

Large-scale land acquisition for carbon: opportunities and risks

A SEFARI Special Advisory Group

Draft Report



Authors: Rob Mc Morran, Mark S. Reed, Jayne Glass, Andrew Bauer, James Glendinning, Bobby Macaulay, Annie McKee, Leo Peskett, Lucy Rothenberg, Hannah Rudman, Abigail Williams

Contact point: Rob Mc Morran (SRUC) Rob.McMorran@sruc.ac.uk



Scotland's Rural College (SRUC), King's Buildings, EDINBURGH EH9 3JG
Leading the way in Agricultural and Rural Research, Education and Consultancy

Contents

Executive summary	4
1. Introduction.....	8
1.1 Aims of the project	10
1.2 Objective 1: Evidence review	10
1.3 Objective 2: SAG round-table event with stakeholders.....	11
1.4 Objective 3: Evidence-informed recommendations for policy and practice	12
2. Evidence review	12
2.1 The international context for large-scale carbon land acquisitions	13
2.2 Rural land market activity in the UK and natural capital drivers.....	14
2.2.1 UK Farmland markets	15
2.2.2 Recent trends in the estates market.....	17
2.2.3 The UK Forestry land market	18
2.2.4 Current market drivers and the influence of natural capital in UK land markets ...	20
2.3. Risks and trade-offs associated with land acquisition for carbon	21
2.3.1 Risks and challenges of carbon markets and offsetting	21
2.3.2 Market transparency, land values and land availability	26
2.3.3 Landownership concentration and natural capital distribution/inequalities	28
2.3.4 Land use trade-offs and challenges of land use transitions	30
3. Policy options for reducing risks and enhancing positive impacts of natural capital investment	33
3.1 THEME 1: Land market transparency, regulation and best practice in land acquisitions	34
3.2 THEME 2: Participatory and collaborative approaches to natural capital investment..	36
3.3 THEME 3: Supporting access to land for nature-based land uses	39
3.4 THEME 4: Values-led, high-integrity ecosystem markets.....	42
3.5 THEME 5: Rural land use frameworks, redistributing support and incentivising landowners.....	46
4. Conclusions	49
Acknowledgements	51
Appendix 1 Evidence review method and themes of enquiry.....	52
Appendix 2: List of organisations/groups invited to the roundtable event	54
Appendix 3 Farmland values and comparative investment performance of land	56
Appendix 4: Summary of round-table participants views on risks and opportunities.....	59
Appendix 5: Round-table reactions to the 16 policy options.....	64
Endnotes	71

Executive summary

Interest in carbon markets has increased rapidly in recent months, leading to new market opportunities and interest in acquiring land to invest in natural capital, typically through tree planting and restoration of degraded peatland habitats. However, the extent to which natural capital investment is driving transactions is unclear, with owners and purchasers potentially influenced by many factors. There is also uncertainty around how large-scale land acquisitions might interact with post-Brexit policies under development across the UK and the interests of rural communities.

In response to this, we conducted an evidence review and convened more than 60 experts from policy, investment, third sector, research, land management and rural communities to identify and critically assess options for policy and practice to pre-empt and address trade-offs and challenges.

Natural capital buyers and carbon markets are driving significant and rapid changes in the land use sector

- Agricultural land quality is no longer the key determinant of value of farmland, particularly for hill ground and less productive grassland and marginal arable ground. Instead, the natural capital and afforestation potential of land is increasingly important, due to timber prices, competitive forestry grants and carbon markets.
- Farm buyers are now frequently outbid for plantable hill ground by forestry investors, particularly in Scotland.
- Farmland values rose across the UK by 0.7% in 2020 and by 6.2% in 2021 (the strongest annual growth since the 2014 global food crisis), with Scotland experiencing the strongest growth in values (31.2%) in 2021. Poor livestock land in Scotland has increased in value by 60.8% in 2021 (thirty times higher in 2021 than a decade ago). This may have longer term implications for hill farming communities and the sheep farming industry.
- Non-farming buyers of farmland, including investors and amenity buyers, are increasingly important, purchasing >40% of farms in the UK over the last 5 years.
- Natural capital buyers are also increasingly important in the estates market. The overall amount invested in Scottish estates in 2020 (£112M) was the largest annual investment in estates in the last ten years and represented an increase of 55% on the ten-year average investment
- Since 2019/2020 demand for forestry and plantable land has increased substantially from institutional investors and financial institutions, with several new rural-investment funds entering the market, driven by increasing demand for environmental investments, and the strong long term returns from forestry (including inheritance tax exemptions) outperforming most other asset classes. At present however, returns from productive forestry are currently higher than incomes from carbon.
- Average sale prices for commercial forestry land exceeded valuations by around 50% in 2021, a year that saw the largest ever annual investment in commercial forestry land. Total investment in commercial forestry land in both 2020 and 2021 reached just over £200M, around double the levels seen in the preceding two years.
- Plantable land increased in value from an average of £6200 per gross hectare in 2020 to £8500 per/ha in 2021, with Scotland experiencing the sharpest rise in value of 54% on 2020 values for plantable land.

- Around a third of sales of farmland, estates, forestry and plantable land have been off market in the last year, representing a substantial increase over former years.

These trends create risks for markets, land managers and rural communities

While it is clear that natural capital markets and wider investor interest in carbon offsetting and green agendas are driving market interest and in particular land values for plantable land (and peatlands), there is currently limited evidence in relation to what the wider outcomes of this are for rural communities and economies and how this varies based on the resulting land use outcomes (e.g. estate or farm based rewilding versus investment oriented productive mixed forestry). Nevertheless, the project has identified a number of important risks that need to be managed:

- Without the development of new, high integrity ecosystem markets, opportunities for UK nature recovery may be missed. Although the UK is the third largest buyer of offsets in the world, the majority are bought from overseas projects, as there are insufficient woodland and peatland projects to meet growing demand from investors.
- However, without buyer checks, it is possible for highly polluting industries to reach net zero via offsetting rather than reducing their emissions at source, undermining the integrity of both markets and global political agreements. With insufficient measurement, reporting and verification, new carbon and ecosystem markets might fail to deliver promised GHG abatement, further undermining trust.
- Failure to effectively “blend” public and private funding via government-run agri-environment schemes and privately-run ecosystem markets could result in market failures creating a postcode lottery for access to private finance (which may only be available in locations and for services that are attractive to the market), and/or public funding paying for work that would otherwise have been delivered by markets.
- As land values increase, there are benefits for existing owners, but with increasing disparity between land values and farmland incomes, particularly for smaller scale farmers, this may exclude new entrants to farming, re-concentrate landownership (where tenancies are taken back in hand to achieve scale efficiencies) and limit access to land by rural communities (which may constrain economic development and housing).

Options for reducing risks and enhancing positive impacts of natural capital investment

Based on the evidence review and roundtable discussion, 16 options for policy and practice across the UK were identified across five themes.

1. Land market transparency, regulation and best practice in land acquisitions:

- Build an evidence base on land market activity through regular independent market assessments (including off-market sales)
- Develop guidance on rights and responsibilities for investors entering the UK land market
- Consider formal approval processes for land acquisitions, including a public interest test for new land sales over a set threshold.

2. Participatory and collaborative approaches to natural capital investment:

- Provide guidance and training for land managers on community engagement, to improve decision outcomes for communities
- Support alternative landownership models, including community ownership, and collective private ownership models and community-owner partnerships
- Assess the potential for community natural capital funds, to ensure benefits from investment are shared fairly between public, private and community interests

3. Supporting access to land for nature-based land uses:

- Facilitate joint venture mechanisms to increase access to land and natural capital funding including (i) contract farming; (ii) partnerships; (iii) share farming; (iv) tenancies; and (v) leasing arrangements
- Address barriers to tenants engaging in ecosystem markets, including encouraging contracts that allow tenants to participate in natural capital schemes
- Explore fiscal instruments that could facilitate diversification of landownership, including income tax relief for new entrants, changes in liabilities for non-domestic rates, inheritance tax and capital gains tax, and development of a Land Value Tax

4. Values-led, high-integrity ecosystem markets:

- Expand and enhance high-integrity carbon and ecosystem markets through developing new accredited codes for different land uses and ecosystem services
- Develop carbon buyer checks to ensure land is only used for carbon offsetting for residual emissions when a buyer has done everything feasible to reduce emissions at source
- Develop a co-ordinated policy framework in each UK country on the design, governance and operation of ecosystem markets and their alignment with land-based support that ensures consistent UK-wide operation of ecosystem markets without distorting effects from different subsidy regimes in each country
- Develop a UK advisory body to ensure oversight of carbon credit projects, make recommendations on additionality requirements and monitor and enforce compliance with rules and guidance

5. Rural land use frameworks, redistributing support and incentivising landowners:

- Further develop the potential for place-based, collaborative approaches to the application of natural capital markets in parallel with public support mechanisms, including through testing a data-driven, natural capital accounting approach
- Apply a redistributive approach to post-Brexit public payment mechanisms where feasible (direct and/or environmental payments), to facilitate wider distribution of benefits across the land management sector to address issues of landownership concentration and capitalisation of support payments on larger landholdings
- Develop knowledge exchange and training for land managers, in addition to increased advice and guidance, relating to engaging with natural capital markets and related environmental support schemes (and undertaking related assessments)

It is clear that interest in natural capital and ecosystem markets is driving rapid and significant change in the land use sector across the UK, but these changes are layered on top of (and often symptomatic of) long term and systemic issues in land markets (e.g. around concentration of landownership) and other market drivers (e.g. timber prices). The

extent and speed of land use change envisioned by the Committee on Climate Change to meet net zero targets by 2050 is unprecedented. To achieve these changes is likely to require a combination of changes to public support mechanisms and privately financed payments for ecosystem services. The scaling of existing voluntary domestic carbon markets and development of new markets has increased the viability of large-scale land use transitions (e.g. rewilding and afforestation). However, income from natural capital is likely to be unevenly distributed across the land management sector and could reinforce existing structural inequalities relating to concentration of landownership and decision-making power, and related outcomes for communities. It is therefore important that effective and well-aligned market-based and public-support mechanisms are designed to tackle existing structural barriers, avoid policy conflicts and ensure land use transitions are viable across a wide range of land managers and holding types and sizes.

1. Introduction

Interest in carbon markets has increased rapidly in recent months, leading to initiatives to create new market opportunities and increasing interest in acquiring land to invest in (and enhance) natural capital. The increasing importance of carbon (and wider natural capital), both as a motivation for ownership and as a form of diversification for existing owners, due to the current policy emphasis on tackling climate change, is reflected across the landed sector¹. This is evident in relation to increased market interest in purchasing farmland to plant trees, the growing number of projects registered with the Woodland Carbon Code² and interest from natural capital buyers in upland estates.

A number of recent high-profile acquisitions have raised awareness of the increased interest, with the aim of restoring native woodland and peatland habitats and benefitting from opportunities for natural capital investment and offsetting emissions from business activities³. This includes the purchase of the 9,300-acre Kinrara Estate by Brewdog, and Glengarry, where Shell have helped fund new upland native woodland creation and peatland restoration projects on national land which will continue to be publicly owned and managed by FLS as part of the wider Glengarry Forest⁴. Importantly, interest in natural capital offers significant opportunities for harnessing additional investment in climate change mitigation and biodiversity and habitat restoration in future years. For example, the Green Finance Institute recently estimated that there is a finance gap for nature related outcomes of £44-97 billion across the UK over the next ten years (Figure 1). As a result, there is now interest from across the UK policy community in developing policy frameworks to develop and govern ecosystem markets (e.g. see the UK Government's Nature recovery green paper⁵, Scottish Government's commitments to natural capital market development in its National Strategy for Economic Transformation⁶ and the £1 billion challenge proposed by the Nature Finance Pioneers Network to ramp up investment in nature-based solutions to climate change, proposed by the Scottish Environmental Protection Agency and the Scottish Wildlife Trust⁷).

While it is apparent that natural capital represents a growing influence on land markets, the extent to which natural capital investment is driving acquisitions and sales is unclear, with owners and purchasers likely to be influenced by a combination of factors. While a variety of land market reports exist⁸, uncertainty remains in relation to the volume of recent sales and the motivations of buyers and sellersⁱ, a situation which is compounded by an increasing number of land sales occurring 'off-market'⁹. Gaining a broader understanding of land market activity (and buyer and seller motivations) is therefore important to assess how landownership change should be considered in relation to emerging models of natural capital finance, and for determining how current land market activity may affect access to land for individuals, communities and businesses.

Increased emphasis on natural capital markets also raises questions relating to the distribution of benefits from natural capital and related impacts for local economies¹⁰. Concerns have been raised in relation to trade-offs with food security, and the involvement of rural communities in land use decision-making and in relation to access to land for housing, enterprise and new farming entrants¹¹. Natural capital markets currently remain relatively under-developed and a critical challenge for policy makers relates to achieving a balance between achieving win-wins for biodiversity, food security and rural communities,

ⁱ The Strutt and Parker Farmland, Estates and Forestry land indexes do include a significant proportion of total rural land sales and include enriched data (on buyer motivations etc.) in around 50% of cases.

while providing investors with strong returns on investment from land value and carbon markets to support the UK Governments in meeting their net zero commitments.



Figure 1¹²: Top: The funding gap between committed/planned spending and spending required to reach net zero targets and other nature-related outcomes. Bottom: estimated gap for each UK country

All four UK nations are currently developing alternatives to the area-based payments of the EU Common Agricultural Policy, a key source of income for many farmers. In England, the new Environmental Land Management (ELM) payments scheme is being introduced gradually from 2021-2028, in line with a phasing out of direct support under the Basic Payment Scheme, with options being explored for aligning the ELMs scheme with private natural capital markets. Longer term arrangements for the provision of post-Brexit agricultural support are under development in the other UK nations, with the Basic Payments Scheme extended until 2024 in Scotland, 2023 in Wales and 2022 in Northern Ireland, to support farmers during this transitional period¹³. Future support mechanisms in Wales (proposed as the Welsh Sustainable Farming System) and Scotland are expected to include measures to support the development of natural capital markets, to facilitate private investment in woodland creation and peatland restoration, as well as supporting the development of new markets such as the UK Farm Soil Carbon Code¹⁴. These support mechanisms and markets represent significant opportunities for land managers, but how they are designed will influence how the resulting risks and opportunities are distributed across the land management sector¹⁵.

Currently, there remains a high degree of uncertainty around how large-scale land acquisitions for carbon by the investment community might interact and align (or mis-align) with post-Brexit agricultural policy, land reform policy in Scotlandⁱⁱ, biodiversity net gain, other green finance mechanisms, England's farmer retirement scheme¹⁶ and similar policies in Wales and Northern Ireland. For example, the potential impacts of large-scale land acquisitions for natural capital on Scotland's already highly concentrated pattern of private landownership¹⁷ are currently unclear. This multi-layered context for natural capital investment suggests the need for a pre-emptive approach to policy design and an improved understanding of rural land markets, to ensure policy can be developed based on a sound evidence base to address trade-offs and challenges before they arise.

1.1 Aims of the project

To inform and help frame policy discussions, this project convened a SEFARI Special Advisory Group (SAG) to bring together key players from the worlds of policy, investment, research and land management to identify, research and discuss opportunities and risks arising from large-scale land acquisition for carbon. The objectives of the work were to:

1. Synthesise evidence on the potential opportunities and risks associated with large-scale land acquisition for carbon in the UK;
2. Share knowledge and perspectives between key members of the research, policy, investor and land management communities on the opportunities and risks of large-scale land acquisition for carbon; and
3. Make evidence-informed recommendations for policy and practice that can minimise or avoid trade-offs and achieve win-wins for climate mitigation, biodiversity, food security and rural communities from land acquisition for carbon.

1.2 Objective 1: Evidence review

To deliver the first objective, a review was conducted to synthesise evidence on current rural land market activity across the UK (including natural capital drivers), and related opportunities, risks and trade-offs associated with large-scale land acquisition for carbon. The review focused primarily on carbon, but evidence and findings related to wider aspects of natural capital were also included. In addition, while the primary focus was on land acquisition and new owners, the role of existing landowners in taking forward relevant initiatives was also considered.

Existing evidence was assessed in relation to three research objectives:

- i. To understand the current extent of land market activity in the UK and the influence of ecosystem markets (and related natural capital drivers) on market activity, and potential future trends;
- ii. To identify and assess key risks and trade-offs associated with large-scale land acquisition for carbon, including in relation to the effects on land values, concentration of landownership and benefits capture;
- iii. To identify and assess key opportunities (emergent schemes, mechanisms, policies and behaviours) related to reducing the risks and trade-offs associated with large-scale land acquisition for carbon, including in relation to distribution of benefits, innovative governance and ownership models, and risk sharing.

ⁱⁱ This includes an emphasis on increased landownership diversification and transparency in land markets.

The process of evidence collation and assessment was used to identify options for policy and practice that can minimise risk and avoid trade-offs and maximise benefits for climate mitigation, biodiversity, food security and communities, from land acquisition for carbon. These are broadly relevant to the UK, although some specific aspects may be more relevant to the landownership and policy context in Scotland. The review focuses on larger scale land acquisitions, including an assessment of farmland markets (holdings of >50 acres), in addition to estate and forestry land markets.

A full description of the review methods and search terms used is included in Appendix 1. Section 2 begins with a brief review of key aspects of the international context for large-scale land acquisitions (LSLAs) and drivers for this in the global context. The remainder of the review is then presented in two sub-sections, addressing the first two research objectives above:

- Section 2.2: This section characterises recent rural land market activity (focused on >100-acre transactions) and the apparent influence of natural capital markets as a market driver, based on a reviewing land market reports and related material.
- Section 2.3: This section synthesises evidence relating to risks and trade-offs associated with LSLAs. This includes a discussion of the potential effects of land acquisition for carbon on: i) land values and land availability; ii) landownership concentration and natural capital distribution/inequalities; and iii) land use trade-offs and challenges of land use transitions. This includes some discussion of the potential impacts of large-scale carbon acquisitions on existing land uses and rural communities based on the wider evidence base.

Section 3 synthesizes a range of material relating to managing risks and enhancing opportunities relating to land acquisitions for carbon and other forms of natural capital, with a focus on identifying examples and evidence relevant to the UK. Sixteen policy options are presented. This incorporates an evidence-based discussion of opportunities and the associated policy options, relating to five themes:

- i. Improving land market regulation and transparency;
- ii. Managing carbon market risks and harnessing investment effectively;
- iii. Facilitating localised natural capital investment and more equitable distribution of benefits;
- iv. Participatory and collaborative models for natural capital investment; and
- v. Enhancing uptake and opportunities for carbon investment for existing landowners.

1.3 Objective 2: SAG round-table event with stakeholders

A first draft of the evidence review was discussed at a round-table event on 22 February 2022. Prior to the event, a stakeholder analysis was carried out using the “3i’s approach”¹⁸, to analyse stakeholders in relation to their relative interest and influence, as well as the impact of the focal issue on them. Conducted during an online workshop with the project team, this analysis ensured comprehensive coverage of relevant organisations and groups, and their interests, influence and impacts. A list of all organisations and groups identified and invited to the round-table event is included in Appendix 2.

The round-table event was designed and professionally facilitated using a range of online participatory tools to enable structured elicitation and sharing of knowledge. Participants

were invited to share written reflections on online Mural boards, as well as verbal contributions to facilitated discussions in both plenary and small group sessions.

1.4 Objective 3: Evidence-informed recommendations for policy and practice

The evidence review informed the development of 16 policy options that were grouped under five themes (see Section 3). The review and policy options were sent to the round-table participants in advance of the event. In the round-table discussions, participants were asked to provide feedback on the evidence review and proposed policy options. The participants' written and verbal contributions at the workshop were analysed by the research team. A summary of the data gathered on stakeholders' views on risks and opportunities is included in Appendix 4. The 16 policy options were then refined based on the discussions at the event and these refinements are also explained in Section 3.

2. Evidence review

2.1 The international context for large-scale carbon land acquisitions

Globally, large scale land acquisitions (LSLAs) can be defined as land investments of over 200 hectares, which transfer rights, control or ownership of land¹⁹. Following the global food crisis in 2008, investment in land increased dramatically, to meet demand for food, biofuel and other commodities²⁰. Globally, most LSLAs are of farmland, but they can also occur for climate change mitigation, limiting deforestation, biodiversity enhancement and watershed protection²¹. Data collated since 2008 shows the global surge of land acquisitions plateaued after 2010, with over 33 million hectaresⁱⁱⁱ in land deals by 2020²². However, this data excludes some countries and may be an underestimate, with Oxfam estimating that 227 million hectares was sold or leased globally in 2000-2011, mostly to international investors²³. A slowdown in LSLAs since 2012 has been influenced by lower price expectations, new restrictions on selling land to foreign investors in some countries, and reduced support for biofuels²⁴. Notably, post-Covid recovery policies may result in restrictions being lifted and more favourable conditions emerging, potentially driving a resurgence in demand for land, with some countries (e.g. India and Indonesia) having already liberalised their land markets to attract foreign investment²⁵.

The international LSLA literature relates predominantly to acquisitions in the Global South, often by foreign investors. The stated objectives and benefits of LSLAs commonly include increasing agricultural efficiencies, addressing food or biofuel security and alleviating deforestation pressures²⁶. However, foreign land investments in low-income countries may lack transparency and local consultation, and as a result may lead to negative impacts on community livelihoods, local food and tenure security and deforestation (and increased carbon emissions)²⁷. Critically, while LSLAs can result in major land use shifts, many LSLAs are not actively used or converted once acquired (due to speculative acquisitions), despite increasing global demand for land to address food security and climate priorities²⁸. These negative associations have led to LSLAs being characterised as 'land grabbing', which the International Land Coalition defines as any type of land acquisition that is in violation of human rights, without prior consent of indigenous land users and without consideration of social or environmental impacts²⁹.

While LSLAs also occur in the Global North, they have not been commonly associated with overt dispossession and human rights abuses or major changes in production, to the extent they have in the Global South. Nevertheless, LSLAs of farmland by corporate investors (and effects on landownership concentration) have been associated with the decline of agricultural communities in Canada (see Section 4.3). A 2018 study³⁰ identified similar community effects of LSLAs by non-agricultural investors in Germany and proposed six criteria for 'land grabbing' in a European context: i) legal irregularities; ii) non-residence of new owners; iii) centralization in decision-making structures; iv) treating land as an investment object; v) concentration of decision-power; and vi) limited access to land markets.

LSLAs which target land specifically for conservation of forest resources and/or investment in natural capital, have been referred by some authors as 'green grabbing'³¹. This '*new appropriation of nature*' reflects a longer-term history of colonial resource appropriation for environmental objectives (e.g. National Parks in the US) and involves a wide range of

ⁱⁱⁱ By comparison the land area of the UK is over 24 million hectares, approximately 75% of which is used for agriculture.

powerful actors, from venture capitalists to commodity traders, business entrepreneurs, green activists and NGOs³². In practice, environmental LSLAs can be multi-dimensional (e.g. interacting with acquisition of resources such as energy or forestry)³³ and incorporate new forms of valuation, commodification or market development for specific environmental ‘assets’ to legitimise and incentivise new acquisitions³⁴.

Critically, commitments by more than 130 countries to achieving net-zero emissions by 2050 have resulted in a substantial increase in investor demand for carbon offsetting opportunities, with the global market for voluntary carbon credits surpassing \$1Bn in 2021 and projected to grow to \$100Bn by 2050, with the average global price per ton for credits from forestry and land use projects rising from \$4.33 in 2019 to \$4.73 in 2021, with a spike to \$5.60 in 2020³⁵. This has resulted in a surge in investment in LSLAs, with a range of investment funds, financial organisations and corporate interests diversifying their portfolios with land acquisitions due to the potential for securing carbon reserves and/or enhancing carbon sequestration and the availability of carbon offsets through forest restoration³⁶. This has been driven by environmental commitments (e.g. Biodiversity Net Gain requirements for developments), regulatory requirements and increasing awareness of the potential for natural capital investments to reduce risk and increase business resilience³⁷. Importantly, through a combination of harnessing private finance and evolving policy commitments LSLAs can facilitate forest restoration and enhancements to natural capital at large scales (in the Global North and South)³⁸. Additionally, new flows of money from institutional investors can provide opportunities for diversifying rural economies during periods of uncertainty by stimulating innovation beyond traditional farming activities, resulting in job creation and infrastructural and environmental improvements, with associated community benefits³⁹.

Nevertheless, while those acquiring land for green investment commonly identify win-win opportunities, local power dynamics may constrain equitable distribution of benefits from environmental initiatives⁴⁰. For example, increased global interest in carbon offsetting is resulting in increased demand for land in the Global South (and related concern around the scale of farmland which may be lost to carbon offsetting demand), with some resulting in detrimental effects for local communities⁴¹. Emissions trading schemes have also been criticised for failing to effectively reduce emissions in many cases (see Section 2.3.1). Other authors have recognised the potential for environmental LSLAs to potentially increase the climate resilience of the ‘buyer’ country through their acquisition of land for carbon and food security, which may leave the targeted country less resilient to climate extremes in the future⁴².

2.2 Rural land market activity in the UK and natural capital drivers

This section characterises recent UK land market activity in three key areas: farmland, estates and forestry sales (including plantable land). Most of the evidence collated in this section is based on recent land market reports from relevant agencies, evidence from the annual UK Forestry market reports and related land market assessments. Published evidence on land market activity often relates to the previous year and while the most up to date material has been assessed, data for the second half of 2021 and very recent (2022) land market activity is not accounted for in this assessment. In addition, while the available land market reports offer detailed and useful market assessments, the degree of off-market activity suggests that most market assessments contain a degree of uncertainty. The high levels of market demand and rapid growth in values also suggest that the evidence set out here may no longer be representative of very recent land market activity (and land values) in

late 2021 and 2022. This section has a broad focus on land sales over 100 acres where this is compatible with the available data.

2.2.1 UK Farmland markets

The UK farmland market includes a relatively diverse range of farm or farmland types, including amenity or ‘hobby’ farms, arable, dairy, livestock, mixed and hill farms. On average around 160,000 acres of farmland have been marketed annually in the UK since 2000, with this figure declining to around 150,000 acres a year since 2010 (see Figures 2 and 3)⁴³. This normally includes around 100 farm holdings (>50 acres) in Scotland and 200-300 in England and Wales⁴⁴, with less than 1% of the UK farmland area changing hands annually. While regional variation occurs, the UK farmland market has experienced reduced supply since 2019 (from 189,000 acres in 2018), to between 117,000 and 123,000 acres annually in the 2019-2021 period, with larger proportional declines in supply evident in Scotland⁴⁵.

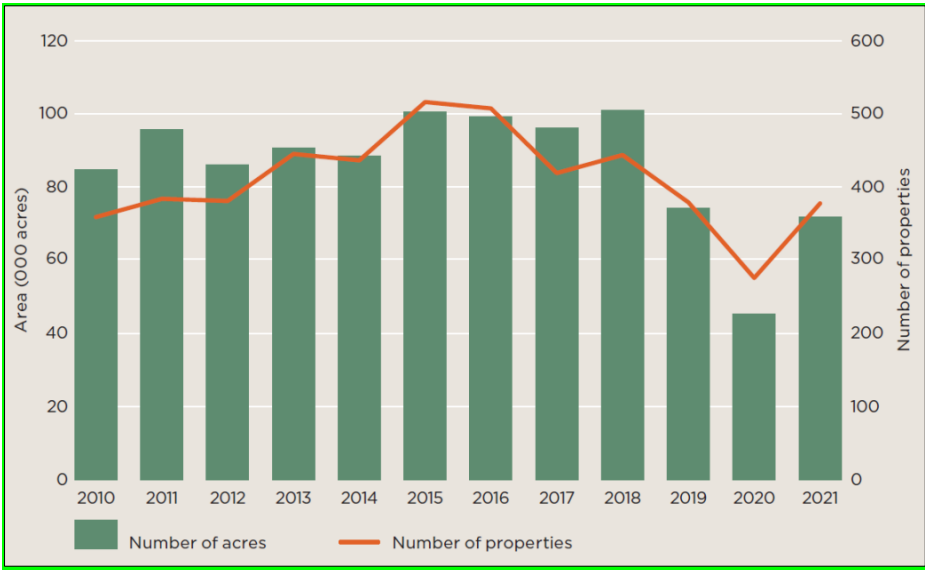


Figure 2 Publicly marketed farmland supply in the UK (2010-2021) (Savills, 2021)⁴⁶

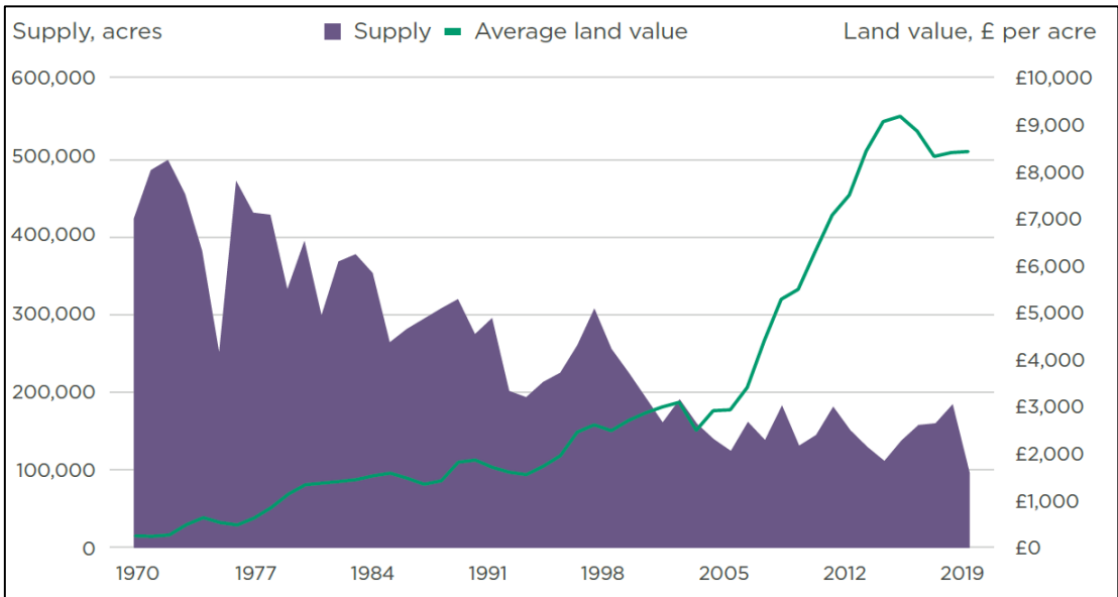


Figure 4 UK Farmland supply and land value per/acre (1970-2019)⁴⁷

In addition to a decline in the number of farms and area of farmland marketed, recent supply of larger farms has been limited with an average farm size for holdings (>50 acres) sold in the UK of just 160 acres, which was 25% below the 10-year average⁴⁸. This reflects a longer-term trend, with smaller farms (<250 acres) having become a larger proportion of the UK farmland market since 1995, with farm sales over 1000 acres making up less than 1% of marketed farms since 2011⁴⁹. This trend relates to multiple factors, including increased demand for smaller amenity farms and an increased likelihood of industry exits from farmers in smaller holding categories⁵⁰.

Notably, 2020 was the first year since 2009 that fewer than 200 farms and estates were marketed in England⁵¹, with only 49 farms (13,100 acres) marketed in Scotland during this period compared to a five-year Scottish average of 95 farms and 32,800 acres⁵². These represent the lowest figures recorded by Savills since they began tracking supply in 1993⁵³. This has been influenced by uncertainty and a cautious attitude among sellers relating to Brexit and the future of agricultural payments, and challenges or delays bringing properties to market due to Covid-related restrictions⁵⁴. Nevertheless, while supply of UK farmland remained low in 2021 (122,400 acres) relative to the ten-year average, supply increased from 2020 levels, with an increase of 7% in England and 63% in Scotland, reflecting a return to pre-pandemic (2019) levels of supply (see Figure 4)⁵⁵.

The reduction in UK farmland supply evident since 2019, while atypical in terms of the scale of the reduction, reflects a longer-term trend of declining supply of farmland to the market. In addition, an increasing number of farmland sales occur off-market, with estimates suggesting 30% of all farmland sales in 2020 occurred in this way⁵⁶. This represents a successful strategy for sellers during periods of low supply and high demand, reducing marketing costs, increasing privacy for buyers and sellers and providing an element of exclusivity associated with a private sale.

Existing farmers accounted for 46% of purchasers of UK farmland in 2021 and 49% in 2020, with non-farming buyers accounting for 38% in 2021 and 34% in 2020 and institutional/corporate buyers 16% in 2021 (up from 10% in 2020)⁵⁷. This reflects a longer-term trend of farmers being less active in the market and non-farming purchasers growing in importance, with private investors and lifestyle/amenity buyers purchasing over 40% of farms in the UK annually over the last 4-5 years⁵⁸.

Reflecting high levels of supply, average UK farmland values fell by 1.8% in 2018 (to £6,700 per acre)⁵⁹ and experienced a smaller drop (of 0.2%) in 2019⁶⁰. Reduced supply has resulted in increasing demand for UK farmland in 2020-2021 despite pandemic restrictions, influenced by the long-term investment potential of farmland. This resulted in average per acre values for farmland across the UK rising by 0.7% in 2020 and by 6.2% during 2021⁶¹, the strongest annual growth since the 2014 global food crisis (during which average values peaked at £14,000 per acre in the UK)⁶². While per acre values remain lower in Scotland relative to other UK regions, Scotland experienced the strongest overall growth in values (+31.2%) in 2021, with average per acre values (all land types) of £5,920.⁶³

Importantly, agricultural land quality is no longer the key determinant of farmland values, due to the increasing influence of capital from outside agriculture (and particularly lifestyle buyers and forestry/land investors) as a market driver⁶⁴. The afforestation potential of land is an increasingly critical driver of demand, particularly for hill ground, but also for less productive grassland and marginal arable ground, with farm buyers frequently outbid for plantable hill

ground by forestry investors [due to timber prices, carbon offset markets and competitive forestry grants], particularly in Scotland⁶⁵.

This increased demand from environmentally motivated buyers and forestry investors has resulted in the biggest overall per acre increases in value occurring for land with afforestation potential, with poor livestock land in Scotland having increased in value by 60.8% in 2021, following a 17.5% increase in value in 2020^{iv} (relative to an 8.8% increase in value for this land type across the UK as a whole in 2021)⁶⁶. This reflects an increasing divergence between prices paid for plantable hill ground and hill ground which is unsuitable for afforestation, with prices paid by forestry investors for plantable hill ground in Scotland up to thirty times higher in 2021 than a decade ago⁶⁷. Due to constrained supply, demand for arable farmland has also remained high in recent years, with arable land increasing in value in Scotland by 19.7% in 2021 and by 270% over the last twenty years⁶⁸.

2.2.2 Recent trends in the estates market

Estates represent an important niche sector of the UK's land market.. The term 'estate' usually relates to landholdings with diversified land uses and activities, which can include in-hand farming, let farms, sporting interests, forestry, renewables, property and tourism⁶⁹. Estate sales are relatively limited in comparison to farmland, with six marketed in England in 2020 and eight in 2019 (these figures do not include off-market sales), with a five-year average (2016-2020) of 10 estates marketed in England⁷⁰. By comparison, an average of 31 estates (126,000 acres) have been marketed annually in Scotland over the last nine years, with sales completing on around two thirds of these annually⁷¹

The supply of estates in Scotland has remained very consistent over the last decade, except for 2013-2014, which saw a temporary downturn, influenced by a cautious approach from sellers and buyers during the Scottish Independence referendum period⁷². In contrast, estate sales in Scotland remained consistent during the pandemic, with 24 sold in 2020⁷³. Despite a reduction in the total area of estate land marketed in 2020 (to 84,600 acres), the overall amount invested during this period (£112M) was the largest annual investment in estates over the last ten years and represented an increase of 55% on the ten year average investment⁷⁴. In addition, four estates sold for over £10M and three sold in the £5-10M range in 2020, compared to one estate in each of these categories in 2019, reflecting increased demand and investor interest⁷⁵. The average estate price in 2020 (£4.7M) was also above the ten-year average (£3.7M) and considerably higher than the average price in 2018 (£2.7M) and 2019 (£2.8M) (Table 1).

Considering average estate price, total investment, and farmland and forestry land values, estates represent a robust long term investment relative to other commodities.

Similar to UK farmland, most estates are marketed publicly, with around a third marketed privately on an annual basis. In 2020 this increased to 45% of estates being advertised off-market, with 33% of sales completed privately and around a third of buyers originating from overseas⁷⁶. While estates are often characterised as large landholdings, they occur across a relatively broad size range. The average holding size among 263 respondents to a 2014 survey⁷⁷ of Scottish estates was 11,762 acres. However, this drops to under 7500 acres when the 16 largest holdings are removed from the sample and 43% of the respondent estates were under 2500 acres. This reflects sales data, with estates marketed in Scotland from 2012-2020 averaging just over 4000 acres⁷⁸. Smaller estates were a particular feature of the 2020 market, with marketed estates averaging 2400 acres, with larger estates

^{iv} From average per acre values of around £1500-3000 per acre for plantable hill ground in 2020 (Strutt and Parker, 2021)

marketed more frequently in the North-West of Scotland⁷⁹. While the average size of marketed estates was higher in Scotland in 2019 (4200 acres), 21 of the marketed estates were under 2500 acres, with just 10 over 5000 acres, indicating a very low turnover of larger estates⁸⁰.

The relatively low turnover of estates evident in Section 3.2 reflects the high degree of continuity of ownership in the estates sector, with over a quarter of owners able to trace their ancestry to the 1600s^{81,82}. This low degree of 'churn' reflects an emphasis by most landowners on the importance of passing their estate on to their heirs, with estate sales often occurring where the owner has no obvious successor⁸³. While the number of estates marketed in Scotland in 2020 was consistent with 2018/2019, the reduction in the total amount of estate land marketed suggests that the pandemic may have acted as a brake on some new estates coming to the market in 2020-2021.

This consistently low supply has resulted in very high levels of recent demand for estates in Scotland. Other factors which drive demand include the rural lifestyle, Scottish landscapes and culture and the relative affordability (and exclusivity) of an estate in comparison to high value city properties. In addition, estates represent an increasing range of capital growth opportunities, including renewable energy, sporting businesses, forestry, and investment in housing/property⁸⁴. Environmental drivers and related markets and incentives have also become an increasingly important motivation for those investing in estates in recent years (see Section 2.2.4).

2.2.3 The UK Forestry land market

The UK forestry land market includes commercial forestry sales and sales of mixed/native woodlands, with recent reports also assessing 'plantable' land bought for future afforestation. The UK Forestry Market Report recorded 67 commercial forestry transactions totalling 10,400 hectares in 2021 (averaging 155ha), an increase from 61 transactions in 2020, despite a reduction of 17% in the total area sold compared to 2020 (Table 1). Per hectare values for forests increased by over 20% in 2021 to £19,300, with some younger second rotation forests selling for over £30,000 per stocked hectare due to high tree quality, investment potential and the presence of in-forest infrastructure⁸⁵. In addition, 36 mixed woodlands (averaging 70.2 acres) changed hands in 2021, for a total of £10.7M (up from £6.6M in 2020) for 1023 hectares of woodland (Table 1^v).

Table 1 UK Forestry land market activity in 2021 (UK Forestry Market Report 2021)⁸⁶

Category (2020 figures in brackets)	Commercial forestry	Mixed/native woods	Plantable land
No. of transactions	67 (61)	36 (30)	70 (33)
Total sold (Ha)	10,400 (12,542)	1023 (750)	6480 (4460)
Total invested (£)	£200.4M (£200.2M)	£10.7M (£6.68M)	£53M (n/a)
Per/ha values	£19,300 (£16,000)	£4,232 (£3,604)	£11,000 (£8,500)

The forestry market has experienced exceptional recent growth, with total investment in commercial forestry land in 2021 (£200.4M) very similar to 2020 (£200.2M). This represents a substantial increase from 2019 (£126.5M) and 2018 (£104.2M), with 2021 the largest ever annual investment in commercial forestry land. While the average transaction dropped to

^v Note this table (from the UK Forestry Market report data) may not include all off-market sales and may also not include all smaller amenity woodland sales.

£3M in 2021 (from £3.3M) due to an increase in the number of smaller forests being marketed, per stocked hectare prices jumped to £19,300 (a 21% increase, which follows a 39% increase in 2020) (Table 2). Larger forests (>100 hectares) attract particularly high prices.

Notably, there were 70 planting land transactions (for £53M) in the UK in 2021^{vi} totalling 6480 hectares (with an average size of 93ha, compared to 139ha in 2020), an increase on the 4460 hectares sold in 2020 (Table 2), with an additional £23M invested in land for natural capital^{vii}. Reflecting elevated values for marginal farmland (Section 2.2.1), plantable land increased in value from an average of £6200 per gross hectare in 2020 to £8500 per/ha in 2021 (or £11,000 per net hectare of plantable ground) with Scotland experiencing the sharpest rise in value of 54% on 2020 values for plantable land.⁸⁷

Some of the most dramatic growth in demand has occurred in the forestry sector, with demand for all forms of forestry and plantable land remarkably high in recent years, with average sale prices exceeding valuations by around 50% in 2021⁸⁸. This represents the scarcity value of forest assets, high timber prices and ambitious government targets for afforestation. Since 2019/2020 demand has increased from institutional investors and financial institutions (with several new investment funds entering the UK land market), with several new rural-investment funds entering the market, driven by increasing demand for environmental investments, and the strong long term returns from forestry, with per/ha values for forests having increased dramatically in the last twenty years (Figure 4), outperforming most other asset classes (see Appendix 3). This demand has resulted in an increase in off-market transactions for forestry and plantable land, with off-market sales accounting for a third of sales in 2020 compared to 11% in 2019, which can create challenges in accurately estimating market activity⁸⁹.

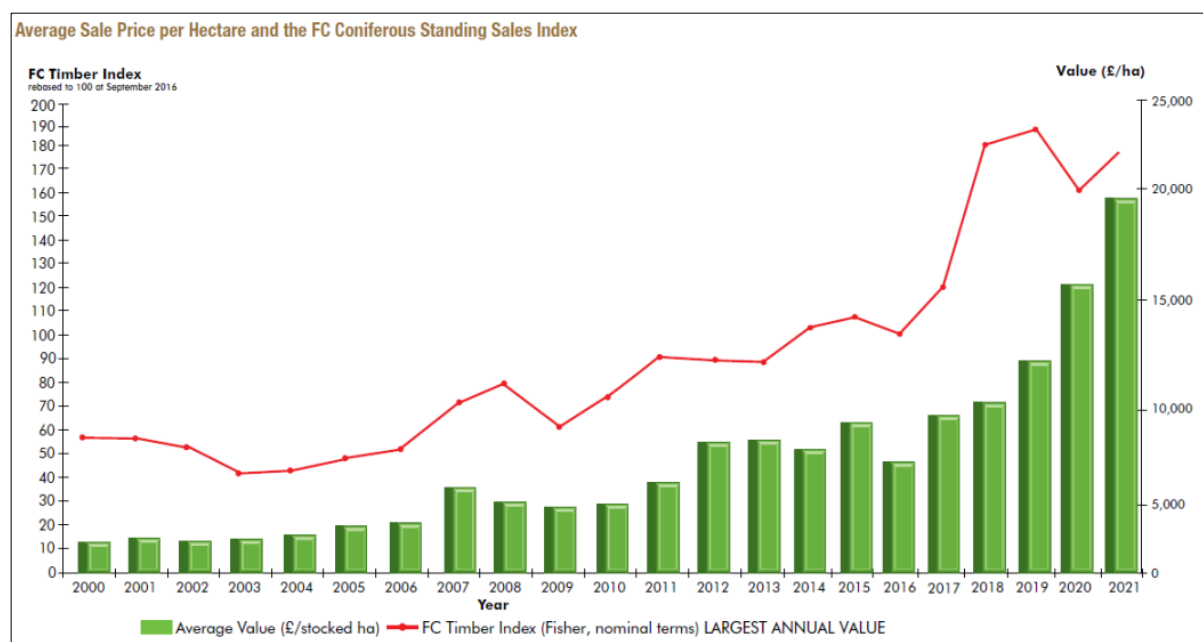


Figure 4 Average per/ha price of forestry and timber prices (2000-2021) (UK Forestry Market Report, 2021)

^{vi} There may be overlap in this case between transactions recorded in the UK Forestry Market Report for plantable land and some of the farmland transactions recorded for the same time period (in Section 3.4.1)

^{vii} The actual form of natural capital investment in this case is unspecified in the UK Forestry Market Report (2021)

The emergence of woodland carbon markets represents a further important driver for rapidly expanding forestry markets, due to the potential for generating additional income from woodland establishment combined with strong interest in investments with natural capital credentials and off-setting potential⁹⁰. This has been facilitated through the ability to verify carbon units under the UK's Woodland Carbon Code (WCC)⁹¹. Woodland carbon represents a relevant option for generating income from native woodland schemes on poorer quality land, where productive forestry is less viable, with a corresponding influence on plantable land prices.⁹²

However, while woodland carbon is of increasing interest, the 'additionality' requirements^{viii} under the WCC result in some schemes not being eligible and creates challenges for registering woodland schemes retrospectively. Additionally, returns from productive forestry are currently considerably higher than incomes generated from woodland carbon, with carbon prices also varying widely across the market. Savills reported a range of £3 to £30 per ton of carbon in 2021⁹³, but the Woodland Carbon Code reports that the majority of Pending Issuance Units (which represent the majority of the market) sell for between £15-20 per ton of carbon (see Section 2.3.1 for further discussion of potential carbon income from woodland schemes). Nevertheless, while land availability represents a constraint for the forestry sector, the emergence of carbon markets in addition to a buoyant timber market and strong policy drivers for afforestation, suggests growth in forestry and plantable land prices is set to continue.

2.2.4 Current market drivers and the influence of natural capital in UK land markets

Retirement from active farming appears to represent an increasingly important driver of supply to UK farmland markets, with 68% of farm sales in the UK the result of retirement and/or related personal reasons in 2021, compared to a ten-year average of 39%⁹⁴. Other reasons commonly identified for selling farmland include downsizing, relocation, career change and releasing funds⁹⁵. This suggests that current land values are potentially influencing owner confidence when making major decisions about selling land.

While buyer motivations vary regionally and by land type, some strong demand trends apparent in recent years include⁹⁶:

- The perception of land as an attractive investment relative to other investment classes due to low risk and strong long-term returns, taxation advantages, diversification potential and lifestyle factors.
- Environmental motivations and buyers interested in natural capital investment are increasing competition in the farmland market, from both private/individual and corporate/institutional buyers. Environmental, Social and Governance (ESG) factors are an increasingly important institutional driver of investment in land, linked to an emphasis on regulatory accountability for environmental impacts, biodiversity gains and the carbon offset potential of woodland creation, soil carbon and peatland restoration.
- Increased demand for smaller/amenity farm holdings due to lifestyle factors and interest in retreats (partly driven by pandemic restrictions), with smaller farms potentially increasing further as a proportion of the market.

^{viii} Under the WCC [additionality requirements](#) a project is only 'additional' if it requires carbon income to turn it from a project which is not viable (in its own right, or compared to an alternative non-woodland use) to one which is financially viable.

- The need for some landowners to reinvest gains from the disposal of an asset to allow them to benefit from rollover tax relief (whereby reinvestment of gains allows landowners to minimise Capital Gains and Inheritance Tax, where the assets are used for business purposes).

These drivers of farmland acquisitions are further reflected in the estates market, where opportunities relating to natural capital have become an increasingly important driver for acquisitions in recent years, with green investors (sometimes referred to as ‘green lairds’⁹⁷) interested in carbon offsetting, afforestation, renewables and rewilding, increasingly competing with lifestyle and sporting focused buyers⁹⁸. In addition, an increasing emphasis on support for environmental measures within future government support mechanisms suggests a favourable financial context for land use transitions at larger scales⁹⁹. This has resulted in ‘blank canvas’ estates (i.e. with potential for land use change) commanding particularly high prices, with demand for smaller estates having also increased during the pandemic due to interest from buyers in retreating from more heavily populated areas of Europe¹⁰⁰.

In the short term, the removal of pandemic related restrictions may result in an increase in the supply of farmland in 2022, with international buyers re-emerging¹⁰¹. Longer term, further reductions in direct farm support may result in increased farmer retirements and a gradual return to the previous ten-year average in UK farmland supply of 150,000 acres¹⁰². The requirement for major land use shifts on over a quarter of UK land in the next 30 years to deliver government net zero and biodiversity commitments, is likely to result in a continued supply/demand imbalance, with Savills predicting annual growth of 6% for poorer quality grassland and 2.5% for prime arable land, with implications for rental values¹⁰³. This reflects other recent reviews, which highlight the potential for plantable land to continue to increase in value as demand from commercial forestry and environmental investors increases¹⁰⁴.

This is likely to result in farmers continuing to be outcompeted by forestry investors for plantable hill ground, which may have longer term implications for hill farming communities and the sheep farming industry. Notably, this demand is being driven by the investment potential of forestry, both in relation to timber and forestry land markets and carbon market potential, with carbon values a particular driver in relation to undertaking native/broadleaf schemes on poorer quality ground. This also suggests that average farmland values across the UK will be increasingly influenced by the value of hill ground, as opposed to the value of better quality and arable land values (which has been the case in the past).

2.3. Risks and trade-offs associated with land acquisition for carbon

2.3.1 Risks and challenges of carbon markets and offsetting

Carbon markets primarily include compliance markets and voluntary carbon markets, both of which have relevance to the UK context (see Box 1). In some cases, carbon credits can also be used for ‘insetting’, where an individual (e.g. a farmer) or company acquires or creates carbon credits through their own activities (e.g. woodland creation) to reduce their carbon footprint, retiring credits under the Woodland Carbon Code or Peatland Code once they have been verified.

To ensure carbon credits represent actual additional carbon sequestration or emissions savings, the majority of offsets and insets are verified against standards, such as the

Woodland Carbon Code (WCC) or Peatland Code (PC). However, for land uses, habitats and practices not covered by existing standards (e.g. agricultural soil carbon), a small volume of trading takes place, either for Corporate Social Responsibility purposes with limited measurement, reporting and verification, or using third party verification bodies to verify greenhouse gas abatement, although there are limits on the claims that can be made by the buyers of these credits.

Box 1 Compliance and voluntary markets for carbon

Compliance markets for carbon aim to establish a carbon price by using laws or regulatory frameworks (e.g. Article 6, Paris Agreement) to control the supply of permits which are traded within a controlled emissions trading scheme, which incentivises emitters to reduce their emissions.

Voluntary carbon markets involve companies or individuals buying carbon credits (which can be generated from emissions avoidance or carbon sequestration) to offset any emissions they are unable to avoid creating (offsetting). These include the Woodland Carbon Code and Peatland Code or international standards such as Verra and Gold Standard, where these cover land uses, habitats or practices that apply to the UK

Carbon markets represent an important mechanism for generating future income streams related to climate change mitigation (a key ecosystem service) and have become increasingly well established in recent years, both in the UK and globally. Nevertheless, a wide range of concerns have been raised in relation to the implementation of carbon markets globally and their wider effects on land use change and communities. For example, in some cases land acquisitions in the Global South by foreign investors, designed to take advantage of carbon markets and offsetting revenues, have resulted in adverse outcomes for local ecologies and livelihoods¹⁰⁵. The commodification of carbon via global markets can disconnect carbon credit consumers from livelihood impacts for those living in or near the offset plantations, limiting the potential of north-south market-based mechanisms as solutions for climate change¹⁰⁶. While several large-scale emissions trading schemes have been established in recent years¹⁰⁷, in some cases these schemes have had limited impacts, with a 2017 EU study concluding that 85% of the offset projects used by the EU under the UN's Clean Development Mechanism (CDM) failed to reduce net emissions¹⁰⁸.

A further concern relates to the scale of global demand for carbon offsets, with Oxfam calculating that for global corporations to meet their collective net-zero pledges through offsetting, this would require more than the entire area of farmland on the planet for tree planting, with obvious implications for future conflict between global food security and offsetting demand¹⁰⁹. Additionally, the multilateral nature of carbon markets can create challenges for incorporating strict regulations (and effective oversight) relating to offsets into policy, which is further exacerbated by varying legal interpretations of the legal status of carbon credits between countries and the complexity of creating fungible carbon credits from the range of very different land use activities around the world¹¹⁰.

In the UK, voluntary markets for carbon credits have been increasingly successful, with the 239 projects registered under the WCC by 2018 covering over 16,100 hectares and projected to sequester 5.8 million tonnes of carbon dioxide over their project timeframes (with additional credits of 1.2M tonnes being added annually)¹¹¹. Nevertheless, the PC cannot currently supply enough projects to meet demand and the limited availability of land is a constraint on the project pipeline for WCC projects¹¹². Furthermore, while carbon markets clearly offer income potential, in most cases this is unlikely to be sufficient to replace current

agricultural support mechanisms, with a carbon price of £50 per tonne potentially providing the equivalent of around half of current CAP funding into the land system through verified soil carbon and afforestation carbon credits (from public and/or private finance) (see Figure 5).

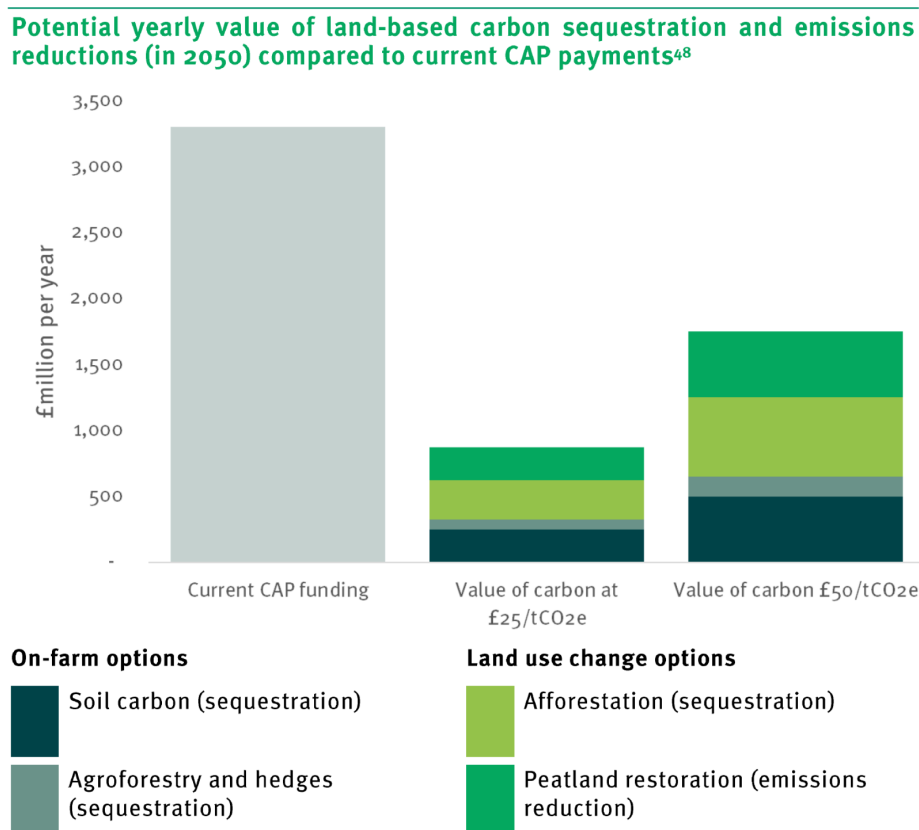


Figure 5 Projected yearly value of land-based carbon compared to CAP payments (Benton et al., 2022)¹¹³

Notably, while considerable growth is expected in carbon markets, the average price for carbon under the EU Emissions Trading Scheme for April 2020–2021 was £24.41/tCO₂e, with recent research suggesting that carbon would need to be priced at £40–£100/tCO₂e to accurately represent the cost of reaching net zero by 2050¹¹⁴. At current carbon prices, many woodland and peatland projects may not be financially viable for land managers based solely on carbon finance, although it is likely that this will change, if carbon prices increase over time, as many market analysts expect¹¹⁵.

Based on a modelling exercise to estimate the carbon balance and financial viability of five different farm management scenarios, Savills also concluded that land managers are unlikely to undertake land use change for natural capital objectives until carbon itself is valued sufficiently highly to act as a counter-balance to productive agriculture¹¹⁶. Nevertheless, when coupled with afforestation grants (assuming additionality requirements are satisfied), returns from native woodland carbon schemes can offer a potentially attractive

additional income stream for land managers, equivalent to £2700-6000 per hectare (assuming a carbon price of £7-15/tCO₂)^{ix}.

Critically, while UK companies are the third largest buyer of voluntary carbon offsets globally (buying 5.9M tonnes or 5.7% of the global market for offsets in 2019), the bulk of these are bought from overseas projects, with implications for the relative value of carbon credits from UK based projects¹¹⁷. While future UK demand for carbon credits is predicted as growing substantially, the relative verifiability and credibility of carbon credits and the environmental credentials of the underlying land-based projects will be critical to ensuring high demand and strong prices for UK-based carbon credits¹¹⁸.

An important influence on the relative financial viability of natural capital improvements for land managers relates to their ability to 'stack' public and private funding, to capture income from multiple environmental services and related incentives and markets. The blending of public and private funding via agri-environment schemes and ecosystem markets will be critical for land use outcomes, the viability of many UK farm holdings and the successful leveraging of private finance into the land use sector. Failure to design agricultural support schemes without adequate consideration of natural capital markets poses several key risks¹¹⁹, including:

- Public funding may pay for work that would otherwise have been delivered by markets, leading to an inefficient use of public money. For example, there is evidence that Peatland Action has crowded out Peatland Code projects in some parts of Scotland;
- If terms are attractive enough, environmental markets may crowd out public funding, reducing uptake and influence. For example, there is evidence that dairy farmers in England offered a milk premium for environmental work chose this consistently over the available agri-environment scheme¹²⁰;
- Markets will favour certain services, sectors and locations creating winners and losers, if public schemes aren't designed to prioritise funding to address these market failures; and
- The funding gap between current public spending commitments and the funding required to meet policy aims from land use, including climate change and biodiversity loss, may not be met and targets may be missed.

The uneven distribution of natural capital and related opportunities across land holdings in the UK (see Section 2.3.3) creates a particular challenge for the development of new public funding mechanisms, to counteract market effects which favour landholdings which: i) have access to relevant natural capital opportunities on their land holdings; and ii) have the capacity and ability to take relevant schemes forward, including paying transaction costs.

In some cases, risk factors (e.g. slow tree growth rates, windthrow risk, deer grazing pressures etc.) can reduce land manager willingness to engage in relevant schemes. Engaging with natural capital markets or related environmental support schemes is also likely to require a greater degree of farmer input and an increased emphasis on the need for business planning and increased requirements for support and guidance¹²¹. Additionally, any

^{ix} For a native woodland which could generate almost 400 tCO₂/ha over 100 years, potential income from carbon credits (at £7 to 15/tCO₂) is £2,700 to 5,800/ha. Taking off the cash cost of involvement the net income could be up to £5,000/ha (at £15/tCO₂), although you still need to consider the time to undertake survey work and complete documentation. For further information see Farm Advisory Service (2020) [An Introduction to Woodland Carbon](#).

potential future requirements for farmers and other landowners to reduce their own emissions represents a constraint on marketing any verified carbon units from current schemes, limiting direct income potential (but offering opportunities to ensure future compliance with net-zero requirements and suitability for related support schemes).

A further barrier to engaging with carbon and other ecosystem markets and related financial support schemes in many regions relates to the terms of agricultural tenancies (see Section 2.3.2 for extent of tenancies in the UK), which can limit the ability of tenants to access funding from privately financed schemes (see Box 2). This has implications for the GHG abatement potential of the land use sector, as the carbon removal capacity of land use change is five times greater than the carbon removal capacity from on-farm measures (e.g. agroforestry, soil management, hedgerows)¹²².

Box 2 Challenges for incentivising natural capital enhancement on tenanted agricultural land¹²³

Tenanted farms are an important component of the UK farmland resource, with around 28% of agricultural land area in England tenanted, compared to 22% in Wales, and 24% in Scotland. Tenancies are of even greater importance when considering the number of individual holdings, with around half of all farms in England and Wales tenanted, with a smaller proportion (around 20%) of farms in Scotland tenanted. Several key challenges exist in relation to incentivising natural capital enhancement on tenancies, which include:

- The **length of the tenancy agreement** may discourage farmers from participating in activities or schemes which have long term payback timescales (with the average length of tenancy having shortened in recent years, to just 2.9 years in England and Wales in 2018). This precludes tenants from engaging in long term biodiversity or woodland carbon agreements (which have the greatest potential for carbon sequestration), with tenant farmers restricted to shorter schemes (e.g. for soil carbon or nutrient offsetting).
- The **terms of the tenancy agreement** may prohibit any changes in land use activities (e.g. restoration measures) or specifically prevent tenants from planting trees and/or stipulate that the tenanted holding can only be used for 'agricultural' purposes.
- In cases where tree planting may be allowed (or the landowner grants permission) the **ownership of the growing trees and/or any potential financial gains from related support schemes may reside with the landowner** rather than the tenants, unless otherwise agreed in advance. Additionally, where natural capital values increase and tenants are unable to take part of relevant related schemes or markets, the landowner may choose to take the tenanted land back in hand to allow them to access the related schemes/markets.
- In Scotland **tenants are required to seek permission from the landlord** prior to engaging in any change in land use and the landowner is entitled to claim compensation where a change lowers the land value, which creates a perceived risk and a disincentive for tenants to undertake land use change.
- **Undertaking natural capital schemes also presents challenges on common grazings**, due to the complexity of tenure arrangements (where commoners effectively control the use and management of the land), which may restrict landowners from undertaking land use changes relating to natural capital enhancement.

Furthermore, while voluntary carbon markets are expanding rapidly across the UK, there remains a lack of well-developed markets (and buyers) for the full range of relevant activities (e.g. riparian woodlands, species rich grasslands etc.), and the development of projects

capable of delivering *additional* environmental outcomes and required investment returns remains challenging. This is further exacerbated by uncertainty in the science of soil carbon sequestration and soil carbon benefits from regenerative farming practices and the permanence of soil carbon gains, which limits the amount of soil carbon which is verifiable under current schemes¹²⁴.

2.3.2 Market transparency, land values and land availability

How land markets function can have a direct impact on the relative accessibility and availability of land for different groups in society¹²⁵. Access to land for individuals can be affected by the general availability of land (what is marketed and the level of turnover), as well as the value (price) of land and how land is marketed¹²⁶.

As apparent from the review of UK rural land market activity in Section 2.2, an increasing proportion of land sales occur 'off-market'¹²⁷. However, this approach also results in land being made available to a smaller pool of potential buyers, due to the lack of open marketing, with a lack of clarity currently around the proportion of sales completed in this way¹²⁸. Furthermore, while a range of land market reports and indexes characterise UK land markets, some uncertainty remains around the total volume of sales (including all off-market transactions) and no fully comprehensive, publicly available index of land sales has been developed which links sales to the motivations of buyers and sellers¹²⁹.

Notably, regulation of UK land markets also remains limited relative to many other countries¹³⁰ with no direct government involvement in land acquisitions or restrictions on who can own land, which (together with a favourable tax regime) facilitates considerable foreign investment and ownership of land, with limited state oversight. This has resulted in a rise in the number of foreign (often absentee) estate owners in Scotland in recent decades, with the extent of foreign ownership quadrupling from 1970-1996 (to around 6% of ownership)¹³¹. These factors have resulted in increasing calls for greater market transparency, to facilitate wider market access and increase understanding of market activity¹³².

Rural land values are affected by a range of factors, including supply and demand, commodity prices, productivity, infrastructural change, fiscal measures (e.g. taxation) and land market regulations¹³³. In addition, agricultural subsidies can capitalise into land values thereby benefitting landowners through capital returns, although the magnitude of this varies considerably between studies (and capitalisation into rental values may vary considerably due to market effects)¹³⁴. Furthermore, various factors can impede the capitalisation of subsidies including land supply, greening requirements, market regulations, and the existence of long-term tenancies¹³⁵. Previous studies have found similar capitalisation effects for land values from conservation land management programmes with farmers, which increased average farmland values between 2-14% depending on the region and relative market demand¹³⁶.

In addition to the direct capitalisation effect of existing subsidies, land values may also be influenced by speculation relating to future expectations for land-based support mechanisms, including the likelihood of increasing support for ecosystem services delivery. As apparent from recent UK land market activity, investment in land (and growth in land values) is increasingly influenced by carbon offset and renewable energy potential, as well as rewilding and afforestation motivations of new owners and the perception of an increasingly favourable land-based support framework for these agendas. This apparent shift is occurring within a wider context of rapid growth in global carbon markets¹³⁷ and an

increasing emphasis on investing in natural capital within the land management community¹³⁸.

As apparent from the dramatic increase in value for plantable hill ground in 2020-2021, these wider market drivers are having a rapid and direct effect on land values, which is often beneficial for existing owners (due to capital gain, increased collateral etc.). However, this is occurring against a long-term backdrop of constrained land supply and an increasing disparity between land values and farmland incomes/production capacity in the UK, particularly for smaller scale farmers¹³⁹.

This can result in the exclusion of new entrants to farming and/or restrict some existing farmers from expanding their farm business¹⁴⁰. This reflects wider conflicts between initiatives to address barriers for new-farming entrants by releasing land held by public bodies in Scotland and the need to increase afforestation to address policy targets¹⁴¹. Land value effects, in combination with wider land use pressures, can therefore impact directly on the long-term sustainability and vitality of the farming sector through potentially inhibiting new farming entrants¹⁴². In addition to the constraint of high value, the increased emphasis on off-market sales in the rural land market may also exacerbate the exclusion of certain sections of the land market.

Critically, access to land represents the largest barrier for new entrants to farming in the UK¹⁴³, reflecting the situation across much of Europe¹⁴⁴. The scale of existing holdings and land transactions can also influence access to land, in relation to the availability of holdings across a broad size range. In Scotland for example, based on a 2017 survey assessing farmland demand, the Scottish Farmland Trust reported that 77% (989) of respondents expressed a desire to establish an agroecological farm business and 71% identified access to land as the most significant barrier¹⁴⁵. The majority (73%) of those interested in land wished to acquire <50 acres (for market farming), whereas the average farm size sold in the UK in 2021 was 160 acres¹⁴⁶. This suggests a supply-demand mismatch at the smaller end of the market, which is compounded by increasing interest in smaller farms as lifestyle holdings (Section 2.2.1).

Agricultural tenancies represent one alternative route into farming which circumvents the need for large amounts of capital. However, the UK has experienced an ongoing decline in the number of agricultural tenancies since the early 2000s (linked to agricultural reforms), in addition to an ongoing decline in the length of agricultural tenancies influenced by policy and market uncertainties¹⁴⁷. Scotland for example has one of the lowest proportions of rented land in Europe and this fell from 41% of agricultural land in 1983 to 23% in 2014, with a drop in secure tenancies and an increase in limited duration tenancies (up 16%) and Short Limited Duration Tenancies (up 13%) over the same time period¹⁴⁸. This increasing emphasis on shorter tenancies decreases the security of tenure for farm tenants, as well as decreasing the incentive for investing in tenancies due to the longer-term uncertainty of tenure. Tenants also face barriers to engaging with natural capital markets and support schemes.

Importantly, emergent markets (e.g. natural capital, renewable energy etc.) offer considerable opportunities for land managers to diversify their holdings and generate new income streams. However, increased demand (including for lifestyle farms), limited supply, high land values and increasing interest in land as an investment from a wider range of actors, can combine to further consolidate landownership and constrain access to land for new farming entrants¹⁴⁹, smallholders and rural businesses¹⁵⁰, with longer term implications for rural communities and the farming sector¹⁵¹.

2.3.3 Landownership concentration and natural capital distribution/inequalities

The current period of growth in land values and constrained access to land in the UK is occurring against a long-term backdrop of highly concentrated landownership, with over half of England owned by less than 25,000 people and an estimated 18% of land owned by corporations, including some based in offshore jurisdictions¹⁵². This is further reflected in the concentration of farmland ownership, with over half of English farmland consisting of large farms run by around 15% of farmers who produce around 75% of the total farming output, with the majority of farmers running relatively small units with disproportionately lower output¹⁵³.

This reflects a wider trend of increasing ownership of land and resources by large agribusiness firms and financial interests, with landownership concentration rising across Europe, with one percent of agricultural businesses controlling 20% of agricultural land in the EU and three per cent controlling 50%¹⁵⁴. This phenomenon is even more pronounced in Scotland, where as few as 500 individuals own half and 1,252 individuals (or families) own over two thirds (67%) of privately owned land in Scotland¹⁵⁵.

Importantly, the high degree of concentration of landownership in Scotland, which can be exacerbated by land markets and high land values, has been identified in some cases as impacting on the ability of rural communities to access land, which can constrain their economic potential¹⁵⁶. A 2019 study in Scotland¹⁵⁷ identified several detrimental effects of concentrated private landownership for rural development outcomes, including constraints on accessing land for economic development and housing, negative impacts on community cohesion, and insufficient opportunities for communities to influence major land use change. While the positive socio-economic impacts of private estates have also been recognised¹⁵⁸, the key over-arching challenge raised by multiple land reform reviews¹⁵⁹ relates to the concentration of social, economic and decision-making power (including around who can access land and at what price) in the hands of a small number of large landowners, who can have a considerable influence on rural community outcomes. The underlying values of existing landowners or new investors in land and their level of local involvement, can play a key role in shaping the environmental and socio-economic place effects¹⁶⁰.

These findings are reflected in Europe, where increased ownership of land by non-agricultural corporate investors has also resulted in increased ownership concentration and negative community effects, including loss of economic vitality and cultural identity¹⁶¹, which in some cases conflicts directly with government policies to support redistribution of land ownership to enhance societal well-being¹⁶². The increasing presence of large private or corporate investors in farmland markets has also been associated with an erosion of smaller scale multifunctional agriculture (and related public goods), towards a focus on perceiving land as an investment commodity and maximising returns through production or monetisation of natural capital¹⁶³. Beyond Europe, several studies have documented the negative impacts of concentrated landownership on economic development, food security, education and housing provision¹⁶⁴. For example, a study in Canada showed that, following the 2007-2008 food crisis, new actors entered the farmland market (including investment and pension companies), influenced by the liberalisation of local land laws in 2002 and farmer retirements, with the resulting shift towards larger holdings and corporate ownership marginalising smaller farmers and impacting negatively on community vitality, local services and cohesion¹⁶⁵. Critically, large-scale corporate investors have the capacity to out-compete local farmers or new farming entrants for land, which over time can concentrate power and resources in fewer hands – specifically *‘the entry of new actors changes the political and*

*economic dynamics of access to and control of farmland, with consequences for family farms of different scales, rural communities, and younger farmers*¹⁶⁶.

In a UK context, the buying power of corporate (and wealthy private) buyers is currently evident in the high demand for plantable hill ground for forestry or natural capital investment. This reflects wider conflicts between initiatives to address barriers for new-farming entrants by releasing land held by public bodies in Scotland and policies to increase afforestation¹⁶⁷. Notably, a 2019 survey¹⁶⁸ of 58 large investors found that nearly 50 per cent expected to invest in owning land or forestry in the next five years, compared to about 37 per cent who currently did, suggesting continued wider growth in demand for land. Nevertheless, while investor interest in natural capital is clearly influencing land markets, this is occurring against a longer term backdrop of agricultural restructuring in Europe¹⁶⁹, with smaller farmers often amalgamated or farm tenancies taken back in hand to increase scale efficiencies, resulting in a re-concentration of ownership in some areas¹⁷⁰. As such, while large-scale land acquisitions by corporate or private investors have been shown as potentially influencing landownership concentration (and related community outcomes), there is insufficient evidence in a UK context to suggest that natural capital investment (in its own right) is currently a major factor in the decline of hill farming communities. Furthermore, natural capital markets (and related government support) may offer considerable opportunities for both existing and new landowners to diversify their holdings.

Importantly, in addition to considering landownership concentration in relation to rural community outcomes, this feature of landownership in the UK may also have fundamental implications for the distribution of natural capital and related benefits. A recent study of landownership and two specific ecosystem services (carbon sequestration and air pollution removal) in Scotland¹⁷¹ found that ownership of land providing comparatively high amounts of carbon sequestration is relatively concentrated, whereas the role of smaller to medium sized land holdings closer to urban settlements is more prominent for air pollution removal. This highlights the central role a relatively small pool of landowners has in relation to the future supply of natural capital, which in turn has implications for the future distribution of land-based financial support for providing ecosystem services and how this reflects or conflicts with wider public policy on land use, ownership and a just transition. Other studies have found similar distributional issues for ecosystem services internationally, including in highly concentrated ownership contexts¹⁷². Critically, the extent of landownership concentration therefore has implications for policy design, particularly payments for ecosystem services translate ‘defacto natural capital ownership’ income and wealth for landowners¹⁷³, potentially reinforcing existing wealth disparities through the monetisation of apparent ‘public goods’.

Concerns around equitable distribution of natural capital to an extent reflect previous criticisms relating to the concentration of EU farming subsidy payments on large landholdings, with the top 100 recipients of subsidies in the UK estimated to have received a total of £87.9M in 2016 (which was more than the bottom 55,119 recipients received over the same time period) and more than half of the total Single Payment Scheme budget was awarded to the top 20 per cent of claimants¹⁷⁴. Issues relating to distribution of benefits have also been raised in relation to windfarm developments on privately owned land, with community windfarm funds commonly established to provide financial support to affected communities. While such funds are effective in channelling funds to communities, they have been criticised for failing to evolve into ‘significant tools of economic development’ to support lasting change and revenue flows from such funds are dwarfed by the returns received through direct community ownership of renewable energy schemes¹⁷⁵.

2.3.4 Land use trade-offs and challenges of land use transitions

Reflecting global pressures, including food security and the climate and biodiversity emergencies, competition for land and natural capital has increased dramatically in recent decades. The UK Committee on Climate Change identified the need for an unprecedented transformation in use on 25% of all land in the UK by 2050, to address climate change priorities and convert the land use system to a net sink for carbon¹⁷⁶. Specific proposals include:

- Increasing UK forestry cover from 13% to at least 17% by 2050 by planting around 30,000 hectares of broadleaf and conifer woodland each year;
- Encouraging low-carbon farming practices;
- Restoring at least 50% of upland peatlands and 25% of lowland peatlands;
- Expanding the planting of UK energy crops to around 23,000 hectares each year;
- Reducing food waste and consumption of carbon-intensive foods including beef, lamb and dairy.

In addition, the UK Government has committed to protecting 30% of land for nature by 2030¹⁷⁷. Delivering on these ambitions requires an estimated annual spend of £1.4 billion (compared to UK CAP funding of £3.3Bn in 2018), proposed as being provided partly by public funding and partly by the private sector through natural capital markets¹⁷⁸.

Importantly, the land which is likely to be available for conversion to woodland, biofuels or low-carbon farming is not evenly distributed across the UK, with some regions likely to see much greater change in land use than others. A considerably larger proportion of agricultural land in England is used for cropping (44%) than in Wales and Scotland, where over 80% of farmland is grassland or rough grazing (with 60% of Scotland's agricultural land classed as rough grazing). Over two thirds of all farmland is also classed as Less Favoured Area (LFA) in both Scotland and Wales, most of which is in the uplands (and in Scotland in particular, often part of large landholdings)¹⁷⁹. While food production in LFAs is largely unviable without public support, these areas offer considerable potential for enhancement of natural capital, with marginal agricultural ground in Scotland offering the greatest potential for woodland expansion at scale¹⁸⁰. This reflects the current high demand (and values) for plantable hill ground in Scotland, with upwards of 20% of existing agricultural land in Scotland likely to be required for tree planting and growing biofuel crops to help offset GHG emissions¹⁸¹.

In purely biophysical (land capability) terms, Scotland has considerable potential to absorb further forest expansion, with nearly three million hectares of land identified as suitable for tree planting in 2020, which includes nearly half a million hectares of higher quality farmland¹⁸². However, marginal agricultural land is often designated for its landscape and habitat qualities (which can preclude afforestation), with game management priorities in many upland areas also representing a barrier to large-scale woodland creation, while the use of higher quality farmland creates potential challenges for food security¹⁸³. Furthermore, in addition to overcoming cultural barriers to woodland conversion¹⁸⁴, a key future challenge relates to understanding the interaction between soil carbon, woodland type and forest carbon sequestration potential, and how the impacts of different afforestation strategies can influence the contribution of new woodland to net-zero ambitions (and co-benefits such as flood risk alleviation and water quality benefits)¹⁸⁵. In relation to restoration of previously afforested peatlands (around 15% of the UK peatland resource), assessing impacts and the suitability of restoration options from a net-zero perspective is hampered by limited data and understanding of GHG emissions from afforested peatlands¹⁸⁶.

Importantly, many of the most significant opportunities for peatland restoration also occur within the UK's LFAs, which highlights the need for a considered and site-specific approach to land use transitions, which optimises both emissions reductions and carbon sequestration outcomes¹⁸⁷. Nevertheless, the scope for natural capital measures in LFAs (which also exhibit the lowest average farm incomes and low productive output) represents a potential opportunity for replacing long term LFA payments with both public and private funding for ecosystem services provision, although the potential for returns is unlikely to be evenly distributed due to variation in peatland distribution and planting constraints in certain areas¹⁸⁸. Furthermore, many small farms may lack the resources and commercial skills to enter into complex tailored funding agreements and new markets, or the capital to take on the associated risks and transaction costs¹⁸⁹.

Fundamentally, land use transitions are dependent on the willingness of land managers to undertake change in their land management activities and business models, which in turn is influenced by both existing and emergent markets and land-based financial support measures. This has been evidenced in recent decades by the abandonment of marginal land for livestock farming in many parts of the UK and Europe, influenced by previous changes to direct farm support under the Common Agricultural Policy¹⁹⁰. Fundamentally, these policy shifts have reduced the feasibility and viability of more intensive grazing regimes in LFA regions¹⁹¹, which has implications in terms of agricultural decline/farm collapse, as well as the perceived attractiveness and viability of alternative land uses¹⁹².

In addition to farming interests, game management represents an important land use in many upland regions of Scotland and parts of England and often represents a key part of the underlying rationale for private estate ownership¹⁹³. These activities generate employment, often in relatively remote areas and (where undertaken commercially) provide a return to support ongoing management and ownership of many private estates¹⁹⁴. Driven grouse shooting has faced increasing pressure and scrutiny in recent years in relation to association with the illegal persecution of raptors and the impacts of grouse moor burning practices on carbon release and water flow and quality¹⁹⁵. This has led to calls for greater uptake of 'walked-up' shooting as a less intensive alternative, as well as proposals to regulate grouse moors through licencing, which has now been adopted as policy in Scotland but not yet been implemented¹⁹⁶.

These concerns and wider drivers for land use change have led to increasing consideration of viable alternative land uses in areas currently managed primarily for sporting objectives¹⁹⁷. For example, it has been demonstrated that native woodland establishment and habitat conservation are economically viable alternatives to grouse moor management, but have potentially lower local employment impacts and require an increased reliance on public funding¹⁹⁸. Productive forestry may also represent a viable alternative on some grouse moors, however this is heavily constrained by biophysical factors, peat depth and statutory designations, with over 40% of grouse moors in Scotland identified as unsuitable for forestry and over 80% identified as having very limited flexibility for the growth and management of tree crops¹⁹⁹.

Critically, wider recognition of the importance of peatland restoration, woodland creation and biodiversity enhancement, has also led to increasing interest in rewilding (i.e. large-scale habitat restoration). In recent years, an increasingly strong business case has been put forward for rewilding on privately owned land, based on capitalising on future public funding, green investment opportunities and diversification including nature-based tourism²⁰⁰. This offers potential for significant wider public benefit, through biodiversity gains and wider environmental improvements at large scale²⁰¹. Nevertheless, a recent study of several large-

scale rewilding initiatives in Scotland concluded that there was limited evidence of the inclusive participation of people in rewilding decisions, reflecting previous concerns around concentration of decision making power and barriers for communities for influencing decisions relating to major land use change²⁰².

3. Policy options for reducing risks and enhancing positive impacts of natural capital investment

This section synthesises the evidence on risks and opportunities relating to land acquisitions for carbon and other forms of natural capital to develop five key themes and 16 policy options. These are summarised in Box 3 and have been refined for presentation in this final report, based on the discussions at the round-table event.

Box 3 Sixteen policy options for enhancing opportunities and reducing risks

THEME 1: Land market transparency, regulation and best practice in land acquisitions

- **Option 1:** Building an evidence base on land market activity through regular independent market assessments (including off-market sales).
- **Option 2:** Guidance on rights and responsibilities for investors entering the UK land market.
- **Option 3:** Consideration of formal approval processes for land acquisitions, including a public interest test for new land sales over a set threshold.

THEME 2: Participatory and collaborative approaches to natural capital investment

- **Option 4:** Provision of guidance and training for land managers on community engagement, to improve decision outcomes for communities.
- **Option 5:** Further support for alternative landownership models, including community ownership, and collective private ownership models and community-owner partnerships.
- **Option 6:** Assessing the potential for community natural capital funds, to ensure benefits from investment are shared fairly between public, private and community interests.

THEME 3: Supporting access to land for nature-based land uses

- **Option 7:** Facilitating joint venture mechanisms to increase access to land and natural capital funding including (i) contract farming; (ii) partnerships; (iii) share farming; (iv) tenancies; and (v) leasing arrangements.
- **Option 8:** Addressing barriers to tenants engaging in ecosystem markets, including encouraging contracts that allow tenants to participate in natural capital schemes.
- **Option 9:** Exploring fiscal instruments that could facilitate diversification of landownership, including income tax relief for new entrants, changes in liabilities for non-domestic rates, inheritance tax and capital gains tax, and development of a Land Value Tax.

THEME 4: Values-led, high-integrity ecosystem markets

- **Option 10:** Expand and enhance high-integrity carbon and ecosystem markets through developing new accredited codes for different land uses and ecosystem services.
- **Option 11:** Developing carbon buyer checks to ensure land is only used for carbon offsetting for residual emissions when a buyer has done everything feasible to reduce emissions at source.
- **Option 12:** Development of a coordinated policy framework in each UK country^x on the design, governance and operation of ecosystem markets and their alignment with land-based support that ensures consistent UK-wide operation of ecosystem markets without distorting effects from different subsidy regimes in each country
- **Option 13:** Development of a UK advisory body to ensure oversight of carbon credit projects, make recommendations on additionality requirements and monitor and enforce compliance with rules and guidance.

THEME 5: Rural land use frameworks, redistributing support and incentivising landowners

- **Option 14:** Further develop the potential for place-based, collaborative approaches to the application of natural capital markets in parallel with public support mechanisms, including through testing a data-driven, natural capital accounting approach.

^x There is already work underway on this framework, as set out most recently by the [UK Financing Nature Recovery](#) roadmap.

- **Option 15:** Application of a redistributive approach to post-Brexit public payment mechanisms where feasible, to facilitate wider distribution of benefits across the land management sector to address issues of landownership concentration and capitalisation of support payments on larger landholdings.
- **Option 16:** Development of knowledge exchange and training for land managers, in addition to increased advice and guidance, relating to engaging with natural capital markets and related environmental support schemes (and undertaking related assessments).

In the following sub-sections, a box is included to explain how and why the policy options were refined on the basis of the round-table discussions. A full summary of the key points from the round-table discussion about each option is in Appendix 5.

3.1 THEME 1: Land market transparency, regulation and best practice in land acquisitions

Option 1: Building an evidence base on land market activity through regular independent market assessments (including off-market sales).

Thoughts from round-table participants:

- Important information gathering exercise but may not lead to immediate change.
- Need for data about off-market transactions, before and after completion.
- Continued need for information about who owns land.
- Transparency *will* lead to change but needs to be legislated.

The increasing occurrence of off-market land sales across the UK and the lack of an independent and comprehensive reporting process for land sales result in a lack of transparency and uncertainty around the total volume and extent of land sales (and drivers of sales and acquisitions). Improving the transparency and relative accessibility of land markets therefore requires an enhanced evidence base, to ensure the effects of any measures taken in the future to increase transparency or regulate markets can be assessed.

Importantly, land market transparency and regulation are relevant beyond discussions of the influence of natural capital on land markets. However, investor interest in natural capital may influence the extent of corporate or foreign investment in land in the UK. To increase understanding of these factors in Scotland, the Scottish Land Commission commissioned research in 2022 to assess recent rural land market activity and the influence of natural capital investment in the land market^{xi}. This work, along with ongoing independent market assessments (as suggested in Option 1), offer scope for identifying how trends in the land market may be influencing landownership outcomes and the influence of changes in regulations on the land market.

^{xi} The project outputs will propose a replicable methodology for gathering data on rural land market activity in the future.

Option 2: Guidance on rights and responsibilities for investors entering the UK land market.

Thoughts from round-table participants:

- Level of impact depends on the ‘weight’ of the guidance – a voluntary approach may be ignored.
- Guidance could be linked with an accreditation of land stewardship.
- An easily accessible register is desirable.
- A list of priorities that investors must adhere to would be helpful (and also welcome investors).

Opportunities exist to develop guidance which sets out rights and responsibilities for new investors entering the UK land market. Building on previous protocols established as part of the Land Rights and Responsibilities Statement, the Scottish Land Commission published a protocol in 2020 on transparency of ownership and land use decision making²⁰³, which sets out the responsibilities of all parties in relation to ensuring appropriate measures are undertaken to ensure information about who owns and controls land is publicly available, including setting out future requirements for landowners and land managers to contribute to both the Land Register²⁰⁴ and the forthcoming Register of Persons Holding a Controlled Interest in land²⁰⁵.

Given the increasing interest in land acquisition for natural capital and the importance of natural capital and related ecosystem services within land use and wider climate change policy, there would appear to be a further opportunity to establish interim guidance or a protocol on the responsibilities and expectations for all parties involved in large scale, land-based investments in natural capital, potentially including guidance on expectations around community involvement in decisions relating to large-scale land use changes.

Option 3: Consideration of formal approval processes for land acquisitions, including a public interest test for new land sales over a set threshold.

Thoughts from round-table participants:

- A clear and usable public interest test offers great potential for win-wins.
- The definition of public interest and the details of the test are very important.
- There may be potential to connect the test to the LRRS on a statutory basis. Or, the Land Registry could require evidence of a test pass for entry into the Register.
- Progress towards this is currently slow and developing it would be time-intensive.
- Public interest tests could/should include current owners to confirm adherence with responsibilities on a regular basis.
- Questions remain about the political feasibility/legality of this option.
- Public interest test could stipulate that land transfers are conducted in the public domain (links with Option 1).
- Concerns that this option may stifle innovation – needs a balance (links with Option 12).

Regulatory measures for controlling land markets may offer scope for increasing transparency around large-scale acquisitions and reducing risks around acquisitions relating to potential negative impacts on communities and/or the environment. One such measure which was included in legislative proposals to the Scottish Government by the Scottish Land Commission in 2021, is the requirement for a public interest test for all new land sales over 10,000 hectares²⁰⁶. If implemented, proposed acquisitions would be subject to an assessment of potential risks arising from the creation or continuation of a situation in which excessive power acts against the public interest. In the case of a sale failing to satisfy the

test, the sale could be halted or conditions attached (e.g. selling off land for housing or a legally enforceable management plan) to mitigate potential negative effects.

There is considerable precedent for such measures in international contexts, with a 2018 study on interventions to manage land markets around the world finding that some form of approval existed in relation to who can control land in 18 out of the 22 countries studied and 12 of the countries required land acquisitions by foreign investors to be formally approved before completion to assess the potential public interest impacts (e.g. on communities or food security) related to land purchases²⁰⁷. Other interventions to regulate land markets identified in international contexts related to: upper and lower area limits; owner characteristics and land use requirements; pre-emptive rights to buy land; and measures to reduce land fragmentation. This study concluded that, based on the experience in other countries, developing a formal approval process relating to the purchase of land or property in Scotland *'would not be unusual and may present an opportunity to consolidate what is in the public interest, in terms of who can own land'*. Nevertheless, landowning interests have raised concerns relating to the compatibility of the proposed legislation with human rights law²⁰⁸. This reflects concerns that state intervention in land transactions in Germany may conflict directly with the German constitution that protects the freedoms of citizens to sell private property, suggesting a cautious approach is required in relation to developing legal interventions in land and property sales²⁰⁹. On the other hand, James Mure QC, writing for the Scottish Land Commission recently concluded that "experience in other countries, and an understanding of Scots law and procedure, show that there is no obvious barrier in law to the introduction of reforms of the type discussed by the Scottish Land Commission in its recent papers"²¹⁰.

3.2 THEME 2: Participatory and collaborative approaches to natural capital investment

Option 4: Provision of guidance and training for land managers on community engagement, to improve decision outcomes for communities.

Thoughts from round-table participants:

- This would be easy to implement and should be best practice, linked to SLC protocols or similar.
- Guidance and training should be universal and authoritative.
- Potential for this option to become part of chartered accreditation/CPD.
- Guidance should extend beyond land managers to all market players.
- Need for professional advice for new landowners to understand the community context. (links to Option 16).

Both established and new landowners play a critical role in relation to land use change and the wider development of rural areas, with several studies highlighting the central role landowners play in influencing long term outcomes for rural communities²¹¹. This fundamental distribution of power is the primary reason that the accountability of landowners has been identified as a key factor in overcoming barriers to wider involvement of communities and individuals in land-based activities²¹². Critically, an increasing emphasis is evident in research and policy in recent years, on the importance of developing engagement and partnership-working between landowners and communities to resolve barriers to delivering local sustainable development outcomes²¹³.

Reflecting this emphasis on community-landowner relations, the Scottish Government published their guidance for land managers (public or private) on engaging communities in decisions relating to land²¹⁴ in 2018, which places an emphasis on the importance of two-way communication, through the greater collaboration and engagement that Scottish Ministers *expect* between those who make decisions about land and the local communities that are affected by those decisions. This reflects a wider policy emphasis in Scotland on community empowerment (e.g. within the Scottish Land Use Strategy and legislation relating to land reform and community empowerment in Scotland). Community engagement is also enshrined within Principle 6 of the Scottish Land Rights and Responsibilities Statement (LRRS) published in 2017, which, states that, *‘There should be greater collaboration and community engagement in decisions about land’*, which led to the development (in 2019) of a specific LRRS Protocol on community engagement in decisions relating to land²¹⁵.

These existing frameworks and recent research offer scope for application in relation to large scale land acquisitions for carbon and/or in relation to large-scale land use transitions on existing landholdings, particularly in relation to reducing the potential for conflict and strengthening landowner-community relations. Pro-active, structured engagement (e.g. workshops) with communities and visible landowner representation, can decrease estate-community disconnect, release community capacity, knowledge and entrepreneurial energy, open access to new resources, reconnect people with the land and ensure robust decision-making²¹⁶. Importantly, this increasing emphasis on effective community-landowner working is likely to require further training for land managers (particularly in relation to large scale land use change) in participatory approaches and implementing the existing frameworks for participatory approaches, with knowledge sharing between the community landownership sector and private landowners also offering scope for learning around empowering communities²¹⁷.

Option 5: Further support for alternative landownership models, including community ownership, and collective private ownership models and community-owner partnerships.

Thoughts from round-table participants:

- Considered worthwhile and necessary, regardless of the other options.
- A clear commitment to community landownership would not interfere with carbon markets.
- Building capacity is important for the success of this option.
- A key challenge is the ongoing rise in land prices and this option therefore needs public support.
- Outside Scotland, in other UK nations, communities should first be given the right to buy public land before the private sector, with public money supporting purchases.
- Align this option with related policies such as planning gain to unlock markets for community landowners.
- Resolve legal issues that impact the ability of communities to purchase land.

Considerable opportunities exist for more empowering approaches to large scale land management for natural capital through alternative models of landownership and tenure. In both Scotland and the wider UK, an increasing emphasis on community ownership of land and assets offers particular opportunities, with nearly 3% of Scotland now under some form of community ownership, including community ownership of large rural estates, woodlands and other assets²¹⁸. This has been supported and enabled through legislative measures (including the 2003 and 2016 Land Reform Acts, which include various mechanisms through which communities can acquire land with or without a willing seller) and advice and funding

from a range of organisations, including the Scottish Land Fund²¹⁹. In many cases community land trusts have developed innovative approaches to addressing the climate emergency, including managing and enhancing their natural capital assets.

Existing and emerging large-scale ecosystem restoration initiatives being undertaken by community landowners in Scotland include: an innovative partnership between NatureScot's Peatland ACTION initiative and the Carloway Estate Trust²²⁰ to facilitate peatland restoration across Lewis and Harris; and the development of a thirty-year partnership between the Assynt Foundation and Woodland Trust Scotland²²¹, to create a mosaic of new native woodlands, peatlands and riparian areas across the 44,000 acre community owned estate. These examples demonstrate the potential for communities to take forward natural capital enhancements at large scales, which offers future scope to contribute to community wealth building through the existence of established community anchor organisations.

A review of international experience of community, communal and municipal ownership of land²²² further highlighted the potential for greater application of different models of collective, municipal and communal ownership in a Scottish and wider UK context. This review highlighted the potential for greater development of 'hybrid' models of ownership or partnerships involving communities (of place and of interest), non-governmental organisations, private landowners and the state. Existing partnership models developed in Scotland under the National Forest Land Scheme for shared delivery of community forest management offer a relevant starting point for such initiatives, with the potential for community-NGO partnerships for enhancing natural capital also highlighted by the Assynt Foundation and Woodland Trust Scotland partnership²²³. In addition to organisational partnerships, some recent large-scale habitat restoration initiatives have utilised a crowdfunding model, which aims to facilitate an ethical return on investing in ecosystem improvements through a mass ownership company²²⁴.

Option 6: Assessing the potential for community natural capital funds, to ensure benefits from investment are shared fairly between public, private and community interests.

Thoughts from round-table participants:

- There is a need for clearer definitions and wider understanding of community wealth building (CWB).
- This option could be 'bolder' because CWB requires policy change in many areas.
- Develop this to recognise multiple scenarios of investment and that not all created value can be distributed.
- This option (and Option 5) relates to ethical/philanthropic considerations which can lead to CWB side-lined as a niche approach.
- It is important to align investor and other business interests, as well as develop an appeals process.

Collective private models of ownership, equivalent to the state incentivised model of collective private forest ownership in France, may have potential in a Scottish context. Such approaches offer the potential for building new frameworks of collaborative land management and challenging the prevailing culture of exclusive private ownership of land and assets, as well as delivering wider public benefits through taking landscape scale approaches to management.

Shared or hybrid models and direct community-owner partnerships offer potential frameworks for effective sharing of financial benefits from natural capital initiatives, with

community-based approaches to payments for ecosystem services having been applied in some international contexts²²⁵, but with varying degrees of success linked to the relative strength of underlying property rights, power dynamics, and institutional capacity. Alternative approaches to generating community benefits from natural capital investment are also likely to be required in certain cases, including Community Wealth Building and/or community natural capital funds to distribute funding for reinvesting in local economies for long term benefits.

3.3 THEME 3: Supporting access to land for nature-based land uses

Option 7: Facilitating joint venture mechanisms to increase access to land and natural capital funding including (i) contract farming; (ii) partnerships; (iii) share farming; (iv) tenancies; and (v) leasing arrangements.

Thoughts from round-table participants:

- Strong agreement with this option.
- These could align with a land matching service and have associated grant/loan funding.
- This option could encourage tenants and/or landowners to initiate joint ventures.
- Supporting new farmer co-operatives could be a solution, with members able to have shares in these organisations and impacts on wider policy reform.

A range of important opportunities exist for increasing access to land for new farming entrants, to mitigate potential negative effects of landownership concentration and enhance opportunities for natural capital enhancements at smaller scales, as a counter-balance to larger scale land acquisitions for natural capital. A recent review of opportunities for increasing the availability of farmland for new entrants in Scotland²²⁶ explored several models for joint venture approaches to farming (Option 7), including (i) contract farming; (ii) partnerships; (iii) share farming; (iv) agricultural tenancies; and (v) leasing arrangements.

While contract farming was viewed as a capital intensive route into farming and share farming was poorly understood in terms of the underlying legal structures, the new Modern Limited Duration Tenancy was highlighted as promoting a partnership between landlord and tenant and the report proposed the development of a 'land matching service' to support partnership models for new farming entrants, which has since been taken forward in Scotland²²⁷, with previous established examples in both Ireland²²⁸ and England²²⁹. The service facilitates collaboration between farmers and new entrants, through pairing individuals who are offering land with those seeking land and business opportunities. Importantly, these models offer potential for capitalising on the productivist orientations of many farmers, with research in Ireland²³⁰ and Europe²³¹ showing that outgoing farmers often select buyers or lessees based on non-monetary motivations, including social interactions, concern for the environment and agricultural landscapes and the potential for allowing the owner to retain some continued involvement in farming.

Option 8: Addressing barriers to tenants engaging in ecosystem markets, including encouraging contracts that allow tenants to participate in natural capital schemes.

Thoughts from round-table participants:

- Noted that the Tenant Farming Commissioner (Scotland) is developing guidance for the agri-holdings sector.
- Need for a practical approach because while the tenant has exclusive access, they will need to work with the landowner (and vice versa).
- Inertia in Scotland in relation to capital works on farms and taking strategic decisions (e.g. related to diffuse pollution).
- Potential to conflict with the terms of a tenancy, which may be to the detriment of the landlord.
- Potential for collaboration across farm businesses through new codes (e.g. hedge land carbon codes) rather than extensive land use changes.

Despite the decline in the number of agricultural tenancies (and the reducing average duration of tenancy agreements) across the UK in recent decades, tenancies continue to represent an important route into farming, particularly for those with limited capital. To address some of the constraints and limitations of tenancy arrangements in relation to longer term decision making the UK Climate Change Committee proposed a potential review of tenancy legislation to ensure it is fit for purpose in relation to contributing effectively to net-zero targets and ensuring tenants are able to participate easily in new systems for public payments. Several recent reviews²³² have also proposed tax interventions to encourage new farming entrants, with a particular focus on income tax relief for tenants, which has been applied successfully in Ireland to ease the passage for new entrants into farming.

A critical area for enhancing opportunities for tenants and distributing the benefits of natural capital investment more widely, relates to addressing barriers to tenants engaging in natural capital markets or related schemes. A recent study by the Green Alliance²³³ identified several opportunities for facilitating greater tenant involvement in natural capital schemes and markets, including:

- A greater emphasis on developing bespoke agreements to allow tenants to participate in natural capital schemes and share risks and rewards with landowners.
- Ensuring land value estimates incorporate natural capital, to ensure any natural capital enhancements are more likely to increase the land value (reducing tenancy value loss risks);
- Introducing minimum length Farm Business Tenancies to enable tenants to engage with a wider range of ecosystem service schemes and markets and safeguard tenants from increasing rent prices in the case of environmental improvements resulting in an increase in land value;
- Discouraging short term tenancies by restricting inheritance tax relief to tenancy agreements of ten years or more.
- Ensuring that it is straightforward for tenants to enter new land-based support schemes (e.g. ELMs) and access related public funding linked with natural capital enhancement.
- Ensuring natural capital markets or enhancement schemes can facilitate shorter term commitments (e.g. schemes for nutrient offsetting or water quality improvement)

The UK Committee on Climate Change²³⁴ also identified the need for clear guidance on tenant compensation for any improvements made during a tenancy agreement period, to encourage tenants to make longer term investments which benefit both parties. Notably, while common grazings can pose challenges for natural capital schemes, landowner-commoner agreements are possible, with the National Trust in England (who manage 66,000 hectares of common grazings) working with commoners to facilitate low carbon management through reduced grazing intensity²³⁵

Increasing interest in nature-friendly farming combined with the increasingly limited availability of land has resulted in the emergence of new third sector organisations to address this challenge, including the Scottish Farm Land Trust²³⁶ (SFLT) in Scotland, which aims to increase access to land for small-scale, ecological agriculture by purchasing land held in trust and renting it affordably to new entrants. This approach reflects models in other countries (e.g. Terre de Liens in France, the Agrarian Trust in the US and Bioboden in Germany). These organisations can act as hubs for receiving public and government support, establish cooperatives and networks and support training and innovation²³⁷.

Option 9: Exploring fiscal instruments that could facilitate diversification of landownership, including income tax relief for new entrants, changes in liabilities for non-domestic rates, inheritance tax and capital gains tax, and development of a Land Value Tax.

Thoughts from round-table participants:

- Generally considered as a good option and that fiscal instruments are essential.
- There is a need to incentivise private investment in peatland restoration.
- Land prices could be determined according to carbon sequestration potential.
- Concerns about changing tax systems.
- A better approach may be to remove land from Capital Gains Tax and Inheritance Tax in favour of a predictable recurring tax on land values.
- In turn, this may make it easier to incentivise behaviours.
- Uncertainty about true long-term land values is a potential risk to private sector investment.
- One participant suggested extending Social Investment Tax Relief to cover community agriculture, aquaculture and restoration/rewilding structures
- Another suggested introducing inheritance tax relief for nature restoration sites, but to mitigate land price inflation, reduce relief for commercial forestry/intensive agriculture correspondingly

Notably, in addition to favourable taxation for tenants, the potential also exists for using fiscal instruments to facilitate diversification of landownership, both in Scotland and further afield. Land in Scotland (and forestry activities) currently benefits from a wide range of tax incentives, including reduced liabilities for non-domestic rates, inheritance tax (through Agricultural Property Relief and Business Property Relief) and capital gains tax (through rollover relief). These facilitate and encourage investment in land due to the favourable taxation environment, with alterations to these measures potentially influencing investment trajectories and (longer term) land values²³⁸.

In particular, tax incentives that enable unbroken transfer of land ownership (e.g. inheritance tax relief) across generations could be reduced to diversify patterns of land ownership over the longer term. The fiscal environment around land and land use (including forestry, agriculture and renewable energy) may therefore benefit from review, particularly in relation

to whether current measures are consistent with wider policy objectives relating to land reform, community empowerment and rural development. The development of a land value tax (a tax levied on the value of unimproved land) has also been proposed²³⁹ as a potential measure to curb the growth in land and property prices and reduce speculation in land and property markets²⁴⁰. Additionally, while most community bodies have charitable status, which offers similar tax exemptions, providing further tax incentives on community ownership or purchase of land could increase the number of communities exercising control over land²⁴¹. However, when considering these options, it will be important to consider the balance between the development or reform of mechanisms to enable benefit sharing between landowners, tenants and other rights holders, versus more fundamental reforms to land tenure.

3.4 THEME 4: Values-led, high-integrity ecosystem markets

Option 10: Expand and enhance high-integrity carbon and ecosystem markets through developing new accredited codes for different land uses and ecosystem services.

Thoughts from round-table participants:

- Seen as essential for driving private investment into natural capital.
- There is an urgent need for a Soil Carbon Code within this option.
- Need for clear guidance and definitions for land managers, given the different carbon accreditation schemes.
- Communities should be empowered to identify the assets they could own, e.g. in a benefit sharing model.
- Modern digital market infrastructure could be a feature of this option.
- There is currently little detail in the WCC and others on wider environment and society factors. Few investors will 'dig enough' to find this information.
- One participant suggested moving away from voluntary carbon markets and towards a cap and trade system that would incentivise land-based businesses to reduce carbon emissions in a similar way to the current emissions trading scheme, which does not currently cover this sector.

Driven by increasing demand for natural capital investment opportunities (globally and nationally), a wide range of markets are emerging in the UK relating to regulating pollution, enhancing biodiversity, managing flood risk and sequestering carbon (or reducing emissions through habitat restoration). Carbon markets have experienced rapid recent growth and investor interest and considerable potential exists for building on existing voluntary carbon markets in the UK (e.g. the Woodland Carbon Code and Peatland Code) and expanding the domestic market through the development of new high integrity codes accredited by UKAS (United Kingdom Accreditation Service), for a range of ecosystem services, habitats and land uses, to provide assurances to both buyers and sellers that GHG reductions and other ecosystem services are real, additional and permanent. Work is already underway to develop new carbon codes for application in a variety of contexts including relating to farm soils, hedgerows and saltmarshes (see Box 4).

Importantly, effective scheme development (and credible verification) requires an increased focus on building the underlying evidence base on the carbon performance of different systems under different land management regimes. Collectively, these emerging schemes offer scope for enabling a wider range of landowners (of different sizes) and land managers to generate income from natural capital over both shorter and longer term timescales²⁴².

Depending on the availability of other funding, support could be targeted via the forthcoming Investment Readiness Fund in Scotland, in coordination with the investments already made by the Environment Agency's equivalent fund in England, to ensure codes operate successfully at national scales in parallel with each other.

Box 4 Opportunities for new carbon market mechanisms in the UK

- Development of a **Farm Soil Carbon Code** is being led by a consortium managed by the Sustainable Soils Alliance with FWAG South-West, SRUC, University of Leeds and others funded by the Environment Agency's Natural Environment Investment Readiness Fund (NEIRF). They expect to launch a pilot code in late 2022, which will focus initially on arable regenerative farming practices (but could be adopted to include other aspects in the future);
- The **Wilder Carbon standard** has been developed by Kent Wildlife Trust and is due to be launched and piloted in March 2022. It will enable the generation of carbon credits from rewilding activities including woodland creation, peatland restoration and other forms of restoration, using metrics developed by the WCC and Peatland Code, and requiring the collection of biodiversity data using Defra's biodiversity offsetting metric. In contrast to other UK domestic carbon markets, it requires buyer checks to ensure those investing in projects have done everything possible to reduce emissions at source before offsetting their residual emissions. It also has unusually long minimum contract lengths of 100 years, or 50 years with conservation covenants that would ensure projects are effectively permanent;
- The development of a **Saltmarsh Code** is being led by the UK Centre for Ecology and Hydrology with RSPB, Jacobs, SRUC and others funded by NEIRF. The goal is to enable the generation of carbon credits from saltmarsh restoration. The group will either adapt a Verra code for application in the UK in the first half of 2022 or pilot a UK Code in late 2022;
- The development of a **Hedgerow Code** is being led by the Game and Wildlife Conservation Trust's Allerton Project. While its initial development will focus on carbon in above ground biomass and soils, projects will monitor biodiversity benefits for potential use in Biodiversity Net Gain and similar programmes. There is no date set yet for the launch of the code;
- Adur District & Worthing Borough Councils were awarded NEIRF funding to explore carbon market opportunities for **sea kelp restoration**; and
- The Woodland Carbon Code are in discussion with a team applying for NEIRF funding to explore the potential to extend the scope of the Code to include agroforestry, or develop a stand-alone **Agroforestry Code**.
- The Scottish Wildlife Trust's Riverwoods project is exploring the potential to finance the creation of **riparian woodland** via carbon markets. Given that the riparian zone itself is too narrow to qualify under the Woodland Carbon Code, it is likely that this would need to be done as part of a wider floodplain afforestation programme, which may be designed to attenuate flooding or help improve water quality, to be eligible under the Code. There are existing examples of riparian woodland planted as part of wider adjacent planting schemes already financed under the Woodland Carbon Code;
- Although there are also no UK domestic carbon markets that focus on **species rich grasslands**, there are a number of international voluntary carbon markets that have developed methodologies that could in theory be adapted for use in the UK (e.g. BCarbon and Verra's VM0026 Sustainable Grassland Management methodology). The UK Farm Soil Carbon Code could also be extended in future beyond its current arable focus to include conversion to species rich grasslands, given the evidence of soil carbon benefits from both conversion and nutrient management on existing grasslands.

Option 11: Developing carbon buyer checks to ensure land is only used for carbon offsetting for residual emissions when a buyer has done everything feasible to reduce emissions at source.

Thoughts from round-table participants:

- This should be a high priority, but it would be hard to verify/enforce (particularly in relation to international investors).
- Suggestion to consider limits on foreign buyers.
- This option may need a central UK regulator (linking to Option 13).
- A robust panel of experts with transparent guidelines could undertake buyer checks but the market should pay through higher fees from ecosystem markets/codes.
- With regard to carbon, an approach to providing evidence that companies are following a mitigation hierarchy would counter accusations of greenwash (linking to Options 9 and 13).
- One participant noted that a consistent and objective set of criteria would be welcome but that individual land-owners and/or project developers may find it hard to develop the expertise to navigate ESG statements to decide who is doing 'enough'. If the short-cut is to require third party certification, there's a risk of excluding SMEs from the market who may be doing lots but haven't got the resources to get certified.

Importantly, to reduce any unintended negative effects and ensure the integrity of carbon-based investments, the inclusion of buyer checks (i.e. corporate social responsibility components) to ensure that land used for carbon offsetting is only used to offset residual emissions (as opposed to simply offsetting existing emissions)²⁴³. The direct involvement of landowners in the design and development of new market mechanisms also offers potential for minimising risks and increasing future scheme uptake (as well as identifying other opportunities for future schemes).

Option 12: Development of a coordinated policy framework in each UK country^{xii} on the design, governance and operation of ecosystem markets and their alignment with land-based support that ensures consistent UK-wide operation of ecosystem markets without distorting effects from different subsidy regimes in each country.

Thoughts from round-table participants:

- Seen as 'probably essential' due to the requirement for blended finance to deliver public goods.
- The question arises around how much regulation should be involved.
- Need for structure and regulation in the market and there are risks of secondary trading.
- Makes sense to have the same rules across the UK for the different codes (links to Option 13).

The emergence of such a wide array of voluntary carbon markets and the need to ensure the potential associated benefits are well distributed across the land management sector, suggests an increasing need for an over-arching policy framework to provide a strategic approach to the design and operation of relevant schemes which aligns with wider relevant policy (e.g. the Agriculture Act and Environment Act in England, and the Scottish Agriculture Bill) and addresses the challenge of designing future agricultural support schemes which facilitate access to private investment through natural capital markets. Such approaches also require coordination of policies across the UK to ensure markets are of sufficient scale

^{xii} There is already work underway on this framework, as set out most recently by the [UK Financing Nature Recovery](#) roadmap.

and standardised effectively to ensure they are attractive to investors and avoid unequal benefits/impacts and competition between different UK countries²⁴⁴.

This may include a benchmarking (or accreditation) system for private sector-led ecosystem market standards and schemes, to ensure the integrity of new markets as they develop. Those that meet benchmarks could then be signposted, for example via the UK Government's Environmental Reporting Guidelines²⁴⁵. In this way, it would be possible to direct both buyers and sellers to the most rigorous standards and schemes, stimulating a "levelling up" of lower integrity standards and schemes, and tie these standards to fiscal incentives, including higher tier agri-environmental subsidies such as ELM.

In addition to voluntary carbon market mechanisms, there is considerable scope for further development of emissions trading within a UK context as well as greater use of auctioned carbon contracts^{xiii}, particularly in relation to providing funding for afforestation (i.e. through a levy on GHG emitting industries). Notably, forestry carbon credits are currently excluded from the EU Emissions Trading Scheme (ETS), but scope exists for the UK to develop a separate trading scheme for forestry or include it in a UK-wide ETS if the UK leaves the EU ETS²⁴⁶. The inclusion of forestry carbon credits within a UK ETS offers considerable scope for accessing financial support for tree planting and is consistent with the 'polluter pays principle' and carbon credit value could be underpinned by a floor price to reduce risk and enhance incentives to participate²⁴⁷.

Option 13: Development of a UK Advisory Body to ensure oversight of carbon credit projects, make recommendations on additionality requirements and monitor and enforce compliance with rules and guidance.

Thoughts from round-table participants:

- Seen as 'required' but also problematic and politically risky. It is uncertain whether all four nations will agree and maintain agreement in the long-term.
- A UK oversight body would be useful for overseeing the credibility of UK-badged schemes.
- Preference for a UK advisory body rather than a co-ordination body.
- This should be 'broader than carbon' and facilitate wider ecosystem services markets.

Reflecting the increasing need for a coordinated approach to governance and oversight of carbon markets, the Green Alliance has proposed the development of an office for carbon removal, to oversee the growth of the carbon market across the UK and ensure that carbon market mechanisms are deployed sustainably to achieve net-zero, with responsibility for: i) ensuring that delivery mechanisms, are robust and credible and carbon credits from land based solutions are not available to offset unnecessary emissions elsewhere in the economy; ii) oversight of carbon credit projects to ensure up to date information is available on market development over time; iii) assessing and making recommendations on additionality requirements for carbon credits on a continuing basis (as farming practices change and evolve); iv) establishing clear rules and guidance on the claims that can be made by different actors in carbon markets, and procedures to monitor and enforce compliance²⁴⁸.

^{xiii} For example Defra and the Forestry Commission launched the [Woodland Carbon Guarantee](#) in 2019, which provides long term certainty to investors in woodland creation. This is enabled through providing scheme participants with the opportunity to sell the carbon credits at a guaranteed price to Government, with an option to sell on the open market if the market rate is higher. Bi-annual auctions are planned between 2020 and 20254 with £50 million currently committed to the scheme.

3.5 THEME 5: Rural land use frameworks, redistributing support and incentivising landowners

Option 14: Further develop the potential for place-based, collaborative approaches to the application of natural capital markets in parallel with public support mechanisms, including through testing a data-driven, natural capital accounting approach within RLUPs in Scotland.

Thoughts from round-table participants:

- Considered 'essential' and an 'admirable aim' but encouraging less formal collaboration is likely to be a worthwhile intermediate process.
- There is a significant opportunity to give RLUPs a regulatory role and to give weight to land use planning.
- RLUPs are bringing landowners around the table to hear community views. Although this is voluntary and they are not bound to listen to communities, it is believed that early indications are positive, suggesting that landowners are being influenced.
- There is a need to facilitate farmer groups to consider future agricultural policy (linking to Option 15).

An important opportunity for managing land use trade-offs and distributional issues relating to natural capital, relates to the development of collaborative approaches to land use decision making. In particular, the variability and specificity of land use pressures requires that 'place-based' approaches be developed, incorporating policy instruments that are more flexible in adapting to the local context, including delivering payments for ecosystem services²⁴⁹. In Scotland, these challenges are being addressed through the development of Regional Land Use Partnerships (RLUPs), which aim to facilitate collaboration between local and national government, communities, landowners, land managers, and wider stakeholders, to help achieve Scotland's climate targets through land use change and the management of natural capital^{xiv}.

The development of democratic, accountable decision-making structures such as RLUPs, offers scope for managing the complexity of supporting ecosystem services delivery through managing policy conflicts and trade-offs between different services and natural capital stocks²⁵⁰. In practice, this can include the development of a data-driven approach to assessing and monitoring ecosystem services and natural capital, as the basis for deciding priorities for land use and targeting public support measures and harnessing natural capital markets at local levels²⁵¹. These collaborative approaches reflect international design principles for co-governance²⁵², which recognise the potential for adaptable, representative and locally embedded governance structures for supporting the mediation of stakeholder interests and the emergence of innovative approaches to policy and practice²⁵³.

^{xiv} Five [RLUP pilots](#) have been tasked by Scottish Government with producing Regional Land Use Frameworks (RLUFs) by 2023, using a natural capital approach. This requires RLUPs to consider key natural assets and the benefits these provide to communities and the regional economy.

Option 15: Application of a redistributive approach to post-Brexit public payment mechanisms where feasible, to facilitate wider distribution of benefits across the land management sector to address issues of landownership concentration and capitalisation of support payments on larger landholdings.

Thoughts from round-table participants:

- Seen as important but needing more detail.
- This may be more challenging to implement than Options 14 and 16.
- There is a risk of redistributing support to land managers who are not generating public benefits.
- There needs to be a cap on very large payments.
- There should be more flexibility in how public payments are delivered so that public and private finance can be blended appropriately.
- It was questioned whether planting support should be based on need, noting that current support could be driving up land prices.

In parallel with collaborative, regional approaches to land use decision making, the design of future public support mechanisms for land use offers scope for addressing distributional issues related to landownership concentration and capitalisation of support payments on larger landholdings. Specific measures which could be adopted in the UK in post-Brexit agricultural policy include redistributive farm payments^{xv}, mandatory capping of payments^{xvi} (agreeing upper limits to total payments for farm holdings) and degressivity (progressive reduction of payment rates above a certain level i.e. top-slicing)²⁵⁴.

The broader shift away from direct support for production also offers greater scope for expanding environmental payment schemes and linking support payments to environmental conditionality measures, with different UK regions potentially adopting different measures over different timescales according to their specific constraints and priorities²⁵⁵. Collectively, these measures have the potential to reduce land market distortions through reducing the direct link between subsidies (and their impact on marginal land returns) and the land²⁵⁶.

The shift towards a payments for ecosystem services model requires the development of effective approaches to combining public and private finance, including through auctioned contracts (e.g. for afforestation and carbon sequestration) and greater use of voluntary natural capital markets, with public funding being used to encourage land uses which are less viable based on market mechanisms alone (e.g. peatland restoration, re-wooding upland catchments etc.). In practice, targeting of public funding for ecosystem services provision requires improved monitoring and assessment of ecosystem services and the development of effective decision support systems²⁵⁷. It is within this blended public-private finance context that regional land use frameworks such as RLUPS, offer scope for developing collaborative approaches to capturing private and public funding (e.g. through collective bidding for landscape-scale ecosystem services funding or Biodiversity Net Gain finance opportunities). Importantly, while such schemes offer greater scope for building a public money for public goods model, they are inherently complex and risks exist in relation to ensuring actor participation, incorporating a sufficiently wide range of ecosystem services, and ensuring data and modelling needs are met²⁵⁸.

^{xv} [Redistributive payments](#) under the EU Common Agricultural Policy involve providing additional support to all hectares below a certain threshold (e.g. the first 20-30 hectares claimed for receives elevated support). Countries can currently allocate up to 30% of their national income support budget to a redistributive payment. This provides additional support to small farmers, as a higher proportion of the hectares on their farms will qualify for the higher payments.

^{xvi} For a fuller discussion of the potential for capping farm payments under the EU Common Agricultural Policy see [here](#).

Option 16: Development of knowledge exchange and training for land managers, in addition to increased advice and guidance, relating to engaging with natural capital markets and related environmental support schemes (and undertaking related assessments).

Thoughts from round-table participants:

- Seen as a good idea that is easy to implement.
- There is a need to bring together all relevant data sources to aid decision making and planning.
- There is also a need for an overarching policy framework to help align planning policy (linking with Option 12).
- Knowledge exchange is already being developed (e.g. by the Soil Association), but there is a need to have a single clear source, and that needs a procurement process for governments to properly resource and commission.
- There is the opportunity to develop a community of practice, particularly within the public sector.

The potential complexity (e.g. monitoring requirements, scheme length and commitments etc.) of new public and market-based mechanisms for supporting land use, places a greater emphasis on the importance of developing support and training for land managers (particularly at smaller farm scales) and ongoing knowledge exchange, on aspects such as carbon market opportunities (and monitoring processes) and evolving opportunities relating to grants and incentives²⁵⁹.

While LSLAs and changes in landownership often represent opportunities for land use change, the successful wider implementation of land use policy objectives relies heavily on ensuring policy goals and related incentives and market mechanisms (including natural capital) are aligned with the motivations, attitudes and values of existing owners and managers of land²⁶⁰. Furthermore, as international research has shown²⁶¹, increasing interest in land from a wider range of actors with non-farming motivations (e.g. lifestyle or investment oriented owners), creates greater uncertainty around uptake of incentives and land management measures by new owners.

Importantly, emergent opportunities relating to incentives and markets are commonly assessed by land managers in relation to their compatibility with existing business models and the potential uncertainties related to timescales or the potential for scheme failure (e.g. failure of a new woodland carbon scheme)²⁶². As a result, whether new opportunities are adopted relates to perceived risk and trust, with recent studies highlighting the potential of peer-to-peer communication and engagement through land manager social networks for improving shared understanding of payment for ecosystem services approaches²⁶³. In particular, early adopters of new 'innovations' can play a key role, followed by 'late' adopters, who decide on whether to adopt a new opportunity (e.g. woodland carbon markets) by monitoring their peers²⁶⁴.

In addition, effective leadership and knowledge transfer at regional scales offers potential for influencing land managers through their networks over time, which offers scope for driving incremental change and challenging embedded land use models. In addition to their role in supporting data-driven, collaborative decision making, regional frameworks therefore also have the potential to play a key role in increasing land management uptake of support mechanisms for land use change, including through the provision of well-informed locally based advisory services, collation of high quality data on ecosystem services and natural capital and the development of training and knowledge transfer for land managers and wider stakeholders.

4. Conclusions

The UK is currently entering a period of large-scale land use transition, driven primarily by global challenges, including the climate change and biodiversity emergencies and food security concerns. The extent of change envisioned by the UK Committee on Climate Change is unprecedented, in terms of both the scale and speed of change required, with current estimates proposing that 20% of agricultural land in the UK will need to be released from agriculture before 2050. Critically, due to wide variability in land type and agricultural land quality, the changes in land use systems envisioned by 2050 will not be evenly distributed across the UK, with plantable areas of marginal agricultural land and areas of peatland soils (often in Less Favoured Areas with lower production capacity), offering particular scope for transitions to afforestation and peatland restoration for example, which may have implications for communities and existing land use outcomes in these regions.

Converting the UK's existing land use systems to approaches which reduce emissions and facilitate large-scale carbon sequestration, is envisioned as being enabled by a combination of changes to public support mechanisms for land use (e.g. increased support for afforestation and peatland restoration) and payment for ecosystem services provision. We have seen the emergence of mechanisms which facilitate markets for natural capital (e.g. the Woodland Carbon Code and Peatland Code) as well as the emergence of communities of practice to support knowledge sharing and transparent deliberations, such as the Nature Finance Pioneers Network in Scotland. This, together with the related potential for facilitating private investment in restoring ecosystems and the services they provide, represents a critical part of the financial rationale for enabling large scale land use transitions in the absence of funding under the EU Common Agricultural Policy in the future. As identified in this report, natural capital markets (and specifically carbon markets) have potentially increased the viability of large-scale land use transitions (e.g. rewilding) on estates and land use change at smaller scales, including in relation to woodland creation and/or adoption of low-carbon farming practices on hill and low ground farms.

Importantly, while voluntary markets for natural capital are developing at pace in the UK (and globally), uptake of related opportunities remains limited by low carbon prices and market complexities, including a limited evidence base on the carbon benefits of certain forms of land management (e.g. the soil carbon implications of regenerative farming). In relation to woodland carbon schemes, uptake has also been hindered by the long term and committing nature of woodland carbon schemes (and perceived risks relating to scheme failure), as well as structural barriers including tenancy agreements restricting tenants from becoming involved in woodland creation and/or other funding schemes or markets relating to natural capital.

Due to the high degree of landownership concentration in the UK (and particularly Scotland), declining numbers of agricultural tenancies and the limited accessibility of land for new farming entrants, the income generating potential associated with natural capital investment is unevenly distributed across the land management sector and society more generally. In this regard, natural capital is providing a new lens for examining existing structural inequalities relating to concentration of landownership and decision-making power and related outcomes for communities. The wider context for large-scale land acquisitions is therefore key to any assessment of the associated risks and opportunities. These acquisitions can offer major scope for facilitating land use transitions (e.g. large scale woodland restoration) and inward investment, due to new owner motivations, private finance, available public funding and emerging markets, while in parallel potentially

reinforcing existing barriers to accessing land and/or excluding communities from land-use decision making processes. These concerns are reflected internationally, with increased acquisitions of farmland (or 'land grabbing') by non-agricultural investors in Canada and Germany associated with reduced community resilience and cohesion.

How land markets function (in terms of who can access the market, values over time and market controls) can act as an important influence on the relative accessibility of land over time. Off-market sales represent an apparently growing proportion of market activity in the UK, which may act to exclude certain potential buyers in favour of others (e.g. institutional/corporate investors known to be active in the market). Additionally, while a range of information on land market activity exists, the lack of a comprehensive, independent land market assessment (combined with the high degree of off-market activity) creates a degree of uncertainty around current market activity and related drivers of sales, acquisitions and land values.

Despite some uncertainty around current land market activity, the data summarised in this review illustrates several key recent trends in UK land market activity, including comparatively low supply (which reflects a longer term trend) and high levels of demand for farmland in recent years, resulting in increasing average per/acre values for most land type. Some of the most dramatic growth in values has occurred for plantable hill ground and forestry (stocked) land, which has resulted in overall average farmland values being increasingly driven by values for plantable land, which has had a particular influence on land values in Scotland, where demand for plantable land is particularly high.

This has been driven by the long-term investment potential of forestry, natural capital markets, timber markets and policy drivers for afforestation. Investment and natural capital values are also acting as an increasingly important driver of estate sales, including by corporate buyers, driven by increasing interest in offsetting through peatland restoration and woodland creation. Notably, long term investment potential has become an increasing driver of land acquisitions, with the relative profitability of a holding having declined in importance (as a driver of value) in recent years, with non-farming investors having become increasingly important at both the smaller (lifestyle buyers) and larger ends of the market (investment/corporate buyers).

Critically, while it is clear that natural capital markets and wider investor interest in carbon off-setting and green agendas are driving market interest and in particular land values for plantable land (and peatlands), there is currently limited evidence in relation to what the wider outcomes of this are for rural communities and economies and how this varies based on the resulting land use outcomes (e.g. estate or farm based rewilding versus investment oriented productive mixed forestry). Nevertheless, based on international evidence and wider contextual challenges, including landownership concentration and limited access to land, there would appear to be a range of potential risks associated with large-scale land acquisitions in a UK context, including the potential for concentrating benefits associated with natural capital. This highlights the importance of developing effective and well-aligned market-based and public-support mechanisms to counteract existing structural barriers and avoiding inherent policy conflicts and ensure land use transitions are viable across a wide range of land managers and holding types and sizes.

Acknowledgements

This work was funded as part of a SEFARI Special Advisory Group chaired by Prof Reed on large scale land acquisition for carbon, which is working in collaboration with the Scottish Land Commission who are also funding a strand of work on this topic. Thanks to all roundtable participants (organisations listed in Appendix 2) for inputs to the roundtable discussion which were integrated with this report, and to those who provided additional feedback on a draft version of this report.

Conflicts of interest: Professor Reed is Research Lead for IUCN UK Peatland Programme and sits on the Executive Board for the Peatland Code, and is part of a team developing a UK Farm Soil Carbon Code and a Saltmarsh Code.

Appendix 1 Evidence review method and themes of enquiry

Due to the breadth and complexity of the topic, a narrative review was undertaken, using expert opinion to identify and collate available evidence relating to the three main research objectives (for the full set of search terms see Table 1 below). While a considerable evidence base exists on the broader context (e.g. land use change, landownership, communities etc.), evidence which relates specifically to the effects of land acquisitions for carbon is more limited. The factors which are likely to shape the outcomes of any land acquisition are also multi-faceted and complex, as they may include behavioural factors, economic constraints and incentives, cultural aspects and environmental opportunities and concerns. In addition, while carbon markets represent an important current driver, land acquisition decisions often take multiple factors into account, including the relative value and importance of other forms of natural capital (e.g. biodiversity). For these reasons, the review has maintained a relatively broad scope, based on identifying relevant evidence of interest to the main research questions that can inform the roundtable discussion and provide an evidence base for the development of any subsequent policy and practice options.

To set out the context for the roundtable discussion, the review sourced published and unpublished reports and evidence relating to large scale land transactions for carbon (or transactions influenced more broadly by natural capital investment drivers) in the UK. This included a range of publications from land agencies on rural land market activity and current owner and investor motivations (and likely future trends). International evidence has also been collated and assessed where relevant to the review research objectives.

The evidence searches undertaken to support this review have predominantly focused on more recent material (from the last 10 years, unless particularly relevant and alternative sources are limited). The evidence base includes published material (journal articles, scientific reports etc.), grey literature and unpublished material, including (where relevant and of sufficient quality) shorter relevant articles and media reports, to capture aspects of the wider narrative of relevance to the themes of enquiry. The approach to identifying and collating evidence used two main search engines: Google Scholar and Scopus. Two researchers undertook evidence searches using the terms and themes in Table 1 below, with some combined searches undertaken in Scopus. This approach was deemed suitable due to the narrative review approach and potential relevance of a broad range of both academic and wider grey and unpublished material, due to the highly current nature of the activity and debates relating to land acquisition for carbon. All relevant sourced material was collated in a spreadsheet database.

Table 1 Themes of enquiry and potential areas of relevant evidence

Theme of Enquiry	Key components (areas assessed for evidence)
Q1. The current extent of large-scale land acquisition for carbon (and potential future trends).	Land markets (farmland, estates, forestry sales/acquisitions) Evidence/data on influence of natural capital/ carbon investment on land transactions (and extent of private/off-market transactions); Landowner and investor motivations (for sales/retention); Future land acquisition trends/role of natural capital
Q2. Risks and trade-offs associated with large scale land acquisition for carbon.	Impacts on land values and knock-on impacts on land availability for farm tenants, communities and individuals; Biodiversity, food-security and environment (trade-offs); Re-concentration of landownership and limiting distribution of benefits from land (e.g. local carbon benefits); Centralisation of decision-making processes.
Q3. Key opportunities (emergent schemes, mechanisms, policies and behaviours) related to reducing risks and trade-offs , for large-scale land acquisition for carbon.	Regulating land markets/acquisitions (e.g. a public interest test for large acquisitions); market transparency; best practice Carbon markets ; carbon pricing; managing natural capital risks; market transparency; offsets and emissions; regulation Enhancing/expanding existing carbon mechanisms (WCC, PC); Local natural capital investment ; social equity and ecosystem services; benefits sharing between public, community and private interests (e.g. ownership diversification, community wealth building, participatory decision-making); Novel shared (public-private) ownership or investment models for carbon/natural capital (e.g. tenant agreements, leases, joint ventures, crowd funding, collaborative schemes); Land sharing approaches/ natural capital additionality; Options for assessing co-benefits for other ecosystem services and communities ; Existing owner/manager carbon/investment behaviours (knowledge exchange etc.)

Appendix 2: List of organisations/groups invited to the roundtable event

Policy community

Scotland:

- Natural Capital team, Scottish Government
- Rural Land Use Partnerships team, Scottish Government
- RESAS, Scottish Government
- Land Reform team, Scottish Government
- NatureScot
- SEPA
- Scottish Forestry and Woodland Carbon Code
- Highlands & Islands Enterprise
- South of Scotland Enterprise
- Just Transition Commission (Scotland)

England:

- Soils team, Defra
- Green finance team, Defra
- Strategic Land Use team, Defra
- Natural England
- Katherine Birdsall

Wales:

- Land, Nature and Forestry Division, Welsh Government
- Natural Resources Wales

Northern Ireland:

- Department of Agriculture, Environment & Rural Affairs, Northern Ireland

UK:

- JNCC
- UK Committee on Climate Change

Investment and financial advising community

- Federated Hermes International
- Finance Earth
- 3Keel
- Forest Carbon
- Future Forests
- Triodos
- Green Finance Institute
- Bunloit and Beldorney Estates

Environmental NGO community

- Sustainable Soils Alliance
- John Muir Trust
- Scottish Wildlife Trust
- Wildlife Trusts UK
- National Trust for Scotland
- RSPB
- Scottish Futures Trust
- WWF Landscape Finance Lab
- Peatland Code
- Nourish Scotland
- Ulster Wildlife

Land management community

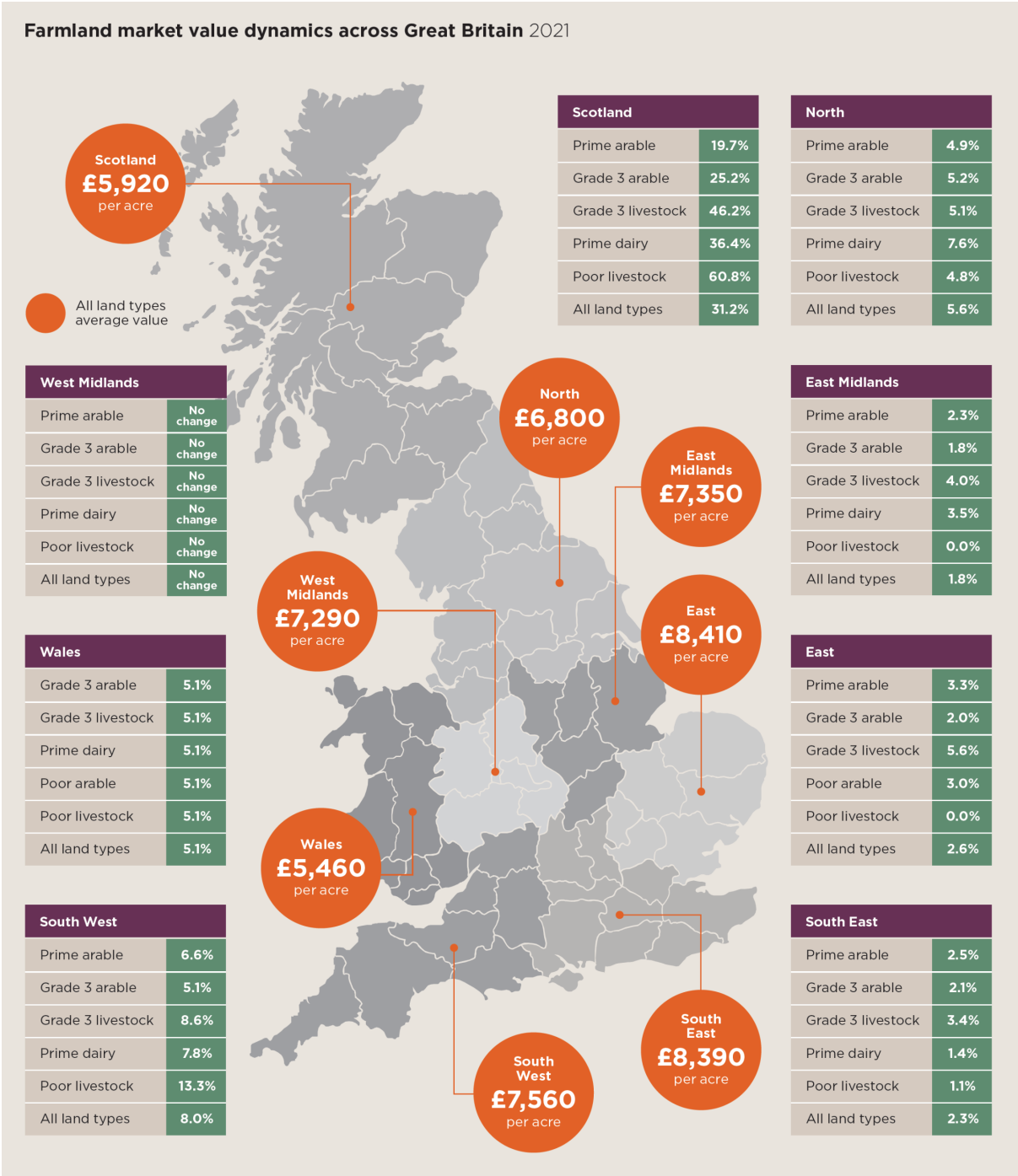
- NFU
- NFUS
- Moorland Association
- Moorland Forum
- Country Land and Business Association
- Scottish Land & Estates
- Galbraiths, Savills, Bidwells and Central Association of Agricultural Valuers
- Cairngorms National Park Authority
- Forestry & Land Scotland
- Scottish Tenant Farmers Association
- English and Welsh Tenant Farmers Association
- Borders Forest Trust
- Scottish Water
- Tillhill
- CONFOR
- Scottish Woodlands
- Crown Estates
- Community Land Scotland

Rural communities

- Scottish Rural Action
- Scottish Crofters Federation
- Crofting Commission
- Scottish Community Alliance
- Community Woodlands Association
- Community Land Trust Network
- Rural Community Network, Northern Ireland
- Action for Rural Communities in England
- Rural Youth Project

Appendix 3 Farmland values and comparative investment performance of land

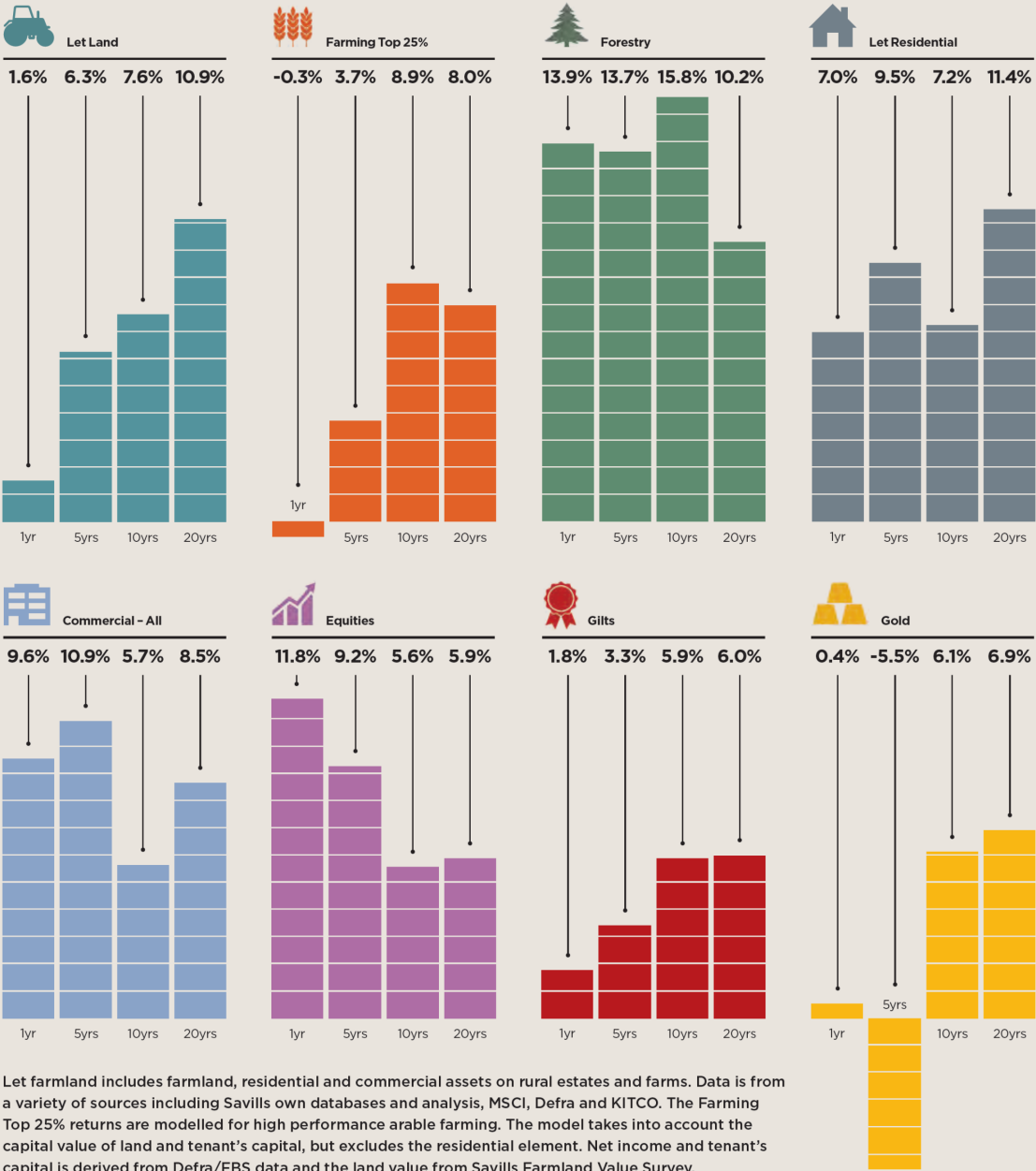
Farmland value dynamics (Savills 2021)²⁶⁵



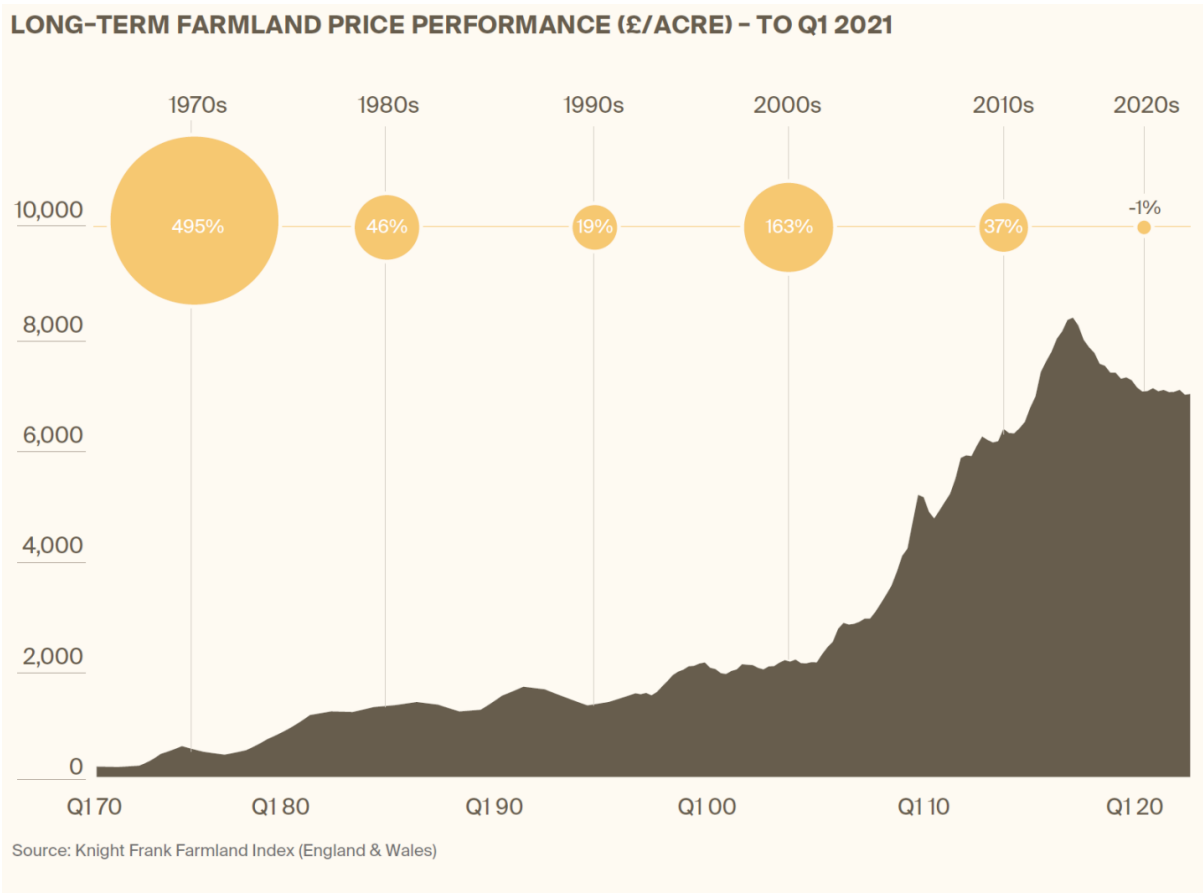
Farmland and forestry comparative investment performance (Savills 2018)²⁶⁶

Comparative investment performance






Farmland and forestry have delivered healthy investment performance over the long term



Long term UK farmland price performance Knight Frank (2021)²⁶⁷



FARMLAND CAPITAL VALUE CHANGES VERSUS OTHER ASSET CLASSES

	ENGLISH FARMLAND	PRIME CENTRAL LONDON RESIDENTIAL	UK HOUSE PRICES (NATIONWIDE PRICE INDEX)	FTSE 100	GOLD
					
3-MONTH	0%	0%	1%	4%	-12%
12-MONTH	0%	-3%	6%	18%	-5%
5-YEAR	-12%	-17%	16%	10%	43%
10-YEAR	16%	12%	41%	14%	36%
20-YEAR	256%	125%	175%	19%	577%

Source: Knight Frank Research

Appendix 4: Summary of round-table participants views on risks and opportunities

Analysis of data gathered through workshop Mural boards. Loosely structured based on different themes from workshops, nuanced by themes emerging from the data.

Land uses

RISK 1- market dictation of land uses may lead to less land available for other less profitable land uses. This includes land for conservation, local social and economic development, and the agricultural sector.

- There is uncertainty as to the extent to which land use for carbon sequestration can be integrated or 'shared' for other land use goals.
- There is the potential for productive agricultural land to be used for carbon purposes, with implications for farm and croft land and their tenants, as well as broader considerations of food security.
- There are increased barriers, financial and otherwise, to new entrants in the agricultural sector.

RISK 2- Instability and uncertainty in the immature market for carbon credits may lead to land owners or managers making land use changes which are not in their long term interests

- Land owners or managers may be enticed by buoyant markets, only to receive a lower return. Alternatively, they may sell their carbon credits early, without realising their full worth.
- Uncertainty about value, legal rights to the ownership of carbon credits may lead to legal wrangles or a wariness about entering into the market in the first place.

OPPORTUNITY 1- Reconsider land uses to incentivise an integrated approach to meeting a range of goals at scale

- Assess potential for land use changes ('land sparing'), e.g. grouse moors to food production and grazing land to carbon storage
- Develop 'land sharing' approach to integrating ecosystem services, carbon capture (trees and peatlands), renewable energy, livestock/agriculture, community usage, biodiversity, etc. for mutual benefit
- Provide financial incentives to adopting integrated approaches at scale

OPPORTUNITY 10- Utilise planning system, combined with Regional Land Use Partnerships, to designate certain areas as available for carbon sequestration

- Integrate local planning considerations with national targets for land use, working within the RLUP framework in order to designate land use at scale.
- Collaborative working across scale and policy areas may be challenging, but will bring a range of perspectives around the table in order to facilitate a Just Transition and enable finance to be directed into the market in sustainable ways.
- Designation of land as not suitable for carbon will spare it from the overheated market and allow more affordable land for other land uses (e.g. housing), as well as preserving some landscapes as free from potential afforestation.

Distributing and delivering benefits

RISK 3- The market for carbon will not benefit communities. Indeed, dependent on its functioning, the market may negatively affect the life, culture and development of communities.

- There was concern as to how this market may affect crofting land and related culture.
- Communities may lose other valued land assets, as well as heightening barriers to land acquisition for young people to live and work.

- While there is talk of community benefit payments, there is no certainty as to how much these will be, and whether they will be seen as adequate in offsetting the potential detrimental impacts.

RISK 4- Collaboration will be insufficient to share benefits of carbon market, potentially risking broader acceptance and adherence to land use changes. This may be due to the capacity or willingness of communities or land owners/managers to engage in such a complex collaborative partnership, or of the markets to support them in doing so.

- Both land owners/managers and communities would need the capacity to engage, possibly requiring training and/or a facilitator/broker.
- Investors with no interest in non-financial returns or the sharing of profits may be unwilling to collaborate in its delivery. Crofters and tenant farmers may be unwilling to change land uses/ behaviours/ farming practices.
- The ongoing nature of the collaborative partnership would need to navigate power dynamics within the community and between the community 'body' and investors/ owners/ managers. There is a risk that power imbalances could affect mutual benefits.
- Community engagement would need to be guaranteed in some way. It would also be susceptible to the same risks of any community involvement- reliance on certain individuals, potentially leading to lack of representation and/or volunteer burnout.
- Collaborative partnerships may be less institutionally stable and there is a risk that markets may be wary of them
- If community engagement or benefits are not considered sufficient, or the scheme is considered to prioritise profits over public good, local people may not adhere to land use changes and jeopardise both the potential for carbon sequestration and the related financial benefits.

OPPORTUNITY 2- Achieve a 'Just Transition' through engaging local people in planning and discussions around the carbon market, and returning benefits to those most affected and in most need of social and economic development

- Economic opportunities (direct employment and new business sectors) can be developed, especially in rural areas, to revitalise and repopulate communities otherwise heavily reliant on agriculture
- Communities should play an active role in land use discussions, with genuine authority to affect how surrounding land is owned, managed and used. Mechanisms encouraging and simplifying joint ventures could formalise ongoing relationships and lead to better design and longevity.
- Financial compensation to, and involvement of, communities should be integrated into legislative and market mechanisms, while affordances should be made for access and recreation opportunities. These should be designed as 'standards' or 'good practice' regulations.
- State intervention in the market may be necessary in order to achieve these goals. The scale of this intervention could be up to, and including, the nationalisation of the sector.

OPPORTUNITY 3- Design mechanism to allow agricultural tenants to make land use changes and benefit from carbon market

- May require a new legal relationship between tenants and landowners, perhaps a formal model of shared governance
- Private and public funding mechanisms would need to be designed to allow tenants to engage in, and benefit from, change

Land ownership and management

RISK 5- The carbon credit market will compound and exacerbate structural issues of concentrated land ownership.

- Benefits will be enjoyed by small cohort of large-scale landowners.
- Requires more of a focus on existing owners, not just new ones, as the continued ownership of this land entrenches and widens inequalities.
- Absentee and other new landowners may be unaware of their responsibilities on the land, or the risks involved in land ownership.
- In the absence of adequate planning controls or requirements for owner-tenant agreements, the objectives of landowners will be unfettered by the needs of tenants, communities or the common good.

OPPORTUNITY 4- Use the new carbon market as a vehicle through which to change the way that land is owned and managed

- Control and regulate previously unfettered and untransparent land market
- Impose public interest test for both existing and new owners of large land holdings
- Expand new models of land ownership and governance, including community landownership and collaborative mixed-sector ownership, to encourage more local accountability
- Support all forms of owners to pursue ethical and sustainable land management practices
- Encourage integration of policy documents, including Land Use Strategy, Land Rights and Responsibilities Statement and NPF4.

OPPORTUNITY 8- Use the carbon market as justification to reform fiscal policy related to land

- Use fiscal levers to incentivise carbon management and investments in a just and sustainable manner
- Inheritance and capital gains tax are in need of reform, and could be restructured to incentivise community collaboration
- Progressive land tax to reflect scale of landholdings and/or provision of tenancies to new entrants
- Taxation on carbon emissions could tip the financial balance so that it is no longer cheaper to offset emissions than to reduce them. This will both generate tax revenue and reduce the 'heat' from the current market for land for carbon sequestration.

The functioning of the carbon market

RISK 6- A lack of transparency in the carbon market leads to uncertain responsibilities and accountability.

- Corporate owners may be able to evade scrutiny, accountability and responsibility
- Liabilities may be placed on tenants and communities without their full understanding

RISK 7- The international market in landownership and carbon credits allows wealth to be extracted from the country, while not contributing to the national efforts to reach net-zero

- The sale of carbon credits abroad does not help in the offsetting of domestic emissions, jeopardising efforts to reach net-zero.
- International wealth extraction is contrary to the principles of community wealth building, the Just Transition and the consideration of carbon credits as a national asset

RISK 13- Regulations and standards are not effective, sufficient or robust enough to ensure compliance and achieve overall environmental goals

- Buyer checks may be difficult to operationalise and could be open to distortion if self-certified. A mechanism would need to be implemented to prevent the double-counting of offsetting.
- If offsetting is not combined with emissions reduction, it could risk a lack of action on the latter
- Standards would need to meet international core principles or risk undermining trust and investment in carbon markets
- Risk of 'greenwashing' if regulation is not robust, independent and well-funded.

- There is a risk of tension or disconnect between the UK government and devolved administrations due to potential overlaps in policy competence. Effective regulations and standards requires coherent authority oversight.

OPPORTUNITY 5- Design mechanisms to reliably account for carbon commitments, capacity and transactions to improve transparency, robustness and trust in the system

- Utilise new technological concepts (e.g. blockchain) to account for carbon market in a reliable and transparent manner
- Ensure accuracy in the calculation of the carbon storage potential of peat, as well as the consequences of planting trees on shallow peat, in the pursuit of carbon credits.

OPPORTUNITY 7- New approach to investment and financing to deliver broader social and environmental returns

- Integrate communities into investment vehicle to build trust and facilitate Just Transition. Could come in the form of shared ownership models, collaboratively governed by community landowners or other community enterprises.
- Investments can deliver multiple benefits dependent on local needs, and may be better rewarded for delivering other local socioeconomic or environmental benefits
- Opportunities for land owners and managers to participate in markets without selling land (e.g. selling the carbon rights to their land for a fixed period)
- Combining different sources of finance between sectors – including local organisations, public and private sector, and individual investors across the world – to balance outcomes and share benefits

Environmental considerations

RISK 8- The focus on the market for sequestering carbon takes the focus off reducing carbon emissions and may lead to other negative externalities

- Offsetting emissions is cheaper than reducing them, allowing companies to take no action on the latter, risking further environmental damage.
- Carbon sinking may lead to land use changes which affect food production or other uses
- Large-scale tree planting may affect water quality and other aspects of the life of surrounding communities, while doing nothing to promote social justice or equity
- Some scientific models of estimating carbon storage capacity are unproven and may lead to inaccurate results and ultimately an overestimation of carbon storage.

RISK 9- The focus on the market for sequestering carbon takes the focus off biodiversity and other ecosystem services

- The favouring of monoculture tree planting for financial benefit can negatively affect nature, communities and biodiversity
- A lack of understanding of soil carbon may lead to carbon being emitted when planting trees
- Other ecosystem services are not taken into account.

OPPORTUNITY 6- Accompany market for carbon capture with necessity for emissions reduction and equivalent for other ecosystem services

- Valuing other ecosystem services in a similar manner will encourage pursuing multiple beneficial outcomes simultaneously, while mitigating against negative externalities of solely pursuing carbon capture
- Link carbon sequestration market to regulation of emissions to ensure that there is action being taken on each, and businesses are not able to buy themselves out of taking action on emissions.

Policy interventions and public investment

RISK 10- Policy timescales may prevent meaningful, effective and timely intervention in the carbon market

- The pace of policy development is significantly behind that of the market. This may lead to outdated or misdirected policy.
- Timescales need to be set longer than political cycles, allowing for land use change and in line with net-zero targets. Simultaneously, flexibility must be built in to avoid overly restrictive terms which cannot adapt to this new and rapidly changing market.

RISK 11- Public policy interventions may be ineffective or lead to unintended or detrimental consequences for one or more stakeholder group.

- Policy based on a lack of evidence or false assumptions will be misdirected, with risks for a number of stakeholders.
- As public interest is a vague and subjective term, there is a risk that the imposition of a Public Interest Test could prevent or restrict investment in this area.
- Centrally-designed policy may not recognise the needs or circumstances of rural and island communities.
- Changes in taxation may affect the broader land sector.

RISK 12- Public funding may not deliver value for money

- Public funding to support a sector which the market could pay for, and will benefit from, represents investment of public money for private gain, while offsetting corporate carbon emissions.
- Structures such as RLUPs need to be well-resourced or they may fail to provide the institutional support necessary, and are thus considered a good investment.
- Without linking investments to regulations or, for example, the Land Rights and Responsibilities Statement, public investment may not result in public benefit.

OPPORTUNITY 9- Design post-CAP agricultural support around incentivising good practice on carbon and other ecosystem services

- Ecosystem services such as biodiversity and clean water can lead to higher-value products anyway, so their integration into agricultural support is a win-win
- Would need to be implemented alongside a robust framework of landowner-tenant relationship (see Opportunity 3)

OPPORTUNITY 11- Reassess how we regulate investments and the use of public money in developing a viable, fair and just carbon market

- A strategically planned, clearly regulated market is necessary in building confidence in the reliability of this sector. Guidance and standard legal contracts will also help in this regard.
- Better understand how the market functions (and who is already receiving subsidy) so that public investment is additional to private, can encourage inclusion and transparency and delivers value for money in generating sustainable social, economic and environmental returns.
- Public-Private partnerships can encourage private finance to be used and directed in ways that the market would not necessarily dictate on financial return alone

Appendix 5: Round-table reactions to the 16 policy options

Ideas: Theme 1: Land values and land availability

Option 1 ideas

- Much of the data already exists but will be challenging to obtain, merge, and use. Can data for off-market transactions be made available/located?
- Land conveyancing is not final until the land registry is informed; the issue isn't that land is being sold in private but that it is not made visible until conveyancing is almost complete. There is a need to have more prior warning before it is a 'done deal'.
- Information on who owns land is important/transparency in landownership provides accountability.
- This is an important information gathering exercise/ 'basic step of evidence', and a robust evidence base is vital for policy / legislative development. However, questions arise as to whether it will have an immediate impact and/or effect change in itself. Transparency is considered to lead to change/impact, but it will be contentious because this will also lead to tax transparency.
- This option would require regulatory capacity and may not 'have much weight' unless legislated. There is a connection between increasing transparency (i.e. intelligence on land market dynamics, especially off-market sales) and the policy mechanism for a public interest test (Option 3).

Option 2 ideas

- Guidance is considered 'easy', but level of impact will depend on the 'weight' of the guidance, with the concern that a voluntary approach will potentially be ignored. This guidance could be linked to an accreditation of land stewardship.
- An easily accessible 'register' is considered desirable, and it is noted that investors' reputations do matter; 'the ethos and heritage of a company matters to the people in the area'. There should be 'conditions on inviting investment', i.e. demonstrating the benefits for place and people as well as the ethics of the organisation.
- It would be helpful if there was a list of priorities that investors must adhere to (as well as welcoming investors).

Option 3 ideas

- 'Public interest' is a good democratic basis for measuring activity, and there are parallels within the development sector. The public interest test will 'need clarity and bite', and political will, so as not to send weak signals and be avoided. Similar mechanisms are common in other developed countries (e.g. New Zealand), as well as within other sectors of the UK economy, for example under the rules of the Competition and Markets Authority.
- Option 3 is 'a significant growth area with the potential for win wins'.
- The definition of 'public interest' is very important, as well as the careful attention required to detail of the test and its implementation. Accountability will need to be 'increased'.
- The recommendation for a public interest test is also in motion in policy development (i.e. not novel) following Scottish Land Commission 2019 report. It is questioned as to whether it is possible to connect the LRRS on a statutory basis to the public interest test, and also the need for a 'cap'.
- Progress towards the public interest test is slow moving and the public interest test would be time intensive.
- Public interest tests should also include existing owners, although this would be contentious. An analogy is being a charity and having to regularly demonstrate to OSCR that you are fulfilling your charitable objectives. The outcome of this process would be mainly to advise on improvements (i.e. rather than taking away ownership); assessment would advise on better management, community engagement, etc.

- The public interest test could stipulate that land transfers must be in public domain, and if not, it would impact on the legal process. (Relates to Option 1). Similarly, the Land Registry could refuse to accept a new owner unless they go through the public interest test process.
- Questions were raised regarding the political feasibility and legality of Option 3, the impact on inward investment, and whether this option would be only for purchases by foreign buyers (or in addition to internal buyers) and what then could be the unforeseen/unintended consequences (e.g. people not wanting to look at Scotland to invest).
- Option 3 may stifle opportunity and innovation: 'The ability to freely trade property is key to investment in the country' and 'we need to be careful that we don't build something that builds something that looks backwards and not forwards; it needs to be agile and allow for change'; 'are we fixing [problems of today] in an agile way that will remain relevant in future?'. Participants state that there is a need to make sure the balance is right between innovation and other objectives (relating also to Option 12).
- Instead of Option 3, participants explained that they would prefer 'improvements to the planning system to improve scrutiny of woodland creation and peatland restoration proposals' (link to Option 14).

Theme 2: Collaborative approaches to natural capital investment for rural community win-wins

Option 4 ideas

- It would be easy to implement, a 'low bar', and should be best practice, linking to Scottish Land Commission protocols. However, such guidance has arguably been ongoing and perhaps with little impact (e.g. concerns mentioned regarding rewilding); 'guidance is just guidance'.
- It is suggested that it is necessary to ensure community involvement, and also to support the facilitation of community meetings, in order to navigate conflicts/contested interests. Communities may also benefit from training on undertaking engagement with landowners (i.e. training not only on the land management side), and to build community capacity.
- It is highlighted that guidance and training should be universal and authoritative and provide a shared understanding of the technicalities and the principles at stake. Codes can provide the underlying framework for this. Option 4 has the potential to become part of chartered accreditation/CPD.
- It is suggested that such 'guidance should extend beyond land managers to all market players who have a responsibility to ensure a credible marketplace', and that of all the stakeholders, land managers may have the least time and resources available.
- There is a need for professional advice for new landowners, especially to build understanding around the community context of land. It is perceived as 'a weakness of the lifestyle owners', e.g. new crofters with 'a dream'. (Linking also to Option 16.)

Option 16 ideas (interlinked with Option 4)

- There is a need to simplify carbon auditing for farmers, as well as to invest in science to clarify the exact amount of carbon emissions and sequestration that is occurring on farms.
- It is suggested that it is important to 'find the sweet spot' and not lose the benefits of current land management.

Option 5 ideas

- Option 5 is considered worthwhile and necessary regardless of the other options. It is proposed that a clear policy commitment to community landownership and incentives/policy drivers to make this default would not interfere with carbon markets for example, because the 'community as freeholder' can best balance wider interests (suggestion likely made by participant from outwith Scotland).
- It is believed that many of these alternative models already exist and require greater exposure, and confidence, to be used. Building capacity may be important to the success of Option 5, as

well as time, trust, and courage (bravery). It is suggested that funding is required to develop community ownership structures and business plans.

- A key challenge to Option 5 is the ongoing rise in land prices, putting land 'out of reach of communities', and therefore community ownership requires much greater levels of public support. It is suggested that communities should be given the first right to buy public land before the private sector, and that public money could support community ownership [assumed outwith Scotland].
- It is suggested to align Option 5 (and Option 6) with related policies such as the Scottish Land Fund, planning gain, amongst others, to give a proportionate subsidy to unlock markets for community landowners
- It is important that Option 5 is undertaken to ensure societal rather than personal benefit (not self-serving). Furthermore, participants asserted that Government money should only be used for public good and not to 'prop up' other projects.
- It is believed that legislation might be working against transfers, for example due to archaic deeds and clauses, and therefore legal issues can impact on communities.

Option 6 ideas

- Participants noted their lack of knowledge about community wealth building (CWB) and requested clearer definitions, as well as greater exploration of the concept.
- Option 6 is considered important, but it is questioned as to whether it is 'bold enough', especially as CWB requires policy change in many areas. There is a need to 'think through' the range of opportunities in Option 6 (e.g. implications for health and wellbeing). It must align with the interests of communities and involve community capacity building to enable communities to participate (learning from experience of onshore wind).
- It is suggested that Option 6 recognises the 'multiple scenarios of investment' and that not all created value can be distributed.
- It is highlighted that Options 5 and 6 are viewed as 'effectively philanthropic' and about 'ethical considerations', which can lead to 'sidelining' community/CWB as a 'niche approach'. Instead, it is important to align investor and other business interests, as well as consider the range of risks and opportunities, and for whom: 'who benefits and what is the opportunity cost?'. An appeals process would also have to be developed.
- It is believed that legislation might be working against transfers, for example due to archaic deeds and clauses, and therefore legal issues can impact on communities.

Theme 3: Land ownership concentration/distribution and access

It is noted that 'all the options are necessary' and should be considered 'in light of less land for agricultural use', but there needs to be a simplification of language and terminology.

Option 7 ideas

- There was strong agreement with Option 7, and suggested that it should align with the land matching service [assuming Scotland] and to have specific grant/loan funding available to support. This option could encourage either tenants or landowners to initiate joint ventures.
- 'Digital transformation agendas' could be applied to support land access.
- Supporting the establishment of farmer cooperatives could be a solution, with community members able to have shares (and dominant share interests) in cooperative organisations, as well as impacts on wider policy reform (e.g. future agricultural policy, hedgeland and carbon code, etc.).

Option 8 ideas

- It was noted that the Tenant Farming Commissioner (Scotland) is developing guidance for the agri-holdings sector. Participants called for 'sensible rents for tenant farmers'.
- It is suggested that there is a consideration of whether carbon ownership is necessary, or rather it relates to 'who owns the right to exploit the ability of land to sequester carbon'.

- There is a need for a practical approach because the tenant would typically have 'exclusive access', but they will need to work with the landlord, and vice-versa, to achieve carbon sequestration (for example). In Scotland it is believed there has been 'inertia' with regard to capital works on farms and taking strategic decisions (e.g. relating to water protection and diffuse pollution).
- It is explained that there is potential to conflict with terms of tenancy which may be to the detriment of the landlord (e.g. planting trees on productive agricultural land can have an adverse impact on capital value). There is however potential for collaboration across farming businesses through new codes (such as a hedge land carbon codes etc) to deliver benefits rather than extensive land use changes. This would also be more accessible to farming tenants without significant detriment to landowners.

Option 9 ideas

- Option 9 is considered 'good' and it is noted that 'fiscal instruments are essential'. Pension funds are 'looking positively to the future', therefore there is the opportunity to design a code for fair return to Government, etc. There is a need to incentivise private investment in peatland restoration.
- Tax reform will depend on HM Treasury tax strategy, and whether the tax system is to be used for re-distributive purposes and/or low carbon outcomes. Land prices could be determined according to carbon sequestration potential.
- Participants highlighted concerns with changing tax systems, stating that 'income tax relief unlikely to work where landlord is corporate entity' and that 'tax in a forestry context is the only constant in 30 years', and 'changing it will be a real risk'. Instead, it is suggested that a 'better approach' may be to remove land from CGT and IHT in favour of a 'predictable recurring tax on land values', which may in turn make it easier to incentivise behaviours.
- It is perceived that uncertainty on true long term land values is a potential risk to private sector investment.

Theme 4: Carbon and other ecosystem markets and market transparency

There is believed that 'all options are hard to disagree with', but there is a 'lack of attention in all options to reparations for other communities outwith UK border, and how these markets impact them, therefore a lack of attention also on aspects of justice and equity'.

Option 10 ideas

- Option 10 is 'essential if we are going to drive private investment into natural capital', otherwise it may be 'chaotic and likely to not deliver'. It is believed that 'ecosystem markets could collapse if the principles and technologies underpinning them aren't designed well'. Similarly, the 'challenge of a carbon-led market' was raised as it risks land use change rather than decisions made according to holistic ecosystem services benefits.
- There is an urgent need for a Soil Carbon Code within Option 10.
- Question of what is meant by 'high-integrity' and how can it be measured? There is a need for more funding for science to provide clarity on the way forward (for example, as suggested, the impact of trampling/traffic on carbon rich soils).
- There is a need for clear guidance and definitions for land managers, especially given the different carbon accreditation schemes (e.g. biodiversity net gain). It is also important to have high quality peatland restoration work, and therefore there is a need for training and upskilling businesses and land managers so that they can review the work that they commission and maintain. Collectively these schemes could be confusing for land managers to balance. Land managers also need more certainty on what guidance to follow for carbon auditing, and it is suggested that the NFU has a role to train and share best practice guidance. Understanding financial markets is also required by land managers.
- The mention of 'farming incomes' in this option is considered 'key' to deliver objectives (beyond the 'focus of the discussion') but future agricultural subsidy must also be accessible to smaller landowners. [Mention of 'Natural Capital Innovation Zone: Whole Farm Audit'].

- Communities should also be empowered to identify the assets that they own/could access that could be monetised, for example in a 'benefit sharing model' with ecosystem markets. It is believed that the 'market is likely to prioritise benefits for communities to avoid negative publicity', and that there is a 'market trend towards UK offsets with co-benefits'.
- Modern digital market infrastructure e.g. blockchain and digital ledgers could be a feature of Option 10, or it is suggested that 'new technology could communicate the WCC/PCC'.
- There is a need for a more transparent/legible tool/data on wider ESG factors in carbon sequestration schemes. This currently exists in the details of the woodland code, for example, but it is believed that few investors will 'dig enough' to find these details.

Option 11 ideas

- It is believed that Option 11 should be a high priority, but it was believed to be challenging to 'police', i.e. how could checks be undertaken and what the impact may be if checks indicated a buyer is not adhering/in accordance? It could be particularly challenging with regard to international investors, therefore it is suggested to consider limiting foreign purchasers.
- It may be necessary to have a central (UK) regulator (linking to Option 13).
- It is suggested that a 'robust panel of experts with transparent guidelines' could undertake buyer checks but that the 'market should pay', through higher fees from ecosystem markets/codes. However, there are questions regarding undertaking 'robust' buyer checks that would lead to actual rather than planned carbon emissions reductions.
- It is explained that SEPA is a regulator for the Emissions Trading Scheme, not including voluntary carbon markets. In our experience the use of codes for verification in voluntary markets does not currently differentiate between offsets and insets which can make it harder for people to do what we ultimately want them to do: to reduce the footprint of agriculture at source.
- Effective 'know your customer' checks are necessary to ensure bona fide investors.
- With regard to carbon, an approach to providing evidence that companies are following a 'mitigation hierarchy' would counter accusations of 'greenwash' (recognising challenges of 'politics' that apparently makes mitigation difficult) (relating also to Option 9 and 13).

Option 12 ideas

- Option 12 is 'probably essential' due to the requirement for 'blended finance to deliver public goods'. The question arises as to how much regulation should be involved.
- There is a need for structure and regulation in the market and there are risks of secondary trading, as a result of increasing distance from land and carbon commitment.
- It makes sense to have the same rules across the UK for the different codes, therefore highlighting the lack of an oversight body with a specific remit (link to Option 13). The point is also made that there are 'thousands of projects on the woodland carbon code', and the 'grant is devolved to Scottish Forestry, so it is a Scottish decision, but the same rules apply across England, Wales, and Scotland'.
- It is believed that there are 'real dangers in picking who might be suitable to invest in land-based activity', therefore it is stated that 'regulation of the 'what' rather than the 'who' is important'. It is noted that 'regulation makes sales difficult' (i.e. land transfers).
- In Scotland there are concerns regarding the lack of a good measure of cumulative impact. There is a need to 'broaden out' to other policies and to develop integrated policies. The suggestion is to look at other countries that have successful policy models, e.g. cooperative forestry plans in Sweden and Finland (recognising the different scale of average forest holding between Sweden and Scotland).
- It is suggested that the Scottish Government group currently looking at the future of agricultural funding don't look only at the RDP, SFP and Pillar one options. They should also look at the different ways that public money comes into land and to build on that, across different types of land uses (linking also to Option 14).

Option 13 ideas

- Option 13 is 'required' but remains 'problematic' and 'politically risky', as it is uncertain whether all four nations will agree and maintain agreement in the long term.
- It is believed that a UK oversight body would be useful, especially with regard to overseeing the credibility of UK-badged schemes, which could add value and would be 'valuable from a carbon investor point of view'. Multi-actor engagement is required, and it is suggested to 'use this project as a good example of bringing a range of stakeholders together to bash out issues and work to solutions-clear goals'.
- However, it is suggested that a 'UK advisory body' is established rather than a coordination body, which might be 'too slow to be of use at this time'. One role for this body could be to advise on contracts that deal with issues such as tree loss. The model of the JNCC may be appropriate.
- A UK body should be 'broader than carbon', and facilitate wider ecosystem services markets (e.g. a 'WRAP for natural capital markets'. There is a need for 'a set of universal principles to the development and operation of ecosystem markets in the UK, to increase compatibility between markets and investor confidence'. Furthermore, it is believed that 'infrastructure around these markets struggling to keep up with change' and a 'central body could help to keep up with this'.

Theme 5: Public policy, incentives and support

It is believed that 'many of the options are not feasible because they depend on landowners making decisions, often regardless of what their local community think'. However, it is 'not just about having a say, but ensuring that communities have a say that actually counts, despite the power imbalance between communities and landowners' (or 'local ownership and networked power'). The question arises of how we can better inspire people and communities to engage. However, it is also believed that communities 'don't necessarily want to actually control the decisions and have that responsibility' and tend to only respond to engagement when it is about a small area or a single issue.

It is also emphasised that it is important to keep in mind the longer term view to provide benefits from 'future upsides'. There is a need for a 'big picture and vision for Scotland', with regard to 'how private investment will shape Scotland's future'. The carbon sector should 'consider the wider conversation of what is happening in Scotland's rural areas', including depopulation, etc.

Option 14 ideas

- Option 14 is considered 'essential' and an 'admirable aim', but it is suggested that 'encouraging less formal collaboration is perhaps a worthwhile intermediate process'. Furthermore, there is a need for 'schemes to foster collaboration between land owners and tenants', as well as a place based approach. For example, there is the opportunity to learn from experiences in the Outer Hebrides regarding carbon investments, where the Scottish Government is the landowner and with tenants.
- There is a 'massive opportunity to give RLUPS a regulatory role' and to 'give weight to land use planning'. It is suggested that 'rooting development of policy in place mitigates many of the issues around other priority areas and provides a context for ranking / valuating'. However, it is stated that 'if RLUPs are the answer they are enormously under resourced!' and that they are 'not ready yet'.
- RLUPs are bringing landowners around the table to hear community views. Although this is voluntary and they are not bound to listen to communities, it is believed that 'early indications are positive, suggesting that landowners are being influenced'.
- It is suggested that 'land sharing using generational knowledge is less risky than large-scale change', and there is a need to facilitate farmer groups to consider future agricultural policy (linking to Option 15).
- With regard to land management plans, it is stated that forestry plans already exist and with public consultation. It is suggested that a condition of grant funding would be to only get funding with a land management plan (linking also to Option 15).

- It is noted that organisations such as SEPA will have background data on several environmental variables, therefore 'incorporating this data and working in partnership will allow new landowners to maximise benefits'. (Linking also to Option 10). Similarly, it is suggested that having 'successful conversations' with SEPA and other organisations would ensure the benefits of neighbouring process are 'realised, maximised, and coordinated'.

Option 15 ideas

- Option 15 is important, but it needs more detail ('slightly woolly') and may be more challenging to implement than Option 14 and 16. It is considered to 'rely on people on the ground to find answers', whereas it should be implemented carefully and have 'robust markets/data to drive it'. The assumption about area-based assessments may be political uncertain and 'area-based assessments is marginal'. However, some state that a 'move away from area basis is required', and that it 'needs to be integrated with regional targeting'.
- There is a risk of 'redistributing support to land managers who are not generating public benefits'. There is a need to acknowledge that 'not everyone can be winners'. There should be a 'cap on very large payments'. It 'makes sense to stop basic payments', but there is a need to 'factor in biodiversity and soil carbon'. The question arises: 'how would you incentivise that and ensure it's being done efficiently and for the right reasons?' There is a link here to the public interest test, and 'other restrictions on investment'.
- It is suggested that there should be 'more flexibility in how public payments are delivered', 'so that public and private finance can be blended appropriately', for example establishing public-private partnerships to benefit the market and 'Scotland PLC'.
- The question of whether planting support be based on need is raised, noting that current support could be driving up land prices.

Option 16 ideas

- Option 16 is 'a good idea', and 'almost essential', and easy to implement. It is explained that 'as new schemes develop specialist consultants are increasingly needed by land managers'.
- There is a need to 'bring together all relevant data sources to aid decision making', as well as 'more information for land managers to help planning', and 'an overarching policy framework to help align planning' (link with Option 12).
- It is explained that knowledge exchanges already being developed (e.g. by the Soil Association), but there is a need to have a single clear source, and that needs a procurement process for governments to properly resource and commission'.
- There is the opportunity to develop a 'community of practice', particularly within the public sector, on 'normal benefit levels and opportunities'. As was seen with onshore wind, levels of benefits vary due to lack of knowledge and understanding of the potential.

Endnotes

- ¹ Savills 2020. [Natural Capital](#). Savills Research Spotlight
- ² [Home - UK Woodland Carbon Code](#)
- ³ Press and Journal (2021) [‘Green lairds’: Scottish Land Commission boss vows to protect communities](#).
- ⁴ The carbon benefits of the projects are being independently verified through the Woodland Carbon Code and Peatland Code with resulting carbon units transferring to Shell.
- ⁵ UK Government (2022) Nature recover green paper. Available at: <https://www.gov.uk/government/consultations/nature-recovery-green-paper>
- ⁶ Scottish Government (2022) Scotland's National Strategy for Economic Transformation. Available online at: <https://www.gov.scot/publications/scotlands-national-strategy-economic-transformation/>
- ⁷ Scottish Wildlife Trust (2021) Trust and SEPA publish route map towards £1 billion for nature conservation. Available online at: <https://scottishwildlifetrust.org.uk/news/route-map-to-1-billion-for-nature-conservation-published/>
- ⁸ See for example the Strutt and Parker [Estates Sales Market Review](#) and [Scottish Farmland Market Review](#) and the night Frank [Scottish Farmland Index](#).
- ⁹ Poppea, D. (2018) [Towards Landownership Transparency in Scotland](#). Community Land Scotland.
- ¹⁰ Trench, H. (2021) [Shaping the Natural Capital market in the Public Interest](#). Scottish Land Commission blog article.
- ¹¹ See for example: Trench, H. (2021) (Endnote 11) and: Atkinson, G. and Ovando, P. (2021) [Distributional issues in natural capital accounting: An application to land ownership and ecosystem services in Scotland](#). *Environmental and Economic Resources*. 81. 215– 241.
- ¹² Green Finance Institute, eftec and Rayment Consulting (2021) [Finance Gap for UK Nature](#).
- ¹³ Institute for Government (2022) [Agricultural Subsidies after Brexit](#).
- ¹⁴ [Soil Carbon Code | About the Code \(sustainablesoils.org\)](#)
- ¹⁵ Benton, D., Plumpton, H., Elliott, J. and Kleczka, J. (2022) [Natural Capital: the battle for control](#). Green Alliance, London, UK.
- ¹⁶ UK Government (2021) [Government launches consultation on exit payments to farmers](#)
- ¹⁷ LRRG (2014) [The Land of Scotland and the Common Good](#). Report of the Land Reform Review Group.
- ¹⁸ Kendall H, Reed MS et al. (in prep.) Interest, influence and impact: 3i's stakeholder analysis
- ¹⁹ Carter, S., Manceur, A.M., Seppelt, R., Hermans-Neumann, K., Herold, M. and Verchot, L. 2017. [Large scale land acquisitions and REDD+: a synthesis of conflicts and opportunities](#). *Environmental Research Letters*, 12, 035010.
- ²⁰ Yang, B. and He, J. 2021. [Global Land Grabbing: A Critical Review of Case Studies across the World](#). *Land*, 10(3), 324.
- ²¹ Yang and He (2021) (see Endnote 20)
- ²² Land Matrix no date. [Land Matrix Deals](#) (www.landmatrix.org) [accessed 8th February 2022].
- ²³ Zagma, B. (2011) [Land and Power: the growing scandal surrounding the new wave of investments in land](#). Oxfam International
- ²⁴ See for example: Lerman, Z. 2014. [Attitudes toward the Lifting of the Moratorium on Land Sales and the Development of Land Markets in Ukraine](#). The Centre for Agricultural Economic Research, The Department of Agricultural Economics and Management, The Hebrew University of Jerusalem, Discussion Paper No. 7.13
- ²⁵ Lay, J., Anseeuw, W., Flachsbarth, C., Nubitza, C., Nolte, K., Giger, M. 2021. [Taking stock of the global land rush: Analytical report III](#). Land Matrix.
- ²⁶ Yang and He (2021) (see Endnote 20)
- ²⁷ Zagma (2011) (Endnote 22) and Yang and He (2021) (Endnote 20)
- ²⁸ Williams, T.G., Trush, S.A., Sullivan, J.A., Liao, C., Chesterman, N., Agrawal, A., Guikema, S.D. and Brown, D.G. (2021) [Land-use changes associated with large-scale land transactions in Ethiopia](#). *Ecology and Society*, 26, 4. and Davis, K.F., Rulli, M.C., D'Odorico, P. (2015) [The global land rush and climate change](#). *Earth's Future* 3, 298–311.
- ²⁹ International Land Coalition 2011. [Tirana declaration “Securing land access for the poor in times of intensified natural resources competition.”](#) International Land Coalition Global Assembly, Tirana, Albania.
- ³⁰ Bunkus, R. and Theesfeld, I. 2018. [Land grabbing in Europe? Socio-cultural externalities of large-scale land acquisitions in East Germany](#). *Land*, 7(3), 98.
- ³¹ Vidal, J. (2008) [The Great Green Land Grab](#). Guardian, Environment.
- ³² Fairhead, J., Leach, M., & Scoones, I. (2012). [Green grabbing: A new appropriation of nature?](#) *Journal of Peasant Studies*, 39(2), 237–261.
- ³³ Holmes, G. (2014) [What is a land grab? Exploring green grabs, conservation, and private protected areas in southern Chile](#). *The Journal of Peasant Studies*, 41 (4) 547-567.
- ³⁴ Fairhead et al. (2012) (see Endnote 32)
- ³⁵ Forest Trends' Ecosystem Marketplace. 2021. [‘Market in Motion’. State of Voluntary Carbon Markets 2021](#), Installment 1. Washington DC: Forest Trends Association.
- ³⁶ Mazzocchi, C., Orsi, L. and Sali, G. (2021) [Environmental, climate and socio-economic factors in large-scale land acquisitions \(LSLAs\)](#). *Climate Risk Management*, 32, 100316.
- ³⁷ Benton et al. (2022) (Endnote 15)
- ³⁸ Deininger, K.; Byerlee, D. (2018) [Rising Global Interest in Farmland](#); The World Bank: Washington DC, USA. and Carter et al. (2017) (Endnote 19)
- ³⁹ Livingstone, N., Gallent, N., Hamiduddin, I., Juntti, M., and Stirling, P. 2021. [Beyond Agriculture: Alternative Geographies of Rural Land Investment and Place Effects across the United Kingdom](#). *Land*, 10, 1153.
- ⁴⁰ Peskett, L. (2011) [Benefit sharing in REDDp: exploring the implications for poor and vulnerable people](#). Washington and London: World Bank and REDD-net.
- ⁴¹ See Davis et al. (2015) (Endnote 28); Yang and He (2021) (see Endnote 20); Lyons and Westoby (2014) (see Endnote 105)
- ⁴² Davis et al., (2015) (see Endnote 28)
- ⁴³ Knight Frank (2021) [The Rural Report 2021](#)
- ⁴⁴ Strutt and Parker 2021. [English Estates and Farmland Market Review. Winter 2020/21](#), and Strutt and Parker 2021. [Scottish Farmland Market Review, Spring 2021](#).
- ⁴⁵ Savills (2021) [The Farmland Market, UK Rural January 2021](#). Savills Research Spotlight; Savills (2020) (see Endnote 53) and Savills (2019) (see Endnote 54)
- ⁴⁶ Savills (2021) [GB Farmland Market in Minutes](#), Savills Research.
- ⁴⁷ Carter Jonas 2020. [Farmland Market Update, Q4 2020](#).

- ⁴⁸ Savills (2021) (see Endnote 45)
- ⁴⁹ Savills (2022) [The Farmland Market, UK Rural January 2022](#). Savills Research Spotlight, and Strutt and Parker 2021. [English Estates and Farmland Market Review, Winter 2020/21](#).
- ⁵⁰ Strutt and Parker (2021) [English Estates and Farmland Market Review, Winter 2020/21](#).
- ⁵¹ Strutt and Parker (2021) (see Endnote 50)
- ⁵² Strutt and Parker 2021. [Scottish Farmland Market Review, Spring 2021](#).
- ⁵³ Savills (2020) [The Farmland Market, UK Rural January 2020](#). Savills Research Spotlight
- ⁵⁴ Savills (2019) [The Farmland Market, UK Rural January 2019](#). Savills Research Spotlight
- ⁵⁵ Savills (2021) (see Endnote 45)
- ⁵⁶ Strutt and Parker 2021. [Scottish Farmland Market Review, Spring 2021](#).
- ⁵⁷ Savills (2021) (see Endnote 45) and Savills (2022) (see Endnote 49)
- ⁵⁸ Savills (2019) (see Endnote 54); and Savills (2020) (see Endnote 53)
- ⁵⁹ Savills (2018) [The Farmland Market, UK Rural January 2018](#). Savills Research Spotlight.
- ⁶⁰ Savills (2019) (see Endnote 54)
- ⁶¹ Savills (2022) (see Endnote 49)
- ⁶² Carter Jonas (2018) [Rural Research Bulletin Q2](#)
- ⁶³ Savills (2022) (see Endnote 49)
- ⁶⁴ Strutt and Parker (2021) [English Estates and Farmland Market Review, Winter 2020/21](#).
- ⁶⁵ Strutt and Parker (2021) [Scottish Farmland Market Review, Spring 2021](#); Strutt and Parker 2021. [Scottish Farmland Market Review, Spring 2021](#); and Savills (2020) (see Endnote 53)
- ⁶⁶ Savills 2022 (see Endnote 49) and Savills (2021) (see Endnote 45)
- ⁶⁷ Strutt and Parker (2021) (see Endnote 56) and Strutt and Parker 2017. [Scottish Farmland Market Review, Spring 2017](#).
- ⁶⁸ Strutt and Parker (2021) (see Endnote 65)
- ⁶⁹ Hindle, R., Thomson, S., McMorran, R., Onea, P. 2014. [Economic contribution of estates in Scotland: An economic assessment for Scottish Land and Estates](#).
- ⁷⁰ Strutt and Parker (2021) (see Endnote 50)
- ⁷¹ Data taken from Strutt and Parker Estate sales market reports (2016-2021)
- ⁷² Strutt and Parker (2016) [Scottish Estates Market Review, Spring 2016](#).
- ⁷³ Strutt and Parker (2021) [Scottish Estates Market Review, Spring 2021](#).
- ⁷⁴ Strutt and Parker (2021) (see Endnote 73)
- ⁷⁵ Strutt and Parker (2021) (see Endnote 73)
- ⁷⁶ Strutt and Parker 2020. [Scottish Estates Market Review, Spring 2020](#).
- ⁷⁷ Hindle et al. (2014) (see Endnote 69)
- ⁷⁸ Strutt and Parker (2021) (see Endnote 73)
- ⁷⁹ Strutt and Parker (2020) (see Endnote 76) and Strutt and Parker (2021) (see Endnote 73)
- ⁸⁰ Strutt and Parker (2020) (see Endnote 76)
- ⁸¹ Cramb (2000) [Who Own's Scotland Now? The Use and Abuse of Private Land](#). Edinburgh: Mainstream.
- ⁸² Hindle et al. (2014) (see Endnote 69)
- ⁸³ Strutt and Parker (2017) [Scottish Estates Market Review, Spring 2017](#).
- ⁸⁴ Strutt and Parker (2018) [Scottish Estates Market Review, Spring 2018](#). and Strutt and Parker (2017) (see Endnote 83)
- ⁸⁵ Tilhill and John Clegg and Co. (2021) [UK Forestry market Report](#).
- ⁸⁶ Tilhill and John Clegg and Co. (2021) (see Endnote 85)
- ⁸⁷ Tilhill and John Clegg and Co. (2021) (see Endnote 85)
- ⁸⁸ Tilhill and John Clegg and Co. (2021) (see Endnote 85)
- ⁸⁹ Savills 2021. [UK Forestry Market, UK Rural April 2021](#). Savills Research Spotlight.
- ⁹⁰ Savills 2020. [Rural Land and Carbon](#). Savills Research Spotlight.
- ⁹¹ For further detail see Section 4.1 and 5.3 and the UK Woodland Carbon Code [website](#).
- ⁹² Tilhill and John Clegg and Co. (2021) (see Endnote 85)
- ⁹³ Savills (2020) (see Endnote 90)
- ⁹⁴ Savills (2020) (see Endnote 53)
- ⁹⁵ and Strutt and Parker (2021) (see Endnote 56)
- ⁹⁶ Savills 2022 (see Endnote 47)
- ⁹⁷ For recent examples see the Reuters report: Marshall (2022) [Who owns Scotland? The rise of green lairds](#).
- ⁹⁸ Strutt and Parker (2021) (see Endnote 73)
- ⁹⁹ Savills 2022. [The Business of Rewilding](#). Savills Research Spotlight.
- ¹⁰⁰ Strutt and Parker (2021) (see Endnote 73)
- ¹⁰¹ Knight Frank (2021) (see Endnote 43)
- ¹⁰² Savills (2022) (see Endnote 49)
- ¹⁰³ Savills (2022) (see Endnote 49)
- ¹⁰⁴ Matthews, K., Wardell-Johnson, D., Miller, D., Fitton, N., Jones, E., Bathgate, S., Randle, T., Matthews, R., Smith, P., & Perks, M. 2020. ['Not seeing the carbon for the trees? Why area based targets for establishing new woodlands can limit or underplay their climate change mitigation benefits'](#), *Land Use Policy*, 97, 104690; and Knight Frank (2021) (see Endnote 43).
- ¹⁰⁵ Lyons, K. and Westoby, P. (2014) [Carbon colonialism and the new land grab: Plantation forestry in Uganda and its livelihood impacts](#). *Journal of Rural Studies*, 36, 13-21.
- ¹⁰⁶ Lyons and Westoby (2014) (see Endnote 105)
- ¹⁰⁷ Including the [United Nations' REDD+ program](#), the [Kyoto Protocol's Clean Development Mechanism](#) and the [EU's Emissions Trading System](#)
- ¹⁰⁸ Came, M., Harthan, R.O., Fussler, J., Lazarus, M., Lee, C.M., Erickson, P. and Spalding-Fecher, R. (2016) [How additional is the Clean Development Mechanism: Analysis of the application of current tools and proposed alternatives](#). Study prepared for DG CLIMA, Berlin 2016.
- ¹⁰⁹ Franco, J.C., Borrás, S.M., 2021. [The global climate of land politics](#). *Globalizations* 18, 1277–1297.
- ¹¹⁰ Streck, C. (2020) [Who Owns REDD+? Carbon Markets, Carbon Rights and Entitlements to REDD Finance](#). *Forests* 2020, 11(9), 959;
- ¹¹¹ Forest Research (2018) [Woodland carbon Code Statistics](#). Forest Research.
- ¹¹² Reed et al (2022)

- ¹¹³ Benton et al. (2022) (see Endnote 15)
- ¹¹⁴ Burke J., Byrnes, R. and Fankhauser, S. 2019. [How to price carbon to reach net-zero emissions in the UK](#). London: Grantham Research Institute on Climate Change and the Environment and Centre for Climate Change Economics and Policy, London School of Economics and Political Science.
- ¹¹⁵ Francis A., and Elliott, J., 2019. [New routes to decarbonise land use with Natural Infrastructure Schemes](#), Green Alliance and National Trust.
- ¹¹⁶ Savills (2020) (see Endnote 90)
- ¹¹⁷ Benton et al., (2022) (see Endnote 15)
- ¹¹⁸ Benton et al., (2022) (see Endnote 15)
- ¹¹⁹ Reed et al (2022)
- ¹²⁰ Coyne, L., Kendall, H., Hansda, R., Reed, M. S., & Williams, D. J. L. (2020). [Identifying economic and societal drivers of engagement in agri-environmental schemes for English dairy producers](#). *Land Use Policy*, 105174.
- ¹²¹ Kuhfus, L., Rivington M., and Roberts M. 2018. [The Payments for Ecosystem Services Approach - Relevance to Climate Change](#). ClimateXChange Briefing; and Benton et al. (2022) (Endnote 15)
- ¹²² Benton et al. (2022) (see Endnote 15)
- ¹²³ Findings summarised and adapted from Benton et al. (2022) (Endnote 15); and Committee on Climate Change 2020. [Land use: Policies for a Net Zero UK](#). Committee on Climate Change Copyright 2020.
- ¹²⁴ Elliot et al., 2022 (see Endnote 15) Reed et al. (2022)
- ¹²⁵ Cheshire, P. and Vermeulen, W. (2009) [Land Markets and their Regulation: The Welfare Economics of Planning](#). In Geyer, H.S., International handbook of urban policy, vol. II: issues in the developed world. Cheltenham, UK.
- ¹²⁶ McKee, A., Sutherland, L., Hopkins, J. and Flanigan, S. (2018) [Increasing the Availability of Farmland for New Entrants to Agriculture in Scotland](#). Report for the Scottish Land Commission.
- ¹²⁷ Strutt and Parker (2021) (see Endnote 73)
- ¹²⁸ For discussion of the influence of land markets, including the role of off-market sales see Section 4 of the [Interim Report of the Scottish Affairs Committee on land Reform in Scotland](#).
- ¹²⁹ The Strutt and Parker Farmland, Estates and Forestry land indexes do include a significant proportion of total rural land sales and include enriched data (on buyer motivations etc.) in around 50% of cases.
- ¹³⁰ Savills (2020) [Global Farmland Index](#). Savills Research Spotlight.
- ¹³¹ Wightman 1996. [Who Own's Scotland?](#) Edinburgh: Cannongate.
- ¹³² Poppea (2018) (see Endnote 10)
- ¹³³ Swinnen, J., Pavel, C., and d'Artis, K. 2008. [Study on the Functioning of Land Markets in the EU Member States under the Influence of Measures applied under the Common Agricultural Policy](#). EERI Research Paper Series, No. 04/2008. Economics and Econometrics Research Institute (EERI), Brussels.
- ¹³⁴ Swinnen et al. (2008) (see Endnote 133)
- ¹³⁵ Baldoni, E. and Ciaian, P. 2021. [The Capitalisation of CAP Subsidies into Land Rents and Land Values in the EU](#). Publications Office of the European Union, Luxembourg. JRC125220.
- ¹³⁶ Wu, J. and Lin, H. 2010. [The Effects of the Conservation Reserve Program on Land Values](#). *Land Economics*. 86, (1) 1-21.
- ¹³⁷ Savills (2020) (see Endnote 90)
- ¹³⁸ Savills (2020) (see Endnote 90); and Savills 2020 (see Endnote 1)
- ¹³⁹ McKee et al. (2018) (see Endnote 126); and Jaevicious, A., Huston, S. and Baum, A. (2015) [Two centuries of farmland prices in England?](#) Said Business School Research Papers, University of Oxford 2015-8).
- ¹⁴⁰ Thomson, S., Moxey, A., Wightman, A., McKee, A., Miller, D., Brodie, E., Glass, J., Hopkins, J., Matthews, K., Thomson, K., McMorran, R., and Bryce, R. (2016) [The impact of diversity of ownership scale on social, economic and environmental outcomes: Exploration and case studies](#). Scottish Government commissioned report.
- ¹⁴¹ See for example: Keane, K. (2019) [Turning forestry land into farms policy needs urgent review](#). BBC News
- ¹⁴² National Farmers Unions for Scotland (2017) New Generations Survey.
- ¹⁴³ McKee et al. (2018) (see Endnote 126) and The Scottish Tenant Farmers Association (2008) [Barriers to New Entrants to Scottish Farming](#)
- ¹⁴⁴ EIP-AGRI Focus Group (2016) [New Entrants into farming: lessons to foster innovation and entrepreneurship.](#); and Conway, S. Farrell, M., McDonagh, J., Kinsella, A. (2020) [Mobilising Land Mobility in the European Union: An Under-Researched Phenomenon](#). *International Journal of Agricultural Management*, 9, 7-11.
- ¹⁴⁵ Scottish Farm Land Trust (2017) [Wanted: Land for New Farmers](#). Nourish Scotland and Scottish Farm Land Trust.
- ¹⁴⁶ Savills (2021) (see Endnote 45)
- ¹⁴⁷ CAAV (2021) CAAV [Agricultural Land Occupation Survey](#) 2020.
- ¹⁴⁸ Scottish Government (2014) [Scottish Agricultural Tenure Evidence Review](#) and Scottish Government (2017) [Economic Report on Scottish Agriculture 2016](#)
- ¹⁴⁹ McKee et al. (2018) (see Endnote 126)
- ¹⁵⁰ Thomson, S., McMorran, R. and Perez Certucha, E. (2019) [Small Landholdings in Scotland – An Assessment](#). Commissioned report for Scottish Government (Underpinning Policy Advice).
- ¹⁵¹ Committee on Agriculture and Rural Development 2017. [On the state of play of farmland concentration in the EU: how to facilitate the access to land for farmers](#). European Parliament. (2016/2141(INI)).
- ¹⁵² Shrubsole, G. (2019) *Who Owns England?: How We Lost Our Green and Pleasant Land, and How to Take It Back*. Harper Collins.
- ¹⁵³ Benton et al. (2022) (Endnote 15)
- ¹⁵⁴ European Parliament, Directorate-General for Internal Policies of the Union Franco, J., Kay, S., Peuch, J. 2016. [Extent of farmland grabbing in the EU](#), European Parliament.
- ¹⁵⁵ LRRG (2014) (see Endnote 17)
- ¹⁵⁶ LRRG (2014) (see Endnote 17)
- ¹⁵⁷ Glenn, S., MacKessack-Leitch, J., Pollard, K., Glass, J., and McMorran, R., (2019), [Investigation into the Issues Associated with Large scale and Concentrated Landownership in Scotland](#). SLC.
- ¹⁵⁸ Hindle et al. (2014) (see Endnote 69)
- ¹⁵⁹ LRRG (2014) (see Endnote 17)
- ¹⁶⁰ Livingstone et al. (2021) (See Endnote 39)

- ¹⁶¹ Kay, S.; Peuch, J.; Franco, J. [Extent of Farmland Grabbing in the EU](#). European Union 2015 and Franco, J., & Borrás, S. M. Jr. (Eds.). (2013). [Land concentration, land grabbing and peoples' struggles in Europe](#). (Transnational Institute for the European Coordination of Via Campesina and Hands off our land Network).
- ¹⁶² See Bunkus and Theesfeld (2018) (see Endnote 30).
- ¹⁶³ Fairhead et al. (2012) (see Endnote 32)
- ¹⁶⁴ Davis et al., 2015 (see Endnote 28); and Faguet, J.P., Sanchez, F. and Villaveces, M.J. 2016. [The paradox of land reform, inequality and local development in Colombia](#). The London School of Economics and Political Science, London, UK.
- ¹⁶⁵ Desmarais, A., Qualman, D., Magnan, A., and Wiebe, N. (2015) [Land grabbing and land concentration: Mapping changing patterns of farmland ownership in three municipalities in Saskatchewan, Canada](#). *Canadian Food Studies*, 2 (1) 16-47.
- ¹⁶⁶ Desmarais et al. (2015) (see Endnote 165)
- ¹⁶⁷ See for example: Keane, (2019) (see Endnote 141) and BBC News online, 6 August 2021, 'Tree-planting: why are large investment firms buying Welsh farms?' www.bbc.co.uk/news/uk-wales-58103603
- ¹⁶⁸ The Nature Conservancy (2019) [Investing in nature private finance for nature-based resilience](#). The Nature Conservancy and Environmental Finance.
- ¹⁶⁹ Buchenreider, G. and Möllers, J. (2009) Structural change in Europe's rural regions Farm livelihoods between subsistence orientation, modernisation and non-farm diversification. IAMO, 2009.
- ¹⁷⁰ Thomson et al. (2016) (see Endnote 140)
- ¹⁷¹ Atkinson and Ovando (2021) (see Endnote 12)
- ¹⁷² Benra, F. and Nahuelhual, L. (2019) [A trilogy of inequalities: Land ownership, forest cover and ecosystem services distribution](#). *Land Use Policy*, 82, 247-257. And Riley and Gardiner (2020) [Examining the distributional equity of urban tree canopy cover and ecosystem services across the United States](#). *POLS ONE* 15(3).
- ¹⁷³ Atkinson and Ovando (2021) (see Endnote 12)
- ¹⁷⁴ Unearthed (2017) [Common Agricultural Policy: Rich list receive millions in EU subsidies](#).
- ¹⁷⁵ Munday, M., Bristow, G., and Cowell, R. (2011) [Wind farms in rural areas: how far do community benefits from wind farms represent a local economic development opportunity?](#) *Journal of Rural Studies* 27, 1–12
- ¹⁷⁶ Committee on Climate Change (2020) (see Endnote 123)
- ¹⁷⁷ UK Government (2020) UK Government (2020) [PM commits to protect 30% of UK land in boost for biodiversity](#). Press Release, Prime Ministers Office, September 2020.
- ¹⁷⁸ Committee on Climate Change (2020) (see Endnote 123)
- ¹⁷⁹ Scottish Government (2020) [Economic report on Scottish agriculture tables: 2020 edition](#)
- ¹⁸⁰ Woodland Expansion Advisory Group (2012) [Report of the Woodland Expansion Advisory Group](#). To the Cabinet Secretary for Rural Affairs and Environment, Richard Lochhead, MSP. June, 2012.
- ¹⁸¹ Committee on Climate Change (2020) (see Endnote 123)
- ¹⁸² Sing, L. and Aitkenhead, M. (2020) [Analysis of Land Suitability for Woodland Expansion in Scotland: update 2020](#) *ClimateXChange*, Edinburgh
- ¹⁸³ Slee, B., Brown, I., Donnelly, D., Gordon, I.J., Matthews, K., and Towers, W., 2014. The 'squeezed middle': [Identifying and addressing conflicting demands on intermediate quality farm land in Scotland](#). *Land Use Policy*, 41, 206-216.
- ¹⁸⁴ Woodland Expansion Advisory Group (2012) [Report of the Woodland Expansion Advisory Group](#). To the Cabinet Secretary for Rural Affairs and Environment, Richard Lochhead, MSP. June, 2012.; Dandy, 2012
- ¹⁸⁵ Matthews et al. (2020) (See Endnote 104)
- ¹⁸⁶ Payne, R., Anderson, A., Sloan, T., Gilbert, P., Newton, A., Ratcliffe, J., Mauquoy, D., Jessop, W & Andersen, R. (2018) [The future of peatland forestry in Scotland: balancing economics, carbon and biodiversity](#). Scottish Forestry.
- ¹⁸⁷ Benton et al., (2022) (see Endnote 15); and Terra Motion (2021) [Game-changing satellite map identifies peatland areas where restoration has the greatest carbon impact](#) (www.peatmotion.co.uk) [accessed 8th February, 2022].
- ¹⁸⁸ Benton et al., (2022) (see Endnote 15)
- ¹⁸⁹ Benton et al., (2022) (see Endnote 15)
- ¹⁹⁰ SAC (2007) Farming's Retreat from the Hills; Thompson (2011) Response from the hills: Business as usual or a turning point?; Dax, T., Schroll, K., Machold, I., Derszniak-Noirjean, M., Schuh, B., Gaupp-Berghausen, M. (2021) [Land Abandonment in Mountain Areas of the EU: An Inevitable Side Effect of Farming Modernization and Neglected Threat to Sustainable Land Use](#). *Land*, 10, 591.
- ¹⁹¹ Crowle, A.J.W., Graves, D.J., Oakley, N., Drewitt, A.L. and Denmark-Melvin, M.E. (2022) [Alternative future land use options in the British uplands](#). Ibis.
- ¹⁹² Bateman, J. and Balmford, I. 2018. [Public funding for public goods: A post Brexit perspective on principles for environmental policy](#). *Land Use Policy*, 79, 293- 300.
- ¹⁹³ McMorran, R., Thomson, S. and Glass, J. (2020) [Socio-economic impacts of moorland activities in Scotland: Part 1 Part 1 of Research to assess socioeconomic and biodiversity impacts of driven grouse moors and to understand the rights of gamekeeper](#). Commissioned report for Scottish Government.
- ¹⁹⁴ Brooker, R. W., Thomson, SG., Matthews, K. B., Hester, A. J., Newey, S., Pakeman, R. J., Miller, D., Mell, V., Aalders, I., McMorran, R., & Glass, J. (2019). [Socioeconomic and biodiversity impacts of driven grouse moors in Scotland](#): Summary Report. SEFARI.
- ¹⁹⁵ Wightman, A. & Tingay, R.E. 2015. [The Intensification of Grouse Moor Management in Scotland](#). Commissioned and published by the League Against Cruel Sports; Graves, D., Morecroft, M., Fitzgibbon, C., Owen, M., Phillips, S. & Leppitt, P. (2013) [The effects of managed burning on upland peatland biodiversity, carbon and water](#). Peterborough: Natural England Upland Evidence Review NEER004; Holden, J., Palmer, S.M., Johnston, K., Wearing, C., Irvine, B. & Brown, L.E. (2015) [Impact of prescribed burning on blanket peat hydrology](#). *Water Resour. Res.* 51: 6472–6484; Heinemeyer, A., Vallack, H.W., Morton, P.A., Pateman, R., Dytham, C., Ineson, P., McClean, C., Bristow, C. & Pearce-Higgins, J.W. 2020. [Restoration of heather dominated blanket bog vegetation on grouse moors for biodiversity, carbon storage, greenhouse gas emissions and water regulation: comparing burning to alternative mowing and uncut management](#). Final report to Defra (Project BD5104).
- ¹⁹⁶ Scottish Government (2020) [Scottish Government response to the report from the Grouse Moor Management Group](#).
- ¹⁹⁷ McMorran et al. (2020) (See Endnote 193); Crowle et al. (2022) (see Endnote 191)
- ¹⁹⁸ McMorran et al. (2020) (See Endnote 193)
- ¹⁹⁹ Matthews, K.B., Miller, D.G., Mell, V., Aalders, I.H. (2018) Socio-economic and biodiversity impacts of driven grouse moors in Scotland: [Part 3. Use of GIS/remote sensing to identify areas of grouse moors, and to assess potential for alternative land uses](#).
- ²⁰⁰ Savills (2022) [The Business of Rewilding](#). Savills Research Spotlight.

- ²⁰¹ Brown, C., McMorran, R. and Price, M. 2012. [Rewilding – A New Paradigm for Nature Conservation in Scotland?](#) *Scottish Geographical Journal*. 127(4), 288- 314.
- ²⁰² Martin, A., Fischer, A., McMorran, R., & Smith, M. (2021). [Taming rewilding - from the ecological to the social: How rewilding discourse in Scotland has come to include people](#). *Land Use Policy*, 111.
- ²⁰³ Scottish Land Commission (2020) [Transparency of Ownership and Land Use](#). The second Land Rights and Responsibilities Protocol.
- ²⁰⁴ [Land Register of Scotland - Registers of Scotland \(ros.gov.uk\)](#)
- ²⁰⁵ Scottish Government (2021) [Land reform: Register of persons holding a controlled interest in land - gov.scot \(www.gov.scot\)](#)
- ²⁰⁶ Scottish Land Commission 2021. [Legislative proposals to address the impact of Scotland's concentration of land ownership. A discussion paper from the Scottish Land Commission](#).
- ²⁰⁷ Glass, J., Bryce, R., Combe, M., Hutchison, N., Price, M. F., Schulz, L., & Valero, D. E. 2018. [Research on interventions to manage land markets and limit the concentration of land ownership elsewhere in the world](#). Scottish Land Commission.
- ²⁰⁸ Scottish Land and Estates 2021. [SLE's response to the Scottish Land Commission \(SLC\) discussion paper](#).
- ²⁰⁹ Bunkus and Theesfeld (2018) (see Endnote 30)
- ²¹⁰ Mure J (2022). Balancing rights and interests in Scottish land reform. Scottish Land Commission. Available online at: https://www.landcommission.gov.scot/downloads/620f73b06cbc1_Land%20Lines%20-%20Balancing%20rights%20and%20interests%20in%20Scottish%20land%20reform.pdf
- ²¹¹ MacGregor, B. D. and Stockdale, A. (1994): Land use change on Scottish Highland estates. *Journal of Rural Studies* 10(3): 301-9; Higgins, P., Wightman, A., MacMillan, D. (2002) [Sporting Estates and Recreational Land Use in the Highlands and Islands of Scotland](#). Economic and Social research Council.; and McKee, A., 2015. [Legitimising the laird? Communicative action and the role of private landowner and community engagement in rural sustainability](#). *Journal of Rural Studies*, 41, 23- 36.
- ²¹² Glenn, S., MacKessack-Leitch, J., Pollard, K., Glass, J., and McMorran, R., 2019. [Investigation into the Issues Associated with Large scale and Concentrated Landownership in Scotland](#). Scottish Land Commission.
- ²¹³ Glass, J. McMorran, R., and McKee, A. 2012. [Working Together for Sustainable Estate Communities - Exploring the potential of collaborative initiatives between privately-owned estates, communities and other partners](#). University of the Highlands and Islands Perth College, Centre for Mountain Studies; and Roberts, D. and McKee, A. 2015. [Exploring barriers to community land-based activities](#). Report for the Scottish Government.
- ²¹⁴ Scottish Government (2018) [Engaging communities in decisions relating to land: guidance](#). Scottish Government, Environment and Forestry Directorate.
- ²¹⁵ Scottish Land Commission (2019) [Community Engagement in Decisions Relating to Land](#). Good Practice Programme, Protocol Series.
- ²¹⁶ McKee (2015) (see Endnote 211) Glass et al. (2012) (see Endnote 213)
- ²¹⁷ McMorran, R., Scott, A.J. and Price, M. 2014. [Reconstructing sustainability: participant experiences of community land tenure in North West Scotland](#). *Journal of Rural Studies*, 33, 20-31.
- ²¹⁸ Macaulay, B. and Dalgligh, C. (2021) Community landowners and the climate emergency. Research report undertaken by Inherit for Community Land Scotland
- ²¹⁹ McMorran, R., Lawrence, A., Glass, J., Hollingdale, J., McKee, A., Campbell, D., & Combe, M. (2018). [Review of the effectiveness of current community ownership mechanisms and of options for supporting the expansion of community ownership in Scotland](#). Scottish Land Commission.
- ²²⁰ [Peatland ACTION \(carlowayestatetrust.co.uk\)](#)
- ²²¹ Woodland Trust (2021) [Assynt Foundation and Woodland Trust Scotland Announce Historic 30-Year Partnership](#). Woodland Trust Press Release [accessed February 8th 2022].
- ²²² McMorran, R., Glass, J., Atterton, J., Jones, S., Perez Certucha, E., McKee, A. J., Combe, M., & Xu, T. (2020). [Review of International Experience of Community, Communal and Municipal Ownership of Land](#). Scottish Land Commission.
- ²²³ [30-Year Partnership with Assynt Foundation - Woodland Trust](#)
- ²²⁴ See for example the [Highlands Rewilding](#) initiative and the [Northwoods Rewilding Fund](#).
- ²²⁵ Brownson, K., Guinessy, E., Carranza, M., Esquivel, M., Hesselbach, H., Madrid Ramirez, L., Villa, L. 2019. [Community Based Payments for Ecosystem Services \(CB-PES\): Implications of community involvement for program outcomes](#). *Ecosystem Services*, 39, 100974; and Hayes and Murtinho 2018. [Communal governance, equity and payment for ecosystem services](#). *Land Use Policy*, 79, 123- 136
- ²²⁶ McKee et al. (2018) (see Endnote 126)
- ²²⁷ [Scottish Land Matching Service | Opportunities in Scottish Farming \(slms.scot\)](#) [Accessed February 4th 2022]
- ²²⁸ <https://landmobility.ie> [Accessed February 4th 2022]
- ²²⁹ [Land Partnerships Service | Fresh Start Land Enterprise](#) [Accessed February 4th 2022]
- ²³⁰ Duesberg et al. (2017) Retirement farming or sustainable growth – land transfer choices for farmers without a successor. *Land Use Policy*, 61,526-535 <https://doi.org/10.1016/j.landusepol.2016.12.007>
- ²³¹ Grubbstrom, A. and Eriksson, C. (2018) [Retired Farmers and New Land Users: How Relations to Land and People Influence Farmers' Land Transfer Decisions](#). *Sociologia Ruralis*, 58 (4).
- ²³² McKee et al., 2018 (see Endnote 126); Alma Economics 2020. [Land and property taxation in Scotland. Initial scoping of options for reform](#). Report for the Scottish Land Commission.
- ²³³ Benton et al., (2022) (see Endnote 15)
- ²³⁴ Committee on Climate Change (2020) (see Endnote 122)
- ²³⁵ Heritage Fund, National Trust and Foundation for Common Land (2019) [Our Common Cause: Our Uplands Commons. Landscape Conservation Action Plan](#). November, 2019.
- ²³⁶ [Scottish Farmland Trust](#) (Accessed February 3rd 2022)
- ²³⁷ Steps, Institute of Development Studies and Land Workers Alliance (2019) [Why access to land is vital for sustainable, healthy and fair food systems Strategies for increasing access to land for agroecological farming](#). Summary paper, October, 2017.
- ²³⁸ Alma Economics (2018) (see Endnote 232)
- ²³⁹ See for example proposals for a Land Value Tax by the [Scottish Green Party](#) and [proposals considered by the UK Labour Party](#) including a Land Value Tax.
- ²⁴⁰ Hughes, C., McCluskey, W., Sayce, S., Shepherd, E., Wyatt, P. 2018. [Investigation of Potential Land Value Tax Policy Options for Scotland. Final Report](#). Scottish Land Commission; and McKee et al. (2018) (see Endnote 126).
- ²⁴¹ Alma Economics (2018) (See Endnote 232)
- ²⁴² Reed et al. (2022)
- ²⁴³ Reed et al. (2022)

-
- ²⁴⁴ Reed et al. (2022).
- ²⁴⁵ UK Government (2019) Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/850130/Env-reporting-guidance_inc_SECR_31March.pdf
- ²⁴⁶ Committee on Climate Change (2020) (see Endnote 123)
- ²⁴⁷ Committee on Climate Change (2020) (see Endnote 123)
- ²⁴⁸ Benton et al., (2022) (see Endnote 15)
- ²⁴⁹ Slee, B., Brown, I., Donnelly, D., Gordon, I.J., Matthews, K., and Towers, W., 2014. The 'squeezed middle': [Identifying and addressing conflicting demands on intermediate quality farm land in Scotland](#). *Land Use Policy*, 41, 206-216.
- ²⁵⁰ Glass, J., Reed, M.S., McMorran, R. and Waylen, K.A. (2021) A review of place-based natural capital frameworks relevant for Regional Land Use Partnerships. Report for ClimateXChange.
- ²⁵¹ Finance Earth and Economics for the Environment Consultancy (2021) [Facilitating Local Natural Capital Investment. Literature Review](#). NatureScot. Research Report No. 1260.
- ²⁵² Ostrom, E., 2009. A General Framework for Analyzing Sustainability of Social-Ecological Systems. *Science* 325 (5939), pp. 419–422. Ostrom, E., 1990. *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press, Cambridge.
- ²⁵³ Burchardt, J., Doak, J. and Parker, G. 2020. [Review of Key Trends and Issues in UK Rural: Land Use](#). Report to the Royal Society, University of Reading, 2020.
- ²⁵⁴ Baldoni and Ciaian (2021) (see Endnote 135)
- ²⁵⁵ Moxey, A., McCracken, D. and Thomson, S. (2021) Environmental Conditionality on Direct Payments to Land Managers. SRUC report for Scottish Government Rural and Environment Science and Analytical Services.
- ²⁵⁶ Baldoni and Ciaian (2021) (see Endnote 135)
- ²⁵⁷ Bateman, J. and Balmford, I. 2018. [Public funding for public goods: A post Brexit perspective on principles for environmental policy](#). *Land Use Policy*, 79, 293-300.
- ²⁵⁸ Kuhfus et al., (2018)
- ²⁵⁹ Benton et al., (2022) (see Endnote 15)
- ²⁶⁰ Mills, J., Gaskell, P., Reed, M., Short, C., Ingram, J., Boatman, N., Jones, N., Conyers, S., Carey, P., Winter, M., and Lobley, M. (2013) [Farmer attitudes and evaluation of outcomes to on-farm environmental management](#). Report for DEFRA CCRl: Gloucester
- ²⁶¹ Khanal et al. (2017) [Evaluating non-industrial private forest landowner willingness to manage for forest carbon sequestration in the southern United States](#). *Forest Policy and Economics* 75, 112-119. And Sorice, M.G., Kreuter, U.P., Wilcox, B.P. and Fox, W.E. (2014) [Changing landowners, changing ecosystem? Land-ownership motivations as drivers of land management practices](#). *Journal of Environmental Management*, 133, 144-152.
- ²⁶² McMorran, R. 2021. [Key drivers for land manager decision making in Loch Lomond and the Trossachs National Park and opportunities for addressing constraints to woodland creation](#). SEFARI Fellowship with Loch Lomond and Trossachs National Park Authority.
- ²⁶³ O'Brien, L., Ambrose-Oji, B., Hemery, G., Petrokofsky, G., and Raum, S. (2018) [Payments for ecosystem services, land manager networks and social learning](#). Forest Research, Farnham
- ²⁶⁴ Rose, D.C. (2018) [Understand how to influence farmers' decision making behaviour: a social science literature review](#). AHDB.
- ²⁶⁵ Savills (2021) [The Farmland Market, UK Rural January 2021](#). Savills Research Spotlight.
- ²⁶⁶ Savills 2019. [The Farmland Market, UK Rural January 2019](#). Savills Research Spotlight.
- ²⁶⁷ Knight Frank 2021. [The Rural Report 2021](#).