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Assessing the Landscape Recovery Scheme in the UK: a Q methodology study in Yorkshire, UK

Emmanouil Tyllianakis

University of Leeds (UK)

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Abstract

Embedded within the European Union's Green Deal is a re-enforced scope to encourage farmers' participation in primarily voluntary agri-environmental schemes. Although outside of the European Union, the newly announced agri-environment schemes in England mirror such a policy shift towards incentivising participation in order to deliver more and better climate public goods. Farmers' viewpoints regarding such schemes and contracts are therefore important to examine, as they should be main determinants of current and future enrolment. In this paper, upland Yorkshire farmers were asked to express their opinions for the Landscape Recovery scheme that aims to encourage collaboration and achieve landscape-wide interventions to ensure lasting delivery of climate public goods. Viewpoints show divergent views between environmentally conscious farmers and pragmatic farmers objecting to the functioning of agri-environmental schemes. Farmer viewpoints lean towards 'broad and shallow' schemes that would have simple contract requirements and only achieve marginal gains in the delivery of agri-environmental climate public goods while still showing concern about the natural environment and its impact on farming.

Keywords: agri-environment schemes; Q methodology; Environment Land Management scheme; Landscape Recovery.

JEL codes: R58 R51 Q18

Corresponding author: Emmanouil Tyllianakis, E.Tyllianakis@leeds.ac.uk.

Highlights:

- Viewpoints were rather diverse despite the similarities in land use and experiences
- Farmers' viewpoints agreed more when identifying scheme goals that were undesirable
- Farmer-friendly schemes coupled with environmentally-friendly goals were desirable
- Socio-environmental issues emerge in viewpoints as inhibitors of potential enrolment

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1. Introduction

To carry out climate actions in the agricultural sector the European Commission has published its Green Deal aiming to utilise 40% of the Common Agricultural Policy budged for the 2021-2027 period for this purpose (European Commission, 2019). These climate actions include the "Farm to Fork" strategy (Scown et al., 2020) and incentivising participation to agri-environmental climate schemes (AECSs) through means of direct income and financial support (Hasler et al., 2022). The ultimate goal for the European Union's agriculture is to become carbon-neutral by 2050 (European Commission, 2019) and in the intermediary, devote 25% of its budget to eco-schemes (now part of the more heavily financed Pillar I of the new CAP) and link payments to mandatory environmental and biodiversity requirements of the new CAP period of 2023-2027 (European Commission, 2022).

Participation in these (primarily) voluntary AECSs is determined by a variety of factors, including farmer characteristics (Unay Gailhard et al., 2015), motivations that include financial components (Lastra-Bravo, et al., 2015) and environmental inclinations (Dessart et al., 2019) and the scheme's characteristics (Tyllianakis and Martin-Ortega, 2021). Of particular interest when evaluating AECSs are determinants of farmer behaviour, driven by pre-existing concepts and viewpoints (Muhar et al., 2018). Empirical approaches to assess and find common patters in viewpoints regarding agriculture, environmental management and stewardship and types of AECSs are becoming more pronounced in the literature (e.g., Walder and Kantelhardt, 2018; Iofrida et al, 2018; Braito et al, 2020; Norris et al, 2021), recognising the important role that the plurality of viewpoints across a topic play.

This study aims to examine and analyse viewpoints concerning a soon-to-be introduced AECS in a country (England) that still is influenced by CAP concepts and has laid out ambitious environmental goals for AECS and the future of farming in the country. It aims to determine whether groups of farmers with similarities concerning their farm type and experience in

collaborative AECS are positively inclined towards new and ambitious AECS currently rolled out in England. By using the semi-structured survey method of Q methodology I present the viewpoints of a specific, geographically-explicit group of UK farmers around the adoption of the newly introduced Landscape Recovery scheme. This is examined in a sample of Yorkshire farmers, members of the Countryside Stewardship Facilitation Fund (CSFF) scheme with past experience in collaborating and sharing knowledge around land stewardship. By doing so I find several patterns in viewpoints of upland farmers in Yorkshire, involved mainly in sheep and beef farming and depending on government subsidies for their income, regarding the operationalisation of the scheme in the lands they manage. I also identify two main typologies of drivers; practical and related to implementation concerns characterise one group of participants while social and environmental concerns are of interest in the other two groups. The paper next presents the method used and reviews past literature of relevance to this application (Section 2). Section 3 describes the case study locations while Section 4 describes the data collected. The results of the Q methodology are presented in Section 5 and Section 6 discusses the findings relating to the implementation of AECS and the delivery of agri-environmental climate goods in the UK and offers some concluding remarks relevant to policy-making.

2. Literature review

The method of analysis chosen in this paper is Q methodology. It stems from the field of psychology and has seen a steady increase in its use through the years, starting from the mid-1950s (Stephenson, 1953) and recently has seen increased application in social sciences (Akhtar-Danesh et al, 2009). In its core, Q methodology systematically studies subjectivity on a particular topic (Brown, 1993) by identifying patterns within the discourse, as broadly and accurately as possible, of a particular topic (Doody et al., 2009). The researcher is responsible for presenting the full range of opinions in an activity and as such the approach is inherently

subjective (Vecchio et al, 2022) and therefore more suitable to analyse attitudes towards a topic (Cross, 2005). Nevertheless, subjectivity is mediated by the researcher presenting recognised points of view to participants instead of an existing framework (Barker, 2008). Potential viewpoint patterns are analysed through factor analysis over small sample sizes (Davies and Hodge, 2007; Taheri et al., 2020). Of particular interest to researchers are patterns such as relationships between participants who have similar rankings of statements (i.e. similar attitudes) that represent the full discourse on a topic (Borthwick et al, 2003).

Q methodology has seen extensive application in surveys of farmers since the 1990's (e.g., van der Ploeg, 1992; Fairweather and Keating, 1994; Vanclay et al, 1998) and in particular post-2000 with farmers being the 5th largest group of stakeholders examined in the socio-environmental research literature employing the same methodology (Sneegas et al., 2021). Research amongst farmers is extremely rich and has focused on a plethora of issues. Such issues, for example, refer to determining generic views of farming (e.g., Fairweather and Keating, 1994), environmental management of agricultural land (Davies and Hodge, 2007) and farmers self-identity (Zagata, 2010). Identifying types of farmers based on viewpoints and beliefs is also of major interest in the literature which has focused on classifying farmers' identities (Cullen et al., 2020), farmers' ideologies or perspectives (Braito et al, 2020; Walder and Kantelhardt, 2018), farmer archetypes based on sociodemographic, psychological and structural characteristics (Leonhardt et al, 2022) or decision-making preferences related to the farm (Barbosa et al, 2020; Braito et al, 2020).

While studies focusing on environmentally conscious farming are more numerous, a small number of studies exists in the literature investigating the viewpoints of farmers regarding agri-environment schemes. Norris et al., (2021), for example, find that reliance on ecosystems (peatland) determines one type of viewpoint while lack of land ownership makes participants more inclined to adopt pro-environmental behaviour. Visser et al., (2007) find that current use

of a protected ecosystem in Ireland strongly influences differences in viewpoints between farmers and non-farmers regarding conservation approaches. Iofrida et al., (2018) report that farmers identify with concepts of modernising agricultural practices while emphasising the importance of protecting the environment in olive grove farming. Walder and Kantelhardt (2018) used a Q methodology approach to assess the views of Austrian farmers regarding specific agri-environmental schemes and found farmers' viewpoints combining environmental stewardship characteristics, appreciation of ecosystems as part of culture and placing less importance on generating income. Q methodology outcomes of types of farmers have also been used in quantitative studies to predict adoption of agri-environment schemes (e.g., Leonhardt et al, 2022).

3. Case study description

This study focuses on two similar (in terms of farming activities and landscape) but also distinct CSFF groups in Yorkshire (in terms of size and financial and development opportunities in the wider area) of land managers. The study offers several insights into viewpoints for AECS, the role of farmer groups and facilitators and their impact. A sizeable portion of the (small) funds allocated to CSFF groups is assigned to fund the activities of a local group lead who can be either a farmer or a farm advisor. Such group leads are expected to encourage group participation, provide support in funding acquisition endeavours and training activities, amongst other duties. As a concept, collaborative groups of farmers, led by specific individuals can support "cultural and social capital" creation (Burton and Paragahawewa, 2011). Furthermore, established and well-functioning groups of land managers should influence implementation of AECS while reducing individualistic and un-coordinated approaches to farming (Riley et al., 2018), further strengthened by the role of intermediaries and advisors (Prager, 2015; Riley et al., 2018). As explained in the following sections, the two selected groups have been operating for several years, attracting an increasing number of engaged

farmers, involved in several nature recovery and enhancement projects and steered by locally based group leads. Overall, these two groups should offer valuable insights when evaluating the Landscape Recovery scheme and inform potential uptake from such types of farmers.

3.1. Agri-environmental public goods post-Brexit in the UK

A UK case study is used, focusing on Yorkshire which contains large number of farmers, to examine the viewpoints on the innovative concepts the UK is introducing in its agri-environmental policy, with agri-environmental climate goods delivery being prioritised (Bateman and Balmford, 2018; Reed et al., 2020).

As the UK leaves the EU, increasing attention is being paid to the future design of national environment policy. Following the recent publication of the 25 Year Environment Plan and England's first Agriculture Bill for over 70 years (UK Parliament, 2020), the devolved administrations are consulting on and developing their own policies and strategies. In England's Agriculture Bill and the consultations run by each of the devolved administrations, proposals are being made to replace the current subsidy system of 'Direct Basic Payments' to farmers, which is based on the total area of land farmed, with a system based on "public money for public goods" (Defra 2021a). There is therefore a unique opportunity to re-evaluate existing options and prioritise funding towards interventions that are more likely to deliver public goods.

As all existing direct basic payments are to be phased out over the Transition Period (2021-2028), (Defra, 2020). ELMs are being positioned to be the main source of future 'financial assistance' to UK's farmers. At the time of design of this study, ELMs were conceived by the Department of Environment, Food and Rural Affairs (Defra) as a three level system with varying degrees of complexity and environmental and biodiversity targets (Defra, 2020). The first level was broadly described to fund the 'broad and shallow' land activities through the

Sustainable Farming Incentive (SFI), which will pay farmers for actions (Defra, 2021), to continue supporting direct payments in farming. The other two levels are designed as being focused more on 'narrow and deep' AECS, under which farmers would be paid for outcomes (Defra, 2018) entailing higher demands from land managers, coupled with higher desired environmental results. These two highest levels were to include elements of collaboration, as well as different and increasing suggested means of monitoring of results and scope of deliver public goods. The Landscape Recovery scheme is the most ambitious of the ELM schemes, envisioning collaboration between land managers and landholders and landscape-wide interventions and benefits. A Test and Trials phase for trialling characteristics and goals of possible Landscape Recovery projects is taking place between 2021 and 2022, across England (Defra, 2021b).

3.2. Esk valley farmer group

The Esk Valley Countryside Stewardship Facilitation Fund (CSFF) network consists of a large group of upland and lowland farmers with common interests in improving water and soil quality within the Esk river catchment. Farmers have joined the group to explore ways of supporting their farm income through providing evidence of environmental services they already provide (carbon storage, natural flood management etc.) in the face of a changing domestic and European agricultural policy.

The CSFF is focused on the environmental and ecological aspects of the catchment, specifically from the perspective of those farming and managing the land (Defra, 2017). The CSFF aims to support efforts by the Esk Pearl Mussel and Salmon Recovery Project to re-introduce the Pearl Mussel to bolster the remnants of the existing population, through improving the water quality in the river. For this iconic species 'good' is not good enough, pristine conditions are required. This needs collective action from farmers in both upper and lower reaches of the catchment to reduce pollution and sedimentation problems (Defra, 2017). There is a long history of action

in the River Esk catchment seeking to improve its ecological status so that an iconic species previously found in the river, the Freshwater Pearl Mussel, does not ultimately go extinct (Schaller et al., 2020).

The CSFF network covers the whole catchment and 30% of the land area (10,514 hectares, both in upper and lower reaches) is farmed by CSFF network members (59 members) (Defra, 2017). A key focus is what can be done to improve water quality across the catchment, especially as it is a salmon and trout river and sediment in the water is a major factor in the lack of recruitment of juvenile migratory fish (Defra, 2017). Water quality is generally good across the catchment and of Good Ecological Status according to the Water Framework Directive apart from one exception (Schaller et al., 2020). Many other additional environmental improvements have been added: sedimentation, nitrate and phosphate pollution due to the agricultural and farming activities in the area, and complement the main focus – for example waders benefit from the network tackling issues of water quality (Schaller et al., 2020). The majority of the land is under Good Ecological Status according to the Water Framework Directive while the pH is 6.0 for more than 68% of the Esk grasslands (compared to 53% for the whole of the U.K.) (Schaller et al., 2020).

The area encompassed by the Esk Valley CSFF is the Esk Catchment that extends from the source of the Esk all the way to the sea at Whitby (Defra, 2017). This means the catchment includes a range of land types from heather moorland to arable fields, areas classified as Site of Specific Scientific Interest (SSSI), Special Area of Conservation (SAC) and Special Protection Areas (SPA) to highly intensive farmland. There is little woodland in the region, less than 13% of the total region, mainly in linear strips (Schaller et al., 2020). As the area falls within the iconic National Park and its traditional landscapes so another aim is to address the disconnect between maintenance of these landscapes and the system to reward this. Farmers joined the CSFF with a two-fold intention: to see environmental improvements and economic

benefits increase from the ongoing and expanding environmental management in the Esk catchment (Defra, 2017). The group and its activities were key in Esk Valley Farmers working with the National Parks Authority (NPA) to submit a successful bid for £300k of capital works plus advice programme (Schaller et al., 2020).

In terms of sociodemographic characteristics of the sample, the upper reaches there are moorland hill flocks of sheep and herds of beef cattle. Lower down in the valley dairy farms are seen; over time there has been a shift to smaller numbers of large dairy farms (Schaller et al., 2020). There are some small pockets of arable land in the valley and potatoes are typically grown. The farms tend to be small compared to the average size of farms in the Yorkshire Dales; the average farm size is about 100 hectares while there are 7-8 big dairy farms in the CSFF group. The farms are a mixture of owner-occupied and tenanted and this is mixed across the whole catchment. Farms belonging to the group cover approximately 1/3 of the whole Esk catchment (Defra, 2017). Large numbers of the farmers are reliant upon farm subsidies and agri-environmental scheme to stay in operation, and many of the farmers also have second jobs (Schaller et al., 2020).

3.3. South Pennines farmer group

The South Pennines Farmers CSFF network is a large network of farmers from the wider Yorkshire area benefiting from the support and active involvement of local government agencies aiming to bring farmers and land managers together, with support from governmental agencies to better deliver AECS. In particular, facilitate knowledge exchange between farmers and provide information on how to better manage the local ecosystems especially under the threat of extreme weather events such as the damaging floods of 2015 (Defra, 2016). The group is comprised of a number of participants with homogeneous interests, land holdings and farm activities and farm holdings are found in mainly upland areas with the majority of the

farmers depending considerably on farm subsidies and AECS to supplement farm income (Schaller et al., 2020).

The South Pennines Farmers CSFF network was set up initially in 2015 with the purpose to deliver and explore how they can improve delivery of several key environmental benefits in the wider catchment area (Defra, 2016). Group members' land holdings are in the proximity of Special Protection Areas (SPA), Special Areas of Conservation (SAC) and the South Pennines Moor Site of Special Scientific Interest (SSSI), which is both expected to have beneficial impact on environmental quality of services and to be benefited from improvements in land management (Defra, 2016). Given the relatively high altitude (approximately 400m above sea level) of the land holdings the interest of farmers revolved around moorland restoration and enhancement, grassland habitat creation, and enhancing and expanding riparian habitats to benefit flood risk management and water quality while considering afforestation practices as well (Schaller et al., 2020). Soil quality and acidity result in grass quality not being enough for sheep to grow properly. Farmers in the group do not engage in any organized forestry and woodlands within the land holdings of members are currently unmanaged. It is early to see whether participation in the network and the actions it supports has produced tangible outcomes for the environment (Schaller et al., 2020).

The majority of the South Pennines Farmers CSFF network farmers have small holdings (average size is 30 hectares) and are involved in sheep and beef farming while there are no dairy farmers or arable/mixed farmers in the network either (Defra, 2016). Given the grass quality, sheep are being sold elsewhere for fattening which results in lower market prices for the local farmers. As a result, farmers have been engaging in other economic activities to supplement their farm income with the majority of network members having such "out-of-farm" income (Schaller et al., 2020). The low price of beef is also resulting in reduced farm income. Additionally, farmers in the area have been dependant in income from various

environmental management schemes, mainly the Basic Payment Scheme (on average, 75% of farm income comes from payment schemes) (Schaller et al., 2020). The majority of the farms are not rented. From all farming activities in the wider Yorkshire area, the activities that the CSFF members partake (grazing livestock) is by far the least profitable one, generating £19.3k per year, lower than the England average (Defra, 2019). Grazing livestock in upland areas is the activity that the vast majority of farms in the West Yorkshire area (where the network's farmers are located) are engaged with.

Farmers in the group have seen a decline in farm income while intensification of weather events (such as the floods of 2015 and the recent (2019) floods that impacted West Yorkshire, in particular, with some lowland areas still recovering and undergoing rebuilding) stress the importance of proper land management in adjacent lands, making land abandonment a real future threat. Farmers see themselves, and are seen by other actors in the economy, as vital partners and providers to environmental goods and services that support climate change mitigation and adaptation while safeguarding income and lives. As a result, the grouping of farmers such as the specific CSFF network has allowed for the procurement of funding for a local council (Calderdale Council) to address flood issues and explore flooding measures such as Natural Flood Management (NFM), following the 2015 floods (Schaller et al., 2020).

4. Data

4.1. Workshops

Two workshops took place in Yorkshire in March (Whitby) and May (Hebden Bridge) 2022. The Q-method was part of further data collection through questionnaires, data from which were not used in the analysis and they are not presented here. These questions assessed the knowledge of participants concerning Landscape Recovery and their interest in participating in agri-environmental schemes in general. They were followed by a list of open-ended

questions where participants were asked about types of agri-environmental activities, their priorities regarding public good provisioning and how participants achieve farm production and delivery of public goods and finally assess any changes in knowledge and intentions to participate in agri-environment schemes.

The first workshop attracted 19 participants with all but two being farmers (the remaining participants were members of local government agencies and farmer advisors). The majority of the participants are quite active in participating in farmer meetings and only a small number of participants did not attend regularly farmer meetings organised in the general Whitby area or organised through the now-discontinued Esk valley CSFF group (which was comprised by a group of approximately 30 farmers). 14 complete Q-sorts were collected and analysed in the first workshop[1]. The second workshop attracted 15 participants, with all being farmers and members of the South Pennine Farmers CSFF group and regular attendees to farmer meetings and discussions through the years. This CSFF group reached a total number of approximately 60 members before it was discontinued but former participants still meet regularly and have contact with the group lead. Similar to the Esk valley CSFF group, the CSFF group of South Pennine farmers' legacy is the continued involvement of several of its members in aspects of land management in their area. Each meeting took approximately two hours in total to be completed. Only Q-sorts carried out individually were included in the analysis, Q-sorts that were completed collectively were excluded, as were Q-sorts from non-farmers. This approach was followed to ensure consistency in viewpoint expression.

[1] Questionnaire collection was fragmented with some participants not filling in the second questionnaire and with few not filling in them at all (also due to late arrivals). Some questions in the pre-workshop questionnaire were left unanswered from the farmers when some terms were not explained to them. For example, some questions in the pre-workshop questionnaire asked about ELMs Landscape Recovery but several farmers indicated that the workshop was the first time they heard about the term, and this was also one of their main reasons for attending and therefore more missing data exist.

4.2. Q methodology data

In order to understand better the viewpoints of land managers that participated in the two workshops, the Q methodology was used. Q methodology groups survey participants in distinct groups (sometimes called “factors”) based on differences and similarities in their ranking of statements within a sample of statements, called the Q-set. After the participants rank-order the statements presented to them to their individual Q-sorts a quantitative analysis through factor analysis can take place (Taheri et al., 2020). Additionally, Q methodology allows for finding statements that participants had a consensus opinion on; either positive or negative one, and therefore are not part of the aforementioned groups of statements. Overall, Q methodology enables assessing common drivers and characteristics of survey participants for a specific topic. In this case, it allows to determine how opinions on contract, socio-economic, environmental and legal characteristics of Landscape Recovery groups Yorkshire upland land managers in distinct groups. Such statements need to be representative of the variety of opinions around the topic to allow for agreement and disagreement around them. See the next section for a detailed description of the Q-set formulation.

Following Sneegas et al, (2021)’s ‘best practice’ recommendations, below I present the development of the Q-set. To this end, a list of statements covering several aspects was produced through consultation with official documents describing the Landscape Recovery scheme, loosely based on a Political, Economic, Sociological, Technological, Legal and Environmental (PESTLE) analysis related to potential agri-environmental contract solutions between farmers from 13 case studies in Europe (Hamunen et al., 2022). Aspects considered relate to four different topics relating to AEPCSs: First, contract aspects (PO) (e.g., whether the 20-year length of Landscape Recovery is feasible for the participant, the availability of training as part of costs covered in the scheme, the requirement to collaborate with adjacent farms or whether compensation should cover income foregone etc.). Second, environmental

aspects (EN) (e.g., scheme supporting climate change adaptation goals in the UK, scheme supporting wider delivery of public goods, etc.). Third, socio-economic implications of the scheme (EC and SO) (e.g., participation in the scheme reducing income uncertainty for farmers, scheme fitting different farm types and levels of income, scheme increasing the visibility and appreciation of farmers for delivering public goods etc.). Finally, policy-oriented aspects (LE and TE) (e.g., how well does the Landscape Recovery scheme fit with wider UK policy, how well the Landscape Recovery scheme fits with the participant's farm goals etc.). This resulted in 25 statements that were tested in a separate farmer workshop with 13 participants from north Yorkshire (including participants from the Esk valley and South Pennines CSFF groups) in February 2020. That workshop included a Q methodology and discussion afterwards on the statements and method itself. This helped to finalise phrasing and inclusion/exclusion of statements. The 22 final statements were then presented in the two workshops in the Esk valley and South Pennines in the form of laminated cards to participants, and they were asked to place them in a grid (turning the Q-set into a Q-sort). Statements placed in the extreme left were the ones that participants disagreed with most/did not interest them at all and those in the extreme right those with the opposite effect. The full list of the 22 statements is presented in Table 1 below. The Q-grid used is available in the Appendix.

Table 1: list of the Q-concourse items

Statement	**Coding**
Contract Aspects (PO)	
Farmers' training and guidance should be eligible cost in the scheme	PO1
The scheme should deliver environmental goods and services by farmers, beyond biodiversity and carbon/climate benefits	PO2
Scheme must have a low level/amount of bureaucracy	PO3
Allow support from skilled authorities and intermediaries in aiding farmers in the implementation of schemes	PO4
Environmental aspects (EN)	

Adaptation to climate change (e.g. change practice/crops, irrigation systems) must be addressed by the scheme	EN1
Mitigation of climate change (e.g. reducing flood risk, sequestering carbon) must be addressed by the scheme	EN2
Scheme must take into account unpredictability of nature and the limited possibility for farmers to guarantee results	EN3
Scheme objectives acknowledge spatial and regional differences of environmental conditions across England	EN4
The contract of Landscape Recovery scheme should be 20 years or longer as there is a long period from action to result	EN5
Socio-economic (EC and SO)	
Financial compensation for participation in the scheme should follow cost incurred/income forgone	EC1
Landscape recovery should reduce financial risk and uncertainty of income for farmers	EC2
Scheme should support better visibility (appreciation, recognition) of farmers' work in providing environmental benefits	SO1
It is important for the scheme to support cooperation with others (stakeholders, neighbours, farmer unions)	SO2
Farmers' awareness and knowledge of environmental issues increases through participating in scheme	SO3
The Landscape Recovery fits all different farmer and farm characteristics: education, age, size of farm, tenancy	SO4
Policy (legal and technological aspects) (LE and TE)	
The ELMs and Landscape Recovery in particular, are simple to understand from the material online	LE1
Large scale landscape recovery is compatible with existing laws, programs and UK policy	LE2
The national Landscape Recovery goals are compatible with your farming long term goals	LE3
There is good agreement between Landscape Recovery priorities and practical, achievable goals in your region	LE4
Scheme must require SMART (Specific, Measurable, Attainable and action-oriented, Relevant, and Time-bound) indicators	TE1
Scheme must be easy to apply and without complex monitoring implementation	TE2
Farmers have no time or money for implementing measures in other ELMs on offer	TE3

Each Q-sort took participants approximately 20 minutes to complete. Q-sorts were then analysed through factor analysis, using a varimax rotation, using the statistical software Stata (version 15.1) and the *qfactor* command (Akhtar-Danesh, 2018). Statements were distinguished between each other with the Stephenson's (1978) formula that allows for an

individual to be loaded on a factor of their score is statistically significantly different at the 95% level.

5. Results

In total, 25 Q-sorts were collected from the two workshops. After removing incomplete sorts (sorts where not all statements were placed within the grid, i.e., statements went missing) or Q-sorts that participants filled in in a collaborative manner, 16 Q-sorts were retained for analysis. Non-farmers were excluded from the analysis.

Results for a three-factor (discourse) solution can be seen in Table 2 below. 'Value' reflects the importance (from -4 to +4) an average participant loaded in a discourse placed on a specific statement. The three-factor solution explains 60% of the variance, higher than other Q methodology farmer studies (e.g., Iofrida et al., 2018) and was selected after comparing model fit with different number of factors and minimising consensus statements (Howard et al., 2016). Each of the three factors had an Eigen value higher than 2.8 and the three-factor solution had only two consensus statements compared to the 6 of the two-factor one. The higher the value participants in a factor placed on a statement, the higher the reported value in Table 2 below. Each Discourse had a similar number of Q-sorts loaded in it, with Q-sorts from Esk valley farmers loading mainly in Discourse 3 and 2 while Q-sorts from the South Pennines loaded equally in Discourse 1 and 2. The bottom of Table 2 presents statements (SO4 and LE3) that workshop participants had a consensus opinion on and as a result did not influence the grouping of participants in ether factor.

From the results of the Q methodology it appears that the workshop participants in Discourse 1 are concerned with practical, implementational characteristics when evaluating the prospect of enrolling in the Landscape Recovery scheme primarily, followed by environmental clauses embedded within the contract of the scheme. Offering training to farmers, guidance and support

and economic returns are important to them. These "pragmatic yet environmentally conscious" workshop participants have slightly different priorities with those grouped in Factor 2 (Discourse 2). Workshop participants grouped in Discourse 2 are more preoccupied with economic and implementational issues when considering enrolling in Landscape Recovery. In particular, these participants' viewpoints focus on the specifics of the scheme, in particular with respect to monitoring of results, low levels of bureaucracy and advice offered by skilled intermediaries. These "pragmatic" farmers appear less interested in environmental aspects of the scheme while being sceptical of how Landscape Recovery fits with their personal farming goals. Finally, participants' viewpoints in Discourse 3 showed a varied interest in environmental issues, compensation levels, minimising of financial and climate risk as goals of the scheme, as well as a desire to co-operate. These "risk-averse environmentalists" appear more interested in solutions that maximise farmers' income, training and welfare while minimising personal financial and climate-related risk. Such participants also appear to not find the Landscape Recovery's goals as attractive or feasible to them.

All groups of workshop participants appear to find the 20-year length of landscape Recovery as undesirable and consider the goals of Landscape Recovery as incompatible with existing UK laws. The results and ranking of statements (4 for "very important" to -4 for "not important at all") for each group of participants can be seen in Table 2 below. Workshop participants were in consensus regarding the uniformity of Landscape Recovery, either in terms of compatibility with personal farmer goals, or in terms of fitting all farmer types and profiles, as can be seen in the bottom part of Table 2. Both these statements did not differ significantly from discourse to discourse and both were seen as "neither important nor important".

Table 2: Relative importance for Landscape Recovery characteristics and aims for Esk and South Pennines land managers

Discourse 1 (Factor 1)			Discourse 2 (Factor 2)			Discourse 3 (Factor 3)		
Pragmatic yet environmentally conscious			Pragmatic objectors			Risk-averse environmentalists		
Label	**z-score**	**Value**	**Label**	**z-score**	**Value**	**Label**	**z-score**	**Value**
PO1	1.860	**4**	**PO1**	1.62	**4**	**EN1**	1.61	**4**
PO2	1.120	**3**	**EC2**	1.6	**3**	**TE2**	1.22	**3**
SO3	1.580	**3**	**PO3**	1.42	**3**	**EN2**	1.22	**3**
EN1	1.050	**2**	**TE1**	1.04	**2**	**EC2**	1.21	**2**
EN3	0.927	**2**	**PO4**	1.19	**2**	**SO2**	1.16	**2**
EC1	0.617	**1**	**SO3**	0.339	**1**	**PO1**	-0.021	**1**
LE1	-0.025	**1**	**EN3**	0.229	**1**	**SO3**	0.516	**1**
LE3	0.091	**1**	**LE3**	0.279	**1**	**EN3**	0.041	**1**
SO2	0.678	**1**	**TE2**	0.62	**1**	**SO1**	0.902	**1**
TE1	0.461	**1**	**EN2**	-0.165	**1**	**EN4**	0.63	**1**
TE3	0.003	**1**	**SO1**	0.639	**1**	**EC1**	0.313	**1**
EC2	-0.145	**0**	**EN1**	-0.586	**0**	**PO3**	-0.085	**0**
EN4	-0.099	**0**	**LE1**	-0.371	**0**	**TE1**	-0.538	**0**
LE2	-0.206	**0**	**TE3**	-0.252	**0**	**PO4**	-0.449	**0**
PO3	-0.473	**0**	**EN4**	-0.374	**0**	**LE3**	-0.103	**0**
SO4	-0.513	**0**	**SO4**	-0.443	**0**	**SO4**	-0.372	**0**
TE2	-0.442	**0**	**LE4**	-0.378	**0**	**LE4**	-0.363	**0**
EN5	-0.649	**-2**	**EC1**	-0.92	**-2**	**LE1**	-1.17	**-2**
PO4	-0.961	**-2**	**LE2**	-0.708	**-2**	**PO2**	-0.83	**-2**
EN2	-1.480	**-3**	**PO2**	-1.49	**-3**	**TE3**	-1.3	**-3**
SO1	-1.110	**-3**	**SO2**	-1.31	**-3**	**EN5**	-1.7	**-3**
LE4	-2.290	**-4**	**EN5**	-1.98	**-4**	**LE2**	-1.91	**-4**
Number of Q-sorts= 5			Number of Q-sorts= 4			Number of Q-sorts= 4		
Consensus statements								
Label/Discourse 1			**Discourse 2**			**Discourse 3**		
SO4	1		1			0		
LE3	0		0			0		

6. Discussion and Conclusions

The aim of the workshops was to understand the perspectives of upland Yorkshire farmers regarding the goals and intended impact of the Landscape Recovery scheme being rolled out in the UK. To achieve this the Q methodology was used and to demonstrate the range of viewpoints amongst farmers that share considerable similarities concerning their farming practices and dependency to government subsidies. The main outcome of the Q-sorting is that there is considerable agreement in viewpoints regarding the a) aspects of the scheme that are

non-favourable for the participants and b) a desire to combine feasible and economically beneficial to their farm practices with environmental objectives. In particular, Discourses 1 and 3 ("Pragmatic yet environmentally conscious" and "Risk-averse environmentalists", respectively) group viewpoints that show interest in farmer-friendly AECS coupled with environmentally-friendly objectives. Economic returns and business-oriented viewpoints while showing a disposition towards AECS are grouped in Discourse 2 (as "pragmatic objectors" viewpoints), with such views being common in the literature (e.g., Davies and Hodge, 2007, Walder and Kandelheart, 2018; Norris et al., 2021).

Discourse 1 grouped statements somehow common issues affecting the practical enrolment of farmers to AECS. Such issues focus on simplifying implementation of AECS (PO2, +3) echoing similar studies (e.g., De Groot and Steg, 2010). Similar with other studies, such viewpoints are not "purely" from an environmentalist point of view (Norris et al., 2021) as farmers appear to want to combine financial viability of their farm (EN3, +2; EC1, +1). Viewpoints of such pragmatic yet environmentally conscious farmers appear more inclined to consider enrolling in an generic AECS contract as a means to achieve the two main goals (financial survival of the farm and environmental stewardship) but doing so through the Landscape Recovery scheme is strongly opposed to (LE4, -4). A desire for "broad and shallow" measures within AECS that achieve limited environmental benefits is often reported in qualitative studies amongst European farmers (Zimmermann and Britz, 2016; Braito et al., 2020). Within Discourse 1 also appear elements of a lack of desire to be recognized for their role as farmers (SO1, -3), contrary to Barbosa et al., (2020), potentially exacerbated by farmer views that the public underestimates the role of famers in society.

Discourse 2 has viewpoints focusing on contract-related characteristics of AECS such as adequate financial compensation provided to farmers (EC2, +4) (e.g., Walder and Kantelhardt, 2018), provisioning of advice being included in the scheme (PO1, +4) and reduced bureaucracy

at the application stage and during the duration of the scheme (PO3, +3). These pragmatic farmers appear fundamentally against several AECS concepts such as the delivery of multiple agri-environmental public goods (PO2, -3), cooperate with other land managers (SO2, -3). This is confirmed by their belief that ELMs are not compatible with UK policy (LE2, -2). This reflects the wider literature concerning land managers' viewpoints regarding AECS contracts and their features, with current schemes failing to properly incentivise farmers to participate (Uthes and Matzdorf, 2013; Tyllianakis and Martin-Ortega, 2021). Such a desire for AECS with limited requirements is also confirmed in these pragmatic farmers by the strong viewpoints against the long-term duration (20-year) of contracts funded by the Landscape Recovery scheme (EN5, -4), similar with the risk-averse environmentalists in Discourse 3.

Discourse 3 ('risk-averse environmentalists') included viewpoints that are somewhat common in AECS since farmers are known to be generally risk-averse when considering AECS (Schroeder et al., 2013) while generally concerned about the environment grouped more environmentally-focused viewpoints, another common occurrence in the relevant literature (e.g., Walder and Kantelhardt, 2018; Braito et al., 2020; Cusworth, 2020). This discourse included viewpoints preferring simple AECS contracts over complicated ones with respect to monitoring (TE2, +3) and AECS acknowledging and being used to address the risk that climate change presents to farming (EN1, +4 and EN2, +3), showing preferences for "narrow and deep" schemes given their low preference for long contract durations (EN5, -3). This apparent pro-AECS stance coupled with strong objections to specific contract characteristics might indicate an extrinsically motivated approach of farmers (Matzdorf and Lorenz, 2010) when expressing viewpoints around the Landscape Recovery scheme

With respect to cultural capital creation in farming, evidence from the Q-sorting points to the need for training and guidance (PO1) as topic of agreement amongst most participants. Such a viewpoint, (evident in Discourse 1 and 3's viewpoints) reflects the need of farmers to receive

training and guidance when enrolled in an AECS (Braito et al., 2020) but offering such an option might not be practically feasible in AECS contracts (Knierim et al., 2017). Given that viewpoints across the three farmer groups were indifferent for aspects of social capital such as cooperation with other farmers (SO2) or having schemes that fit every farmer (SO4) came from participants of CSFF groups with well-functioning group leader dynamics. These groups had also operated over an extended period of time (each CSFF operates more than 5 years with the same group leader), nevertheless, cultural capital creation appears to be still be lacking. This prevents potential positive spillover effects in AECS (Burton and Paragahawewa, 2011) and in the delivery of agri-environmental climate goods. In other similar examples in the literature, Braito et al., (2020) did not find a desire amongst farmers to coordinate actions and foster social networks. Norris et al., (2021) did not find any association between membership in collective, cooperative agreements (what can be approximated by CSFF membership in the present study) and any farmer viewpoints when assessing viewpoints over peatland management between farmers. Therefore more studies are required to determine the impact that past experiences in cooperative, collaborative and socially-driven farmer networks influences similar viewpoints concerning environmental land management.

Limitations of this study refer to the research scope and the familiarity of participants with it. As it became evident through the workshops, many participants were not aware of the specific requirements and description of the Landscape Recovery scheme. Expressing their opinions was therefore based on past experiences and viewpoints concerning the authority responsible for the scheme' rollout (Defra) and their (limited) past experience with AECS. Therefore, larger 'burden of proof' is placed upon the workshop organisers to present an accurate description of Landscape Recovery to facilitate viewpoint formation. Additionally, some self-selection existed within the farmer sample. Interested farmers were more likely to respond to the invitation to participate in the workshops (although this should have been partially mitigated

by the offer for claiming expenses and free dinner offered) and therefore their viewpoints might be representative of other, less engaged farmers. Therefore, generalising the findings is not possible (Walder and Kantelhardt, 2018) and also outside of the purposes of Q methodology (Norris et al, 2021). Finally, although farmer viewpoints are expected to be primary drivers behind enrolment in AECS, determining the impact that socio-demographic characteristics such as age, having a named successor, farmer income and current dependency from direct payments is required. All these factors were brought up from workshop participants as key drivers of any future enrolment in AECS, therefore quantitative experimental survey methods such as through the use of vignettes (e.g., Parkins e al., 2022) or examining relationships between observed AECS participation and farmer viewpoints/types (e.g., Leonhardt) could act as complimentary to the presented results.

From these findings, it appears that enrolling in the Landscape Recovery scheme is inhibited by a series of factors for upland Yorkshire farmers. Nevertheless, the viewpoints expressed by Yorkshire farmers should fit broadly with "broad and shallow" AECS (Defra, 2021), such as the wider ELM scheme. It appears that aspects regarding payments, free advice, duration and scope inhibit the endorsement of Landscape Recovery from Yorkshire farmers. Uncertainty around the level of payments, type of management practices and the type of changes in existing practices they would entail also appear significant. Furthermore, socio-environmental issues also further inhibit potential enrolment, with Landscape Recovery and particularly lengthy contracts within it, being perceived as un-aligned with Yorkshire farming goals and capabilities. Such findings, if corroborated by actual enrolment in Landscape Recovery in the future from upland beef and dairy farmers in Yorkshire, would mean that wider, landscape interventions will not be taking place in the area. Instead, such land managers would focus in less-demanding ELM schemes such as the SFI, which seems to be meeting the combination of

requested management practices and involvement. Nevertheless, lack of clarity whether SFI payments would be enough to cover for the loss of Basic Payment Scheme (BPS) payments would mean that upland Yorkshire farmers might be faced with ever-decreasing farm-related income. In the event of this occurring, farmers are expected to turn even more to out-of-farm activities such as tourism and hospitality sectors to supplement farm income or continue the trend of land abandonment. This would have detrimental effects in maintaining the existing quality and quantity of public goods in the general Yorkshire area.

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Appendix

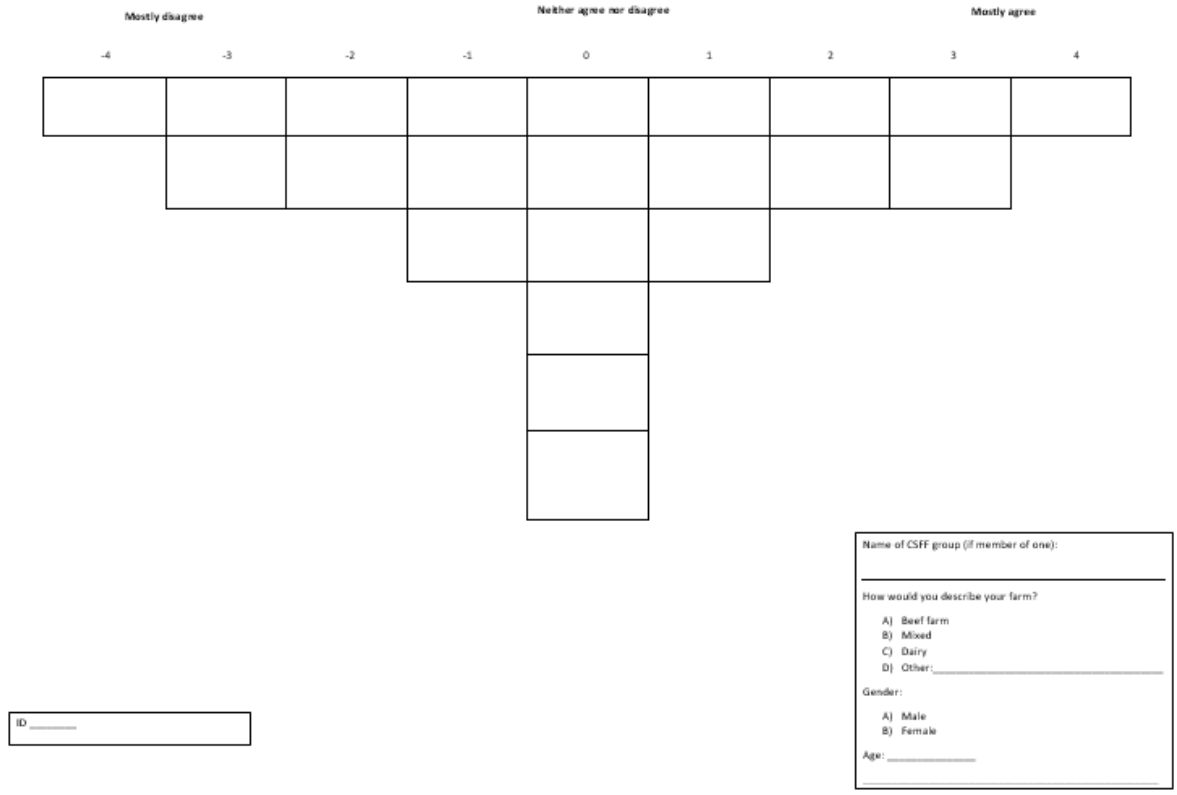

Figure 1: Q-grid used for sorting in the workshops