Understanding socio-cultural factors influencing the decision-making of suppliers in green finance markets

Project Report

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1. Executive Summary

Purpose of the report

The realisation of the Green Finance Strategy is only possible if sufficient suitable land is supplied for green finance schemes. Despite the availability of capital for investment, there are growing concerns that landowners are hesitant to supply land to green finance markets or enter into long-term agreements.

The overall objective of this research was to explore the social science dimensions of supplying land for green finance and provide evidence to inform future green finance policy approaches. Specifically, this research aimed to identify:

- The categories of landowners who may have an interest in engaging with green finance markets and schemes
- The range of personal, socio-cultural and contextual factors that could drive and inhibit landowners from supplying land to green finance
- Policy recommendation on the role of government and arms lengths bodies (ALBs) (Natural England) could play in encouraging landowner participation in emerging green finance markets.

Methods

A mixed methods approach was adopted involving a rapid evidence review of 12 papers and 11 stakeholder interviews with landowners and landowner representatives.

The rapid evidence review was used to assess the existing evidence about decisions to supply land to green finance schemes. As green finance is a developing market in the UK there was found to be a limited body of high-quality research specific to green finance. The review, therefore, included evidence related more broadly to engagement with payment for ecosystem service (PES) schemes and schemes that were similar to green finance (i.e., publicly funded land use schemes that produce environmental benefits). The results of the rapid evidence review were used to identify gaps in our knowledge about the types of landowners who may supply land to green finance and the range of personal, socio-cultural, and contextual factors that inform these decisions.

Building on the rapid evidence review, the qualitative research took a stakeholder perspective to enable a more specific exploration of the factors influencing the decision to supply land for schemes funded by private (or blended) capital streams. Additionally, landowner and stakeholder perceptions of what makes a green finance market effective and equitable were explored to develop an initial set of recommendations for Natural England to better respond to incentives and barriers of landowners to supply more land to green finance.

Findings

Landowner categories

Landowners are not a homogenous group, and there is significant variation in willingness to engage and the factors influencing decision-making between and within landowner categories (e.g., farmers vs corporations, wealthy vs less wealthy farmers, dairy farmers vs arable farmers). However, this research suggests cross-cutting characteristics that may influence willingness to engage with green finance. Farmers and tenant farmers are a particular group of interest due to the large amount of land they collectively manage and their motivation to increase, diversify and stabilise income in the future. Among farmers, those who are younger, wealthier or with more social capital may be more likely to engage in green finance schemes. However, farmers, particularly tenant farmers, face significant barriers, including existing agreements (i.e., tenancy agreements and stewardship schemes) that reduce their ability to supply land for green finance. Others who may be particularly willing to engage with green finance include landowners with environmental motivation embedded in their business objectives and those with larger areas of land or greater resources available.

Factors influencing engagement with green finance

The research revealed a range of motivations and barriers that were particularly pertinent in the decision to engage with green finance, as opposed to traditional publicly funded environmental land management schemes.

A key motivation to engage with green finance across all types of landowners is the desire to increase, diversify and stabilise income: the private nature of green finance can be perceived as a route to achieving this goal. Landowners also value agency, so perceptions around the extent of flexibility in green finance schemes influenced willingness to engage.

There is considerable uncertainty around the potential financial gains, rules and regulations and payment structures of schemes and the risks involved, which can increase hesitancy to engage. In this context of uncertainty, the long-term nature of green finance schemes also emerged as a significant barrier. Taxation was a barrier to changing land use away from agriculture, as current inheritance tax structures that protect against land loss for agricultural land do not extend to land used for nature recovery. Anxiety around greenwashing, and being associated with greenwashing, was also a factor resulting in a hesitancy to engage in green finance.

Generally, landowners are influenced by the attitudes and behaviours of others in their social network. Landowners may be more willing to engage with green finance when they can see the benefits and practicalities of supplying land to green finance demonstrated by other landowners.

Finally, landowners, particularly farmers, often have strong identities and beliefs about land use. When these identities and values conflict with the types of land use and land management landowners associate with green finance schemes, this can reduce openness to engaging with green finance.

Recommendations

Overcoming barriers to engagement

Some initial recommendations emerged from the rapid evidence review and stakeholder interviews that will support and encourage landowner participation in green finance schemes and developing effective and equitable markets.

Our findings suggest that it will be important to reduce uncertainty and develop landowner skills and knowledge by providing clear information, tools and advice through trusted sources to help landowners understand the potential financial impact of green finance. Clarification regarding tax rules and structures to incentivise participation is needed, in addition to financial support to cover the upfront costs faced by landowners to enter green finance schemes.

Schemes should also work to aggregate and connect landowners to leverage social influences and to offer flexibility so that participants can exercise agency. There is also a need to ensure that the perceptions of schemes align with the values and identities that landowners hold, potentially using communication campaigns and scheme design to respond to perceptions and support social change.

Developing an effective and equitable market

The research also identifies 3 key factors that, from the landowners' perspective, will contribute to an effective and equitable green finance market.

First, payment structures are important. Fixed payments could enhance equity by ensuring landowners are fairly rewarded for their efforts and reducing financial risks associated with outcome-based payments. However, outcome-based payments may be better suited to ensure that environmental outcomes are achieved and increase the effectiveness of the market.

Second, there needs to be clear market governance with clarity on the rules and regulations around schemes, for example, how 'stacking' is integrated. Allowing the stacking of eco-system payments may increase the financial viability of supplying land to green finance and increase incentives for landowners to participate. However, unregulated stacking may increase the risk of greenwashing and result in poorer environmental outcomes. Further research is needed to shape the rules around schemes and the governance of emerging markets.

Third, there is a need for more research to identify the attributes of environmental outcomes that should be measured and accurate methodologies and tools used to record and report on these outcomes. Doing so will improve standardisation across schemes and is likely to increase willingness to engage in green finance on both the demand and supply sides.

What is the role of Natural England?

Natural England can support and inform landowner engagement with green finance. This can be achieved through support for the following:

1. Taking a role in creating and standardising measurements and methodologies.
2. Acting as a regulatory body in the market to ensure equity across schemes and effectiveness in achieving environmental outcomes.
3. Establishing or supporting an intermediary body to connect the supply and demand side of green finance and act as a trusted and visible information source for landowners.

2. Background and Methods

Background

The UK Government's 2019 'Green Finance Strategy' (BEIS, 2019) proposed to leverage significant private sector investment to fund 'Green Finance' initiatives. Green financing describes a loan or investment that funds activity to support the delivery of the UK's carbon targets and clean growth, resilience, and environmental ambitions. Green finance encompasses a wide range of initiatives (e.g., rewilding and reforestation of Scottish Highland (Trees for Life) and creation of bog and peatland (Wyre River Natural Flood Management)) and investors, including corporate investors, voluntary schemes and local authorities on behalf of developers. Implementing and adopting green finance strategies is essential in achieving ambitious international and national net-zero emissions targets and promoting nature recovery. However, realising the Green Finance Strategy is only possible if sufficient suitable land is supplied for schemes. Indeed, despite the availability of capital for investment, there are growing concerns that landowners are hesitant to supply their land for restoration schemes or enter into long-term agreements which restrict land use (Barkley et al., 2022; Inman et al., 2018).

This research was commissioned by Natural England and the Department for Food, Environment and Rural Affairs (Defra) to explore social science dimensions of the decision to supply land to green finance and provide evidence to inform future green finance approaches.

This research has three overarching research questions:

1. What are the **main categories of landowner** in England who may have an interest in becoming suppliers in green finance markets and related schemes?

2. What is the indicative range of **personal, socio-cultural, and contextual factors** that could **drive** these landowners to enter some or all of their land into green finance markets and related schemes?

3. What is the indicative range of **personal, socio-cultural, and contextual factors** that could **inhibit** these landowners from entering some or all of their land into green finance markets and related schemes?

Methods

Rapid Evidence Review

The rapid evidence review (RER) aimed to conduct an efficient search to provide an indicative range of the personal, socio-cultural, and contextual factors that drive or inhibit landowners and managers to supply land to green finance schemes and related activities.

We prioritised systematic reviews supplemented with individual studies and grey literature.

To decide on keywords, we first hand searched articles relevant to green finance schemes and landowners' and managers' land use considerations using the Google Scholar database (https://scholar.google.com/). Based on the relevant articles and systematic reviews found, we agreed on the following keywords to use in our final literature search: Landowner, Personal social cultural factors, Drivers of behaviour, Environmental, Sustainable, Land management, Land use, Literature review, Systematic review, Metanalysis.

To narrow the search to 12 articles, we then created a search syntax: ("landowner") AND (“personal social cultural factors” OR “drivers of behaviour”) AND (“environmental” OR “sustainable”) AND (“land management” OR “land use) AND (“literature review” OR “systematic review” OR “metanalysis”).

We used this syntax to search for academic literature on Google Scholar and used the keywords to search for grey literature using Google. The UK Woodland Carbon Code was set up in 2011 and is one of the earliest influential examples of a voluntary scheme promoting land use for nature recovery and generating private finance. Therefore, we restricted our search to papers published after 2010.

The green finance market in England is relatively new and in early-stage development. Therefore, we designed the inclusion criteria to include evidence of landowner and manager land use decisions to supply land to schemes that pay landowners for land use that produces environmental benefit targeting Peatlands (e.g., Peatland Code), Woodland (e.g., Woodland Carbon Code), and Agriculture (e.g., Agri-environmental schemes).

We also drew on recommendations of relevant papers, including grey literature from the green finance steering committee, made up of members from Defra, NE, and the EA.

Between October and November 2022, three researchers conducted iterative and independent searches using the same resources and search terms. Across these searches, 1090 search results were returned and identified 27 articles and reports that met our set of systematic inclusion and exclusion criteria (see Appendix B, Table 3). From this group, we reapplied our inclusion and exclusion criteria to select 12 papers most relevant to our research question. Reasons for excluding papers at this stage include having too broad a focus (i.e., focusing on land acquisition rather than land use or supply, or conservation opportunity rather than specific behaviour or activities) or not focusing specifically on the social, contextual, and cultural factors driving landowner/manager land use decisions.

To meet our inclusion criteria, studies needed to be written in English. Although, papers that addressed landowner and land manager land use decisions in countries that were most like the UK in terms of culture, farming context, land-use, and ownership categories were also considered. Literature from the UK, Australia, New Zealand, the USA and countries in Western Europe were included in the sample. Studies needed to have

collected primary data or conducted a systematic review or meta-analysis. Opinion and comment pieces were excluded. We excluded evidence that explored green finance market engagement from the perspective of non-landowner/manager stakeholders or from the demand side.

Qualitative Research

The qualitative research consisted of 11 interviews with landowners and managers, estate management companies, local councils, representative bodies, individuals involved with green finance or sustainability projects and stakeholder networks. Individual contacts were initially suggested by Natural England Green Finance Steering Group members and contacted by email. Further contacts were then recruited via snowballing from these contacts. Interviews lasted sixty minutes and were conducted virtually over Zoom. A semi-structured topic guide and stimulus were used to focus the conversation during the interviews (see Appendix C: Qualitative research for the topic guide). Interviews were conducted in December 2022.

Limitations

The rapid evidence review was designed to provide an informative rather than an all-encompassing review of the literature. As a result, the review takes an in-depth but not a systematic approach to address the research questions. Therefore, there may be research relevant to our research questions that is not included in the review.

As green finance is in its infancy in the UK, there is a limited pool of high-quality research specific to green finance. Therefore, we included both evidence on the behavioural factors in land use decisions to supply land to green finance and green finance-related schemes (i.e., government-funded schemes targeting peatlands, woodland, and agriculture designed to produce an environmental benefit that could be sold as a product under a green finance scheme). While it is a limitation of the rapid evidence review that the results may not be specific to green finance schemes, we were able to further investigate the specific considerations to supplying land for green finance schemes, as opposed to publicly funded environmental schemes, in the qualitative research.

A limitation of the primary qualitative research is that the findings cannot necessarily be generalised to the UK population of landowners and managers due to the small sample size. Additionally, due to project restrictions, not all landowner types are represented in the sample (for example, the sample did not include any tenant farmers).

Participants were recruited for the online interviews using Steering Group member contacts. As a result, the sample was potentially more engaged in green finance than England’s average landowner and manager. We focused on recruiting individuals who have considered, participated in, or been involved in a green finance scheme to gain insight into the barriers and facilitators of engagement in green finance schemes. Therefore, important considerations and barriers to landowner engagement in green finance may not have been captured by this qualitative research.

We also did not recruit many individual farmers or small to medium-sized landholders as these individuals were more difficult to reach and engage through Steering Group member contacts. Although not landowners or managers themselves, we instead focused recruitment on landowner representatives and representatives from stakeholder networks who were well-positioned to discuss the experiences and perspectives of different landowner types and provide recommendations for developing effective and equitable green finance markets. As a result, many of the people we spoke to about the barriers facing smaller landowners and farmers were not themselves smaller landholders; this should be considered when interpreting the results.

Another potential limitation was that our interviews were conducted online, meaning that our qualitative sample was not likely to include digitally excluded landowners, a group highlighted in the rapid evidence review as hard to engage in green finance.

3. Rapid Evidence Review

We reviewed 12 papers of which 7 were published in academic journals and 5 were grey literature. While we prioritised systematic reviews in our search protocol, the included papers varied in methodology with 4 papers using systematic literature reviews, 3 case studies, and 5 mixed methods articles. In terms of geographical context, 10 papers focused on the UK (or countries within the UK) and, of these papers, 3 also included evidence from other countries relevant to a UK context (i.e., European, and North American countries, Australia, and New Zealand). The remaining 2 papers with a non-UK focus were based in Australia. In terms of scheme design, 5 papers focused on social-cultural participation factors of private and/or blended finance schemes, while 7 focused on public grants and schemes. Of the 5 papers focused on private and/or blended capital schemes, 3 focus on UK landowners, 1 includes evidence from the UK as well as other countries, and 1 focuses on an Australian context.

All papers focused on private landowner and land manager decisions to supply land to activities that support delivery of carbon targets, clean growth, and environmental recovery. However, the types of schemes and land use activities covered across the 12 papers varied to include woodland creation and management (Evans, 2018; Lawrence & Dandy, 2014; Staddon et al., 2021), Agri-environmental schemes (Coyne et al., 2021; Mills et al., 2021), Environmental Land Management schemes (ELMs) (Hurley et al., 2022), Long-Term Agreements (LTAs) (Barkley et al., 2022), restoring peatlands (Moxey et al., 2021; Reed et al., 2020), mitigation activities for combating diffuse water pollution from agriculture (Inman et al., 2018), Regional Land Use Partnerships (RLUPs) (Reed et al., 2022), and conservation markets (Zammit, 2013). For the full paper characteristics, see Appendix B, Table 4.

While all papers met our inclusion and exclusion criteria and were relevant to our research questions, the quality of the evidence varied (see Appendix B, Table 5). In the case of 9 papers, the quality was assessed as good or very good, while 3 were of lower quality. The main issue was a lack of systematicity caused by reliance on case study reviews as opposed to primary research (Evans, 2018; Moxey et al., 2021), reporting results from the literature non-systematically (Evans, 2018), and methods not being reported clearly (Zammit, 2013).

Across the next sections, the ISM model described below is used to organise the findings of the rapid evidence review.

Individual, Social, Material (ISM) Model

The ISM model was developed to support policy making in situations where significant levels of social change are required and it is important to engage people and influence their behaviour (Darnton & Horne, 2013). As shown in Figure 1, the model involves three layers of context that shape behaviour, the individual, social and material.

Individual: This includes the factors held by the individual that affect the choices and the behaviours he or she undertakes. These include an individual's values, attitudes, and

skills, as well as the calculations he/she makes before acting, including personal evaluations of costs and benefits.

Social: This includes the factors that exist beyond the individual in the social realm yet shape his or her behaviours. These influences include understandings that are shared amongst groups, such as social norms and the meanings attached to particular activities, as well as people's networks and relationships, and the institutions that influence how groups of individuals behave.

Material: This includes the factors 'out there' in the environment and wider world, which both constrain and shape behaviour. These influences include existing 'hard' infrastructures, technologies, and regulations, as well as other 'softer' influences such as time and the schedules of everyday life.

Taking into account motivations and barriers across all these layers of context can help to identify where there is potential to develop effective interventions to change behaviour.

Figure 1. ISM Model

Individual factors

The individual context describes the factors held within an individual that underlie their decision-making process and behaviour. The ISM model describes 6 distinct components of the individual context: (1) Values, Beliefs, and Attitudes, (2) Costs and Benefits, (3) Emotions, (4) Agency, (5) Skills, and (6) Habits.

Values, beliefs, and attitudes

Landowners are more likely to engage with green finance schemes and supply their land when their personal values and priorities align with that of the scheme and land use

activity (Coyne et al., 2021). Landowners who are engaged with green finance schemes are in general more likely to value conservation, biodiversity, wildlife, and animal welfare as management objectives (Coyne et al., 2021). These values are associated with landowners who identify as custodians or guardians of the landscape (discussed in more detail under Roles and Identity) (Lawrence & Dandy, 2014; Staddon et al., 2021).

Beliefs about the "best use" of land are an important factor shown to influence attitudes towards land use change (Staddon et al., 2021). For example, Staddon et al. (2021) found that farmers held negative attitudes towards woodland creation on unwooded land due to beliefs that land is "too good" or "too profitable" for woodland. Other beliefs reported as barriers to land use change decisions are that:

- Land use change will reduce job satisfaction (e.g., farming as opposed to managing woodland) (Staddon et al., 2021);
- Some types of land use change (e.g., woodland creation, peatlands) are perceived as permanent and irreversible (i.e., there is a risk of not having the option to – or not being able to afford to – revert to previous land use if markets were to change) (Evans, 2018; Reed et al., 2020; Staddon et al., 2021); and
- Land use change will result in worse or uncertain outcomes as opposed to maintaining the status quo (Mills et al., 2021).

Some papers also report landowner beliefs about joining schemes, specifically, as barriers to engagement:

- Joining a scheme will increase visibility and open farmers up to the judgement of other farmers, leading to being exposed as a "bad farmer" (Hurley et al., 2022);
- Scheme engagement is risky and by joining farmers may incur financial penalties from mistakenly breaking terms of agreements such as filing incorrect paperwork or failing inspections (Barkley et al., 2022; Hurley et al., 2022);
- Joining sustainable management schemes (e.g., carbon sequestration) can reduce landowner revenue (Hurley et al., 2022); and
- Environmental subsidies schemes are not relevant to them (particularly for smallholders who have historically not needed to, or been able to, claim environmental subsidies) (Hurley et al., 2022).

Costs and benefits

Most landowners do not consider profit the most important factor in land use decisions (Lawrence & Dandy, 2014; Staddon et al., 2021). However, financial costs and benefits are often given as reasons for supplying or withholding land from green finance schemes and activities (Barkley et al., 2022; Coyne et al., 2021; Evans, 2018; Lawrence & Dandy, 2014; Mills et al., 2021; Moxey et al., 2021; Reed et al., 2022).

A key financial consideration is the stability of future payments especially as future profitability is often uncertain (Barkley et al., 2022, 2022; Coyne et al., 2021; Lawrence & Dandy, 2014; Moxey et al., 2021; Reed et al., 2020), existing agricultural policy support in the form of cash payments and or tax breaks are not designed to explicitly reward ecosystem service benefits (Moxey et al., 2021), and the success of activities can be impacted by factors outside of a landowner's control (e.g., political uncertainty, weather) (Evans, 2018; Inman et al., 2018). In this way, landowners are risk averse as they prefer to engage in schemes (e.g., agri-environmental schemes) that offer guaranteed payment to offset uncertainty over future financial returns and reduced productivity (Barkley et al., 2022). This is particularly true of smaller farmers with fewer resources, who run greater risks when adopting new practices compared to larger farmers who can benefit proportionately more (Hurley et al., 2022). This links to wider debates about whether it is more effective for green finance schemes to implement incentive instruments that reward outputs (direct results produced by the project, such as trees planted or megawatts of clean energy produced), outcomes (changes in an environment affected by outputs, such as reduced soil erosion as a result of trees planted), or both.

Landowners require clear and accessible information on the relative benefits and costs of adopting activities to make an informed decision about land use change and supply decisions (Evans, 2018; Zammit, 2013). Some landowners report policy inconsistency as a barrier to engagement, where advice can be contradictory even when coming from the same source (Hurley et al., 2022). Advice delivered across multiple delivery channels has been found to be the most efficient way of getting messages across to hard-to-reach land managers (Staddon et al., 2021).

There are also examples of associated costs that are not directly financial. These include:

- Costs associated with additional administrative burdens of scheme uptake and activity monitoring (Coyne et al., 2021);
- Some land use is more resource intensive than others (e.g. agroforestry is considered more difficult than agriculture as it requires more skills, knowledge, labour, capital, and time than traditional farming) (Staddon et al., 2021);
- Land use change can negatively impact the productivity of other land uses (e.g., planting trees on agricultural land may create poor light conditions for crops) (Staddon et al., 2021);
- Some schemes require the provision of public access which may lead to litter and vandalism (Lawrence & Dandy, 2014; Staddon et al., 2021);
- The potential of losing income or grants from other land uses (as a result of additionality criteria) and the relative profitability of agriculture (Lawrence & Dandy, 2014; Reed et al., 2022).

There are also costs associated with uncertainty, for example, many landowners report experiencing shifts in policy and incentive schemes that make it difficult to identify the

most beneficial schemes to engage in and increase the perceived risk of committing to a specific scheme, effectively paralysing the market (Coyne et al., 2021; Evans, 2018; Lawrence & Dandy, 2014; Moxey et al., 2021; Staddon et al., 2021)

In many cases, a reason for not engaging in scheme activity is that the benefits are obtained over too long of a time frame (Lawrence & Dandy, 2014; Moxey et al., 2021; Staddon et al., 2021). This is particularly relevant to tenant farmers (Staddon et al., 2021) and older farmers without succession plans (Mills et al., 2021) who may not be around to see any return on investment.

Emotions

Landowners report feeling personal pleasure from activities that enhance the countryside and the landscape (Staddon et al., 2021) and pride associated with the legacy of land management (Staddon et al., 2021) and maintaining the environment (Coyne et al., 2021). However, negative emotions such as feeling “excluded and disenfranchised” have been reported by farmers where natural regeneration projects created competing cultural narratives of what constitutes correct and incorrect land management practices, and subsequent changes in valuations of landscapes (Staddon et al., 2021).

Agency

Land-owners and managers can perceive regulation as exerting considerable influence over their decisions leading to inflexible and restrictive land management regimes (i.e., being constrained to “designated sites” for activity, and being forced to allow public access) (Lawrence & Dandy, 2014; Staddon et al., 2021). Therefore, landowners have been known to demand higher compensation payments relative to short term agreements, termed an "Inflexibility Premium", to offset this inflexibility and loss of agency as a result of scheme membership (Barkley et al., 2022). Another consideration is that agency losses from entering into long-term agreements may be passed onto inheritors of land (Staddon et al., 2021). Therefore, schemes with range and flexibility in terms of eligible interventions are preferred, especially when landowners can select activities that align with the conservation features and land management practices of their individual farms, increasing their perceived control and customisability (i.e., delivering interventions that work on their land) (Coyne et al., 2021).

Some farmers report feeling disempowered in the market (price takers rather than price makers) resulting in farming more intensively than is ideal and incurring negative consequences for the environment (Inman et al., 2018). This strong sense of financial disempowerment and the perceived inevitability of environmental damage can demotivate farmers to participate in schemes (Mills et al., 2021).

Skills

Gaps in landowner knowledge of markets and market-based instruments (e.g., metrics used to determine outcomes/scores and market allocation instruments) can make

navigating highly complex schemes difficult (Lawrence & Dandy, 2014). Additionally, low awareness of schemes and the benefits of nature recovery activities can result in lower uptake of conservation behaviour and scheme engagement, which is of particular relevance to peat land restoration relative to other activities such as woodland creation and management (Moxey et al., 2021; Staddon et al., 2021).

Formal education is one of the strongest factors determining conservation behaviour (Mills et al., 2021; Staddon et al., 2021). Farmers with comparatively low formal education (e.g., who left school without taking exams) are less likely to participate in agri-environmental schemes, to adopt environmentally friendly farming practices (Mills et al., 2021), or plan to plant trees (Staddon et al., 2021). Relatedly, there is some evidence indicating dyslexia is more prevalent within the farming community relative to the general population (NFU Scotland, 2020), which could exacerbate the negative impact of scheme complexity and result in lower levels of engagement (Hurley et al., 2022).

Poor digital skills and connectivity can negatively impact engagement in schemes as many consultations are conducted online (Hurley et al., 2022). Older farmers and smaller rural-based landowners are more likely to suffer from the digital divide (Hurley et al., 2022).

Nature restoration requires specialist knowledge and skills which are of limited supply at the local level (Moxey et al., 2021; Staddon et al., 2021) with some landowners expressing concerns that they will not have access to or time to learn the knowledge and skills needed (Reed et al., 2020).

Habits

Landowners who already engage in unsubsidised environmental activity are more likely to supply land to green finance related schemes and activities (Mills et al., 2021; Staddon et al., 2021). Reluctance to give up familiar and favoured farming practices, particularly in older farmers, was also reported as a barrier to land use change (Hurley et al., 2022). This is particularly relevant as, in 2016, over a third of all landholders were over the age of 65 years, while only 3% were aged less than 35 years (DEFRA, 2022).

Social factors

The social context describes the factors that exist beyond the individual in the social realm that influence perceptions and behaviour. The ISM model describes seven distinct components of the social context: (1) Networks and Relationships, (2) Meanings, (3) Tastes, (4) Roles and Identity, (5) Norms, (6) Institutions, and (6) Opinion Leaders.

Networks and Relationships

Scheme participation can increase landowner exchange of ideas, build trust and social capital (Hurley et al., 2022; Mills et al., 2021; Staddon et al., 2021; Zammit, 2013). However, landowners with high social capital are also more likely to participate in schemes in the first place, as low social capital landowners are “harder-to-reach” and less likely to

be influenced by others' behaviour (Hurley et al., 2022). Indeed, proximal social influences can influence scheme engagement. For example, farmers are more likely to participate in woodland expansion schemes if woodland exists on neighbouring farms (Staddon et al., 2021). Discussing plans with family has been evidenced as an important part of decision processes for farmers, and there is also evidence that familial relations become more influential in decision-making as farmers age (i.e., through reinforcement of tradition, family heritage, continuity, and legacy) (Lawrence & Dandy, 2014; Staddon et al., 2021).

Schemes that connect landowners provide the additional benefit of information sharing, reducing knowledge gaps and increasing awareness. This leads to the revision and improvement of management approaches, independent of success in the scheme (Mills et al., 2021; Zammit, 2013). Networking among landowners can also strengthen shared understandings about the conservation significance and build common understandings about emerging market opportunities and the implications of these for local community wellbeing (Zammit, 2013). Better networks can also result in positive environmental outcomes due to collective commitment-making and a sense of collective efficacy (Mills et al., 2021).

Landowners express a preference for a landowner-led approach to land-use decisions and collaboration (Barkley et al., 2022; Evans, 2018; Inman et al., 2018; Staddon et al., 2021). For example, farmers prefer to learn from other farmers due to their applied experience, lack of external agenda, and greater levels of trust (Evans, 2018; Inman et al., 2018; Staddon et al., 2021). Farmers also prefer to work collaboratively with neighbouring properties, making schemes requiring competition for market efficiency undesirable (Inman et al., 2018).

Trust and good communication between landowners and institutions, both government and external, can improve the efficacy and enrolment in environmental schemes and increase conservation activities (Hurley et al., 2022; Mills et al., 2021; Reed et al., 2022; Staddon et al., 2021; Zammit, 2013).

Meanings

Land management can hold cultural meaning, making changes in land use away from existing practices more difficult (Lawrence & Dandy, 2014; Moxey et al., 2021; Staddon et al., 2021). Owning a resource, such as farmland or woodland, can be seen as a means to enact or implement one's values in the world (Lawrence & Dandy, 2014). As such, land use change may be constrained by a desire to honour practices and maintain landscapes inherited from previous generations, rather than undertake what is perceived as a radical and possibly irreversible change (Moxey et al., 2021). Especially as the beauty and character of landscapes and features are strongly associated with the traditions of the land management that produced them (Mills et al., 2021). Additionally, the act of taking land out of production when many farmers have struggled to cultivate the land in the past can be seen by farmers as morally questionable (Staddon et al., 2021). However, landowners can also place cultural meaning in the act of conserving and protecting the environment,

particularly features regarded as important in terms of a landscape's social and cultural history (Mills et al., 2021).

Tastes

Some landowners express a preference for maintaining the aesthetics of agricultural land (e.g., crop management) due to strong cultural meanings and as it can increase social status (Lawrence & Dandy, 2014; Staddon et al., 2021). Particularly in farming, landowners may prefer to retain cultural capital by prioritising a farm that is 'tidy' and well managed to one that has wild growth and field margins beneficial to biodiversity (Hurley et al., 2022). This is also reflected in the desire to maintain 'productive' land, and the consequent resistance to 'abandoning' land to woodland regeneration (Lawrence & Dandy, 2014; Staddon et al., 2021).

Roles and Identity

Farming identities are partly composed of perspectives on what it is to be a 'good farmer' (Mills et al., 2021; Staddon et al., 2021). Differing levels of commitment to environmental responsibility, agricultural productivity, and farm business management have clustered around a three-fold identity typology (Mills et al., 2021):

- the profit maximiser;
- the food producer or productivist; and
- the custodian or guardian.

Supplying land to certain green finance schemes may create a tension between the identity valued by farmers and the identity they enact with their land use decisions (Lawrence & Dandy, 2014). Farmers identify themselves first and foremost as producers of food (or "productivists") as opposed to environmental managers or someone who plants trees (Inman et al., 2018; Reed et al., 2020; Staddon et al., 2021). Therefore, non-producer or absentee landowners are more likely to participate in conservation schemes involving perpetual agreements than those who derive their primary income from their land (Barkley et al., 2022). Small private woodland owners on the other hand are more likely to see themselves as custodians, driven by the heritage value of woodland, landscape beauty and aesthetics, and have a desire to conserve wildlife (Lawrence & Dandy, 2014; Staddon et al., 2021)

Norms

Normative perceptions held by landowners may influence land use decisions (Inman et al., 2018; Mills et al., 2021; Staddon et al., 2021). For example, there is a socially influenced perception that earning a living from the environment is viewed as a less noble occupation than being a producer of food (Inman et al., 2018); and a perception that 'correct land use' is linked to desire to be seen as doing the right thing, or doing 'good farming' by others (Staddon et al., 2021).

However, it may be possible to change perceptions of what is deemed as an acceptable practice by increasing the visibility of the practices of farmers who are already engaged in green finance schemes to their peers (Mills et al., 2021). It should be noted, however, that younger farmers may be more sensitive to social responsibility norms than older farmers (Staddon et al., 2021).

Institutions

Land tenure affects land-managers' ability and willingness to participate in or receive benefits from some changes in land use (Mills et al., 2021; Staddon et al., 2021). As a result, tenant farmers demonstrate a lower degree of engagement with schemes than landowner managers due to uncertainty about long-term tenancy agreements with the landlords and whether benefits will be shared with tenants (e.g., activities may not lead to a corresponding reduction in rent or direct payment) (Mills et al., 2021).

Opinion Leaders

Having a trusted intermediary between landowners and scheme organisers is an important indicator of the decision to supply land to green finance schemes (Evans, 2018). Given the distributed nature of farming stakeholders across landscapes, working with trusted intermediaries (e.g., local organisations and aggregators) can help to reduce transaction costs and facilitate greater levels of engagement than would otherwise be possible (Lawrence & Dandy, 2014; Reed et al., 2022).

Landowners value advice from external advisors with existing levels of rapport (Mills et al., 2021). Therefore, pre-existing bilateral relationships, such as with the agencies and environmental Non-Governmental Organisations (NGOs) are generally viewed as better placed to create new connections and relationships (Reed et al., 2022). Also, NGOs (e.g., Linking Environment and Farming, Game and Wildlife Conservation Trust, Farming and Wildlife Advisory Group) often have the skills and contacts needed to coordinate collaboration between various stakeholders and take a bottom-up participatory approach to addressing local needs and issues (Barkley et al., 2022).

Material factors

The material context describes the factors in the environment and wider world that both constrain and shape behaviour. The ISM model describes 5 distinct components of the material context these include "hard" constraints: (1) Rules and Regulations, (2) Technologies, (3) Infrastructure, and "softer" constraints (4) Time and Schedule.

Rules and Regulations

Some scheme requirements may put landowners off from supplying their land (Lawrence & Dandy, 2014). For example:

- Public access requirements are reported as barriers to land-owner participation in grant schemes to create and/or manage woodlands (Lawrence & Dandy, 2014).

- Felling regulations can affect willingness to create woodland, because they contribute to the perception that tree planting is an irreversible change in land use (Lawrence & Dandy, 2014).

- Ecosystem markets may prevent stacking of payments for multiple ecosystem service outcomes (Reed et al., 2022).

The administrative bureaucracy involved in applying for schemes can be seen as overly complex and a barrier to engagement (Evans, 2018; Hurley et al., 2022; Moxey et al., 2021; Staddon et al., 2021). Additionally, scheme complexity was cited as a major contributing factor to withdrawal from long-term finance agreements (Barkley et al., 2022). Similarly, schemes with too many limitations and restrictions are off-putting, and are perceived as providing insufficient financial reward and too many demands (Coyne et al., 2021).

Technologies

Farmers with poor internet and digital connectivity find it harder to engage as it is more difficult to participate in online consultations or online webinars (Hurley et al., 2022). Farmers may also lack the technology and tools to transition to new land use activities (Staddon et al., 2021)

Infrastructure

Land use change is more likely on less productive areas and can be limited by aspects of land type such as soil quality and slope morphology (Staddon et al., 2021). Land use change decisions can also be influenced by nearby infrastructure (e.g., woodlands located away from roads can have increased costs of biomass extraction) (Staddon et al., 2021).

Farm type can also determine social capital and historic engagement with policymakers, which can determine trust in institutions and previous experiences of scheme engagement (Hurley et al., 2022).

Time and Schedule

A barrier to land use change is that some activities require longer timeframes until benefits can be reaped (Lawrence & Dandy, 2014; Staddon et al., 2021). For example, unlike annual agricultural crop cycles, woodland creation may be unlikely to show results (and therefore provide social status and reward) within a meaningful timeframe for (or even in the lifetime or tenancy of) the farmer (Lawrence & Dandy, 2014; Staddon et al., 2021).

Concerns about the implications of long-term property commitments and contract lengths encourage more attention towards succession planning for family enterprises (Mills et al., 2021; Zammit, 2013). Succession has been found to both positively and negatively

influence the uptake of environmental practices (Mills et al., 2021; Staddon et al., 2021). Farmers without successors disengage from full-time agriculture and extensity (benefitting the environment). However, no-succession farmers may be disincentivises to enter land into conservation agreements due to 'winding-down', poor labour availability, or wanting to have the flexibility to sell the land (Mills et al., 2021).

Changes in behaviour are more likely to occur at particular times or under certain circumstances, such as a change in ownership, inheritance, in response to crises or threats (e.g. disease outbreak, flooding), or through the spread of innovation (Mills et al., 2021; Staddon et al., 2021).

Discussion: Rapid evidence review

What is the indicative range of personal, socio-cultural, and contextual factors that could drive or inhibit these landowners to enter some or all of their land into green finance markets and related schemes?

This review highlights three key factors that may drive landowner participation in green finance schemes. For one, landowners may be more inclined to participate in schemes offering guaranteed payment to offset uncertainty over future financial returns and reduced productivity (Barkley et al., 2022). Second, schemes that provide landowners with opportunities to increase their social capital by strengthening their network of landowners can provide the additional benefit of improved information sharing (Hurley et al., 2022; Lawrence & Dandy, 2014; Zammit, 2013), and may result in better environmental outcomes due to collective commitment-making and improved sense of collective efficacy (Mills et al., 2021). Third, NGOs and supply aggregators that have good rapport with landowners can help to reduce transaction costs and risk; therefore facilitating greater levels of engagement than would otherwise be possible (Lawrence & Dandy, 2014; Reed et al., 2022). These institutions and opinion leaders are the preferred avenues for developing relationships as they have already established relationships with landowners and can take a bottom-up participatory approach to addressing local needs and issues (Barkley et al., 2022).

We identified three factors that might inhibit landowner participation in green finance schemes. First, perceived and actual loss of agency is a barrier to participation, especially since owning a resource, such as farmland or woodland, can be seen as a means to enact or implement one's values in the world (Lawrence & Dandy, 2014). As a result, schemes that are inflexible in terms of the types of interventions that landowners can implement or that impose highly restrictive land management regimes may inhibit participation (Evans, 2018; Lawrence & Dandy, 2014; Zammit, 2013). Second, land management holds important cultural meanings which in turn inform land management norms and aesthetics valued (Inman et al., 2018; Lawrence & Dandy, 2014; Mills et al., 2021; Staddon et al., 2021). Specifically, beliefs about best use of land can influence attitudes towards land use change (Inman et al., 2018; Mills et al., 2021). More research is needed to understand how green finance schemes can acknowledge and accommodate these cultural meanings to improve perceptions of earning a living from environmental restorative and protective

land management. Third, the complexity of regulations and requirements is an important barrier to engagement for many landowners (Evans, 2018; Hurley et al., 2022; Moxey et al., 2021; Staddon et al., 2021), and a large contributing factor to scheme dropout (Barkley et al., 2022).

Most of these identified barriers and facilitators to supplying land to green finance are supported by evidence in a private or blended finance context, or both a public and private finance context. However, the evidence supporting the importance of social networks as a facilitator, and the cultural importance of other land uses as a barrier, comes from research focused on publicly funded schemes. Therefore, more research is needed to explore the impact of these factors on participation in green finance schemes.

What are the main categories of landowner in England who may have an interest in becoming suppliers in green finance markets and related schemes?

The evidence reported provides insight into the main categories of landowner who have an interest in becoming suppliers in green finance markets and related schemes. For example, landowners who identify as “productivists” (landowners who place value on land productivity and food production) may be less likely to participate where scheme activities involve repurposing land away from agriculture (Inman et al., 2018; Reed et al., 2020; Staddon et al., 2021). Alternatively, those who identify as “custodians” (or guardians of land), where activities are more consistent with their values, are more likely to participate. Notably, farmers tend to identify primarily as producers of food, rather than environmental managers (Inman et al., 2018; Reed et al., 2020; Staddon et al., 2021). Land tenure may also be an important characteristic for engagement (Mills et al., 2021; Staddon et al., 2021), since tenant landowners are less likely to receive the benefit from scheme participation due to the long-term nature of land-use agreements and large time-lags until benefits from activities are received (Lawrence & Dandy, 2014; Reed et al., 2022; Staddon et al., 2021; Zammit, 2013). Additionally, landowners with higher social capital and whose neighbours are already involved in schemes may be more likely to engage with schemes due to better access to market information and opportunities (Hurley et al., 2022; Staddon et al., 2021). In terms of demographics, there is some evidence that farmers’ level of formal education is positively correlated with the uptake of conservation behaviours (Mills et al., 2021; Staddon et al., 2021). Also, younger landowners may be more willing (i.e., place more importance on environmental responsibility (Staddon et al., 2021) and able to engage in schemes (i.e., have greater digital skills (Hurley et al., 2022)). However, younger landowners represent only a small minority of all landowners in the UK (Hurley et al., 2022).

The evidence on the characteristics of landowners who may have an interest in becoming suppliers for green finance schemes comes predominantly from research related to public funded schemes. There is some evidence that landowner identities play a role in landowner decisions to supply land to private and blended finance schemes (Reed et al., 2020). However, more evidence is required to explore the types of landowners interested in green finance schemes, and how they might differ from those interested in public funded schemes.

Limitations of this review and next steps

While this review aims to be an informative review of the literature on the socio-cultural factors driving and inhibiting landowner participation in green finance and related schemes, it does not take a systematic approach. Also, some of the papers in this review were included despite methodological weaknesses relating to systematicity of their reviews (for more detail see Appendix B, Table 5). While all evidence reported from these sources was also corroborated by the papers of higher quality, this does present a potential limitation of our results.

It must also be acknowledged that green finance is in its infancy in the UK and there is a limited pool of high-quality research. This has implications for the specificity and generalisability of the results.

i. The research highlighted in this review is often scheme, region, and landowner specific, limiting the generalizability of observations to all types of green finance schemes.

ii. We did not restrict the review to green finance specific evidence but instead included papers with focus on schemes related to green finance in terms of their objectives and land usage (i.e., we included government funded schemes targeting peatlands, woodland, and agriculture designed to produce an environmental benefit - that could be sold as a product if it was produced under a green finance scheme).

It was acknowledged from the on-set of this research that there would likely be a lack of relevant literature specific to green finance schemes. A distinctive feature of green finance that sets it apart from other environmental land management schemes in that investment is funded by private (or blended) capital streams.

The qualitative research enabled more specific exploration of green finance schemes. This research therefore builds on the results of this evidence review by investigating the experiences of key landowner stakeholders in the decision to supply land specifically for green finance schemes. Additionally, we explore landowner perceptions of what makes a green finance market effective and equitable and develop an initial set of recommendations for Natural England to better respond to the incentives and barriers landowners face when deciding to supply land to green finance.

4. Qualitative Research

The qualitative research involved 11 interviews with landowners and managers, and individuals who represented or worked closely with them (such as famer representative bodies and stakeholder networks). All participants were based in England. The characteristics of the qualitative sample are described in Table 1 (for more detail about the participants see Appendix C, Table 6).

Table 1. Qualitative interview participants

Interview number	Landowner type	Case study
1	Farmer and landowner representative	
2	Green finance project (Estate Farmer)	*Wendling Beck project*
3	Stakeholder network and landowner representative	
4	Stakeholder network and landowner representative	
5	Estate	
6	Land management business	
7	Local authority	
8	Environmental Trust	
9	Green finance project (Trust)	*Wyre River Trust – Natural Flood Management project*
10	Area of natural beauty	
11	Green finance project (Company)	*Nestle with the First Milk initiative*

Many of the participants were engaged in green finance to some extent, either directly, considering involvement, or acting in an advisory role. Therefore, insight was collected from various projects and schemes. However, three participants were particularly involved in established green finance projects, which were discussed in sufficient depth to generate case studies. Figure 2 summarises these three projects: Nestle with the First Milk Initiative, the Wyre Rivers Trust Natural Flood Management project, and the Wendling Beck project. These case studies are used as examples throughout this report to illustrate

potential barriers to supplying land, and how they were addressed in the scheme design and implementation.

The interviews focused on exploring the personal, social, and cultural factors influencing landowner decisions to supply land to green finance schemes (see Appendix C: Qualitative research for the topic guide).

Landowner categories

The interview sample included a range of landowners and managers based in England. Our sample can be divided into broad categories based on factors such as role, land ownership, use and size, and individual relationship to the land. However, within categories there is variance in attitudes towards green finance and motivations and barriers to engagement. For example, farmers can be further divided by size of landholding, or farming methods (e.g., dairy or arable), and it was noted that these factors could influence attitudes towards engagement.

Farmers and tenant farmers arose as an important category of landowner when it comes to understanding how to increase engagement with green finance schemes. Farmers tend to own relatively small areas of land, and to live and work on their land. Tenant farmers rent land off other landowners and tend to live on the land they manage. We interviewed two farmers (one of which was an estate), and a farming representative body. Other participants also discussed farmers at length.

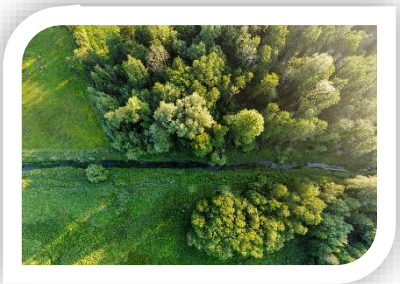
Figure 2: Case studies

Nestle with the First Milk Initiative

- A cooperative for dairy farmers with 88 farms who provide milk to Nestle factories
- Farmers gain an additional sustainability bonus on the price of milk by engaging in regenerative farming practices

Wyre River Trust – Natural Flood Management project

- Engaged landowners and stakeholders set up nature-based interventions to reduce flood risk
- Annual management fees are paid to host and maintain interventions
- Revenue comes from the sale of ecosystem services



Wendling Beck project

- Set up by four private landowners, working with local authorities, non-government organisations, and Anglian Water
- A collaborative project that helps farmers access grants and schemes to facilitate nature-based solutions to biodiversity, climate change and food production issues.
- Revenue comes from the sale of ecosystem services (biodiversity net gain, nutrient neutrality, natural flood management)

Larger estates hold larger areas of land, and so often rent land to tenant farmers as well as managing part of the holding themselves (i.e., farming, hunting). We interviewed one estate, and a land management company that works with estates.

The sample also includes representatives from a local council, a large national trust, and an Area of Outstanding Natural Beauty (AONB). These landowners act as custodians of the land and, as with estates, often rent some land to tenant farmers.

Also included in the sample are representatives from stakeholder networks and organisations who work closely with landowners (referred to as 'landowner representatives' in this report).

Other landowner types discussed in the interviews, but not represented in the sample, included tenant farmers, corporations, and other large landowners such as the Crown Estate. Participants often spoke about the experiences of other types of landowners based on previous interactions. Therefore, where quotes are used in this report, we note the relevant landowner type in the quote, and the landowner type of the quoted interviewee.

Findings

What is the indicative range of personal, socio-cultural, and contextual factors that could drive or inhibit these landowners to enter some or all of their land into green finance markets and related schemes?

Table 2 summarises the main findings emerging from the qualitative research. Factors were often common across landowners, but Table 2 highlights where factors were particularly relevant to a certain type of landowner. References have been added to highlight where the finding was corroborated by evidence from the rapid evidence review. An arrow symbol indicates where a factor was primarily a driver to engagement, and a hand symbol indicates where a factor was primarily a barrier.

Table 2: Factors emerging from the qualitative research with links to the rapid evidence review

ISM	Factor	Quote	Landowner Relevance	RER evidence
Values and Beliefs ⊕	**Environmental Concern**	*"[It was driven by that] desire to deliver more sustainable outcomes in terms of land use and environmental benefit." [Estate]*	Wealthier landowners Farmers	(Coyne et al., 2021; Lawrence & Dandy, 2014; Staddon et al., 2021)
Values and Beliefs ✋	**Greenwashing concern**	*"If we are going to be doing this, we don't want to be paid to be contributing to greenwashing." [AONB]*	Public bodies and organisations with strong environmental ethos	-
Values and Beliefs ✋	**Perceived small individual impact on environmental outcomes**	*"Small farmers might be dissuaded from engaging in schemes independently because they feel they cannot provide enough benefit individually." [Green finance project]*	Smaller landowners	(Mills et al., 2021)
Values and Beliefs ✋	**Belief that land should be used for food production**	*"A lot of our farmers are family farms that have been passed down through generations [...] there is a deeply ingrained belief that they are there as custodians of the land, but primarily that to grow food and supply food. It goes against the grain for a lot of these farmers to change their business model." [AONB]*	Farmers and tenant farmers	(Staddon et al., 2021)
Costs and Benefits ⊕	**Drive to increase, diversify, and stabilise income**	*"Anyone sensible in this game will be looking to other sources of funding [like] an emergent source of private sector finance through, in particular, business and corporate investment." [Trust]*	Farmers and tenant farmers Trusts or organisations reliant on funding	(Barkley et al., 2022; Coyne et al., 2021; Lawrence & Dandy, 2014; Moxey et al., 2021; Reed et al., 2020)

Costs and Benefits ✋	**Trust in, and perceptions of, stability of funding**	*"Will the policy still be in place in 30 years' time? I've been in this world for 30 years and I've seen different policy drivers within this world." [Estate]*	Farmers and tenant farmers Organisations reliant on funding	(Barkley et al., 2022; Coyne et al., 2021; Lawrence & Dandy, 2014; Moxey et al., 2021; Reed et al., 2020)
Costs and Benefits ⊖	**Desire to meet environmental targets or mandates**	*"They'll want to be able to put a label on a product saying it has been produced in a certain way." [Farmer]*	Farmers and tenant farmers Organisations, trusts	-
Costs and Benefits ✋	**High up-front costs**	*"A lot of farmers/landowners are 'asset rich and cash poor'. There are lots of potential overheads at the start of GF scheme (e.g., land assessments) which prevent scheme participation." [Land management company]*	Farmers and tenant farmers	(Coyne et al., 2021)
Costs and Benefits ✋	**Uncertainty in an emerging market**	*"I wouldn't want to be tied at this particular stage [...] to something long term [...] when within two years that value could have doubled or there could be some further scientific development which says [...] your scheme doesn't work." [Farmer]*	Less well-off landowners	(Coyne et al., 2021; Evans, 2018; Lawrence & Dandy, 2014; Moxey et al., 2021; Staddon et al., 2021)
Emotions ✋	**Uncertainty around financial planning**	*"We have to build confidence that green finance is going to work for [farmers] … Everything is a bit wishy-washy, and farmers are suspicious of that. If they are going to make land use change, they want to be sure about it." [Stakeholder Network]*	Farmers and tenant farmers Smaller landowners	(Barkley et al., 2022; Hurley et al., 2022)
Emotions ✋	**Fear of failure**	*"[Farmers] are fearful of being a first mover and failing and affecting their family." [Stakeholder Network]*	Farmers and tenant farmers	(Hurley et al., 2022)

Agency ✋ ⊖	**Desire to maintain agency and flexibility in land use decisions**	*"Farmers are price takers, and subject to the volatility of food prices as an indicator for how much to supply. As such, it is important for Farmers to have the flexibility to respond to the market in the short term." [Farmer Representative]*	Farmers and tenant farmers	(Lawrence & Dandy, 2014; Staddon et al., 2021)
Skills ✋	**Low knowledge of green finance**	*"[Farmers] don't know how to sell carbon, they don't know how to sell phosphates, they don't know how they can get it measured." [Stakeholder Network]*	Smaller and cash-poor landowners, and particularly farmers.	(Lawrence & Dandy, 2014).
Habit ✋	**Lack of skills to engage with green finance**	*"Farmers are likely to have a lot of ideas about what they could do, but do not have the skills to implement well-costed and laid out plans that are attractive for private investors." [Trust]*	Smaller and cash-poor landowners, and particularly farmers.	(Lawrence & Dandy, 2014; Moxey et al., 2021; Staddon et al., 2021)
Networks and Relationships ✋	**Preference to stick to the status quo**	*"[Farmers] just don't see it as being for them. They are just naturally cautious and suspicious of ideas like this." [Stakeholder Network]*	Farmers and landowners who are not used to engaging with subsidies and schemes	(Mills et al., 2021).
Networks and Relationships ✋ ⊖	**Personal connection to land and the local area**	*"We've been in this occupation for over 260 years as a family, we have a vested interest in making sure we try to look after the local area and the people that live in it." [Estate]*	Landowners who lived on their land and have done so for generations	(Moxey et al., 2021; Staddon et al., 2021)
Networks and Relationships ✋	**Concern around impact on local communities**	*"The lack of active management roles and labour involved in conservation (relative to agricultural production) could reduce their sense of place within their communities, and also reduce employment opportunities." [Farmer Representative]*	Landowners who lived on their land and have done so for generations	(Moxey et al., 2021)
Networks and relationships ⊖	**Social influences**	*"Once some farmers get involved, they will naturally take after each other. Social community and cohesion are a factor that will play into the delivery of green finance schemes." [Green finance project]*	Farmers and tenant farmers	(Evans, 2018; Inman et al., 2018; Staddon et al., 2021).

Meanings ✋	**Attachment to specific type of land use**	*"There is a certain amount of pride that land has been managed by a family over a certain number of years. This pride is associated with characteristics of the farm, and farmers want to carry on traditions through generations." [Stakeholder Network]*	Farmers, organisations with strong attachment to a local area (e.g., AONBs)	(Lawrence & Dandy, 2014; Moxey et al., 2021; Staddon et al., 2021).
Tastes ✋	**Preference for certain ways of working and outcomes**	*"There is an awful lot of farmers that just want to farm; they like growing food and they like nice clean fields." [Green finance project]*	Farmers and tenant farmers	(Hurley et al., 2022; Lawrence & Dandy, 2014; Staddon et al., 2021)
Roles and Identity ✋	**Identity and role as farmers or 'producers'**	*"There is a deeply engrained belief that they are there as custodians of the land, but primarily that to grow food and supply food. It goes against the grain for a lot of these farmers to change their business model." [AONB]*	Farmers and tenant farmers, landowners that live on the land	(Inman et al., 2018; Lawrence & Dandy, 2014; Reed et al., 2020; Staddon et al., 2021)
Opinion Leaders ⊖	**Social pressure to act sustainably**	*"Lots of major landowners are significant public figures. There is a level of pressure that exists to be seen to do something publicly." [Green finance project]*	Larger and more public landowners.	(Staddon et al., 2021)
Opinion Leaders ✋	**Lack of trusted information sources**	*"Because green finance is an emergent industry that targets very specific policies, the trusted bodies or officials that farmers traditionally turn to are not necessarily informed or well versed in what offers are available." [Farmer Representative]*		(Evans, 2018)
Rules and Regulations ✋	**Uncertainty around rules and regulations**	*"A key barrier is a lack of information regarding stacking of different ecosystem and nature services, and how that might interact with existing agri-environmental schemes." [AONB]*		(Barkley et al., 2022)

Rules and Regulations ✋	**High administration and bureaucracy**	*"Farmers are already very time poor, and overloaded with spurious, complicated paperwork." [Farmer]*	Farmers and tenant farmers	(Evans, 2018; Hurley et al., 2022; Moxey et al., 2021; Staddon et al., 2021)
Rules and Regulations ✋	**Decision making restricted by other schemes or agreements**	*"[Green finance agreements] are a challenge to the model of tenure - how you make a match between those different timescales and the sharing of those duties and benefits." [Trust]*	Tenant farmers and landowners renting out land to tenants	(Mills et al., 2021)
Rules and Regulations ✋	**Tax structures and uncertainty do not incentivise switching away from agriculture**	*"We will get to a point where we feel we can't do anymore until tax is clarified or we have to build in the price of tax in the credits, but then we can't compete in the markets [compared to competitors with other tax positions]." [Green finance project]*	Landowners looking to shelter wealth, or who felt a strong attachment to their land or wanted to continue multi-generational businesses	(Moxey et al., 2021)
Technology ✋	**Lack of technology and tools to support green finance engagement**	"*Developing and improving technology for measuring environmental outcomes, would decrease cost of participation and monitoring and increase transparency of financial incentives." [Green finance project]*		(Staddon et al., 2021)
Time and Schedules ✋	**Long-term nature of scheme commitment**	*"Quite a few farmers are sitting and waiting to see if government will provide better long-term agreements than what are currently offered in the private market." [Organisation]*	Farmers and tenant farmers	(Lawrence & Dandy, 2014; Mills et al., 2021; Staddon et al., 2021; Zammit, 2013)

Time and Schedules 	**Lack of time to engage with green finance schemes**	*“Farmers are in a "hamster wheel" of production that does not include sufficient time to sit down and revaluate business.” [Green finance project]*	Farmers and tenant farmers	(Reed et al., 2020)

The research also revealed several factors which were **specific, or more influential on decision making around private or blended funded green finance schemes**, when compared to more traditional and government funded environmental schemes.

Uncertainty: A key barrier to engaging with green finance was high levels of uncertainty, due to it being an emerging and developing market. Many landowners were hesitant to commit to schemes at this early stage of development because of uncertainty about financial outcomes. For example, there was uncertainty around whether the sale of eco-system services would provide a suitable income, which was equivalent or higher than their current ways of working. This was partly due to a lack of knowledge and accessible information on how to calculate the potential value of their land, and a lack of clarity on revenue models and values. There was also uncertainty around whether engaging with a private finance scheme would lead to a landowner losing out on revenue from other existing or emerging government schemes. These concerns were exacerbated by uncertainty around the payment structures for green finance schemes. Participants felt their decision to engage would be influenced by the payment structure of a scheme, and that structures could differ across green finance schemes. Some participants suggested payments should be based on best efforts and the implementation of interventions, to ensure landowners could predict and be certain of income potential. This approach to payment was considered to reduce the extent to which unpredictable external factors might affect the value of final outcomes. However, others felt payments should be based on outcomes, to incentivise additional efforts and offer motivated landowners the opportunity to further increase income.

Case study – Wyre Rivers Trust

Annual payment structure: Annual management fees rather than land-based payments reflects a shift away from compensating based on the amount of land owned. Payment is given to those who manage the land, worked out individually.
Concern around losing out on future public payments: Project team received written statement from Defra and Rural Payments Agency saying they would not lose out on ELM participation should payments be higher than what Wyre Rivers Trust were offering (assuming outcomes did not conflict)

Perceptions around the stability of funding also influenced willingness to engage. Some saw green finance as potentially being a more stable source of investment than publicly funded schemes, as government priorities can shift (for example, post-election). There was also a perception that public money available to support conservation was declining, driving landowners who typically relied on government grants and funding to look to private finance for funding opportunities. However, others felt green finance had the potential to be more or equally unstable than publicly funded schemes, as private sector priorities can be subject to change (i.e., new management, companies being bought out, etc.), and can change in response to policy shifts.

There was also high uncertainty and a lack of clarity over the rules and regulations of privately funded green finance, compared with traditional agri-environmental schemes which are more familiar to landowners and perceived to have clearer requirements. Also, there was uncertainty around how and if private schemes would integrate with public finance options. One of the key uncertainties that emerged here was the rules around stacking. Some participants felt that horizontal and vertical stacking should be allowed and would encourage engagement and supply of land to green finance, as it may be the only way landowners and managers can earn sufficient income. However, others worried that stacking could lead to greenwashing.

Low knowledge and skills, and a lack of trusted information: Green finance was seen as a new and developing market that is complex to understand (for example, using new and specific terminology). There was a lack of understanding about aspects such as how to sell environmental services, and how to measure nature conservation and protection outcomes. This contrasted to traditional agri-environmental schemes, which were more familiar and well understood.

Involvement in schemes was also seen as requiring specialist skills, which many landowners do not have. For example, conducting baseline feasibility studies or creating business plans for investment. Additionally, activities seen as necessary to engage with green finance (e.g., initial asset mapping to provide an estimate of potential outcomes generated on their land) were expected to be difficult and expensive to conduct.

Case study - Wendling Beck

Provision of resources to assess biodiversity potential: Wendling Beck employed various third parties to undertake asset modelling and enable the project's financial viability.

Generally, participants thought there was a lack of trusted and well-informed sources to go to for advice on green finance, particularly compared to traditional agri-environmental schemes, as even trusted sources were seen to lack knowledge in this emerging area. There was some discussion around distrust in the government, and a preference for advice and information from independent bodies or trusted other in their social networks (e.g., other farmers and larger landowners).

Long term agreements and restricted agency: Another key difference participants perceived between private and publicly funded schemes, was the level of agency a scheme enabled. Green finance schemes often required longer term commitments than traditional schemes, and landowners may be unwilling to commit to long-term schemes that appear to reduce agency and impose inflexible restrictions on land use for themselves and their successors. Green finance could also impose contractual obligations (for example, to provide public access to nature), which could be off-putting to some landowners. However, under the right conditions, green finance was seen to afford greater agency. There was a perception that privately funded schemes may invite more input from

landowners and be more flexible to their individual circumstances, making them more appealing than rigid publicly funded schemes.

Case study - Nestle and the First Milk Initiative

Agency within scheme participation: Farmers can choose to implement practices that work best for their circumstances from a 'menu' of options.

Another barrier to engaging in schemes requiring long-term commitments was not wanting to miss out on other more profitable future schemes. This was particularly relevant to green finance schemes as many participants felt as though the market was still being developed on both the supply and demand side, and that trustworthy information about green finance opportunities was more difficult to find than other schemes.

Case study - Nestle and the First Milk Initiative

Annual commitment: Farmers can be hesitant to commit to long-term schemes in case better (government) schemes emerge. The First Milk initiative can be altered on an annual basis.

Green washing anxieties: Green finance was seen to have higher risk of greenwashing than publicly funded schemes. There was a perception that companies could make false claims about their effect on the environment to capitalise on the ESG movement. Landowners, particularly land management organisations and nature-focused trusts and charities, wanted to protect their organisation's reputation and wanted to ensure they could be certain in claims that they were meeting environmental targets. They were therefore hesitant to engage in schemes that were seen to facilitate greenwashing.

Several factors were particularly linked to a **perception that green finance schemes required a shift away from agriculture.**

Identities, values, and beliefs: Landowners, primarily farmers, held strong beliefs that land is best used for food production, and that productive land should not be used for nature restoration. Linked to this, many farmers held strong identities as farmers or 'producers'. There was a perception that natural assets (i.e., ecosystems) were not perceived as "assets" in the same way as agricultural assets (i.e., fertile soil). As a result, shifting land use away from food production seemed at odds with a farmer's identity. Some farmers and tenant farmers also had strong preferences over ways of working and held aesthetic and/or cultural preferences for the agricultural (as opposed to ecological) outcomes.

Case study - Nestle and the First Milk Initiative

Designing interventions to work alongside production: The menu of interventions offered by Nestle were designed to enable farmers to continue with normal production, whilst also implementing sustainability interventions. For example, farmers could achieve points for hosting school visits or planting hedgerows.

Landowners were concerned about impacts on equity in local communities. Landowners with strong connections to the local area and a desire to give back to the local community were motivated to engage with green finance schemes to improve local access to nature and the environmental quality of land. However, within this group some landowners believed that a shift away from agriculture could reduce the number of jobs in the local community, if nature conservation and protection land management practices were less labour intensive than agriculture.

Taxation incentives: Current inheritance tax structures protect against land loss when land is used for agriculture, however the same protections do not extend to nature conservation and recovery. There was also uncertainty on how gains from green finance would be taxed (e.g., as capital gains tax or as income tax). For some, particularly landowners considering their legacy with strong attachments to their land (i.e., multi-generational farmers) and those looking to shelter wealth, the lack of clarity on the impact of tax structures on revenue was a barrier to suppling land to green finance.

Some land use decision factors were dependent on **the green finance scheme type** (e.g., tree planting or peat restoration)

Greenwashing anxieties: Certain types of schemes were seen as presenting a higher risk for greenwashing. For example, one participant specifically mentioned timber planting as having high potential for greenwash if marketed as a biodiversity outcome but then sold as “a crop”. Selling credits to carbon offsetting schemes was also flagged as particularly concerning. There was a perception that organisations ‘greenwash’ by using carbon offsetting schemes to market themselves as sustainable, whilst making limited efforts to reduce their emissions,

Attachment to specific type of land use: Some landowners, especially local organisations, or multi-generational farmers, attached meaning to the specific type of land use in that area. For example, a particular type of landscape might be seen as a defining feature of the area, or landowners may feel culturally or traditionally ‘attached’ to the current land-use. In this case, the type of land-use change required by a scheme was an important factor in decision making (for example, tree planting may be seen to disrupt the natural landscape and change the look of the land more so than other interventions).

Long-term nature of scheme commitment: Some types of land use change, such as tree planting, take longer to produce outcomes. The nature of the scheme can therefore impact the time taken to become financially viable, which influenced willingness to engage.

There were also several factors more generally related **to decision making around environmental land-use change**, whether private or publicly funded.

Environmental motivations: Landowners with high environmental concern, or who place high value on restoring and protecting nature, were motivated to join schemes designed to improve environmental outcomes. There was also a general incentive to engage in any scheme which would help meet any future voluntary or mandatory environmental targets, both directly (e.g., environmental trusts working to meet organisational targets) and indirectly (for example, retailers with environmental targets may incentivise or mandate farmers to improve the sustainability of their products, so that they can meet targets or market themselves as being more sustainable).

Case study - Nestle and the First Milk Initiative

Supply chain incentivisation: The scheme pays a premium price for milk, if farmers provide proof that they have implemented sustainable practices on their farm. All farmers who provide milk to Nestle are obligated to be involved in the scheme.

Case study – Wendling Beck

Desire to build financial and environmental resilience into business: Multi-generational farming families with a desire to maintain business viability and an understanding that farming subsidies would decrease in future. Landowners saw climate change as the single biggest threat to food security and perceived an urgent need to address the root cause and fundamentally change an unsustainable production model.

High administration and bureaucracy: High levels of bureaucracy and the resource intensive nature of understanding and applying to schemes was a barrier to engagement with any scheme.

Case study - Nestle and the First Milk Initiative & Wyre Rivers Trust

Reduce the burden on landowners to evidence outcomes: To reduce administrative costs, the First Milk initiative allows farmers to provide proof of intervention via photos to qualify for payment. Under the Wyre Rivers Trust scheme, performance data is measured by the Wyre Rivers Trust. Thereby removing any burden on landowners to monitor outcomes and invest in the tools and skills necessary for flood measurement.

Social influences: In any land use decision, landowners are highly influenced by others in their trusted social network. Landowners look to others for inspiration and proof that a new idea is worth trialling. They are also driven to maintain a competitive advantage. As noted in the RER discussion, support for social influences as a factor influencing engagement came from research focused on publicly funded schemes. The qualitative research confirmed that this barrier also applies to private green finance scheme engagement.

Case study - Wyre Rivers Trust

Connecting landowners: WRT connected farmers across the Wyre River catchment area. Wyre Rivers Trust used farmer cluster meetings to introduce the project. Farmers networking facilitated outreach to harder-to-reach communities.

Attachment to specific type of land use: As noted in the RER discussion, evidence that the cultural importance of other land uses is a barrier to engagement, came from research into publicly funded schemes (rather than private green finance). The qualitative research confirms that this is also a significant barrier to engagement with green finance schemes. This barrier may have a greater influence on private green finance, as there was some evidence that individuals can perceive private green finance as requiring a more significant change in land use (e.g., away from agriculture) compared to public schemes.

What are the main categories of landowner in England who may have an interest in becoming suppliers in green finance markets and related schemes?

The findings from the qualitative research provide some insight into differences across landowner categories. Generally, there was some willingness to engage across the sample, but some landowner categories, or types of landowners within a category, faced stronger or more unique barriers.

Farmers and tenant farmers are a particularly important group for green finance initiatives, considering the large amount of land they collectively manage. There was a perception that farmers could be motivated to diversify income, to become less reliant on agriculture, and less vulnerable to changing market forces and other external factors influencing their profitability. However, they can also be cash and time poor, which can limit their ability to engage. Farmers can also hold strong beliefs that land is best used for food production and identify strongly with their perceived roles and ways of working. These notions could conflict with a proposed land-use change away from agriculture, and act as a barrier to engagement. Finally, farmers appeared to be particularly influenced by their trusted social networks – primarily other farmers. They may require ‘proof’ from other farmers that these schemes are achievable and profitable before they are willing to engage. It is important to note that there is significant variance within farmers. For example, for arable farmers who use their land for crops, green finance may require a much greater shift in land use,

compared to dairy farmers. When engaging farmers in green finance it will be important to understand and consider the specific influences at play.

Organisations with strong environmental ethos (including trusts and AONBs) are also potential targets for green finance schemes, with strong environmental motivations and often large amounts of land. However, concerns around greenwashing were a particular barrier for this group.

There were also some cross-cutting factors which influenced willingness to engage:

Landowner wealth and liquidity: Wealth and cash-flow can influence a landowner's willingness to engage with green finance schemes. Engagement with green finance required having the resource to cover high upfront costs (for example, employing resource or investing in interventions). Many landowners were described as 'asset rich but cash poor' and had limited resource readily available. Those with more of a 'financial buffer' not only have greater resources; they may be less hesitant to engage amongst perceptions of uncertainty, and more driven to act on environmental concerns than less well-off landowners who often prioritise profit maximisation.

Case study - Wyre Rivers Trust

Up-front cost payments: Wyre Community Interest Company (CIC) paid for initial interventions and provided a one-off £500 onboarding fee for every land manager to compensate them for the engagement they would be contributing to the project's development.

Land size: Smaller landowners may be more hesitant to engage with green finance due to a perceived lack of individual impact and more limited resources.

Relationship to land: Landowners who lived on their land, and particularly those who have done so for generations, were likely to have stronger connections to the land and local area. These landowners were more likely to be influenced by social and cultural factors in land use decisions, as opposed to purely economic factors.

What factors need to be considered in an effective and equitable green finance market?

The concept of an 'effective and equitable' green finance market was explored during the interviews. Overall stakeholders agreed it was important that the market, and any scheme, was both effective and equitable, and discussed the definitions of these concepts and the factors that should be considered to ensure this was achieved.

Case studies have been used to illustrate examples. For full case studies, see Appendix D: Case studies.

Effective green finance

To be 'effective', stakeholders felt the green finance market and schemes must achieve sustainability outcomes, provide financial return, avoid greenwashing and work alongside food production. Important factors to consider in achieving this included ensuring outcomes were accurately measured, and ensuring schemes were designed to reward the desired outcomes.

Achieving sustainability outcomes: Participants felt that the main feature of an effective green finance scheme or market is its ability to achieve outcomes and provide benefits to the environment, for example carbon sequestration or enhancing biodiversity. Some felt an effective scheme would also contribute to broader sustainability outcomes, including social and community benefits such as environmental education or public access to nature.

> *"[Effectiveness is] ensuring that the ecosystem services that are provided are resilient in that they are not duplicated through market definitions." [Stakeholder Network]*

Case study - Wendling Beck

Measuring impact: Wendling Beck has developed a monitoring strategy using novel techniques, including drone-based LIDAR and machine learning to quantify the actual carbon sequestered in different habitat types, to track the effectiveness of interventions. This will enable them to understand the most effective deployment of investment.

Rewarding landowners and managers for achieving real outcomes: Some acknowledged that allowing stacking would be essential to enable farmers to earn sufficient revenue, and therefore necessary to encourage supply. However, stacking was thought to need careful consideration, as it could reduce effectiveness if outcomes were duplicated. Likewise, some participants felt that outcome-based payments might better support realisation of actual environmental benefits, than effort- or activity-based payments, which risk reducing incentive to ensure outcomes are met.

> *"Ensuring that the ecosystem services that are provided are resilient in that they are not duplicated through market definitions. For instance, I'm not so sure about the idea of stacking biodiversity with carbon because biodiversity might be better as a factor of carbon storage regime to add resilience." [Stakeholder Network]*

Providing financial returns: Financial effectiveness was also important, in that to be effective the market had to provide a return on investment and offer a viable form of finance for investors, so that investment continued to be available to fund projects.

> *"If you're not going to create returns for investors, then you're not going to get the scale of finance that we desperately need." [Land management business]*

Schemes also needed to be a viable way for landowners to earn income and be at least as profitable as other forms of land-use. To achieve this, some felt that schemes would need to allow stacking of environmental outcomes, to ensure sufficient income could be generated from a piece of land.

Avoid greenwashing: Avoiding greenwashing was also often mentioned as an essential aspect of any effective scheme. Greenwashing was described mainly in terms of enabling companies to offset carbon emissions and market themselves as green, whilst continuing to have a negative impact on the environment. Schemes that enabled greenwashing were therefore not seen to contribute to achieving environmental outcomes. Some suggestions to reduce the risk of greenwashing included management companies avoiding taking on clients who are not actively taking steps to reduce their emissions (insetting) alongside offsetting. They felt it was important that schemes such as this were regulated to avoid greenwashing, and that a solid understanding of the complexities behind aspects such as biodiversity was needed to do so properly.

> "*As a company, [we] have to make sure that the clients are doing as much as they can to decarbonise [...] so that you are not just facilitating greenwashing." [Land management business]*

Working alongside food production: Participants felt an effective market needed to work alongside food production, and not deplete the land needed for agriculture or incentivise a shift away from food production on productive land. There was a perception that some landowners saw land use for agriculture and nature or conservation as an either-or situation. However, some participants felt this was a false assumption, and that schemes could work to enable the continuation of agriculture alongside green finance, either through regenerative agriculture or shared land-use. Additionally, some acknowledged that fertile land for agriculture was not the target for green finance and that green finance schemes would provide opportunities for income from land currently unsuitable for farming.

Ensuring valid and accurate measurement of outcomes: Participants thought it was important to have valid and accurate measurement tools to ensure outcomes were being measured, for example, not over or underestimating the value of outcomes.

Equitable green finance

Equity was widely understood to mean 'fairness', and it was considered important to ensure fair distribution of benefits and risk across those involved with and affected by schemes. This included distributing financial risk and reward and ensuring equity across different schemes. Important factors to consider in achieving this included ensuring payment structures rewarded landowners for efforts as well as outcomes, ensuring schemes consider the wider social and community impact, and developing standardised methodologies and rules for schemes. There was some concern that private green finance schemes might not consider equity to the same extent as publicly funded environmental schemes and this may contribute to inequity. For example, there was some

perception that the private finance nature of this market could lead to inequitable outcomes by increasing the wealth of a subset of individuals or companies.

Distributing financial risk and reward fairly: Participants agreed that equity and fairness was an important factor to consider and integrate into green finance scheme design. This was seen to involve equitable and fair distribution of financial risk across all parties involved in a scheme, but particularly considering farmers and tenant farmers. There was some concern that farmers and tenant farmers could be over-burdened with risks such as being left without a buyer for an outcome they had produced. Suggestions for reducing this included ensuring schemes had an element of fixed payments at least initially, to ensure farmers had a certain and stable income; or developing a system in which farmers could be certain there would be a buyer for any outcomes they did deliver. Some felt there was a role for government in ensuring this and potentially providing that certainty. These points particularly related to tenant farmers: large landowners often rented out portions of their land to tenant farmers and acknowledged the value of tenant farmers in achieving environmental outcomes and felt this should be recognised and fairly rewarded.

> *"Financially fair. You share risk, government help underwrite risk and have got your back for the long term." [Green finance project]*

Case study - Wyre Rivers Trust

Fair payment structures: Annual management fees rather than land-based payments reflects a shift away from compensation based on amount of land owned. Payment is given to those who manage the land, calculated on an individual basis.

Fairly rewarding effort: To be equitable, participants felt there should be a level of activity- or effort-based payments for land managers, so that any resource invested was rewarded. Production of environmental outcomes could be dependent on a range of external factors outside of a famer's control, and it was considered unfair to leave farmers at a disadvantage if external factors were to intervene. However, as noted, some recognised that a system of effort-based payments could conflict with the need to ensure effectiveness of schemes and felt that outcome-based payments could better ensure environmental outcomes were met.

> *"Rewards should be tied to best endeavours, rather than outcomes because of the variability of external factors, [such as] drought/floods." [Green finance project]*

Providing wider social benefits: Participants also felt that for a scheme or market to be equitable, the needs of and impact on the local community need to be considered and integrated into design. There was heightened concern around the potential for buy-up of land for green finance projects without attention being paid to the local community. Some felt there should be guidance or mandates for schemes to ensure social elements were considered, for example though requiring a scheme provide a social benefit such as local access to nature, or jobs for the local community.

Case study - Wendling Beck

Community Engagement: The project includes an Environment Hub, which provides local access to nature and education. The project also has a volunteering program and is partnering with local charities. A cycle path is also being created to link to the Norfolk Trails network.

Ensuring standardised measurements and rules: Participants said that having standardised measurements and universal baseline rules could help to provide consistency in the way outcomes were assessed across the market. This would help ensure the landowners were fairly paid for the outcomes they produced and help to standardise payment across different schemes.

> *"These markets are utterly dependent on consistency and a level playing field of how you monitor measure it [...]." [Trust]*

6. Discussion

What are the main categories of landowner in England who may have an interest in becoming suppliers in green finance markets and related schemes?

Both the rapid evidence review and interviews support the finding that farmers and tenant farmers are a particular group of interest. This group collectively manages large amounts of land and could be motivated to supply land to green finance to increase their financial resilience and diversify income. Within the category of "farmer", this report highlights some factors that have been associated with a higher willingness to engage in new green finance schemes. The evidence in the rapid evidence review predominantly focused on the context of public funded schemes and found that younger farmers, those with a higher level of education, those with higher social capital, wealthier farmers, and those with neighbours already involved in schemes, may be more likely to be open to environmental schemes (Mills et al., 2021; Staddon et al., 2021; Hurley et al., 2022). The qualitative research focused on green finance specifically and identified farmer wealth and involvement of close others as key influences on decisions to supply land to green finance. However, both the qualitative research and rapid evidence review found tenant farmers face particular barriers to engagement due to tenancy restrictions and uncertainty around benefits given the long-term nature of schemes (Lawrence & Dandy, 2014; Reed et al., 2022; Staddon et al., 2021; Zammit, 2013).

The interviews suggest that organisations with a strong environmental ethos may also have a higher interest in becoming suppliers in green finance markets, as involvement can align with their values and targets. Additionally, the interviews suggest that larger landowners may be important first movers. These landowners may be more willing to engage under uncertainty, as they have greater resource available. Increasing participation by this group initially may then have a positive influence on engagement of other landowners.

What is the indicative range of personal, socio-cultural, and contextual factors that could motivate or inhibit these landowners to enter some or all of their land into green finance markets and related schemes?

The research revealed a range of motivators and barriers specific to engagement with green finance, as opposed to traditional schemes.

A major barrier to engagement was the high level of perceived uncertainty across many aspects of green finance. The qualitative research and evidence review revealed that there was high uncertainty around the potential financial gains from eco-system payments and that this was increasing hesitancy to engage (Barkley et al., 2022; Hurley et al., 2022). There was also high uncertainty around the rules and regulations of green finance, and landowners were unwilling to commit until there is greater clarity (Coyne et al., 2021; Evans, 2018; Lawrence & Dandy, 2014; Moxey et al., 2021; Staddon et al., 2021). It will be important to understand the root of these uncertainties and how to overcome them.

However, landowners were motivated to increase, diversify and stabilise their income, and private green finance funding was seen as potentially more stable than public funding.

Additionally, both the qualitative research and evidence review reveal that landowners place importance on their ability to make decisions about land management practices and activities (Lawrence & Dandy, 2014; Staddon et al., 2021). Landowners can perceive green finance as a route to increase their agency and involvement, compared to structured public schemes. However, scheme inflexibility in terms of land management regime and the types of interventions landowners can implement may inhibit participation.

The qualitative research also highlights that concern around greenwashing may be inhibiting engagement, as private green finance schemes were perceived to have a higher risk of greenwashing than traditional public funded schemes. It will be important to consider how to mitigate this risk and appease concerns when designing schemes and engaging landowners.

Social factors were particularly important in encouraging participation with green finance schemes. Both the qualitative research and evidence review highlight that landowners, and particularly farmers, are highly influenced by others in their social networks (Evans, 2018; Inman et al., 2018; Staddon et al., 2021). Engagement in green finance therefore seems likely to increase over time, as more landowners become involved, and it will be important to consider how to engage these early adopters and leverage this influence. However, the opposite may also apply if early influential adopters have bad experiences with green finance schemes, which may deter others.

Both elements of the research also provide evidence that the active use of land for productive outcomes (i.e., through livestock farming or agriculture as opposed to earning a living from environmental protection and restoration) is central to the social and cultural identity of many farmers. The research suggests that a key barrier to changing land use through green finance schemes may be the tension between a landowner's highly-valued identity and the land-use management required under the schemes (Inman et al., 2018; Lawrence & Dandy, 2014; Reed et al., 2020; Staddon et al., 2021). For example, the qualitative research confirmed that there is a strong perception that green finance requires a shift away from agriculture, and this was a barrier for people who thought the best use of land is for food production. It will be important to shift farming mindsets towards recognising nature-recovery and regenerative agriculture as valuable land uses and ensure green finance activities are aligned with farming identities and roles.

Material factors also have a significant influence on decision making. The evidence review found that the long-term nature of green finance schemes was a particular barrier (Dandy, 2014; Mills et al., 2021; Staddon et al., 2021; Zammit, 2013). This was also found to be the case in the qualitative research, especially considering the schemes' early development stage and the uncertainty surrounding them. This suggests that schemes with shorter contracts and obligation could help to encourage early adopters to participate.

Both aspects of the research also found that there was high uncertainty around the rules and regulations of green finance schemes (such as whether stacking eco-system

payments are allowed and if so, how they work) (Barkley et al., 2022). The qualitative research found that the final rules and regulations will influence landowner ability and willingness to supply land to green finance (for example, some landowners may only engage if stacking is allowed). This research does not permit strong conclusions on what the rules and regulations of a scheme should be to maximise participation, and further research may be needed to explore this with a wider set of landowners. It will be important to clarify these rules, and clearly communicate them to landowners, to reduce uncertainty and encourage engagement.

Additionally, it will be essential to develop a tax structure to incentivise participation in green finance, and clearly communicate this to landowners. Evidence from the evidence review and qualitative research indicates that current tax structures reduce incentives to shift land use away from agricultural (Moxey et al., 2021).

It is also important to recognise that landowners are not a homogenous group, and there is significant variation between different categories of landowner (e.g., farmers versus corporations) and within categories (e.g., wealthy vs less wealthy farmers, dairy farmers vs arable farmers). Therefore, when aiming to encourage participation with a green finance scheme, it will be important to understand and target the specific factors influencing the landowners of interest.

What are the factors of an effective and equitable green finance market?

Payment structure is an important factor to consider; this research does not permit conclusions about the most effective structure(s), although the qualitative research suggests that fixed payments could enhance equity by ensuring landowners are fairly rewarded for their efforts and reducing financial risk associated with uncertain outcomes. However, outcome-based payments may better to suited to ensuring that environmental outcomes are indeed achieved, and therefore could be important in ensuring schemes' and markets' effectiveness. Further research is needed to understand the relative benefits of a fixed versus outcome-based payment structure on effectiveness and equity.

Likewise, the rules and regulations pertaining to schemes will contribute to both their equity and their effectiveness. The qualitative research showed that there are varied views on how aspects such as stacking should be designed to enhance effectiveness and equity. Further research is needed to understand the impact of rules and regulations.

Finally, methodologies for measuring and reporting outcomes should also be carefully considered. There is a need for further research to understand and develop valid and accurate methodologies to ensure that environmental outcomes are being achieved and reported, to ensure that there is standardisation across schemes, and to ascertain the impact that this has on willingness to engage with green finance markets on both the supply and demand side (i.e., investors, companies buying carbon offsets, developers buying bio-diversity net-gain credits, banks providing green bonds etc.).

Recommendations

Some initial recommendations emerged from the rapid evidence review and stakeholder interviews on how to support and encourage landowners to supply more land to green finance, and how to develop an effective and equitable market.

Reduce uncertainty around the rules and regulations: More clarity and reassurances are required around green finance schemes in general, and particularly regarding rules for stacking environmental outcomes and eco-system payments and how participating in green finance interacts with eligibility for existing publicly funded schemes. To help alleviate uncertainty as a barrier to participation, landowners need accessible, clear, and trusted information around green finance to clarify the rules and regulations for schemes. This information should be produced and disseminated through existing trusted sources, such as landowner representatives and advisory bodies including Natural England.

Reduce financial uncertainty: Greater availability of and access to free information and tools (i.e., asset mapping, environmental outcome forecasting) could support landowners to conduct initial activities to identify and realise green finance opportunities. This would help to reduce financial uncertainty around potential earnings from green finance, and help landowners make informed decisions about land use change. Additionally, regulations or contractual agreements preventing businesses from withdrawing committed investment would increase landowner confidence in the stability of green finance investment.

Revisit tax structures: Adapting tax structures to equalise the tax advantages of using land for agriculture or conservation, particularly with regards to inheritance tax, would reduce barriers to green finance engagement. However, care should be taken to mitigate large incentives for wealthy investors to buy-up land to shelter their wealth. While this may increase the amount of land supplied to green finance, which could have benefits for environmental outcomes, it may come at a cost to equity and local communities.

Provide financial support to cover up-front costs: Financial support in the form of grants or loans could help landowners, particularly those with smaller land holdings, transition from agriculture to the commercial provision of eco-system services.

Create schemes to aggregate and connect landowners: Aggregating smaller landholders within a scheme could encourage engagement. Aggregation would increase the combined output produced by individual farmers, creating a more attractive and safer investment opportunity and diffusing the level of perceived risk. Creating and strengthening landowner networks through aggregation can build an increased sense of collective efficacy through collective commitment-making. It may also lead to better information sharing between landowners and better environmental outcomes. However, aggregating landowners can be difficult and requires careful consideration during scheme design.

Shift perceptionsand work with valued identities: Farmers ‘productivist’ identities could be leveraged to drive participation in green finance schemes. For example,

communications could reframe nature and ecosystem services as “assets” which farmers can produce. Also, developing schemes that enable farmers to continue food production alongside providing biodiversity and ecosystem services (i.e., regenerative agriculture) as opposed to repurposing large areas of land away from agriculture completely may encourage scheme participation. However, it was noted that supplying small areas of land per holding may be less attractive to investors, which further highlights the important role for aggregation. Additionally, stressing the important role of farmers in mitigating the climate crisis may increase motivation and encourage greater participation in green finance markets.

Increase landowner agency: Flexible schemes that offer shorter term contracts could help encourage engagement in green finance, particularly from farmers and tenant farmers. Additionally involving farmers in the early stages of development, and providing opportunities for landowners to shape agreements, could lead to a greater sense of power and involvement and engagement with green finance schemes.

Develop landowner skills, enable knowledge sharing, and increase visibility of local success stories: Landowners would benefit from more accessible and low-cost information and training to increase knowledge and skills around green finance. Greater sharing of knowledge and learnings between landowners could help encourage hesitant individuals to engage. Landowners are more likely to trust, and be influenced by, other landowners in their networks. Therefore, information from peers has the potential to be persuasive and reassuring. Sharing local examples could help landowners visualise what engagement in green finance markets and schemes would look like for their land and businesses, and therefore reduce uncertainty around green finance.

What is the role of Natural England?

There are several ways Natural England and wider government could support and encourage landowner engagement with green finance and the development of an effective and equitable green finance market. Key recommendations include:

Create and standardise measurement tools: Government could take a role in standardising and verifying measurement tools and codes. This might involve conducting of funding research to support the development of valid methodologies for measuring outcomes or verifying existing methodologies.

Regulation: More regulation could increase engagement by providing landowners with tools to identify legitimate schemes. Government could play a role in mitigating greenwashing by enforcing broad regulations on schemes.

Establishing an intermediary body: An intermediary body between the supply and demand side of green finance could help to connect landowners with green finance opportunities and play a role in aggregation on both the supply and demand side. This independent intermediary could also act as a source of information, assisting both sides with the administration aspect of schemes, and potentially supporting on asset mapping activities.

These options are explored further in the accompanying policy brief.

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Appendix A: ISM Model[1]

Darnton & Horne (2013) provide definitions of the ISM model subheadings as part of their user's guide:

Individual Factors

Values, Beliefs, Attitudes: The basic elements of an individual's motivational system, moving from the most abstract and broad based values (e.g., pursuit of wealth or power), through beliefs or more particular worldviews (e.g. that we should preserve the environment for future generations) to attitudes, which are individual's views on specific things such as objects, activities or other people (e.g., I should not have to pay more for sustainable products).

Costs & Benefits: The cost/benefit calculation is the basic method of decision making, in which the perceived benefits (or 'utility') of acting are weighed against the perceived costs of doing so, including non-monetary costs such as time (e.g., deciding whether the extra time spent walking to work is worth the health and environmental benefits). However, recent research has shown that much of this decision making is based on mental shortcuts, which can introduce errors, rather than effortful calculations.

Emotions: How people feel about something - their emotional response - is one aspect in their behavioural decision making (e.g., fear, virtuousness or apathy). Some theories contrast 'hot' evaluations, based on emotions, with 'cold' evaluations, based on attitudes and rational choice.

Agency: Agency relates to self-control and a person's confidence that they can undertake the behaviour in question and see it through to completion. It usually relates to a specific object or situation (e.g., installing and using microgeneration technologies in the home), but people can also be described as 'low agency' (generally lacking in confidence).

Skills: Skills are the things a person needs to know in order to carry out a behaviour. These include both procedural knowledge ('know how') and factual knowledge ('know what') (e.g., fuel efficient driving techniques).

Habit: Habits are those behaviours which are undertaken automatically and frequently, with little conscious thought, and usually at the same time or place. These can also be understood as routines (e.g., commuting by car or using the tumble drier even in good weather).

[1]ISM Model: https://www.gov.scot/publications/influencing-behaviours-moving-beyond-individual-user-guide-ism-tool/pages/2/

Social Factors

Opinion Leaders: Opinion leaders can be thought of as individuals who have a strong influence over others, for instance in shaping social norms. In social networks, these people could be network nodes, who connect together numerous others. In everyday life, examples could include faith leaders or celebrities.

Institutions: Institutions influence how groups of individuals behave when they are engaging in particular activities or interacting with other people. Institutions can be formal (such as the legal system) or more informal (such as family life). In either, shared expectations about how members should behave are transmitted (e.g., eating together as desirable). Shared understandings may also take shape as explicit rules and regulations.

Norms: People's perception of how other people (especially 'significant' others) would view their behaviour. In turn these perceptions have a strong influence on the behavioural decisions that people make (e.g., people being aware that they are not supposed to fly for domestic trips, but observing family, friends and others doing it).

Roles & Identity: Roles relate to a person's different repertoires of behaviours and attitudes, based on the role they are fulfilling at the time (e.g., mother, employee, football supporter etc.). The related concept of identity is a person's innate sense of who they are (e.g., being a good person or identifying as a 'green').

Tastes: Tastes can be understood as preferences through which people signal their belonging to particular social groups (e.g., kinds of music listened to, or table manners). These preferences are collectively developed and are based on shared understandings of appropriate and desirable conduct.

Meanings: Meanings are culturally constructed understandings of daily life which can include images, ideas, metaphors, and associations. These meanings effectively set the frame for a behaviour or practice, and in so doing influence how it is undertaken, and how it is understood (e.g., smoking in popular culture used to mean sophistication and glamour, but now is more likely to mean an unhealthy lifestyle).

Networks & Relationships: Connections between individuals, which people identify and draw upon in identifying and carrying out possible courses of action (this is sometimes called 'social capital'). In aggregate, social networks can help to explain how ideas, innovations and behaviours can spread (e.g., growing your own food).

Material Factors

Rules & Regulations: At their most basic, rules and regulations are set out by formal institutions, such as government, to prescribe or prohibit certain kinds of behaviour (e.g., through the taxation system). Yet rules and regulations are also implicit, for instance determining appropriate conduct for individuals in informal institutions (e.g., not disposing of recyclable materials in the general waste bin in the workplace).

Technologies: Technology is sometimes contrasted to behaviour, in that techno-fixes are presented as ruling out the need for individuals to change their behaviour. However, individuals and technologies interact, and this can influence the effectiveness of a technology in terms of its desired impact (e.g., smart meters and how they are used in practice). This interaction also enables new practices, and the meanings of these practices, to spring up and take hold quickly (e.g., tweeting).

Infrastructure: Hard infrastructure relates to the firm boundaries to people's behavioural choices presented by the environments in which they live (for example, without a bus service, there will be no chance of bus use). Such factors can often prevent even motivated people from undertaking the behaviour in question. Alongside hard infrastructure, soft infrastructure emphasises features of everyday life which also bound individual action, but are not concrete (see Time & Schedules, and Rules & Regulations).

Objects: Many behaviours (e.g., cycling to work) involve the use of objects (e.g., a bike, cycle racks at work), and the lack of necessary objects can stop a practice from being undertaken. As with technologies, objects and individual users interact, such that sometimes the object can 'act back' on its owner and heavily influence how much time an individual spends on which practices (e.g., waste in the home 'acts back' on the householder who spends time cleaning and sorting recycling for collection).

Time & Schedules: Time is a finite resource that gets used in the course of carrying out everyday activities. Like money, it is a scarce resource that people have to allocate across competing demands. Changes in schedules (e.g., set by formal institutions) can often result in changes in individuals' practices, for instance, school hours and commuting habits.

Appendix B: Rapid evidence review

Table 3: Inclusion and Exclusion criteria

	Inclusion criteria	Exclusion criteria
Language	Literature written in English	Literature not written in English
Publication year	2011 onwards	Before 2011
Country	UK, Western Europe, Australia, New Zealand, and the USA	Any other country
Stakeholder	Landowners, land managers, land use sector	Demand-side of green finance schemes (investors, consumers, etc.)
Focus	Behavioural factors and drivers of land-use behaviour, particularly social and cultural factors.	Any literature that does not explicitly focus on landowner's land-use and supply decisions.
Domain	Green finance or related schemes targeting Peatlands, Woodland, and Agriculture such as operational and near to market UK eco-system markets: The scheme and/or land use activity must generate a product that someone can or wants to buy. The scheme and/or land use must generate a product or activity that directly benefits the environment.	
Data	Primary data, meta-analysis, literature reviews, comparative analysis.	No comment or opinion pieces

Table 4: Context of chosen studies

Article	Country	Landowner type	Methodology	Scheme	Funding
Lawrence & Dandy (2014)	UK	Private Landowners and their representatives	Rapid Evidence Assessment	Woodland creation and management grants	Public
Zammit (2013)	Australia	Private Landowners	Mixed method case study comparison	Conservation of biodiversity through inverse auctions.	Public
Reed et al (2022)	Scotland	Landowner or general stakeholder	Case study review and interviews	Regional Land Use Partnerships	Public
Barkley et al. (2022)	Australia, New Zealand, USA, Canada, The Netherlands, Belgium, France, Germany, UK	Landholders, farmers, and land managers	Rapid Evidence Assessment	Long-term agreements in agriculture and conservation - including conservation covenants	Private and blended
Inman et al (2018)	UK	Farmers	Survey and follow up discussion groups	Combating diffuse water pollution from agriculture	Public
Coyne et al (2021)	UK	UK dairy producers who were "suppliers of a (single, unnamed) global food producer and members of the producers own agri-environmental scheme"	Survey and follow up individual interviews	Membership of private agri-environmental scheme managed by a single global producer	Private
Moxey et al (2021)	UK	Land managers and restoration practitioners	Case Study review	Peatland code	Blended
Staddon et al (2021)	England, Ireland, France, USA	Land managers, Farmers	Literature review	Woodland creation in the farmed environment	Public

Article	Country	Landowner type	Methodology	Scheme	Funding
Reed et al (2020)	England	Land managers, Conservationists, land agents and local authorities	Mixed methods	England Peat Strategy	Private and blended
Hurley et al (2022)	England	Farmers	Mixed methods	Environmental land management scheme	Public
Mills et al (2021)	UK and countries relevant to UK context	Farmers involved with land management	Literature review	Agri-environmental schemes	Public
Evans (2018)	Australia	Private landowners	Case study review	Carbon Farming Initiative (Emissions Reduction Fund)	Blended

Table 5: Quality assessment of chosen studies

Article	Relevance (-/+/++)	Quality (-/+/++)	Limitations
Lawrence & Dandy (2014)	+	+	Only includes evidence up to 2012. Only 20% of the evidence used in this study is from peer reviewed research.
Zammit (2013)	+	-	Little empirical or qualitative insights into the factors which affect participation in agri-environmental scheme. Outcomes are discussed at a macro scale. Methods are hard to infer and not well reported.
Reed et al (2022)	+	+	The authors acknowledge that a lack of guidance on stakeholder identification could lead to tokenistic engagement, rather than proactively engaging stakeholders in the coproduction of aspects of the assessment
Barkley et al. (2022)	++	+	There is no clearly identified exclusion criteria for the REA.
Inman et al (2018)	++	+	Potential conflict of interest acknowledged by authors
Coyne et al (2021)	++	+	Highly specific research context limits the generalizability of findings and raises questions about the potential for response bias. The authors acknowledge that future research should compare themes identified in this study in different populations
Moxey et al (2021)	++	-	A case study review rather than primary research or literature review.
Staddon et al (2021)	++	+	Do not provide full list of included studies
Reed et al (2020)	++	++	No consideration of interviewer reflexivity. However, this research used a wide range of methods to draw conclusions.
Hurley et al (2022)	++	++	No consideration of interviewer reflexivity.
Mills et al (2021)	++	++	Did not list all papers included in the review.
Evans (2018)	+	-	A case study review rather than primary research or literature review. Insights into factors driving landholder engagement are taken from the literature without systematic review.

Appendix C: Qualitative research

Topic Guide

Introduction **(5 mins)**

Starting the meeting

- Admit from the waiting room and check that video and audio is working

Introduction

- Introduce yourself and Kantar Public – an independent social research agency
- We are conducting this research on behalf of Natural England
- The aim of the discussion is to understand landowners' and land managers' drivers and barriers to engagement with green finance schemes (changing the way in which they use land to benefit the environment), with a particular focus on social, cultural and personal factors, as opposed to economic factors
- Interview length will be 60 minutes
- Research is confidential and voluntary – Natural England are aware of the organisations participating in this research, but the names of any contributing individuals will not be included in any published reporting. Names of organisations will be reported unless you specifically do not wish to be named [would use general description instead]
- Any questions?

Recording

- Ask participants for permission to record, then start recording and confirm consent

Participant introductions

- Name
- Organisation: Introduction to organisation and role within it, particularly in relation to green finance and land ownership/management
    - Moderators note: Clarify whether they own/manage land or represent/work closely with landowners/managers – then follow appropriate prompts in guide
- Individual: Introduction to self, day to day life

Land ownership/management **(10 mins)**

To understand the type of land owned or managed, how decisions are made, and the relationship the interviewee has with the land

Organisations (that are not landowners themselves):

- What type of landowners or managers do they represent/have a relationship with?

    - What type/how much land is generally involved?
    - What are the main ways individuals are using land? How is this changing over time?
    - Are there 'categories' of landowner? What determines these categories?
- How does decision-making work in these types of organisations – who is involved and how?
- What drives this decision-making at an overall level?

Landowners (including organisations that own land)

- Can you give me a brief overview of the type of land you own and how it is managed and used?
    - Probes if needed: how did they acquire the land, how long have they owned it?
- Who is involved in decisions about how the land is managed?
    - How involved are they in decision-making and, if so, in what way(s)?
- What drives decision-making at an overall level? (Moderators note: listen out for issues such as: stewardship of land, economic factors, environmental issues, community etc)

Managers

- Can you give me a brief overview of the type of land you manage and how it is used?
    - Probes if needed: Who owns the land, how much land, what is the land currently used for?
- Who is involved in decisions about how the land is managed?
    - How involved are they in decision-making and, if so, in what way(s)?
- What drives decision-making at an overall level? (Moderators note: listen out for issues such as: stewardship of land, economic factors, environmental issues, community etc)

Understanding of Green Finance (10 mins)

Explore general perception and understanding of green finance – including perceptions about effectiveness and equity

Green finance overview

- What is their current understanding of green finance? How would they define it?
    - Moderators note: if they struggle to answer, show stimulus slide

Note to moderator – explain that it is important to Government that the green finance market is 'effective and equitable'

- What would an 'effective' green finance market look like in this country/their community? (Moderators note: listen out for who is the focus, e.g., landowners/managers, consumers or others)

- What would an ‘equitable’ green finance market look like in this country/their community? (Moderators note: listen out for who is the focus, e.g., landowners/managers, consumers or others)
- What do they think is important to take into consideration to ensure this aim (of developing an ‘effective and fair’ green finance market) is achieved?

Moderators note: if they are finding it difficult to answer this question, focus on the following:

- What would they need to know more about to be able to answer this question better?

Moderators note: show slide 2 and 3 from the stimulus deck, presenting some examples of green finance projects to give further detail/overview of different project types (emphasise these are the types of projects we are interested in as opposed to more traditional government grant schemes which encourage land use change - ELMs etc).

Decision making **(25 mins)**

To understand how decisions are made about land use, and spontaneous barriers and drivers to supply land to green finance

For landowners/managers (including organisations that own/manage land)

- To what extent do they consider green finance projects in decision making about land use? (i.e., compared to traditional grants)
    - Do they actively explore this type of project, have they been approached by projects directly and who have they been approached by?
- What type of scheme/project have they considered and why?
- Is any of the land they own/manage currently being used for green finance/nature-based solution schemes?
    - **If yes:** How did this come about and why did they choose to engage in this scheme/project?
    - **If no:** Why not? (Probing the extent to which this relates to lack of awareness/passivity versus active decision-making to reject schemes)

Moderators note: Remind participants the focus is on personal, social and cultural motivations and barriers. Economic factors are likely to be discussed but should not be the focus of conversation. Acknowledge importance of these factors but maintain focus on personal, social, cultural factors.

If yes, and they have engaged with a green finance project:

- What were the main motivations for engaging in the scheme/project?
    - Spontaneous then probe:

    - **Individual factors** – This includes the factors held by the individual that affect the choices and the behaviours he or she undertakes. These include an individual's values, attitudes and skills, as well as the calculations he/she makes before acting, including personal evaluations of costs and benefits- – e.g., values, agency, skills, knowledge, costs/benefits, perceived risks
    - **Social factors** – includes the factors that exist beyond the individual in the social realm yet shape his or her behaviours. These influences include understandings that are shared amongst groups, such as social norms and the meanings attached to particular activities, as well as people's networks and relationships, and the institutions that influence how groups of individuals behave - – e.g., networks, influences, norms
    - **Material factors** – factors that are 'out there' in the environment and wider world, which both constrain and shape behaviour. These influences include existing 'hard' infrastructures, technologies and regulations, as well as other 'softer' influences such as time and the schedules of everyday life - – e.g., restrictions of land type, time, restrictions on land use, existing designations on sites, requirements of the scheme
- How did they become aware of this scheme/project?
- Who was involved in decision-making?
    - Did they get advice from anywhere? From whom?
- What barriers did they face when making this decision? If so, what were they?
    - Spontaneous then probe:
    - Individual factors
    - Social factors
    - Material factors
- What helped them to overcome these barriers?

If no:

- What barriers have prevented you from deciding to supply land to green finance?
    - Spontaneous then probe:
    - **Individual factors** – This includes the factors held by the individual that affect the choices and the behaviours he or she undertakes. These include an individual's values, attitudes and skills, as well as the calculations he/she makes before acting, including personal evaluations of costs and benefits– e.g., values, agency, skills, knowledge, costs/benefits, perceived risks
    - **Social factors** – includes the factors that exist beyond the individual in the social realm yet shape his or her behaviours. These influences include understandings that are shared amongst groups, such as social norms and the meanings attached to particular activities, as well as people's networks and relationships, and the institutions that influence how groups of individuals behave – e.g., networks, influences, norms
    - **Material factors** – factors that are 'out there' in the environment and wider world, which both constrain and shape behaviour. These influences include existing 'hard' infrastructures, technologies and regulations, as well as other 'softer' influences such as time and the schedules of everyday life – e.g.,

restrictions of land type, time, restrictions on land use, existing designations on sites, requirements of the scheme

- How did they become aware/would they expect to become aware of any opportunity to change the way they use land?
- What would be the main motivations for engaging in these types of schemes?
    - Spontaneous then probe:
    - Individual factors – e.g., values, agency, skills, knowledge, costs/benefits
    - Social factors – e.g., networks, influences, norms
    - Material factors – e.g., restrictions of land type, time

For organisations/representatives

- To what extent are the landowners/managers they represent aware of, or consider, these sorts of projects when making decisions about land use?
    - Do they actively explore these types of projects, or have they been approached by projects directly?
- What do they perceive as the main factors influencing decisions around engaging with green finance/nature-based solution schemes or projects?

Moderators note: remind participants the focus is on personal, social and cultural motivations and barriers. Economic factors are likely to be discussed but should not be the focus of conversation. Acknowledge importance of these factors but maintain focus on personal, social, cultural factors.

- What do they think are the main **individual** factors that influence landowner/manager decisions? This includes the factors held by the individual that affect the choices and the behaviours he or she undertakes. These include an individual's values, attitudes and skills, as well as the calculations he/she makes before acting, including personal evaluations of costs and benefits- – e.g., values, agency, skills, knowledge, costs/benefits, perceived risks
    - Are these specific to certain types of landowners?
    - To what extent do they differ across different types of green finance project? (e.g., project type – forestry vs peatland restoration, investor type, finance type, revenue model)
- What do they think the main **social** factors are which influence landowner/manager decisions? includes the factors that exist beyond the individual in the social realm yet shape his or her behaviours. These influences include understandings that are shared amongst groups, such as social norms and the meanings attached to particular activities, as well as people's networks and relationships, and the institutions that influence how groups of individuals behave – e.g., networks, influences, norms
    - Are these specific to certain types of landowners?
    - To what extent do they differ across different types of green finance project? (e.g., project type – forestry vs peatland restoration, investor type, finance type, revenue model)
- What do they think the main **material** factors are which influence landowner/manager decisions? – factors that are 'out there' in the environment and wider world, which both constrain and shape behaviour. These influences include

existing 'hard' infrastructures, technologies and regulations, as well as other 'softer' influences such as time and the schedules of everyday life – e.g., restrictions of land type, time, restrictions on land use, existing designations on sites, requirements of the scheme
    - Are these specific to certain types of landowners?
    - To what extent do they differ across different types of green finance project? (e.g., project type – forestry vs peatland restoration, investor type, finance type, revenue model)

Increasing land supply to green finance **(10 mins)**

Explore what might encourage landowners/managers to provide land to green finance projects/schemes

What would help, or make it easier for, landowners who make decisions around whether to supply land to green finance schemes/projects?

- What would encourage landowners/managers to supply land to green finance?
    - What would help overcome the barriers discussed earlier? (Focus on personal, social, cultural barriers)
        - Has anything been done on projects/schemes that have helped overcome these barriers? (e.g., scheme design, communications)
        - How can schemes be designed to overcome these barriers, and encourage participation by landowners?
    - What is the job of policy in this area – what can it/can it not achieve and why, what policy levers could be used?
        - What aspects of policy are enabling/acting as a barrier to land use change for green finance
        - How could policy be improved to encourage landowners/managers to supply land to green finance?
- What factors need to be considered to ensure that green finance schemes are 'effective and equitable'? (e.g. do not affect the life of local communities negatively)
    - What are the main risks/issues and how can these be overcome?

Close **(2 mins)**

- Any final thoughts and advice for Natural England
- Thank and close

Qualitative sample

Table 6: Qualitative sample description

Interview number	Landowner type	Participant context
1	Farmer and landowner representative	Third-generation landowner and farmer who grows a variety of crops. Member and Chair of a landowner representative's Environmental Forum. Environmental Forum's priorities are environment, public engagement, and food production.
2	Green finance project (Estate Farmer)	Landowner and project lead on a green finance project
3	Estate	Owns and manages a large estate: 860 hectares of arable farmland, 200 acres of woodland. Focus on ecosystem service delivery. Land owned as part of trusts. Four partners (family) on the estate. Primarily rents land to long-term, multi-generational tenant farmers.
4	Stakeholder network and landowner representative	Representative of a trade representation representing 55,000 farmers across sectors. The member-led organisation comprises boards at local and regional levels with elected appointees at the national board level.
5	Stakeholder network and landowner representative	Nature-based finance specialist that helps facilitate knowledge exchange. Set up by the government to help put public policy into practice and catalyse green finance in the UK. Represent and interact with rural business owners with smallholdings (less than 60 hectares to more than 1000 hectares).

6	Land management business	Land management business, specialising in ecosystem restoration and nature recovery at scale. Works with a range of different landowners at a minimum of roughly 300 hectares.
7	Local authority	Head of Environment at a local authority. The council's role under the new Environmental Act is to be the responsible authority for producing a local nature recovery strategy. Responsibilities focus on carbon, sequestration, nature recovery, access to the countryside, flood risk management, and visitor economy. Works as a public sector partner with private landowners and landowners. Landowners with a portfolio of county farms (tenant starter farms).
8	Trust	Large landowner (250,000 hectares across England, Wales, and NI). Of these, 160,000 hectares are farmed in some form and dependent on tenured farmers for land management.
9	Green finance project (Trust)	Acts as a trusted broker and supply aggregator for landowners (primarily pastoral agricultural land), advising on faecal matter handling, pesticide use, and improving general water quality. Focus on promoting restoration, habitat creation, education, and engagement.
10	Area of natural beauty	Participant A: Runs consultancy projects for different clients and is working for AONB and farmers to understand how to increase involvement in natural capital and ecosystem services, set objectives for the local area and source financing for such projects. Participant B: The business development officer for AONB, runs a Natural Environmental Investment Readiness project (NERP) and looking for further financing options for AONB.
11	Green finance project (Company)	Responsible sourcing manager for large UK company. Has a relationship with farmers in the company ingredient supply chain (i.e., milk, wheat, sugar). Focus on increasing regenerative agriculture to reduce carbon emissions

Appendix D: Case studies

These case studies were developed from three of the interviews referenced in the main report. Each case study presents a brief overview of a green finance project and the factors influencing landowner engagement with that scheme. The case studies do not present every factor influencing decision making, but instead focus on examples of how drivers and barriers to engagement can be leveraged and overcome to encourage engagement. The case studies also highlight some elements of the scheme which were considered particularly important in achieving effective and equitable outcomes.

These studies were developed following one sixty-minute interview, and therefore should be considered as an overview of the discussion covered, as opposed to an in-depth exploration of each project.

Case Study – Wyre Rivers Trust Natural Flood Management[2]

This project aimed to use nature-based solutions to reduce flood risk in the Wyre River catchment, using a blend of public and private finance. The Project is being led by the Rivers Trust, the Wyre Rivers Trust, Triodos Bank UK, the Environment Agency, United Utilities, Flood Re, Co-Op Insurance and the Esmée Fairbairn Foundation.

Finance: Institutional investors and high net-worth individuals. Woodland Creation - Woodland Trust (Grow Back Greener)**.**

Revenue Model: Sale of ecosystem services and financial savings from reduced flood impact.

Payment: Fixed payments for the first 6-9 years then outcomes based.

Interventions: Building of leaky dams, wetland and woodland creation, rewetting peat, bunded hedgerows, ponds and scrapes, riparian buffers, grassland management.

Outcomes: 5-15% reduction in flood impact and delayed peak for 2% AEP flood event, new habitats for wildlife, improved water quality, improved water quantity, improved habitat connectivity sequestration of carbon in the newly created wetlands and restored peatlands.

[2] Wyre Rivers Trust: https://wyreriverstrust.org/wyre-nfm

Relevant landowners: Landowners in the Wyre River catchment area

Factors influencing engagement with this scheme

- **Stable and diversified income:** Stable payments for 6-9 years. This offered landowners a new form of income (particularly in light of basic payment scheme being withdrawn[3]). Additionally, landlords were motivated to allow tenants to take part due to this being a more secure financial agreement.

- **Trust:** Wyre Rivers Trust had strong pre-existing relationships with local land managers and was a trusted source of information.

- **Social influence**: Farmers networking facilitated outreach to harder to reach communities. Wyre Rivers Trust used farmer cluster meetings to introduce the project.

  "Once some farmers get involved, they will naturally take after each other. Social community and cohesion are a factor that will play into the delivery of green finance schemes" [Trust]

- **Social responsibility:** Catchment stakeholders were keen to do something to prevent flooding further downstream.

- **Landowner benefits:** This scheme was sold as a 'win' in terms of productivity and business, as well as just a financial opportunity.

- **Upfront costs:** Wyre Community Interest Company (CIC) paid for initial interventions and provided a one-off £500 onboarding fee for every land manager to compensate them for the engagement they would be contributing to the project's development.

- **Concern around losing out on future public payments:** Project team received written statement from Defra and Rural Payments Agency saying they would not lose out on ELM participation should payments be higher than what Wyre Rivers Trust were offering (assuming outcomes did not conflict)

- **Uncertainty around what schemes involve:** Landowners were involved in initial discussions around the project. Non-Binding Memoranda of Understanding were used to clearly outline the project to landowners.

[3] The Basic Payment Scheme (BPS) is the biggest of the rural grants and payments that provide help to the farming industry. The Rural Payment Agency (RPA) plans to replace the Basic Payment Scheme (BPS) in England with delinked payments in 2024.

- **Reduced bureaucracy:** Once the interventions are put in place measurement of performance data is undertaken by the Wyre Rivers Trust, reducing the burden on landowners to monitor outcomes and invest in the tools and skills necessary to undertake flood measurement.

What makes this scheme effective and equitable?

- **Fair payment structures:** Annual management fees rather than land-based payments reflects a shift away from compensating based on amount of land owned. Payment is given to those who manage the land, worked out on an individual basis.

Case Study – Wendling Beck[4]

This project is a collaboration between private landowners, local authorities, environmental NGOs, and Anglian Water. It aims to transform land use for environmental benefit, whilst also building community and environmental resilience

Finance: Natural Environment Readiness Fund, Natural England Biodiversity Net Gain pilot scheme, Natural England Nature Recovery Programme, ELM test and trial. Pro bono and philanthropic support.

Revenue Model: Sale of ecosystem services: biodiversity net gain, nutrient neutrality and natural flood management. Aims to sell carbon credits in future to private buyers.

Payments: Biodiversity Net Gain, Nutrient Neutrality Credits, Natural Flood Management, Carbon Credits, ESG, Voluntary Environmental Credits, Eco-Tourism, Regen-Blackcurrants, Livestock Enterprise, Revenue from Farm Shop, Wildflower Seed.

Interventions: Species-rich grassland creation, lowland heath creation, floodplain restoration, woodland creation (including wet woodland), parkland and wood pasture creation, chalk stream creation & restoration, riparian buffers, regenerative farming system (commercial blackcurrants)**.** Environment Hub to encourage public access and education, disease resistant ash and elm pilot, development of species monitoring strategy.

Outcomes: Reduction in fossil fuels, agro-chemicals and synthetic fertilisers (from farming), carbon sequestration and storage, habitat creation & biodiversity gain, flood risk reduction, removal of nutrients to Special Area of Conservation (SAC), improved air and water quality, public access to nature, expansion of education program to 15,000+ school children, raising public awareness of climate change, water use and future conservation strategy to wider public (via environment hub), creation of farm shop and social hub, disease resistant seed bank by 2029, collaboration on regional wildflower seed hubs.

[4] Wendling Beck: https://www.wendlingbeck.org/

Landowner type: Arable farmers & Horticulture

Factors influencing engagement with this scheme

- **Risk aversion:** Landowners were willing to try something new despite many uncertainties in policy and market.
- **Uncertainty around measurements:** Wendling Beck employed various third parties to undertake modelling, which gave them confidence to proceed.
- **Desire to build financial resilience into business:** Multi-generational farming families with a desire to maintain business viability and an understanding that farming subsidies would decrease in future. Landowners saw climate change as the single biggest threat to food security and perceived an urgent need to address the root cause and fundamentally change an unsustainable production model.
- **Desire to protect & enhance the environment:** Motivated to deliver biodiversity and nature outcomes, particularly after witnessing the effects of climate change on the business (e.g., drought).
- **Rewarding to provide local access to nature:** Desire to provide benefits to and build resilience within the local community (i.e., wellbeing, natural flood management, air and water quality).
- **Tax uncertainties:** The project set up a single operating company which mitigated some tax risk, but there was still seen to be a lack of clarity over how returns will be taxed and the impact from other taxes (APR, BPR, Capital Gains etc).

  "We will get to a point where we feel we can't do anymore until tax is clarified or we have to build in the price of tax in the credits, but then we can't compete in the markets [compared to competitors with more favourable tax positions]". [Farmer]
- **Knowledge and understanding:** Landowners can lack knowledge of how to diversify away from just agriculture. There is not enough clear, easy to access information, knowledge, or support. Ecosystem service delivery requires new specialist skills, which many landowners don't possess. The Covid-19 pandemic and lockdown provided a unique set of circumstances, in which landowners had more time to engage and there was wider access to online webinars and information. This played a role in developing the knowledge and understanding needed for this project. The landowners involved in this project have now set up a consultancy business to share knowledge and support those looking to engage with green finance projects.

What makes this scheme effective and equitable?

- **Measuring impact:** Wendling Beck have developed a monitoring strategy using novel techniques, such as drone-based LIDAR and machine learning to quantify the actual carbon sequestered in different habitat types, to track the effectiveness of

interventions. This will enable them to understand the most effective deployment of investment.

- **Community Engagement:** The Environment Hub provides local access to nature and education. The project also has a volunteering program and is partnering with local charities. A cycle path is also being created to link to the Norfolk Trails network.

- **Collaboration with existing initiatives:** Wendling Beck are working with Norfolk County Council on a program to help people living with dementia by providing access to nature. The partnership with John Innes Centre (JIC) will pioneer the development of disease resistant Ash and Elm trees. A collaboration with The Eden Project is looking to protect and enhance high distinctiveness, local provenance wildflower seed across the UK.

Case Study – Nestle with the First Milk Initiative[5]

This project was led by Nestle and First Milk, a cooperative that helps dairy farmers sell milk at a standardised rate. All farmers who provide milk to Nestle are involved in the scheme. The scheme encourages farmers to adopt new sustainable practices alongside current production.

Finance: Nestle UK

Revenue Model and payment: Farmers fain additional revenue by engaging in regenerative farming practices. Farmers are paid a sustainability bonus per litre of milk, based on a points system.

Interventions: A range of regenerative farming practices and other sustainable interventions, e.g., planting hedgerows, hosting school visits

Outcomes: A range of sustainability outcomes, e.g., preventing water run-off, sustainable education

Relevant Landowners: UK Dairy Farmers in Ayrshire and Cumbria

Factors influencing engagement with this scheme

- **Additional and diversified income:** Regenerative agriculture provides additional income and builds long term resilience into business. Farmers were motivated by the additional sustainability payments.

[5] Nestle and First Milk: https://www.nestle.co.uk/en-gb/sustainability/responsible-sourcing/milk-dairy-farming

- **Agency:** Farmers have the opportunity to choose to implement practices which work best for their circumstances from a ‘menu’ of options.

- **Reduced bureaucracy:** Bureaucracy is a particular barrier to dairy farmers, when compared to arable farmers, who are more used to engaging with subsidy schemes. This scheme was structured as a straightforward, farmer focused scheme – for example farmers were able to provide proof of intervention via photos to qualify for payment.

- **Improving social image:** Farmers are aware of negative perceptions around the sustainability of farming in society. Participation in this scheme offered a route of communication with the public (e.g., via adverts) and an opportunity to improve public image.
- **Social influences:** Farmers belong to First Milk Coop and are influenced by other farmers in the Coop and are aligned with the Coop’s ethos on sustainability.

“First milk - the coop - has decided regenerative agriculture is the way forward. All [the farmers] are invested in this model.” [Company]

- **Stability of payment:** Scheme has a clear payment structure with stable base payments plus sustainability bonuses.

- **Annual commitment:** Farmers can be hesitant to commit to long term schemes in case better (government) schemes emerge in future. Nestle scheme can be altered on an annual basis.

- **Knowledge and capability:** Farmers may not have the knowledge and skills to implement interventions. This scheme worked with third party to educate and help farmers.

“The way we have got it right with first milk is that we've worked with a third party, we've included the farmers in the process of developing the program and the third party helps deliver to the farmers how they go about making the changes." [Company]

- **Trust:** Farmers can distrust private companies and the stability of support, as they have the tendency to rapidly adjust priorities. This scheme was developed alongside farmers and third parties to increase trust between partners. First Milk is a trusted connection. Nestle has made long term environmental commitments.

- **Risk of future government schemes being more beneficial:** The shorter-term nature of this scheme removes need for long term commitment and mitigates this barrier to some extent.

What makes this scheme effective and equitable?

- **Equitable payment structure:** Points system is scaled according to farm size, with larger farms needing more points to achieve the sustainability bonus.

- **Environmental and social outcomes:** Points system covers broad sustainability outcomes, including environmental outcomes and social outcomes (e.g., farmers can achieve points for hosting school visits).