

Why understanding stakeholder perspectives and emotions is important in upland woodland creation – A case study from Cumbria, UK

Sara V. Iversen^{a,*}, van der Velden Naomi^b, Ian Convery^b, Lois Mansfield^b, Claire D.S. Holt^b

^a Department of Agroecology, Aarhus University, Blichers Allé, 8830 Tjele, Denmark

^b Department of Science, Natural Resources & Outdoor Studies, University of Cumbria, Rydal Rd, Ambleside, UK

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ABSTRACT

Upland regions in the United Kingdom (UK) are increasingly under consideration as potential areas for the creation of woodlands. This is driven by a combination of factors, including the aims of UK forestry and environmental policy to increase woodland cover, meeting international greenhouse gas emission reduction targets, agro-environment schemes in national and international policy, and an increasing public awareness of the ecosystem service benefits landscapes can deliver for society. Creating new woodlands in upland areas is challenging, partly due to concerns of the potential impacts from a change in land use and due to stakeholder perspectives. In the UK, the upland landscape is in multiple ownership and currently managed by multiple land managers and stakeholders with contrasting aims and objectives. This research adds a much-needed qualitative element to the overall understanding of this complex topic, by carrying out a Q-methodology investigation of stakeholder perspectives of upland woodland creation. Three characteristic groups of stakeholders are identified as 1. 'Not enough is done to protect the environment', 2. 'Changing the landscape is changing us' and 3. 'let's not let our emotions get in the way – seeing the bigger picture'. The clear potential for antagonism, and even conflict, in ideologies and approaches between these groups highlights the importance of engaging with stakeholders and employing approaches rooted in mutual understanding, participation and collaboration. Stakeholder perspectives are a powerful influence on if, and how, woodlands are created and maintained, thus understanding emotions and attitudes is a vitally important part of the challenge of creating new woodlands in the uplands of Cumbria.

1. Introduction

Woodland cover in the UK stands at 13%, which is well below the European average of 37% (Forest Research 2017). The UK Government has acknowledged the economic, social and environmental benefits woodlands can provide, and has set a 2050 target to increase woodland cover from 13% to 15%. Central to this policy is the need for new suitable areas to plant and the Government states in the 25-year environmental plan (DEFRA, 2018), that it will take action to work with landowners, farmers and key stakeholders to identify and target areas suitable for, and likely to benefit from, woodland creation. Parts of the Cumbrian uplands,¹ in the northwest of England may be one potential area where planting could be carried out with multiple benefits to society (Fox, 2012; Reed et al., 2009; Ford et al. 2014) and nature (Bunce et al., 2014). Cumbria has recently been selected by the Government as

one out of five special 'Local Nature Recovery Strategy' areas in England to aid countrywide scale nature recovery (DEFRA 2020) and increased tree planting and changes to landscape management is an expected strategic output. The management of this upland landscape is, however, contested and highly politicised, and whilst there is evidence that some people value the barren fell sides (Reed et al., 2009; Bunce et al., 2014), there are also calls for addressing biodiversity loss and nature recovery in the uplands, particularly within upland protected areas (Glover, 2019). Planting trees in such a landscape could potentially alter its appearance and function, depending on how and where the planting is carried out. Adding to this, the uplands of Cumbria also have a strong cultural identity and values, which are connected to the landscape and a history of livestock farming (Mansfield, 2012; Convery et al., 2014).

How the uplands are managed in the UK has, in recent years, become a highly contested topic (Nijnik and Mather, 2008; Reed et al., 2009),

* Corresponding author.

E-mail addresses: sara.iversen@gmail.com (S.V. Iversen), naomikv@gmail.com (V. Naomi), ian.convery@cumbria.ac.uk (I. Convery), lois.mansfield@cumbria.ac.uk (L. Mansfield), claire.holt@cumbria.ac.uk (C.D.S. Holt).

¹ Upland Cumbria is defined as land above 300 m as per Burton et al. (2005).

with debates surrounding land-use (Reed et al., 2009), cultural heritage and entitlement (Curry, 2008; Mansfield, 2012), management (Broadmeadow and Nisbet, 2010; Huq and Stubbings, 2015), and nature conservation (Curtis et al., 2014; Jerrentrup et al., 2014). Additionally, the uplands also provide society with vital services, such as agricultural production, climate change mitigation, water provision, recreation and biodiversity (Gimona and van der Horst, 2007; de Groot et al., 2012). Increasing wooded areas in a landscape that is predominantly grazed grassland will therefore have impacts on not only the appearance and function of the uplands, but also on local communities and their identities. It is therefore important to explore local stakeholders' perspectives on this topic, as they will either be able to influence decision making or be directly influenced by any changes (Iversen, 2019).

Much research has been carried out to understand the relationship between woodland creation and stakeholders both in parts of the UK; (Madsen, 2003; Langpap, 2006; Church and Ravenscroft, 2008; Duesberg et al., 2013; Lawrence and Dandy, 2014; Sorice et al., 2014; Nielsen-Pincus et al., 2015; Ruseva et al., 2015; Thomas et al., 2015; FitzGerald et al., 2021) and internationally (Madsen, 2003; Nijnik et al., 2017). And the majority of these studies are focusing on farmers and less so other stakeholder groups, such as agents, managers, community woodland groups and local authorities (Fox, 2012; Lawrence et al., 2014). Additionally, this research often draws multiple conclusions (e.g., Thomas et al., 2015) and highlights a need for more in-depth understanding of what impacts tree planting would have on both the landscape and people equally (Thomas et al., 2015; Nijnik et al., 2017).

Evidence from previous research has shown a difference in opinion of stakeholders against woodland creation. For some, there is a reluctance towards woodland creation which is influenced by policy tools and regulation (Madsen, 2003; Sorice et al., 2014; Ruseva et al., 2015) or financial incentives (Church and Ravenscroft, 2008; Fox, 2012; Bell, 2014). Others have found a more positive mindset for woodland creation (Carroll et al., 2011; Duesberg et al., 2013; FitzGerald et al., 2021), but the results can vary between different locations within the same country (Duesberg et al., 2013). This divergence has emphasised the need to understand the wider range of opinions and attitudes to woodland creation (Buijs and Lawrence, 2013; Duesberg et al., 2013; Lawrence and Dandy, 2014). One particular element, stakeholder emotions and values, has been suggested to be a potential barrier to tree planting (Duesberg et al., 2013) but despite this, Buijs and Lawrence (2013) found that this is an underrepresented area of focus within woodland creation research. Research that has examined perspectives on woodland creation typically takes either a very broad approach (Urquhart et al., 2012; Bell, 2014) or focusses on one particular element, such as financial incentives (Madsen, 2003; Church and Ravenscroft, 2008), regulation (Sorice et al., 2014; Ruseva et al., 2015) or employment impacts (Crabtree et al., 2001). Or as documented in the Lawrence and Dandy (2014) review of private landowners and woodland creation, the focus is mainly on 'external' behavioural controls, such as economic considerations (Madsen, 2003; Langpap, 2006; Church and Ravenscroft, 2008) or policy frameworks and advice. This is further supported by Thomas et al. (2015) who argue that this is because these external factors are easily observable as opposed to less definable factors, such as values and emotions.

Predmore et al. (2011) and Buijs and Lawrence (2013) suggest that this lack of focus on emotions and values may also arise from a perspective that within the forestry sector emotions are perceived as irrelevant and this has later been further supported by (Carroll et al., 2011; Duesberg et al., 2013). Foresters tend to explain differences in opinion and conflict surrounding forestry by divergence in interests and knowledge, but Buijs and Lawrence (2013) argue that emotions are equally relevant components of an environmental resource conflict. Evidence has been put forward by several case-studies in Ireland carried out by Dhubháin et al. (2009); Carroll et al. (2011); Duesberg et al. (2013) to suggest that, not only does perspectives towards woodland creation vary immensely between local regions, but it is also influenced

cultural identity, a history of forestry activity in the area and concern of changes in society.

There is therefore a need for a greater understanding of the underlying extrinsic/intrinsic values associated with woodland creation as this may have significant impact on whether or not woodlands are created. Investigating less quantifiable factors, such as values and emotions needs to be carried out by the use of qualitative research approaches. But social science as a research paradigm still carries a stigma to some extent of not being as valid as quantitative science within some scientific fields (Davis and Michelle, 2011; Eyvindson et al., 2014) and within certain professional agencies. For example, Predmore et al. (2011) has shown how the US Forest Service favours scientific empirical data, over qualitative comments, in their public forest planning consultation processes. An ideal method therefore combines both qualitative and quantitative elements. This will satisfy the traditional view of the need for quantifiable results, with the need for understanding the emotions and perspectives that may underpin and cause the barriers which exist in upland woodland creation.

In this paper, we aim to explore and identify local stakeholder perspectives on barriers and opportunities to woodland creation in the uplands of Cumbria, UK. We used Q-methodology as an approach to understand and identify the range of stakeholder perspectives and aim to offer suggestions to how we can minimise social conflict in upland woodland creation. As such, Q-methodology also functions as our theoretical framework. As Cordingley et al. (2005) note, Q methodology is more than just a technique for assessing perspectives and attitudes. The fundamental approach behind the method has subjectivity as opposed to objectivity at its core and from here, allows an examination of the world from the internal perspective of an individual. It therefore aims to allow researchers to present the views and perspectives of different people without claiming the 'superior', or more 'objective' status of the researcher's own opinion or construction of reality. The approach has more than demonstrated its 'sense-making' capacity and ability to find qualitative 'order' even in domains where variability and disparity seem initially to have prevailed (Watts and Stenner, 2005).

2. Material and methods

2.1. Study area

The Howgill Fells Natural Character Area (NCA) situated in Cumbria, in the north-west of England, covers an area of 10,360 ha - Fig. 1. The area is representative of the upland regions of England; it is rural, remote, strongly influenced by hill farming and has a strong cultural identity and similar socio-demographics (NE, 2010). The NCA is a fell massif of characteristically rounded, smooth hills, which reach a height of 676 m, and is separated from the surrounding fell regions to the west and east by steep-sided valleys. The fells are open and exposed, with very little variation in vegetation cover. The most abundant habitat is upland heath, mainly comprising acid grassland and bracken. The area is grazed by domestic stock, mainly sheep and to a smaller extent cattle and fell ponies. Seventy seven percent of the area is common land, which is collectively owned by a number of people who all hold traditional and statutory rights to graze their livestock on it, and approximately thirty farms are active within the area (NE, 2010).

Woodland cover within the NCA is, at 1.5%, one of the lowest levels found in England and the lowest in Cumbria. Moreover, and importantly within the Natural England NCA profile report (Natural England 2010), the opportunity for woodland expansion is proposed in the form of the Statement of Environmental Opportunity (SEO) as an appropriate and desirable land-use for some areas within the NCA. Within the NCA there has been, for the past 10 years, a large amount of tree planting carried out as part of national agricultural and environmental stewardship schemes (Leeson, P. 2015, personal communication).

The study area was selected due to its representativeness of upland Cumbria and the area's history of planting in the past, the current



Fig. 1. The study area situated within the county of Cumbria (circled), in the Northwest of England (Mapsoftheworld 2019).

planting schemes and the plans of extending in the future. A large number of stakeholders have participated in previous and in extant tree planting schemes and/or are considering taking part in future planting schemes. Stakeholders included in this study woodland creation advisors, nongovernmental organizations (NGOs), interest groups, farm advisors, general public, landowners and farmers who were either considering planting, had already planted or did not wish to take part in any planting scheme. Together, this forms a good exemplary case-study, wherein the main stakeholders are included and provides an excellent opportunity for investigating their subjective opinions on the topic of woodland creation in the uplands of Cumbria.

2.2. Introducing Q-methodology

Individual perspectives, emotions and the finding of areas of consensus on a conflicted topic, can only be explored by the use of methods that can investigate subjectivity instead of objective views. Methodologies rooted in the field of psychology aim to understand and identify underlying values and emotions which underpin stakeholder behaviour (Hall, 2008; Walder and Kantelhardt, 2018) or perspectives on complex and conflict-intense case studies (Chamberlain et al., 2012) are increasingly being used. One such method - Q-methodology, has been successfully used to explore the breadth of human subjectivity from which to develop more effective management strategies (Rodríguez-Piñeros et al., 2012). It is therefore not surprising that Q-methodology has

also been applied to gain an understanding of human subjectivity in environmental conflict situations (Bredin et al., 2015; Dempsey et al., 2021) and the methodology is increasingly gaining popularity across disciplines (Haslam and McGarty, 2014; Zabala et al., 2018).

Q methodology combines both quantitative and qualitative data collection and analysis through statistical discourse analysis, using an application of factor analysis tools (Stephenson, 1935; Brown, 1980). The tool gives insight into the range of opinions that exist on a topic and allows for individuals within the study to categorise statements, based on shared viewpoints. As a result, a typology of people and their views and beliefs is created and the criteria and factors which influence these are examined (Watts and Stenner, 2012). Davis & Michelle (2008) state that in comparison with purely qualitative methods, such as interviews, focus groups and observation, the method provides more structure, scientific rigour and a richer insight into subjectivity than provided by conventional surveys. Moreover, Q-methodology is particularly beneficial in research that explores a diversity of opinions within smaller study groups ($n = <60$) (Watts and Stenner, 2012).

Q-methodology creates a selection of statements that are representative of the subject. Participants are then asked to evaluate and rank each statement on a ranked grid – Fig. 2, depending on the level of agreement and disagreement. The method follows a seven-step procedure: 1. Identification of the discourse, i.e. the subject of interest; 2. Development of the Q-sample; 3. Piloting the Q-set; 4. Selection of participants; 5. Execution of Q-sorts; 6. Statistical analysis of the Q-sorts and 7. Interpretation of the results (Brown, 1980; Watts and Stenner, 2005) – Fig. 3.

2.3. Developing the concourse, Q-set and piloting

For our study, the subject of interest was to assess stakeholder perspectives of woodland creation in a Cumbrian upland landscape. Therefore, the question which was provided to guide participants through the Q-sorting process was, “What do you think about planting new woodland in the uplands of the Howgill Fells NCA? Please sort the provided statements in order to best describe your opinion on the matter”.

A concourse of 102 statements were gathered from previous research or discussion, such as interviews, surveys, general media or literature, but also day-to-day ordinary conversations and additional verbal information from thirteen preliminary interviews held at the early stages of the study in 2015 with key stakeholders. These were semi-structured interviews held with influential stakeholders within the woodland creation sector in Cumbria. The interviews were conducted in an inductive, explorative manner, as the aim of gaining the information was discovery in order to get a broad initial understanding of the subject and not to test an already established hypothesis. Participants were chosen based on them being deemed as key stakeholders locally and being influential within the subject of woodland creation. A snowballing sampling approach was used to verify the choice of participants (Newing, 2011). All interviews were conducted face to face at locations convenient to the participant and generally took 1–1.5 h. All interviews were sound recorded. A simple thematic and constant comparison analysis (Glaser, 1965; Boeije, 2002) was carried out, by review of the material and simple memo writing in order to identify theoretical categories. From this, seven key themes were developed, to ensure that the breath of the topic was represented: 1. Ecosystem services, 2. Policy, 3. Productive woodlands, 4. Nature conservation, 5. Farming, 6. Recreation/inspiration and 7. Landscape.

From this large selection of statements, a smaller representative selection (the Q-set) of forty-four statements was chosen by consideration to the themes and a pilot study (from September to December 2016) including fifteen experts, academics, and people with practical experience within the field of woodland creation. Based on the results and feedback given during the pilot, a further three statements were added to the Q-sample and adjustments were made to seven of the statements. As a result, a final Q-set of forty-seven statements was used for the Q-

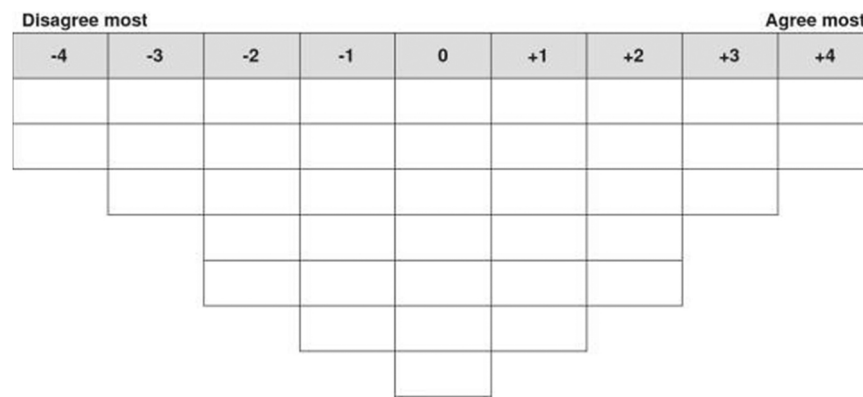


Fig. 2. An example of a traditional grid for Q-methodology sorting. Participants rank the statements on the grid according to level of agreement/disagreement. Statements are not ranked in importance in the rows from top to bottom, only vertically.

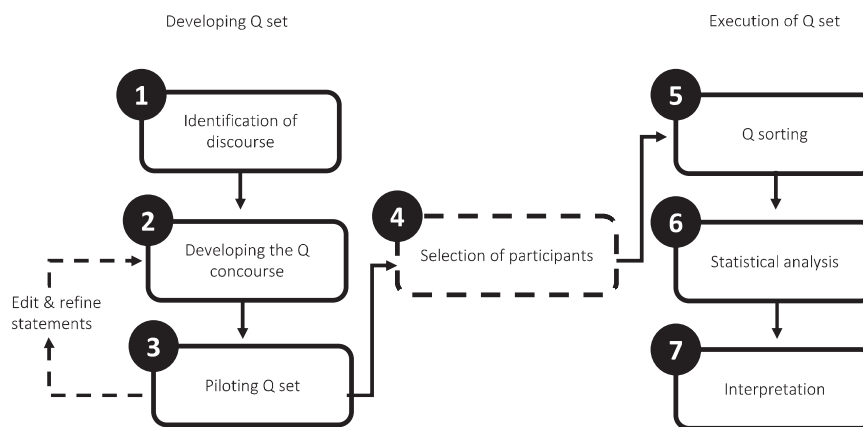


Fig. 3. Q-methodology research structure of the seven-step structure of a Q-methodology study, developed from [Brown \(1980\)](#) and [Watts and Stenner \(2005\)](#).

sorts (Table 1). It is normally recommended that a Q set of is between forty to sixty statements, depending on subject, time and participant ability (Watts and Stenner, 2012). Our aim was that any participant should feel that he/she can get their opinion on the topic expressed, without feeling frustrated by a lack of statement options or the size of the Q-set or overwhelmed by similar or repetitive choices.

2.4. Selection of participants & data collection

Sixty participants took part in the study. In a Q study, participants are selected as a sample that covers a range and diversity of viewpoints present amongst the participants. The sampling should be strategic instead of random (Brown and Schroeder, 1999). The participants were all relevant to woodland creation in the Howgill Fells NCA. These included farm or woodland creation advisors (9), NGOs (8), business or interest groups (9), general public with common rights (8), council (2), landowner (2), and farmers who had already planted (11) or were considering planting (11). These participants were identified as relevant stakeholders following the criteria by Reed (2008) and Colvin et al. (2016). The Q-sorts was carried out on a one-to-one basis. Each participant was asked to rank the forty-seven Q statements according to opinion and all statements had to be weighted relative to each other from - 5 to + 5 (left to right) and within the matrix. Post Q-sorting, a follow-up recorded interview was carried out, where participants were asked to elaborate on their choices for ranking of the Q-set. This is important, both for the interpretation of the data, but also because participants will often have a need to explain their thoughts and feelings for particular statements. This leads to a much deeper understanding of their perspective on the topic and the reasons behind ranking

(Stephenson, 1953).

2.5. Data analysis

To analyse the Q sort data the Ken-Q Analysis v. 0.11.0 bespoke Q-methodology software (Banasick, 2016) was used to perform a centroid factor analysis (CFA) (Watts and Stenner, 2005). A Varimax factor rotation was carried out (Kaiser, 1958) with an automated flagging of Q-sorts to reduce any subjective bias in analysis (Bryant 2013). An initial seven factors were retained for rotation, following standard recommended approach (Watts and Stenner, 2012). Following the Varimax rotation, a three-factor solution was identified, informed by a combination several statistical criteria, such as Eigenvalues > 1.00 , significant loading rule > 0.39 , a total factor variance $> 35\%$, Humphrey's rule and a Cattell's Scree test (see Iversen 2020 for more detail). The full CFA procedure was continued with extraction and rotation of three factors as a result. Finally, a qualitative interpretation guided by the results from the factor analysis was carried out. Insights gained from participants comments during the Q-sorts and the post-sort interview were incorporated into this understanding.

3. Results

Three main factors (stakeholder viewpoints) were identified from the analysis of the 60 Q-sorts. These are described as: Factor 1. *'Not enough is done to protect the environment'*, Factor 2. *'Changing the landscape is changing us'* and Factor 3. *'Let's not let our emotions get in the way'*. The output from the varimax rotation lists each participants' Q-sort and its loading (how strongly it is associated) against each of the three factors

Table 1 -

Factor arrays and their associated Z-scores. The factor array is single Q-sort configured to represent the viewpoint, or 'best fit', of a particular factor. The factor arrays display each factor's level of agreement of each statement used for the Q-sorts, ranging from - 5 (severe disagreement) to 5 (severe agreement). The darker the colour, the higher level of disagreement/agreement. Each factor array has an associated Z-score column.

ID	Statement	Factor arrays					
		F1	Z-score	F2	Z-score	F3	Z-score
1	New woodlands in the uplands should be planted with consideration to flood protection	3	1.23	-2	-0.84	0	0.26
2	Farmland in the uplands should be used for agricultural production, not woodland planting	-4	-1.49	3	1.13	-3	-1.26
3	New woodlands in the uplands should be planted with consideration to water resource management	3	1.1	-2	-0.62	1	0.65
4	New woodlands in the uplands should be created with equal benefit to the environment, economy and society	2	0.66	0	0.04	1	0.68
5	New woodlands in the uplands should be planted with consideration to climate change	3	1.08	-1	-0.58	0	0.14
6	The tree planting consultation process between landowners/farmers, advisors and governmental departments is not good enough	1	0.41	2	1.12	2	0.85
7	New woodlands in the uplands can positively contribute to alternative and renewable energy sources	0	-0.02	-3	-1.36	2	0.8
8	More woodlands in the NCA would negatively impact tourism and therefore the local economy	-3	-1.37	-1	-0.52	-5	-1.7
9	We need more resources on the ground for helping people get into woodland planting in the uplands	3	0.85	-3	-1.03	-1	-0.04
10	Planting trees in the uplands of the NCA is difficult.. There are so many opinions and values.	2	0.67	2	0.71	1	0.64
11	Economic incentives for tree planting are too low	-1	-0.17	0	-0.01	4	1.15
12	Tree planting incentive programmes (grants/schemes) are too complex	0	0.31	1	0.43	3	0.86
13	There are concerns about uncertainties, such as payments, risk of planting failures and impacts	1	0.36	1	0.71	1	0.54
14	A big barrier to tree planting around here is the disagreement amongst ourselves/stakeholders	1	0.65	1	0.29	2	0.79
15	There is not enough information given about tree planting opportunities	0	0.03	0	-0.14	0	0.45
16	Opinions towards woodland creation are heavily influenced by managers, agents and regulators	0	0.01	1	0.57	4	1.18
17	Opinions towards woodland creation are heavily influenced by family members, friends and neighbours	0	0.13	-1	-0.46	0	0.09
18	New woodlands in the uplands could help with creating a timber resource for the future	-1	-0.21	-3	-1.08	4	1.15
19	New woodlands in the uplands should be coniferous for production and the economy	-5	-1.94	-2	-0.88	-2	-0.7
20	New woodlands in the uplands should be mixed species and multifunctional	2	0.7	0	0.08	3	1.01
21	We should promote creation of productive woodlands in the uplands, as this provides employment opportunities in remote rural communities	-1	-0.19	-2	-0.93	0	0.4
22	New woodlands in the uplands should be native species for wildlife and people	5	1.69	-1	-0.29	-2	-0.75
23	New woodlands in the uplands would be beneficial for nature, wildlife & biodiversity	5	1.95	-2	-0.88	2	0.81
24	Enough is already done to protect and enhance the upland environment	-5	-1.74	0	0.05	-3	-1.45
25	There has been too much planting of woodland with native only species	-4	-1.61	-1	-0.25	-1	-0.06
26	More woodland in the uplands would be beneficial to the hill farmers in terms of caring and shepherding for livestock, shelter and shade	1	0.38	-5	-2.25	3	0.9
27	We have worked so hard to make the uplands suitable for farming... seems a real shame to now change that back	-3	-1.07	3	1.24	-2	-0.96
28	More woodlands would negatively affect the way of life for people deriving a living from the land	-2	-0.96	2	1	-4	-1.55
29	New woodland could help diversify the income to a business relying on upland areas for income	2	0.79	-3	-1.23	2	0.8
30	There is little consideration to landowners/managers/farmers trying to make a living from the land	-1	-0.64	3	1.26	3	0.92
31	More woodland in the uplands could encourage more outdoor leisure activity	0	0.35	-4	-1.47	-1	-0.21
32	The rights of people to enjoy the beauty of the landscape is more important than making profits from the land	-1	-0.43	-4	-1.43	-5	-1.99
33	It is important to have woodlands in the uplands – it is good for our mental and physical health	1	0.61	-5	-1.56	-1	-0.16
34	More woodland in the uplands would help in creating a sense of wildness	0	0.12	-4	-1.43	-2	-0.71
35	Increasing woodlands on the fells of the NCA would negatively change the identity and local cultural heritage	-2	-0.93	4	1.26	-1	-0.65
36	I support creation of new woodlands, but it has to be done in tune with the landscape	4	1.66	0	-0.1	1	0.66
37	The characteristic landscape of the fells in the NCA would be ruined if there were more trees up there	-2	-0.78	3	1.26	-4	-1.6
38	The use of the land for pastoral farming is more aesthetically pleasing than woodland on the fells	-2	-0.97	5	1.5	-1	-0.54
39	Woodlands should be planted with future generations in mind	4	1.27	0	-0.06	5	1.47
40	A lot of the recent planting in the uplands has been of scrub species... It's no good for man nor nature	-4	-1.47	2	0.79	0	-0.02
41	I am concerned about a negative irreversible change in land use that tree planting would entail	-2	-0.76	4	1.44	-2	-1.23
42	We have enough woodland in the uplands of the Howgill Fells NCA	-3	-1.44	4	1.28	-4	-1.58
43	Tree planting schemes are too short in duration	1	0.38	-1	-0.27	1	0.66
44	When planting trees in the NCA, we need to respect the rights of the commoners/landowner	4	1.3	5	1.66	5	1.94
45	Some woodland planting in the NCA is ok; just not too much	2	0.73	1	0.28	0	0.05
46	It is a waste of time planting trees up on the Howgill fells - they will struggle to grow	-3	-1	2	0.84	-3	-1.41
47	It is difficult to combine the management of upland farming with woodland creation on the fells of the NCA	-1	-0.22	1	0.7	-3	-1.28

(main viewpoints). If a Q-sort loads significantly on more than one factor, it is deemed to be compounded and not included in the analysis. Three such Q-sorts were identified in this study. One Q-sort was found to be bi-polar (consists of both positive and negative loading Q-sorts) on F1 and 3 and disregarded from the analysis. Table 1 shows the loadings of each Q-sort against the three rotated factors with exemplified Q-sorts flagged. Within the table, compounded Q-sorts are also identified and shown alongside the arrays with scores against each statement, as well as the associated Z-scores.

Additionally, two statements did not distinguish significantly ($P > 0.05$) between any pair of factors. These were, "Planting trees in the uplands of the NCA is difficult... there are so many opinions and values" and, "There are concerns about uncertainties, such as payments, risk of planting failures and impacts". By not distinguishing significantly means that these are 'consensus' statements, whereby there is agreement between all three groups of stakeholders.

In the interpretation below, each statement mentioned is indicated by an 'S' and its ranking by the particular factor, by '+' or '-'. For example statement 50, which was ranked as + 3 will be (S50:+3). All statements

are listed in Table 1.

3.1. Factor 1 - 'Not enough is done to protect the environment'

Factor 1 (F1) Twenty-one participants (35%) are significantly associated with this factor. They are from a wide range of backgrounds such as NGOs, interest groups, general public, public houses and environmental advisors. The majority of them do not make a living from the land directly, but have an interest or connection in other ways, such as in advisory or specific interest roles, and they all have a strong interest in the area. Four farmers were included, all of which are farming as part of an environmental sensitive farming scheme.

This is a group of people very much driven by intrinsic values and overall, who do not feel that enough is done to protect the environment. This was often expressed in frustration as part of the Q sorting process. Woodlands for environmental benefits, such as wildlife and biodiversity are very important to them (S23:+5) and they believe that more should be done towards environmental protection in the uplands of Cumbria (S24:-5). For example, participant (01) said, "We have an intrinsic

obligation to do everything we can for the environment". They feel that a focus on planting native trees is the best way forward (S25:−4) and this would very much be beneficial to nature as a whole (S23: +5). Similarly, participant (14) said, "Essentially, this is why we do this!" (i.e. carry out tree planting). Despite this strong focus on environmental benefits, there is also strong consideration for people and the perceived benefits from woodlands (S22: +5). Further to this, there is a belief that woodlands would be beneficial not only to the environment but also to people making a living from the land (S28: −2). These benefits are not to be achieved by the establishment of productive forests of a coniferous type in this area (S19: −5), but woodlands of a mixed type and multi-functional nature are perceived as acceptable (S20: +2). Their opinion is that woodland related benefits to local business should come from nature-based recreation tourism (S29: +2; S8: −3) or the concept of payments for ecosystem services. Some benefits of woodlands, such as physical and mental benefits to health, creating a sense of wilderness and the general encouragement of outdoor leisure activity are perceived as already in existence and a given added benefit from woodlands by this group, but given less focus and not prioritised (S31: 0, S33: +1, S34: 0).

The focus of these perceived benefits to people are related to ecosystem services provided at a societal level and likely to be influenced by local flooding events happening the past 10 years. New trees should be planted with consideration to flood protection (S1: +3), and the management of water is of great concern to this group (S3: +3). Therefore, the use of the upland landscape should be for multiple purposes and consideration to the long-term 'bigger picture' (S5: +3, S39: +4). There is a strong feeling of 'need' for this and for more resources towards achieving this which is perceived as fundamental to society (S9: +3). How more planting is achieved and the underlying policies behind planting in such upland areas is, however, not of significant interest to this group (S12: 0, S15: 0, S16: 0, S17: 0). There is an acceptance that planting trees in the uplands of Cumbria is difficult and that one reason is the many different opinions and interests behind the subject (S10: +2). Another barrier is concern surrounding uncertainties, such as planting failures and impacts and the current political situation of the UK's separation from the EU and the financial consequences, which may impact the Common Agricultural Policy and/or other agri-environmental scheme payments (S13: +1).

People aligned to F1 strongly disagree with upland areas being used predominantly for agricultural purposes (S2: −4), but on the other hand also feel that the rights of the commoners/landowners should be respected (S44: +4). Woodland creation is perceived as being able to co-exist with farming and would not negatively affect a way of life for people deriving a living from the land (S26: +1). This may be connected to the feeling that although there is support for creation of new woodlands, then it has to be done in tune with the landscape (S36: +4) and the establishment of poorly placed or the wrong type of woodland would not be accepted. Nonetheless, changes are acceptable (S27: −3) and woodlands are not seen as having a negative impact on the identity and local cultural heritage (S35: −2), nor would the characteristics of the landscape be ruined with more trees. This may be linked with the fact that they do not perceive tree planting as an irreversible change that cannot be undone (S41: −2). Added to this, there is a strong belief that woodland creation in this area is practically possible (S46: −3).

3.2. Factor 2 - 'Changing the landscape is changing us'

Factor 2 (F2) Seventeen people (28%) are significantly associated with this factor. With the exception of two people, all are actively hill farming and reside in the area or have retired from doing so. The two who are not from a farming background are, through their profession and personal interest, strongly interested in the protection of the landscape.

Protecting and enhancing the upland environment via woodland planting for environmental reasons is not the focus of this group (S24: 0). They feel that this landscape has enough woodland as it is (S42: +4)

and do not believe that creating new woodlands would have an increased benefit to themselves or society as a whole, in comparison to what the current landscape provides. They do believe that beneficial environmental impacts are to be had, but there is a strong element of scepticism with regard to the extent of any benefits. Adding to this, the environmental elements of this topic are overpowered by stronger concerns of what the landscape ought to be used for (S38: +5), a worry of changes ahead (S41: +4) and strong feelings that, although they are the primary user group (perceived by themselves), they are not listened to or consulted on these changes (S44: +5, S6: +2): "I wish they would just listen more" (participant 09). Participants often commented on the irreversible impact woodland creation can have on traditional livestock keeping: "Woodland creation does not help farmers. Once the sheep are off the fell, we cannot bring it back" (24), said in reference to the traditional local livestock keeping methods.

This area and landscape is perceived by the participant loading onto this factor to be closely linked to a sense of place, culture and a way of life (S37: +3) and should primarily be used for what it traditionally has been used for: hill farming (S2: +3). Participant (30) said, "The land has always been for making a living off". The idea that such a landscape should be wild is therefore strongly opposed (S34: −4). The trees themselves, and planting more of them, are not so much a concern as what they represent (changes) (S37: +3, S27: +3). Participant (27) said, "What is wrong with the fell the way it is?" Creating more woodlands would change the landscape. Changing the landscape is changing them and their way of life (S28: +2) and this was often voiced as part of the Q sorting process. This raises strong emotions and concerns as this touches on their sense of identity, which is strongly linked to the landscape and way of life.

Creating new woodlands and the beneficial impacts this would bring to society as a whole is perceived with an element of distrust (S1: −2). Participants often voiced, in association with statement 1, that they did not believe trees would have an impact on flooding and that tree planting in this area would not have much impact on the claimed environmental societal benefits, such as climate change (S5: −1). More pragmatic and economically driven opportunities, such as the creation of timber resources on the fells are perceived with a critical eye (S18: −3) and the use of the land for planting of productive woodlands of a coniferous type in particular are not well received (S19: −2, S21: −2).

What the area and landscape deliver in its current state is seen to be of bigger value, both for the local community but also society as a whole. The notion that aesthetics and nature-based recreational activities would benefit if more woodlands were created is regarded with strong contempt (S33: −5). Nature-based recreational activities are perceived as already being plentiful and the current landscape is well functioning for the delivery of this (S31: −4). That such values are of more, or equal, importance than what it should deliver in terms of agricultural produce is met with strong disapproval (S32: −4).

In many ways, the viewpoints within this factor contain a sense of conflict. Conflict between the practicalities of combining hill farming with tree planting (S26, −5) and between the varied opinions between people on this topic and also the feeling of not being listened to (S30: +3). Although there is a general objection to the creation of more woodlands by this group, the details of policy elements of the discussion are not given much priority (S11: 0, S12: +1, S15: 0, S43: −1), except where there is a need to state that communication between landowners/farmers and governmental departments are not good enough (S6: +2). Participants said that they felt, "Bullied into the scheme" (24, 51), "Sick of meetings" (30) and "Only took part to keep the peace" (08, 51). Unsurprisingly, there is consequently a feeling of not wanting more resources on the ground to encourage more planting (S9: −3) and a feeling that it is a waste of time and resources to focus on tree planting (S46: +2, S40: +2).

3.3. Factor 3 - 'Let's not let our emotions get in the way – seeing the bigger picture'

Factor 3 (F3) Seventeen people (28%) are significantly associated with this factor. This factor consists of a variety of forestry, landscape and farming related advisors and businesses, as well as farmers. All of them have currently, or in the past, had an economic experience with woodland creation, either in an advisory role, business or directly. Besides the people in advisory roles, all of them have a business or are diversifying their farm business with additional incomes related to the land and area.

The participants loading on to this factor share a viewpoint that is embedded in the thought that we do not have enough woodland within the study area (S42: -4). They believe that changes in land management and use are impending and that such changes can be for the positive (S41: -2). This change is seen as being able to complement positively to the existing use of the landscape (S26: +3) and that if the creation of more woodlands were to happen, it would allow for an additional income stream to be generated, which would be beneficial for the local communities (S28: -4). There are, however, suggestions that there is an element of respect for the existing landscape and that creation of such desirable multifunctional woodlands have to be carried out in tune with this, albeit under the acceptance that changes are needed (S36: +1). What is more important to the participants loading onto this factor is the need for respecting the local people as opposed to the landscape as such (S44: +5). As participant (35) said, "We/they are the ones that have to live with it".

Consideration towards future generations and the 'bigger picture' are very important to the people loading onto this factor (S39: +5). These considerations are, however, not connected to what woodlands deliver in terms of ecosystem services to society (S4: -1). This is not to say that there is a complete disregard for the relationship between woodlands, landscape, and the importance of such ecosystem services, but merely that there is another important aspect, which is felt to be underrepresented and should be brought into the discussion of this topic. Further to this, during the interviews it was clear that there is also an element of ambiguity as to how much woodland creation would have an impact on such ecosystem services.

The participants of F3 are essentially saying that there are important elements to this discussion of woodland creation in the uplands of Cumbria that are overshadowed by the polarised and often more emotionally driven views on this topic, which are embedded in either environmental or cultural heritage conservation. Fundamentally, this is driven by an extrinsic viewpoint that focuses on values such as economics and resource security and frustration was often expressed over F1 and F2 participants during the Q sorting process, due to them not being able to see the bigger picture and letting their feelings get in the way of the process. Participant 37 said, "Landscapes are developed by the needs of production and society". The participants loading onto this factor do not identify with the sentiments of intrinsic value, such as aesthetic appreciation of the landscape, recreational activities and the potential mental and physical well-being connected to the landscape and woodlands (S31: -1; S33: -1). They therefore believe that these aspects should not take precedence above making a profit from the land (S32: -5). Tourism is seen as an important income stream and challenging this by the use of emotionally driven and fact-absent arguments are perceived with a feeling of antagonism (S8: -5).

As such, the economic aspect of the topic features highly within this factor. These considerations are with future generations in mind and embedded in an interest for increasing sustainable resource security for the future (S18: +4) by the use and design of multifunctional woodlands (S20: +3). Participant (42) said, "It is fundamentally about how public money is best spent". The use of multifunctional woodlands may also come from a belief that more should be done to protect the environment (S24: -3; S23: +2).

A pragmatic view is taken with the identification of barriers to the

establishment of woodland creation, such as the process is currently too complex (S12: +3), economic incentives are too low (S11: +4) and the consultation processes are not good enough (S6: +2). This is perceived with some frustration, as it is deemed to be heavily driven and influenced by the opinions of a vast variety of NGOs, forestry agents, land managers and regulators (S16: +4). All of these bodies have differing opinions which leads to a conflicted debate (S14: +2) and loses touch with what is perceived by this viewpoint to be of importance.

4. Discussion

The conflict surrounding woodland creation in the uplands of Cumbria is deep-rooted. Understanding the perspectives, values and emotions of different stakeholder groups may be important for the further development and successful implementation of woodland creation policies and management. But importantly, it may also provide an insight between local stakeholders on areas of agreement and common ground.

4.1. Farmers are not against trees per se

Evidence from previous research has shown a divergence in stakeholder opinion of woodland creation. Some have suggested that there is a reluctance towards woodland creation which is influenced by policy tools and regulation (Madsen, 2003; Sorice et al., 2014; Ruseva et al., 2015) or financial incentives (Church and Ravenscroft, 2008; Fox, 2012; Bell, 2014). Others have found a positive mindset for woodland creation (Carroll et al., 2011; Duesberg et al., 2013; FitzGerald et al., 2021), but the results can vary between different locations within the same country (Duesberg et al., 2013). Although such reluctance towards tree planting does indeed exist for some stakeholders, our findings suggest that these perspectives, for some stakeholders but not all, are based on deep rooted emotions related to concerns for the changes ahead, past and current experiences of consultation processes and cultural identity. This supports the findings of Duesberg et al. (2013) who found that for the majority of farm participants in their study, the choice to not plant trees on agricultural land, was guided by intrinsic values and a cultural belief about what land ought to be used for e.g. farming. Abrupt changes in the landscape, such as woodland creation, can therefore seem like a provocative radical new element. Perhaps perspectives may change over time or there is a need for reassurance amongst participants that the proposed landscape changes will not cause a profound change in their farming identity.

4.2. Concerns for changes ahead

The perspectives of the F2 grouping ('changing the landscape is changing us') differs in one significant way with those of F1 ('Not enough is done to protect the environment') and F3 ('Let's not let our emotions get in the way – seeing the bigger picture'). F1 and F3 both consider what is important to them to be at a broader theoretical scale, whereby for F2, it is personal. This is a significant point, because for stakeholders aligned with F2 woodland creation symbolises change that will not only change the landscape, but also themselves, their way of life and culture. There is also a strong sense of belief of what the landscape ought to be used for, a worry of changes ahead and strong feelings that, although they are the primary user group (perceived by themselves), they are not listened to or consulted on these changes. The perspectives and concerns of F2 participants are nearly identical to the findings of Fitzgerald et al. (2021) amongst their farming participants. In their study, however, Fitzgerald et al. (2021) still conclude an overall positive view of the prospect of planting new woodlands in Dartmoor National Park, whereby in our study, our F2 stakeholder group is more hesitant. It is, however, not clear from Fitzgerald et al. (2021), if the participating farmers have any previous experience with woodland creation. Our results suggest that consultation processes have had an influence on the views of woodland

creation of our participants. Additionally, Fitzgerald et al.'s (2021) study is also relying on a much smaller sample size. Although there is a similar pattern emerging in viewpoints and the study sites are similar in terms of being upland, mainly pastorally grazed and within a National Park, our conclusions may differ due to methodological differences in our studies.

The stakeholders of F2 believe that beneficial environmental impacts are to be had by woodland creation, but there is a strong element of scepticism with regard to the extent of the benefits. Again, similar findings were made by Fitzgerald et al. (2021). Their farming participants, as opposed to institutional informants, did show much less interest in climate change mitigation, flood mitigation and improving water quality. However, this was most cited as important by institutional informants, similarly to our F1 participants. This shows, again, how there is a difference between the factors and their emphasis on either social/shared and individual values. The importance of the relationship between social/shared and individual values on different levels have been explored by (Kenter et al., 2015) who identified that especially social/community values are often implemented in policymaking, whereas the individual values are neglected, which can stimulate conflict. Scepticism amongst farmers of institutional information is common in natural resource management and a contributing factor is the lack of trust, which is shaped by past and ongoing institutional relationships (Rust et al., 2020). F1 and F3 both also accept that changes to land management and grant schemes are imminent but embrace this as a positive development. In fact, both these stakeholder groups have many similarities, embedded in a primary belief that woodland creation within this area would be a positive development beneficial to the environment and society as a whole. But from this fundamental point of agreement, the similarities separate into two essentially very different viewpoints which are value-driven and fundamentally based on intrinsic and extrinsic viewpoints.

4.3. Positive stakeholder engagement and participatory processes

Woodland creation is a collaborative process between all involved stakeholders and is facilitated through consultation processes. The results from our study suggest that consultation processes are a very important factor for stakeholders either considering or already partaking in tree planting schemes, due to the level of attention it received during the Q – sort by F2 stakeholders especially. This group expressed a strong need for inclusion and ‘to be listened to’. Stakeholders of F3 provide a strong pragmatic and economic focus on consultation processes, and F1 stakeholders an intrinsic value and appreciation of the protection of the environment. This broad spectrum of perspectives can be beneficial in collaboration, but positive outcomes are only to be reached if inclusion, understanding and compromises are made (Chamberlain et al., 2013). We suggest that it would be beneficial to the consultation process, to not mainly focus on understanding the reasoning behind one specific type of stakeholders’ viewpoint. For example, the Forestry Commission (Fox, 2012) carried out a Cumbrian focused survey on how to engage the agricultural sector in woodland creation and concluded that landowners are motivated mainly by economic incentives, “difficult to engage with” and creating new woodland is for many farmers something they simply would not do, because they fundamentally “do not want to grow trees, but farm sheep”. Our findings support the notion that economic incentives may provide motivation for some farmers and landowners, but this was not the main focus for F2 participants in our study. Eves et al. (2013) provide an excellent woodland planters typology and suggested incentives for each type. It would seem that there are many similarities between the farmers within F2 in our study area and what Eves’ study would identify as the type ‘Farmers First’. However, some farmers were also represented within F1 and F3 within this study. The ‘Farmers First’ group in Eves et al. (2013) were less likely to be encouraged to plant woodland by the use of common incentives, such as economics, and were more driven by the

values and emotions described in F2 and perceived as irrational by F3. This needs to be addressed in a consultation scenario to facilitate woodland creation, but our findings suggest that some consultation processes within the study area are having the opposite effect and can, in fact, cause conflict and act as a barrier due to lack of recognising diverging views and not finding consensus between stakeholders.

4.4. The importance of recognising emotions and values

Fundamental intrinsic/extrinsic value-driven viewpoints are what is fuelling the conflict surrounding the topic. For the stakeholders whose viewpoints lie within either F1 or F2, emotions dominate, albeit with different focus. For F1 it is environmental and for F2, personal/cultural. F3 (which includes foresters, policy influencers and farmers with highly diverse businesses) on the other hand, has a strong opposition to letting feelings get in the way of what they perceive as important within this topic. Considering that creating new woodland requires collaboration between the many diverse stakeholders, dismissing emotions as less important highlights a problem of divergence and conflict. Members of two of the three stakeholder groups (F1 and F2) held viewpoints that are highly driven by intrinsic values and emotions. These people are farmers, NGOs, environmental advisers, and interest groups. One stakeholder group (F3) recognise that feelings are a part of the discussion surrounding woodland creation, but they strongly feel that it is of less importance and should not be given much attention. This Factor consists of the stakeholders that are instrumental in delivering woodland creation and this identifies an important element and underlying cause for conflict amongst stakeholders within the topic of woodland creation and adds clarity to the findings of Predmore et al. (2011), whereby quantitative empirical data were given preference over qualitative comments in US forest planning consultation processes. Furthermore, Lawrence et al. (2014) indicated that this exact group of stakeholders are often neglected in research on this topic and identified a need for them to be included. Care was therefore taken to do so in our study and by doing so, has offered a much deeper understanding of stakeholder dynamics and interrelationships. We advise that this particular group of practitioners must engage with a wide range of stakeholders and that the acceptance of differences is vital, even if considered irrational.

5. Conclusion

Using Q-methodology to explore the diversity of stakeholder perspectives has shown that understanding emotions, attitudes and perceptions is a vitally important part of the challenge of creating new woodlands in the uplands of Cumbria. Even where the views of one party/actor may appear irrational or ill-informed to another, successful woodland creation depends on the ability of proponents to acknowledge differences and reconcile approaches, such that woodland creation is done not only in harmony with the landscape, but in harmony with those living and working there.

Our study has provided evidence that shows that stakeholder conflict is a significant barrier to woodland creation in upland areas and hinders the parties understanding each other and being able to work together successfully. Without mutual recognition and acceptance of the different values and motivations identified here, successful woodland creation opportunities on existing farmland in upland areas are likely to remain challenging. We recommend that future research needs a reappraisal of consultation processes, as these have been identified as causing conflict amongst stakeholders. Practitioners must continue to engage with a wide range of stakeholders and develop approaches rooted in mutual understanding, participation and collaboration. This can be done by first accepting that for some stakeholders, resistance towards woodland creation is deep rooted in concerns for the unknown societal changes ahead, emotions and values connected to cultural heritage and problematic consultation processes. Thereafter, we recommend accepting the value of including qualitative investigative approaches into the

engagement process, and using recommended evidence based inclusive protocols (Reed et al., 2017). A Q-methodology, as used here, enables the rich complexity of all stakeholders' perspectives to be taken into account and analysed into simplified factors (or groupings) characterised by similar thoughts and opinions. The method allows for subjective opinions to be raised and shared equally amongst participants, during local consultation processes, without differing viewpoints causing antagonistic conflict. Additionally, it would be beneficial to use these results in combination with a new Q-sorting process, which focused on the three factors perspective on finding solutions that would be most effective in overcoming the barriers of woodland creation in upland areas. The understanding of the three stakeholder groupings could also with benefit be used in ensuring equal stakeholder representation, with a focus on not only organisational connections, when establishing future working groups and consultation activities.

Based on the evidence presented in this paper, we challenge the often-opposing mindset between differing woodland creation stakeholder groups in Cumbria. Farmers are not against trees per se, environmentalists do not want to sacrifice cultural heritage in their quest for biodiversity recovery and the forestry sector is not only focused on economic gain by plantation planting. The Cumbrian upland landscape is perceived as highly precious for all and below the surface there is a general willingness to make landscape changes. But positive outcomes are only to be reached if inclusion, understanding, and compromises are made.

CRedit authorship contribution statement

Sara V. Iversen: Conceptualization, Methodology, Formal analysis. Investigation, Writing – original draft, Writing – review & editing, Visualization, Project administration. **Ian Convery:** Conceptualization, Methodology, Writing – review & editing, Supervision. **van der Velden Naomi:** Writing – original draft, Writing – review & editing, Supervision. **Lois Mansfield:** Writing – review & editing, Supervision. **Claire D.S. Holt:** Conceptualization, Writing – original draft, Writing – review & editing, Project administration, Supervision, Funding acquisition.

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Declaration of interest

None.

References

- Banasick, S., 2016. KenQ. (<https://shawnbanasick.github.io/ken-q-analysis/>) (accessed 01 February 2017).
- Bell, M., 2014. A comparison of forestry and hill farming: productivity and economic impact. *For. Res.*, Engl.
- Boeije, H., 2002. A purposeful approach to the constant comparative method in the analysis of qualitative interviews. *Qual. Quant.* 36, 391–409.
- Bredin, Y.K., Lindhjem, H., van Dijk, J., Linnell, J.D.C., 2015. Mapping value plurality towards ecosystem services in the case of Norwegian wildlife management: A Q analysis. *Ecol. Econ.* 118, 198–206.
- Broadmeadow, S., Nisbet, T., 2010. Opportunity mapping for woodland creation to reduce diffuse sediment and phosphate pollution in the Lake District. Farnham, Surrey, UK.
- Brown, S., Schroeder, P., 1999. Spatial patterns of aboveground production and mortality of woody biomass for eastern US forests. *Ecol. Appl.* 9, 968–980.
- Brown, S.R., 1980. Political Subjectivity: Applications of Q Methodology in Political Science. Yale University Press, USA.
- Buijs, A., Lawrence, A., 2013. Emotional conflicts in rational forestry: Towards a research agenda for understanding emotions in environmental conflicts. *For. Policy Econ.* 33, 104–111.
- Bunce, R.G., Wood, C.M., Smart, S.M., Oakley, R., Browning, G., Daniels, M.J., Ashmore, P., Cresswell, J., Holl, K., 2014. The landscape ecological impact of afforestation on the British uplands and some initiatives to restore native woodland cover. *Landsc. Ecol.* 7, 5–24.
- Carroll, M.S., Dhubháin, Á., Flint, C.G., 2011. Back where they once belonged? Local response to afforestation in County Kerry. *Irel. Sociol. Rural* 51, 35–53.
- Chamberlain, E.C., Rutherford, M.B., Gibeau, M.L., 2012. Human perspectives and conservation of grizzly bears in Banff National Park. *Can. Con. Bio* 26, 420–431.
- Church, A., Ravenscroft, N., 2008. Landowner responses to financial incentive schemes for recreational access to woodlands in South East England. *Land Use Policy* 25, 1–16.
- Colvin, R.M., Witt, G.B., Lacey, J., 2016. Approaches to identifying stakeholders in environmental management: Insights from practitioners to go beyond the 'usual suspects'. *Land Use Policy* 52, 266–276.
- Convery, I., Corsane, G., Davis, P., 2014. Making Sense of Place: Multidisciplinary Perspectives. Boydell & Brewer Ltd.
- Cordingley, L., Webb, C., Hillier, V., 2005. Q methodology. *Nurse Res.* 4, 31–45.
- Crabtree, B., Chalmers, N., Eiser, D., 2001. Voluntary incentive schemes for farm forestry: Uptake, policy effectiveness and employment impacts. *Forestry* 74, 455–465.
- Curry, N., 2008. Leisure in the landscape: rural incomes and public benefits. In: Bonn, A., Hubacek, K., Stewart, J., Allot, T. (Eds.), *Drivers of Change in Upland Environments*. Routledge, England.
- Curtis, C.J., Battarbee, R.W., Monteith, D.T., Shilland, E.M., 2014. The future of upland water ecosystems of the UK in the 21st century: A synthesis. *Ecol. Indic.* 37, 412–430.
- Davis, C.H., Michelle, C., 2011. Q methodology in audience research: bridging the qualitative/quantitative 'Divide'? *J. Adv. Res.* 8, 559–593.
- de Groot, R., Brander, L., van der Ploeg, S., Costanza, R., Bernard, F., Braat, L., Christie, M., Crossman, N., Ghermandi, A., Hein, L., 2012. Global estimates of the value of ecosystems and their services in monetary units. *Ecosyst. Serv.* 1, 50–61.
- DEFRA, J., 2018. A green future: our 25 year plan to improve the environment. HM Gov. Lond.
- Dempsey, B., 2021. Understanding conflicting views in conservation: An analysis of England. *Land Use Policy* 104, 105362.
- Dhubháin, Á.N., Fléchar, M.C., Moloney, R., O'Connor, D., 2009. Stakeholders' perceptions of forestry in rural areas—two case studies in Ireland. *Land Use Policy* 26, 695–703.
- Duesberg, S., O'Connor, D., Dhubháin, Á.N., 2013. To plant or not to plant—Irish farmers' goals and values with regard to afforestation. *Land Use Policy* 32, 155–164.
- Eyvindson, K., Kangas, A., Hujala, T., Leskinen, P., 2014. Likert versus Q-approaches in survey methodologies: discrepancies in results with same respondents. *Qual. Quant.* 49, 509–522.
- FitzGerald, O., Collins, C.M., Potter, C., 2021. Woodland Expansion in Upland National Parks: An Analysis of Stakeholder Views and Understanding in the Dartmoor National Park. *Uk. Land* 10, 270.
- Fox, P., 2012. Engaging the Agricultural Sector with Woodland Creation. Forestry Commission, England.
- Gimona, A., van der Horst, D., 2007. Mapping hotspots of multiple landscape functions: a case study on farmland afforestation in Scotland. *Land. Ecol.* 22, 1255–1264.
- Glaser, B.G., 1965. The constant comparative method of qualitative analysis. *Soc. Probl.* 12, 436–445.
- Glover, J., 2019. Landscapes Review – DEFRA final report. Gov.UK.
- Hall, C., 2008. Identifying farmer attitudes towards genetically modified (GM) crops in Scotland: Are they pro- or anti-GM? *Geoforum* 39, 204–212.
- Haslam, S.A., McGarty, C., 2014. Research methods and statistics in psychology. Sage.
- Hug, N., Stubbings, A., 2015. How is the role of ecosystem services considered in local level flood management policies: case study in Cumbria. *Engl. J. Environ. Assess. Policy Manag.* 17, 155–173.
- Iversen, S., 2019. Impacts and perspectives of woodland creation in upland Cumbria, UK. University of Cumbria (awarding body Lancaster University).
- Jerrentrup, J.S., Wrage-Mönnig, N., Röver, K.U., Isselstein, J., 2014. Grazing intensity affects insect diversity via sward structure and heterogeneity in a long-term experiment. *J. Appl. Ecol.* 51, 968–977.
- Kaiser, H.F., 1958. The varimax criterion for analytic rotation in factor analysis. *Psychometrika* 23, 187–200.
- Kenter, J.O., O'Brien, L., Hockley, N., Ravenscroft, N., Fazey, I., Irvine, K.N., Reed, M.S., Christie, M., Brady, E., Bryce, R., 2015. What are shared and social values of ecosystems? *Ecol. Econ.* 111, 86–99.
- Langpap, C., 2006. Conservation of endangered species: Can incentives work for private landowners? *Ecol. Econ.* 57, 558–572.
- Lawrence, A., Dandy, N., 2014. Private landowners' approaches to planting and managing forests in the UK: What's the evidence? *Land Use Policy* 36, 351–360.
- Madsen, L.M., 2003. New woodlands in Denmark: the role of private landowners. *Urban For. Urban. Green* 1, 185–195.
- Mansfield, L., 2012. Hill farming identities and connections to place. In: Convery, I., Corsane, G., Davis, P. (Eds.), *Making Sense of Place: Multidisciplinary Perspectives*. The Boydell Press, Woodbridge, England.
- NE 2010. Natural England: National Character Areas (England). England.
- Newing, H., 2011. Conducting Research in Conservation – A Social Perspective. Routledge, London, England.
- Nielsen-Pincus, M., Ribe, R.G., Johnson, B.R., 2015. Spatially and socially segmenting private landowner motivations, properties, and management: A typology for the wildland urban interface. *Landsc. Urban Plan.* 137, 1–12.
- Nijnik, A., Nijnik, M., Kopyi, S., Zahvoyska, L., Sarkki, S., Kopyi, L., Miller, D., 2017. Identifying and understanding attitudinal diversity on multi-functional changes in woodlands of the Ukrainian Carpathians. *Clim. Res.* 34, 1–12.

- Nijnik, M., Mather, A., 2008. Analyzing public preferences concerning woodland development in rural landscapes in Scotland. *Landsc. Urban Plan.* 86, 267–275.
- Predmore, S.A., Stern, M.J., Mortimer, M.J., 2011. Constructing the public: the 'substantive sieve' and personal norms in US Forest Service Planning. *J. Environ. Plan. Manag.* 54, 403–419.
- Reed, M., Allen, K., Attlee, A., Dougill, A., Evans, K., Kenter, J., Hoy, J., McNab, D., Stead, S., Twyman, C., 2017. A place-based approach to payments for ecosystem services. *Glob. Environ. Change* 43, 92–106.
- Reed, M., Bonn, A., Slee, W., Beharry-Borg, N., Birch, J., Brown, I., Burt, T., Chapman, D., Chapman, P., Clay, G., 2009. The future of the uplands. *Land Use Policy* 26, 204–216.
- Reed, M.S., 2008. Stakeholder participation for environmental management: A literature review. *Bio. Con.* 141, 2417–2431.
- Ruseva, T.B., Evans, T.P., Fischer, B.C., 2015. Can incentives make a difference? Assessing the effects of policy tools for encouraging tree-planting on private lands. *J. Environ. Manag.* 155, 162–170.
- Rust, N.A., Ptak, E.N., Graversgaard, M., Iversen, S., Reed, M.S., de Vries, J.R., Ingram, J., Mills, J., Neumann, R.K., Kjeldsen, C., 2020. Social capital factors affecting uptake of sustainable soil management practices: a literature review. *Emerald Open. Research* 2, 8.
- Sorice, M.G., Kreuter, U.P., Wilcox, B.P., Fox, W.E., 2014. Changing landowners, changing ecosystem? Land-ownership motivations as drivers of land management practices. *J. Environ. Manag.* 133, 144–152.
- Stephenson, W., 1935. Technique of factor analysis. *Nature* 136, 297.
- Stephenson, W., 1953. The study of behaviour. Q-technique and its methodology. University of Chicago Press, Chicago, USA.
- Thomas, H.J.D., Paterson, J.S., Metzger, M.J., Sing, L., 2015. Towards a research agenda for woodland expansion in Scotland. *J. Ecol. Manag.* 349, 149–161.
- Urquhart, J., Courtney, P., Slee, B., 2012. Private woodland owners' perspectives on multifunctionality in English woodlands. *J. Rural Stud.* 28, 95–106.
- Walder, P., Kantelhardt, J., 2018. The Environmental Behaviour of Farmers – Capturing the Diversity of Perspectives with a Q Methodological Approach. *Ecol. Econ.* 143, 55–63.
- Watts, S., Stenner, P., 2005. Doing Q methodology: theory, method and interpretation. *Qual. Res. Psychol.* 2, 67–91.
- Watts, S., Stenner, P., 2012. Doing Q methodological research: Theory, method & interpretation. Sage, Engl.
- Zabala, A., Sandbrook, C., Mukherjee, N., 2018. When and how to use Q methodology to understand perspectives in conservation research. *Conserv. Con. Bio* 32, 1185–1194.