

Landscape Decisions SPF programme

This statement outlines Defra group needs that could be supported by the ‘Landscape Decisions Fellowships’ call and aims to facilitate dialogue between the Department and applicants during proposal co-design.

The statement highlights the possible challenges as identified in the call text (section 3.2 *Call Scope and proposal requirements* in the Announcement of Opportunity). Under each of the challenges is the detail of Defra group needs relating to these challenges.

Initial Points of Contact for enquiries relating to these needs:

- **Giles Golshetti:** Giles.Golshetti@defra.gov.uk -General and cross-Cutting needs
- **Tracie Evans:** Tracie.Evans@defra.gov.uk -Environmental Land Management
- **Hannah Baker:** Hannah.Baker@defra.gov.uk -Farming
- **Luke Spadavecchia:** Luke.Spadavecchia@defra.gsi.gov.uk –Agri-Food
- **James Finigan:** james.finigan@environment-agency.gov.uk- Cross-cutting needs under Net Zero challenge area.

How to ensure landscape decisions are climate-resilient

Agri-Food

How can climate projections (e.g. MET Office UKCP18 and 2019 releases) be incorporated into landscape planning to ensure our agri-environmental systems are climate resilient (and better estimate their contributions over time to targets, e.g. Net Zero)? Equally, how can we avoid taking actions in areas where climate change would mean value for money was not achieved or would render them inappropriate or damaging?

How landscape decisions can support the UK’s 2050 net zero emissions target

Agri-Food

Net zero trajectories indicate that significant land use change will be required, which will put pressure on the agri-food system and our ambitions relating to food security and public goods. There is significant competition for land and relatively little consensus on what patterns of future land use will look like. Tools are needed to enable the assessment of future land use consistent with both the net zero target and the 25 Year Environment Plan targets.

For example, tools to robustly and holistically assess how best to address key land use issues/trade-offs such as:

1. >90% Agricultural emissions come from biological processes essential for energy and nutrient cycling in agri-food production. These processes can be optimised to reduce but not eliminate GHG emissions.
2. Offsetting is required to achieve net zero for agriculture, but opportunities for sequestration on agricultural land (>70% UK land area) are limited.

3. Significant conversion of agricultural land for 'Bioenergy with Carbon Capture and Storage' (BECCS), afforestation or peatland restoration will be required to achieve net zero. Such change will have implications for the character and function of UK landscapes, and we do not currently have a well-developed understanding of the risks to wider ecosystem services or food system climate resilience of landscape change at a national or local level. It is feasible there might be knock on effects to farm businesses (including succession planning), heritage and broader well-being.

Work would need to span pre and post farm gate, recognising the important role of consumption choices in this context. Possible solutions for land use which are consistent with a net zero future need to be explored. This may include strategies for land sharing or land sparing and exploring the trade-offs between consumption choices and overall landscape character. This will have to involve stakeholders, including farmers, land managers, and the public (e.g. through civil society groups) in co-developing solutions. There could also be scope to learn from good practice and those farms which are already improving their climate resilience/farming with nature/reducing GHG emissions.

Cross-cutting

How do we identify where 'nature based solutions' can help us achieve net zero carbon, whilst at the same time achieving other policy outcomes, including flood alleviation, food production, water provision, nature recovery and supporting healthy and resilient local communities? The Environment Agency is looking to develop nationally consistent tools which tell a comprehensive story about the wide range of benefits that are provided from natural capital, and so empower communities to adopt landscape scale approaches which optimise benefits. A particular gap that needs to be addressed is incorporating the benefits of natural assets for public health and wellbeing, including how we incorporate quantitative and non-quantitative measures of health.

The role of mathematics, big data and artificial intelligence within landscape decision making

Cross-cutting

How can data and insight generated from maths/big data/AI etc. be communicated to the public and to the private sector? What measures can be taken to validate the data? How can maths/big data be used alongside other more qualitative approaches, including participatory approaches, citizen assemblies and economic approaches?

Qualitative data can provide a more nuanced understanding of the quantitative big data and help target communication more effectively in areas such as farming. How can qualitative data support precision farming/the use of satellites in farming/use of robotics?

Data presentation for end users is also important and this includes the role of decision support maps (or spatial prioritisation). Here, there are considerations around the amount of detail required in maps, the amount of data layered underneath this and what is most useful for different end-users (e.g. land managers, policy-makers, delivery bodies) to support/guide

decision-making and mechanisms for assessing and understanding confidence. This could then inform the amount and type of data we should collect in evidence and what should be made available and readable for different users.

How decisions on multifunctional landscapes can be taken under uncertainty to improve environmental land management

Cross-cutting

There is a need for land use scenarios to factor in:

- how uncertainty around future trade deals/access to markets (and other international political economy uncertainties) impact farm priorities, such as domestic food production and environmental outcomes, as well as how it impacts farmers' wellbeing and resilience;
- how multifunctional landscapes will need to account for synergies and trade-offs and how these relate to the local context and values of the communities.

The engagement of diverse social and institutional groups with landscape decision making

Cross-Cutting

The sub-national political economy is continuing to evolve and includes a number of institutions/decision-making forums which bring political actors and economic agents together, e.g. Local Authorities, Local Enterprise Partnerships, Combined Authorities and other local scale partnerships.

- How do these actors work collaboratively to support strategic land use decisions?
- How do they involve social actors?
- How do we ensure local-level priorities feed into national-level priorities/targets (identification of local priorities, trade-offs between national/local, how to align these)?

Farming

There is a need to understand how farmers interact with their peers/other land owners and other stakeholders (incl. the public) to deliver landscape outcomes and the public goods that these provide. Connected to this is the need to understand the value of local, place-based knowledge of how farmers make decisions about landscape priorities. Local context influences farmer behaviors and in turn their potential uptake of new measures or schemes.

The role of individual emotions and values, and/or finance in landscape decision making.

Farming

It is important to understand how emotions and values linked to farming (including heritage, traditions, gender issues and family succession issues) influences decision making.

The role of subsidies and grants plays a large part in landscape decisions and the changes ahead may impact decisions about investment on farms and activities around maintaining and enhancing environmental outcomes. These changes and their implications for decision-making need to be explored further.

How to ensure landscape decisions take account of local/regional place-based factors including those of a socio-political and economic nature.

Environmental Land Management

In order to maximize the impact of an Environmental Land Management scheme, we need an understanding of what land management interventions are best delivered where, what the impetus is for these changes and how we account for changing priorities under climate change projections or competing land pressures. Priorities identified then need to be balanced with other national priorities. Some specific related questions are:

- How do we account for changing priorities under climate change scenarios and different land use pressures?
- How do we ensure local-level priorities feed into national-level priorities/targets (identification of local priorities, trade-offs between national/local and how to align these)?

Answering these questions will help to inform analysis on 'how we can spatially prioritise', drawing on geographic, topographic, and climatic conditions as well as governance structures and valuation of the environmental outcomes being prioritised in different areas.