted (1) -People can usually be trusted (0.75) -You usually can't be too careful in dealing with people (0.50) -You almost always can't be too careful in dealing with people (0.25) -Can't choose (0)		
		51. Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all? -Your family -Other farmers in the local area -Your landlord (if applicable) -Your local community		
		52. To what extent has joining the AES changed your level of trust towards the following groups? Greatly increased (1), slightly increased (0.75), no change (0.50), slightly decreased (0.25), greatly decreased (0)  -Your family -Other farmers in the local area -Your landlord (if applicable) -Your local community		
		53. How much trust do you feel there is between farmers in the country/ in your local area? -Very high -High -Moderate -Low	Recommend removing as considered too broad a question	





		-Very low		
LE_02	<b>Bridging social capital</b>			
2.1	Engagement in non-agricultural networks	54. How many non-farming groups networks are you a member of?		
		55. In how many of these non-farming groups or networks do you have any responsibility, such as being a committee member, raising funds, organizing events or admin work?		
		56. In the past 6 months, have you done a favour for a non-farming neighbour? Yes/No/Just moved into the area (1/0/0) 57. And, in the past 6 months, have any of your non-farming neighbours helped you out? Yes/No/Just moved into the area (1/0/0)	In the past 6 months, how many non-farming neighbours have you done a favour for, if any?  And, in the past 6 months, how many of your non-farming neighbours have helped you out, if nay?  4+ (1) 3 (0.75) 2 (0.50) 1 (0.25) 0 (0)	
2.2	Engagement with general public	58. Do you engage with the general public in relation to any of these farming activities  Open Farm Sunday, Social media, Tourism accommodation – camping B&B Tourism activity School visits Other educational visits Public rights of way FaceTime a farmer Etc		





		<p>59. To what extent, has joining the AES increased or decreased your <u>level of contact</u> with: Other farmers/ General public</p> <p>Greatly increased Slightly increased No change Slightly decreased Greatly decreased</p>	<p>Additional question:</p> <ul style="list-style-type: none"> <li>If increased contact to what extent has this been a positive or negative experience with Other farmers/General public</li> </ul> <p>Very positive experience (1) Slightly positive experience (0.75) Positive and negative experience (0.50) Slightly negative experience (0.25) Very negative experience (0)</p>	
2.3	Public acknowledgement	<p>60. How important is it for you to be recognised by the public for your AES work?</p> <p>-Very important -Important -Slightly important -Not important at all</p>		
		<p>61. To what extent, if at all, have you been acknowledged by members of the public for your work in delivering environmental benefits?</p> <p>High levels of acknowledgement Moderate levels of acknowledgement Low levels of acknowledgement No acknowledgement</p>	<p>Additional question: How has such acknowledgement been shown?</p>	
LE_03	Linking social capital			
3.1	Relationship with government	<p>62. How often do you communicate with government agencies:</p> <p>-On a regular basis &gt;7 times a year -Fairly regularly 4-6 times a year -Some communication from time to time 2-3 times a year -Minimal communication – might communicate once a year</p>	<p>How often do you communicate with the farming government agencies, such as Natural England, RPA, Defra?</p>	







		-Does not communicate at all - other than receiving through the post		
3.2	Level of social trust in government	<p>Could you tell me for each whether you trust people from this group completely, somewhat, not very much or not at all?</p> <p>-Defra/Natural England -Political parties</p> <p>To what extent has joining the AES changed your level of trust towards the following groups? Greatly increased, slightly increased, no change, slightly decreased, greatly decreased</p> <p>-Defra/Natural England -Political parties</p>	<p>-Local Natural England -National Natural England -RPA -Defra</p> <p>-Local Natural England -National Natural England -RPA -Defra</p>	
<b>LC_04</b>	<b>Cultural capital</b>			
4.1	Respect amongst peers	63. How do you think you are perceived by other farmers?		
	Change in cultural acceptability	<p>64. Since you joined, has engagement in an AES become more or less acceptable within the farming community?</p> <p>Greatly increased acceptance (1) Some increased acceptance (0.75) No change in acceptance (0.50) Some decreased acceptance (0.25) Greatly decreased acceptance (0)</p>		
4.2	Do they advise other farmers?	<p>65. Since joining AES, to what extent, if at all, do other farmers come to you for advice about AES implementation</p> <p>-Frequently -Occasionally</p>		


		-Never		
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	Indicators & Sub-indicators - <i>Quality of life (SS)</i>	Questions	Suggested changes to question	Action
QL_01	Employment and working conditions			
1.1	Holiday days	66. How often do you take a holiday? -More than once a year -Once a year -Less than once a year -Never	How many days of holiday do you take a year? Or how many days a year do you get away from the farm 0-7 (0) 7-14 (0.25) 14-21 (0.50) 28-35 (0.75) 36+ (1)	
1.2	Extent of off farm working	67. How many hours a year do you work off farm a year ( <b>annual working hours</b> )	Recommend removing this question as too complicated to quantify for piecemeal seasonal contracting work	
1.3	Average Peak working hours	68. On average how many hours do you work a day during peak times in the year? (daily working hours)		
		69. <i>To what extent, if at all, has your involvement in AES increased or decreased</i>  <i>Number of holidays you've taken?</i> <i>Extent of off farm working?</i> <i>Average Peak working hours on the farm</i>		

QL_02	Job satisfaction			
2.1	Work-life balance	70. How satisfied are you with your work-life balance? -Completely satisfied -More than satisfied -Satisfied -Less than satisfied -Not satisfied at all		
2.2	Being a farmer	70. How satisfied are you with being a farmer? -Completely satisfied -More than satisfied -Satisfied -Less than satisfied -Not satisfied at all	How satisfied are you with being a land manager?	
2.3	Freedom of decisions	70. How satisfied are you with your freedom of decision making? -Completely satisfied -More than satisfied -Satisfied -Less than satisfied -Not satisfied at all		
		71. To what extent has your involvement in AES affected your satisfaction with:  your work-life balance? being a farmer? your freedom of decision-making? your overall quality of life?	Being a land manager  Additional question: To what extent, if at all has your involvement in AES made your job more enjoyable Greatly increased enjoyment Some increased enjoyment No impact on enjoyment	

			Some reduced enjoyment Greatly reduced enjoyment	
QL_03	Quality of life			
3.1	Quality of life	70. How satisfied are you with your quality of life? -Completely satisfied (1) -More than satisfied (0.75) -Satisfied (0.50) -Less than satisfied (0.25)  -Not satisfied at all (0)		
		71. To what extent has your involvement in AES affected your satisfaction with: your overall quality of life?		

	Indicators – Health & Wellbeing (HW)	Questions	Alternative questions	
HW_01	Happiness			
1.1		72. Taking all things together, how happy would you say you are at the moment?		
		73. Overall, to what extent do you feel that the things you do in your life are worthwhile?		
HW_02	Physical & mental health			

2.1		<p>74. How is your:</p> <p>a. physical health in general, would you say it is:  Very good (1)  Good (0.75)  Fair (0.50)  Bad (0.25)  Very bad (0)</p> <p>b. mental health in general, would you say it is:  Very good (1)  Good (0.75)  Fair (0.50)  Bad (0.25)  Very bad (0)</p>		
HW_03	Stress levels			
3.1		<p>75. To what extent, if at all, have your stress levels increased or decreased as a result of</p> <p>Workload due to your AES agreement?  AES administration and bureaucracy?  AES inspections  Financial issues as a result of your AES agreement  Family conflicts as a result of your AES agreement  Environmental enjoyment as a result of your AES agreement</p>	<p>Consider asking the last question separately.</p> <p>To what extent have you experienced enjoyment as a result of undertaking environmental activities that are part of AES?</p>	