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We undertake impactful rural research with implications for enhanced policy and practice. Our recent and ongoing work provides important insights into the design and delivery of effective decision-making and governance in complex land use contexts. A framework can be helpful if it is designed with flexibility but incorporates a common set of high-level principles and targets, against which locally designed action plans and actions will be judged. Our research indicates that the quality of the execution of the policy, and the investments made in support and evaluation are significant but often neglected factors in policy success. Our submission makes connections between our research and evaluation findings, and the specific questions posed by the Committee. We only answer questions where our research provides relevant findings and recommendations. We would be happy to explain our points in detail or respond to further questions in an oral evidence session.

Question 1

- 1.1. **Land use in England is already changing and is likely to change significantly in the coming years, due to multiple factors as analysed in recent CCRI work.** The challenges are multiple, complex, interconnected and context-specific (Lenormand et al. 2021). Our work has identified challenging food system shifts, with major global events leading to increased uncertainty and volatility. Continuing pressures on biodiversity and ecosystems are also changing the context and practicalities of managing land for productivity, sustainability and resilience. These dynamic challenges impact different communities, businesses, and households in different ways but all increase the information demands in managing land in the best interests of both people and planet.
- 1.2. **The ongoing transition in agricultural policy in England represents a significant challenge to those closely engaged in land management, with major implications for current and future income streams and related land-use patterns.** The resulting tension among farming communities was observed during recent research with dairy farmers in Somerset (Maye et al., 2018), and within supporting ELM tests and trials (e.g., Chivers et al, 2022). **Decision makers should not underestimate the disruption and uncertainty associated with subsidy transition and future support schemes among those whose management practices and investment decisions will most critically affect outcomes.** Uncertainty will be at the forefront of farm business planning, notably concerning choices in response to demands for agriculture to reach net zero, and to the complete phasing out of BPS support by 2028. Farming

businesses are likely to respond very differently by sector, location and family circumstances; increasing production, diversifying into other land uses as market opportunities allow, or moving away from farming altogether - either facilitating land moving into other uses including housing, energy generation or forestry, or enabling further farm amalgamation which accelerates a trend seen consistently across commercial agriculture, in recent decades (Keech et al., 2021).

- 1.3. **It is important to adopt a territorially sensitive approach to challenges and change to reflect varying regional, local and sector requirements.** This means delivering support in ways that empower farmers, land managers, stakeholders and communities at local and regional scales to help inform and steer change, appreciating the fundamental role that all these actors play in delivering marketable and non-marketable public benefits to society. CCRI's work in the ROBUST project (2017-2022) examined rural-urban relations, showing how reframing farmers' and land managers' roles could empower them to recognise co-benefits of their management for rural and urban places, such as the protection and strengthening of ecosystem services to support climate change mitigation (Maye et al., 2021).
- 1.4. **Climate change mitigation and biodiversity protection should be central goals of land use and management practices in future policy, but these must be considered alongside the unavoidable range of continuing and legitimate demands for active and productive land use.** The current dependence of UK food production on fossil fuels and the global markets in which they are traded has profound implications for the livelihoods of all UK citizens. Food security links directly to climate security, such that de-carbonising food production via appropriate land use measures should simultaneously boost food and climate security, rather than trading one goal off against the other. The multiple demands on land and the systemic nature of land-use interactions locally, regionally and nationally mean that **well-judged and well-implemented policies need to be focused on meeting multiple public policy goals in an integrated way.**
- 1.5. Drawing from our research evidence, CCRI suggests these specific priority areas for policy support and attention:
 - 1.5.1. **Accessible, trusted and co-ordinated advice and information services to help land managers gain the multiple types of knowledge and skills they need, to secure public goods and key marketable products and services from appropriate land use and business models (Chivers, 2021).** These services are needed to assist in balancing food production with maintaining ecosystem functions and contributing to thriving rural communities, seeking co-benefits and synergies throughout.
 - 1.5.2. **Actions to reduce the number of vertical nodes in the food supply network and close the distances between food**

chain actors will make these networks more robust and durable whilst making markets more transparent. Our research has shown how food supply networks have become attenuated, leaving them particularly vulnerable to shocks.

- 1.5.3. **Promoting longer-term agreements or plans** (a focus of Chivers and Short in their ELM Test and Trial) designed to underpin basic assets and standards of management, to lessen uncertainty in an increasingly volatile world, will help households, businesses and communities. To be effective, these need to be negotiated and overseen with their main delivery agents, to build a platform of consensus and respect from which multiple benefits can flow.

Question 2

- 2.1. CCRI's current work indicates that **climate change (adaptation and) mitigation is likely to be a key driver for land use change**, reflecting not only scientific and public policy priorities but also public debate (Maye et al., 2021). This, in future, will include addressing some difficult issues, notably the need to support dietary shifts as well as change to radically reduce agricultural emissions to air, water and soils, and simultaneously maintain or increase land's delivery of food, fibre and energy production and carbon storage. In the current context, input costs and income uncertainties could lead many farmers to leave the industry but current market conditions around access to land and infrastructure significantly restrict the possibilities for would-be entrants. These combined factors will favour short-term strategies; the currently most profitable incumbents; and those capital-intensive sectors that can most easily survive BPS cuts (Lenormand et al. 2021).
- 2.2. Mindful of the unavoidable interlinkages between human activities, ecosystem services and land-use functions, care must be taken in planning processes to avoid encouraging dramatic, haphazard and large-scale separation between land uses (I.e., 'land sparing', as opposed to 'land sharing'. A common set of core functions pursued at local and regional levels is critical to address the multiple challenges. An outcome to avoid is 'agricultural territorialisation' where agricultural and land use processes become more spatially differentiated and specialised, creating highly 'productive' agricultural regions that place emphasis on food (or fuel) production, at the expense of other (ecological and socio-cultural) land use services (Maye, 2013), while at the other end of the spectrum, a marked reduction in agricultural land management effort affects England's most remote and economically marginal areas. **Our research identifies the value of bringing together both international/national strategic oversight, and local knowledge and understanding, in effective strategy formulation and implementation.**

Question 3

- 3.1. The PEGASUS project (2016-2018) developed a toolkit to help local integrated delivery of public goods and ecosystem services, through social processes that bring actors together (Dwyer et al, 2020). Evaluation revealed the **key role of local facilitation and advice in achieving integrated and coordinated delivery by stakeholders** in the Upper Thames catchment (Short et al, 2010). Our involvement in 'Exmoor's Ambition' (ENPA/EHFN, 2017) showed the importance of local, multi-actor partnerships enabling joined-up planning and action across landscapes, considering multiple goals together and building a coherent place-based vision. This requires balanced governance structures that command broad stakeholder support (Dwyer and Hodge, 2016). Our evaluation of the LEADER programme 2014-2020 across the EU also demonstrated the importance of local, multi-actor partnerships, well-supported by flexible regional/national rules and funding, to achieve innovative, integrated solutions to local development challenges (Dwyer et al, 2022). These studies show the **benefits of devolved design and collective action over standardised national or regional prescription, in rural land use planning and management**. This holds even when ambitious national targets must be achieved – for example those under the 25-year Environment Plan to significantly reduce pollution (currently explored in Defra's Nutrient Management Expert Group, chaired by Dwyer).
- 3.2. **At local and landscape level, multi-actor bodies with economic, social, and environmental knowledge and representation, combining public, private and third sectors and well-supported by research, are key to cost-effective and coherent policy design and delivery**. Previously successful models, such as LEADER local action groups, still have merit. The importance of building local partnerships is very evident in current British Academy-funded CCRI work on the agri-food net-zero transition, as well as in ELM tests and trials.
- 3.3. **At regional and national levels, CCRI's experience in programme development and evaluation (by Dwyer, Kubinakova and others) highlights the importance of formal mechanisms (e.g., Committees, processes) which ensure a level of coherence in policy and planning between different government ministries and departments**, prior to the formulation of policy frameworks (primary), and refining delivery mechanisms (secondary), in legislation. Mechanisms such as the (environment and climate) cross-cutting scrutiny that occurs when (socio-economic) Rural Development Programmes are drafted, prior to agreement, are important, as well as fully implemented 'rural proofing', and inter-institutional/expert-informed steering of RIAs, IIAs and EIAs supporting new legislation by the UK and devolved governments. Standing committees and expert groups (for which CCRI has provided advisors and members, respectively) also offer valuable scrutiny to enhance joined-up policy.

- 3.4. Many policy instruments and approaches too readily adopt a 'one-size-fits-all' approach to prescribing how change must take place. The CCRI has undertaken *ex-ante*, ongoing and *ex-post* evaluations of agri-environment schemes, regulations, advisory approaches and socio-economic rural grants which expose the weaknesses in this approach. Failings include: poor uptake (Short et al 2018); inappropriate prescription (Jones et al 2015; Boatman et al 2015); significant transaction costs (Dwyer and Powell, 2016); poor scheme promotion or explanation; complex, highly competitive and resource-constrained roll-out and follow-up; leading to perverse outcomes and poor value for money (ADAS et al, 2016). CCRI contributed to a rapid evidence assessment which revealed persistent lack of resourcing affecting policies for protected landscapes and undermining locally sensitive delivery and farm viability (ICF, 2022). **We suggest better outcomes flow from polycentric policy design and governance** in which higher levels focus on a framework underpinned by principles, targets, common standards of operation and consistent resourcing and reporting requirements, and local levels tailor funding packages and supporting advice, information and learning to local situations, explicitly on condition that they ensure a positive and sufficient contribution to national framework requirements through regular dialogue and negotiation, both 'upwards' to the centre, and 'horizontally' with peers.
- 3.5. Our research reveals **many examples of poorly-designed, simplistic and/or minimalist approaches to monitoring and enforcement** (M&E) which lead to low value for money, unnecessary duplication or error and, most worrying, significant erosion of public confidence in the institutions and motives of policymaking. Such problems occur at local and higher levels. For example, Chivers' research exploring the environmental governance of water quality in England identified a serious lack of awareness-raising, implementation and enforcement of the 'farming rules for water' introduced in 2018. A key recommendation was that to achieve sustainable land use, the responsible body (Environment Agency) must become better able to implement the rules using both advisory and regulatory powers. Often, M&E involves 'outsourced' delivery by actors who have only a contractual, short-term or very partial understanding of the situations that they monitor and enforce.

Question 4

- 4.1. Food production has experienced a persistent output/input price squeeze, exacerbated by the Ukrainian crisis, and a highly oligopolistic supply-chain structure. In line with WTO declared goals, agri-environment supports have been computed on (at best) an income-foregone basis: one of the reasons for their poor uptake in recent years when many 'farmgate' prices have been improving (Boatman et al.

2015). These significant challenges (discussed in 1.1-1.4) could all lead to huge changes in the landscape.

- 4.2. Recent work by CCRI identified a series of priority research questions for digital agriculture (Ingram et al 2022). Through dialogues with stakeholders, **digital technologies, including precision agriculture, have much to offer farmers and land-use managers, but support is needed** in relation to how the technologies are owned, data is managed, and support and advice are delivered to support appropriate farmer uptake.
- 4.3. What is evident from CCRI's current British Academy work (ongoing) is that **new land use metrics and methods of data collection and visualisation are also emerging**, particularly in relation to carbon.

Question 5

- 5.1. A key challenge surrounding the emerging Environmental Land Management scheme appears to be a **lack of clarity** from Defra. The various farmers with whom we converse exhibit considerable confusion and frustration as a result (unpublished findings from several CCRI projects, e.g., Chivers et al, 2022; Short et al, ongoing).
- 5.2. **There is evidence that collaborative schemes provide biodiversity and wellbeing benefits.** Countryside Stewardship Facilitation Fund (CSFF) group membership can influence the environmental management options chosen by members, ensuring they align with group priorities at landscape-scale (Breyer et al, 2020). CSFF members demonstrated improved resilience and wellbeing from working with their group (Short et al, forthcoming).
- 5.3. Most farmers are keen to implement environmentally improved land management practices where this will not affect their business viability (Chivers and Collins, 2022; Short et al, forthcoming). **Understanding farmer behaviours and attitudes to AES is vital**; identifying barriers to uptake can help increase engagement in AES and thus influence agricultural and biodiversity outcomes (Mills et al, 2013; 2017).
- 5.4. **Current uncertainties regarding the future of agricultural support mean it is difficult to ascertain the long-term impacts of ELMs**, though there is evidence from our ELMS Test and Trial (Chivers and Short, ongoing) to suggest that long-term agreements, such as suggested by Defra for the Landscape Recovery programme, may improve biodiversity.

Question 6

- 6.1. The CCRI is aware of much research into the threats to nature and biodiversity, including: **intensive agricultural practices** resulting in degraded soil health, water quality issues and biodiversity losses (Congreves et al, 2015; Hamza et al, 2005); **inappropriate land use**, for example, biomass crops grown in unsuitable areas (Haughton et al,

2009); **contamination of land or water from urban sources** (Vannucchi et al, 2021); **excessive wastewater outfalls** (Charlton et al, 2018; Worrall et al, 2019; EAC, 2022); **lack of awareness** surrounding the most effective approaches for increasing nature and biodiversity, for example, through appropriate tree planting on agricultural land (Staddon et al, 2021); and a **lack of recognition or reward for those already providing nature and biodiversity benefits**, including small-medium rural enterprises, thus presenting a missed opportunity to bolster these efforts (Chivers et al, 2022).

- 6.2. In addition, the often-fragmented delivery of advice in England promotes confusion amongst farmers and may result in inaction in situations where they are given contradictory messages by different advisers (Chivers, 2021).

Question 7

- 7.1. A challenge which CCRI research currently seeks to address, is **how to achieve landscape recovery across contiguous landscapes, as targeted in both landscape recovery and local nature recovery elements of ELM**. In the southwest, we are carrying out a Defra-funded test and trial to investigate **whether long-term, conservation style covenants could offer a solution** (Barkley, Chivers, & Short, report submitted to Defra). It appears that several factors will likely affect farmer uptake of long-term agreements, including land ownership, circumstantial changes, flexibility (in terms of discharges and modifications), payment rates, and how they are monitored and evaluated. The importance of equal participation by farmers and landowners, environmental, animal health and disease experts, nature conservation experts, local policymakers and independent socio-economic evaluators is evident in Dwyer, Butler, and Lenormand's ongoing work with the Molland Estate (2020).
- 7.2. For local nature recovery, a recent test and trial study found that emerging policies must be flexible, with feasible options which consider previous environmental work undertaken (Ormesher, Chivers, & Rose, 2020). In addition, **farmer clusters and landscape-scale farming should be facilitated**, ensuring at least one longstanding advisor in each area (Chivers et al, 2021, report to Defra). **Farmers emphasized the need for a system of earned recognition** (Chivers et al, 2021).
- 7.3. CCRI work in the LANDWISE project found that whilst farmers are generally receptive to natural flood management (as one type of nature-based solution), they require clear policy and reassurance that such measures will not profoundly affect the continuation of their agricultural activities, and that they will be sufficiently remunerated. **A finding common to many CCRI projects is that farmers do not feel that their time is valued properly, and future policies should cover their time as well as direct costs.**

Question 8

- 8.1. Trees and woodland planting are seen as one way in which the UK can reach its commitment to net zero carbon emissions by 2050, and the government has plans to plant 1.5 million hectares of trees by 2050. Much new planting is expected to happen on land currently used for agriculture, particularly marginal land such as uplands used for livestock grazing. The benefits for nutrient management of land-use mosaics and farmed landscapes with more permanent crops and landscape features are apparent. This suggests policies focused on integrating trees to preserve and strengthen landscape character will also give them increased absorptive capacity and resilience for nutrient management.
- 8.2. Work undertaken by the CCRI for Natural England suggests that **insufficient attention has been given to understanding farmer behaviours and attitudes towards tree planting**, recognising that past planting schemes have had poor farmer uptake (Staddon et al. 2021). Many factors present barriers to afforestation by farmers, including tree planting is perceived as alien to farmers' (food production) identity and preferred behaviours. Ambrose-Oji et al (under review) found that **although farmers perceive they lack expertise and confidence in their ability to manage trees, they do have relevant skills and knowledge**, many independently undertaking maintenance of their own trees.
- 8.3. To overcome these barriers, Staddon et al (2021) recommend **including farmers in the design of new policy tools to ensure they align better to farmers' motivations** and are more likely to be adopted; and developing a suite of policy mechanisms that appeal to a broader range of farmers, not just those already interested in tree planting. It will also require link-up with Environmental Land Management schemes.
- 8.4. Notwithstanding these findings, we also note that **rapid treescape expansion has the potential for perverse impacts and unintended consequences, if not done in a considered way**, as past afforestation policies demonstrated. Newly-created forests and woodlands also have impacts on local communities, so it is crucial that public and stakeholders are involved in their design and delivery, to gain buy-in and realise wider societal benefits. Urquhart, ambassador of UKRI's Future of UK Treescape Programme is researching how to achieve the 'right tree in the right place'.
- 8.5. Another key commitment in the 25-year Environment Plan is to set targets for enhanced condition of water, soils and air, which will be binding. Dwyer's role in the Defra Nutrient Management Expert Group has given her a clear understanding of the significant changes to agricultural practice that will be required for these targets to meet the overarching goals of the Plan. The implications for land use are not so much a change in the balance of land use but more a need to retain and encourage closer linkages between crop and livestock production

and location, to facilitate a 'circular economy' approach to manure management and crop fertilisation, radically reducing use of fossil-fuel derived chemical fertilisers.

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