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Delivering synergies and multiple public goods: Why whole farm systems must be central to Environmental Land Management and the agricultural transition plan

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Summary

This paper lays out the core reasons why Defra must include agroecological whole farm systems in the agricultural transition and Environmental Land Management (ELM) schemes. We refer to organic, pasture-fed and agroforestry as three key systems. For this paper, we prioritise the ELM National Pilot and the Sustainable Farming Incentive (SFI).

We propose that a whole farm approach will best deliver Defra's goals and aspirations laid out in the 25-Year Environment Plan [4], the Health and Harmony white paper, the Agriculture Act, Net Zero 2050, and COP26. This results from the synergies and wider outcomes of this 'systems approach' to farming which is evident in the robust science and lived-experience that underpin them [17, 21].

By providing farmers with a clear roadmap, Defra can deliver transformational change to English farming and land management, benefiting people and planet in both the short- and long-term. This roadmap is about delivering a just transition for farmers towards a more ambitious and resilient future, and we would welcome the opportunity to discuss this further with Defra.

Introduction and discussion

In this paper, we present a vision of a transformed English farming sector through the agricultural transition plan and Environment Land Management (ELM).

The organisations supporting this paper include: Sustain who are an alliance of over a hundred food and farming non-governmental organisations; the Soil Association, Pasture-Fed Livestock Association (PFLA), Landworkers' Alliance (LWA), Organic Farmers and Growers (OF&G), and the Community Supported Agriculture (CSA) Network UK representing thousands of British farmers and growers; CPRE, the countryside charity; and the English Organic Forum (EOF) representing the breadth of organic food and farming organisations in the United Kingdom (UK).

The agricultural transition plan and the Environmental Land Management (ELM) schemes [3], as envisaged in the Agriculture Act 2020, must play a central role in transforming the English farming sector. Unless farmers are supported to move away from current conventional farming practices and towards whole farm systems (see whole farm system section) that deliver a wide range of public goods - environmental, social and economic - government may not be able to deliver on its aspirations for farming, food, climate, and nature.

To achieve this, we recognise the importance of fairly and properly rewarding farmers who are already delivering optimal outcomes for the environment and animal welfare. Just as important is the need to provide a roadmap that is accessible for all farmers who want to transition to whole farm systems like organic, pasture-fed and agroforestry. A 'whole farm' approach referred to in this report, refers to all or part of a farm business managed within a designated system approach. We know there are many farmers wanting to make this change, so we must meet their needs to allow the necessary transformation. We also know that a system-based approach (which we describe below) is well placed to deliver public goods at value for money [11].

Initially, some farmers will require support to reduce negative externalities like reducing greenhouse gas emissions or diffuse water pollution. Farmers should be supported to do so alongside transitioning into delivering positive outcomes like increasing biodiversity and building soil carbon. Farmers should be encouraged and rewarded to move up to a higher standard. We acknowledge the need for continued progression and recommend that research and development funding should include provision for trialling whole farm system approaches. Not one size fits all and this is a unique benefit of farming which is why we are calling for an approach to ELM and wider measures that gives farmers the opportunity to move towards whole farm systems.

This approach also supports government priorities such as a green economic recovery, public health goals and net-zero (and proposed COP26 ambitions). Studies also show that agroecological systems can provide the food we need alongside measures to reduce waste with changing consumption patterns and diets [7]. Through ELM, Defra has an opportunity to enable farmers in making that transition successfully.

Recommendations

Future schemes need a baseline which allows all farmers to access support in proportion to their evidenced delivery of public goods. Alongside this, we believe that schemes based on a public goods approach must also provide a pathway that fairly rewards and encourages farmers to transition up to higher standards. Furthermore, Defra need to recognise and fairly reward earned recognition to those already delivering higher environmental and animal welfare outcomes through whole farm system approaches. We recommend the inclusion of the following in the ELM National Pilot and the SFI:

- An organic, pasture-fed and horticulture pilot in the National Pilot starting in 2021.
- An organic land management standard in the SFI.
- A pasture-fed land management standard in the SFI.
- An agroforestry land management standard in the SFI.

We also ask that Defra provides experts and stakeholders with a full opportunity to review payment methodologies and rates to ensure they will fairly and properly incentivise delivery of public goods at value for money.

The SFI must support farmers who wish to continuously progress. We also support the key principles that are set out in the Wildlife and Countryside Link (WCL) paper (see Annex 1) [22].

Areas for improvement

We are pleased with the overall direction of the agricultural transition plan in taking a public goods approach to its range of schemes, all of which seem to share the ultimate goal of addressing the challenges of climate change, biodiversity decline, and other environmental issues. However, we still share some common concerns with ELM:

There is no inclusion of organic and other whole farm approaches in the ELM National Pilot phase 1.
There is no clear pathway within the Sustainable Farming Incentive (SFI) for farmers wanting to move into whole farm systems like organic, pasture-fed and agroforestry.
There is no commitment to fairly reward farmers who already go above and beyond in delivering for the environment (earned recognition).
Payment calculation methods are as yet undeveloped and have not been subject to expert and stakeholder review.
The payment structure of income foregone plus costs is inadequate to ensure that delivery of public goods and sustainable food production is scaled up to the level needed.
Payment levels might not be sufficient enough to incentivise progression to the higher level of standard.
There has been no committed to remove the 5 hectare minimum limit which currently excludes smaller scale farmers and growers from accessing schemes to deliver for the environment.
There is no commitment to provide free or low-cost independent advice for farmers and growers applying for and delivering SFI agreements.

Whole farm systems

We define whole farm systems as those which fit into the 10 elements of agroecology agreed by the Food and Agriculture Organisation (FAO) Council [6], of which the UK is a Council Member. It is a framework which farmers, policy-makers, supply chains, and others can operate within. We see organic, pasture-fed and agroforestry as three key agroecological systems that work successfully in the UK.

A ‘whole farm’ approach referred to in this report, refers to all or part of a farm business managed within a designated system approach. It is through the interconnectedness of management practices on that land that delivers the broader benefits of the systems approach.

Modelling by IDDRI (Institut du Développement Durable et des Relations Internationales) in the Food, Farming and Countryside Commission report, provides us with much of the evidence for an agroecological future in the UK [7] (and Europe more widely [16]). Whilst there are challenges identified, the alternative of business as usual must not be an option, which is why ELM must play a key role in supporting farmers into agroecological whole farm systems.

Unlike conventional farming, a systems approach best delivers public goods because of the synergies created from looking at the whole farm: for example, carbon sequestration, natural flood management, genuine integrated pest management (where natural tools are used and chemicals only as a last resort), increased biodiversity, public access and education, and better regeneration of natural capital.

Organic, pasture-fed and agroforestry farming systems are all well-established and based on well-evidenced and peer-reviewed scientific literature, as well as the local knowledge of farmers.

Organic:

Organic farming is defined by a legal set of standards [13, 20] which provides a framework for farming more in-tune with enhancing ecosystem services and regenerating natural capital [5]. Organic standards apply across all farming types and sizes (including arable, livestock (lowland and upland), mixed, horticulture, market garden etc.). In the below table, we have linked elements of organic farming with the public goods they deliver.

Improving soil structure, fertility, biology and carbon sequestration/storage:

- Focus on building soil biome to create naturally productive soils;
- Best practice grazing management to alleviate soil poaching/compaction;
- Increasing diversity of nitrogen fixing plants to maintain soil fertility;
- Increasing plant diversity to improve soil structure and biological activity;
- Zero-use of synthetic fertilisers;
- Use of a very limited number of natural pesticides;
- Focus on building soil organic matter (across farming types) to increase soil carbon sequestration/storage;
- Incorporation of grass/herbal fertility building breaks into arable rotations;
- Utilising elements of agroforestry that increase plant biomass carbon sequestration;
- Use of organic nutrients (manure, compost and through fertility building crops, etc.); and,
- More diverse and longer cropping rotations.

Improving biodiversity and farmland habitats:

- Use of a very limited number of natural pesticides;
- Use of high-standard Integrated Pest Management (IPM) strategies;
- More diverse and longer cropping rotations;
- Integration of livestock through use of herbal/grass leys;
- More space for nature through better management of on-farm habitats and in-field plant diversity; and,
- Utilising elements of agroforestry which benefits biodiversity.

Reducing diffuse pollution to water and air:

- Reducing field run-off by improving soil water infiltration capacity;
- Better management standards for manures, slurry and composts;
- Better soil management which improves structure and water infiltration;
- Zero-use of synthetic fertilisers;
- Use of a very limited number of natural pesticides;
- Better soil structure reducing field run-off; and,

- Better management standards for manures and slurry.

Better landscapes:

- Increased diversity of flowering plants and herbs within the sward to help build fertility;
- Utilisation of elements of agroforestry improves landscape structure;
- Greater use of native livestock breeds;
- Increasing agricultural diversity through grass breaks and cover crops in arable rotations;
- More space for nature across farmed landscapes; and,
- Greater farming diversity.

Natural flood management:

- Better soil health allowing greater water infiltration and reduced run-off; and,
- More space for nature and use of trees to store and slow the flow of water across landscapes.

Animal welfare and monitoring outcomes:

- Longer outside grazing periods improves livestock welfare through natural behaviour;
- More effective monitoring of outcomes established through the certification process; and,
- Higher animal welfare standards for improved livestock health.

Pasture-fed:

The standards established under the Pasture for Life (PfL) certification [14] encourage best management for beef, sheep & dairy pasture systems. This approach aims to enhance ecosystem services and protect natural capital, similarly to the principles of organic (many PfL farmers are organic). PfL principally centres on extensive systems using only forage based diets for ruminants. Pasture-fed is also shaped by our history of pastoral farming in the UK and its rich tapestry of species-rich grasslands, wood-pastures, heathlands and wetlands.

Improving soil structure, fertility, biology and carbon sequestration/storage:

- Best practice grazing management to alleviate soil poaching/compaction;
- Increasing diversity of nitrogen fixing plants to maintain soil fertility;
- Increasing plant diversity to improve soil structure and biological activity;
- Reduce the use of fertilisers (only use when soil nutrient budgeting requires it);
- Utilising grass growth and grazing rest periods to increase soil carbon sequestration/storage;
- Incorporation of grass/herbal breaks into arable rotations; and,
- Utilising elements of agroforestry that increase plant biomass carbon sequestration.

Improving biodiversity and farmland habitats:

- Increasing the diversity of native grasses and wildflowers (many are at-risk or threatened) within the sward;
- Reduce the use of pesticides and herbicides (only use spot treatment if needed);
- Use of high standard Integrated Pest Management (IPM) strategies;

- Better management of habitats and creating more space for nature across the farm; and,
- Utilising elements of agroforestry which benefits biodiversity.

Reduce diffuse pollution to water and air:

- Reducing field run-off by improving soil water infiltration capacity;
- Reduce the use of synthetic fertilisers and pesticides;
- Better management standards for manures and slurry; and,
- Better soil management which improves structure and water infiltration.

Better landscapes:

- Increased diversity of flowering plants within the sward;
- Utilisation of elements of agroforestry improves landscape structure;
- Better use of native livestock breeds; and,
- Increasing agricultural diversity through grass breaks and cover crops in arable rotations.

Natural flood management:

- Better soil management increases water infiltration; and,
- More space for nature and use of trees to store and slow the flow of water across landscapes.

Animal welfare and monitoring outcomes:

- Longer outside grazing periods improves livestock welfare through natural behaviour;
- A diverse pasture only diet improves the health of livestock and reduces disease burden; and,
- Higher level of animal welfare standards in general.

Agroforestry:

Agroforestry is mostly based on integrating trees into arable, livestock, mixed, horticulture, and other farming types. This approach works well with organic and pasture-fed, offering joined-up thinking which addresses the negative impacts of intensive farming and which delivers positive outcomes for a range of public goods [1, 18]. Although agroforestry does not have a set of standards which are set within a certification, this systems approach is based on well-established and acknowledged principles [23].

Improving soil structure, fertility, biology and carbon sequestration/storage:

- Root systems from integrating trees in the landscape alleviates compaction, improves soil biological activity (including better fungal networks) and sequesters more carbon into soils;
- Sequestration and storage of carbon through greater above ground biomass; and,
- Greater litter (e.g. leaves) provides biomass for soil biology to breakdown which increases biological activity and improves soil health.

Improving biodiversity and farmland habitats:

- Integration of trees and creating more of a mosaic farmed landscape increases biodiversity through greater diversity of flowering plants, healthier soil and increase in insect life.

Reducing diffuse pollution to water and air:

- Reduced field run-off through improved soil structure and landscape structure (trees); and,
- Improvements to soil health reduces the need to apply synthetic fertilisers and pesticides.

Better landscapes:

- Increased diversity and structure across the landscape through planting of more hedges and trees; and,
- Agroforestry can be incorporated into all farming types and support a mosaic of agricultural diversity and farmland habitat.

Natural flood management:

- Greater number of trees across the landscape slows the movement of surface water which reduces downstream flooding; and,
- Improved soil structure allows more water to infiltrate into the soil.

Animal welfare and monitoring outcomes:

- Integration of trees with livestock farming provides more shade from sun which reduces heat stress, and more shelter from harsh winter weather;
- More trees also allows more natural behaviour of livestock which includes more grazing days - this boosts livestock well-being;
- Trees also provide a more diverse array of browsing opportunities for livestock, which provides a healthier diet; and,
- All of the above lead to a reduced disease burden and generally healthier and happier animals.

These system-based approaches are well-established (there are around 3,500 certified organic farmers and around 80 Pasture-Fed Livestock Association certified farmers), with organic and pasture-fed being built upon a set of standards which farmers have to work towards. Although not set around specific standards, agroforestry is well understood and defined, as laid out in The Agroforestry Handbook [18]. Therefore, they are easily transferable into Sustainable Farming Incentive standards and can be built into the ELM design and delivery.

Furthermore, it presents Defra with opportunities to achieve objectives and goals of key policy-drivers such as sustainable food production, the 25-Year Environment Plan, Net Zero 2050, COP26, and the Animal Health and Welfare Pathway.

Just as important is the clear momentum which is gathering behind these ways of farming, and therefore, Defra must provide a pathway to support them. For instance, the Organic Farmers & Growers (OF&G) group have recently seen an 85% increase in organic certification inquiries [12], but farmers and growers are holding off for the time being with such uncertainty around whether Defra will provide space for organic in ELM and its future farming policies. It is clear that many see organic as a way to deliver sustainable, healthy food while delivering public goods, and Defra must support them in doing so.

Conclusions

This paper provides a clear argument for including a whole farm system approach within the framework of the agricultural transition plan, Environmental Land Management (ELM) and the ELM National Pilot. We propose that this approach would best support delivering many of Defra's objectives of the Future Farming and Countryside Programme (FFCP). If these whole farm systems are left out of the SFI and ELM, it may create barriers to delivering the aspirations of public goods.

This is an optimal approach for delivering multiple public goods through the synergies gained from a system-based approach. We recognise that not one size fits all and there is a need to support farmers in mitigating negative externalities. However, this must be coupled with a pathway that supports and rewards farmers for delivering public goods through higher standards. The SFI scheme must incentivise this.

We believe this approach aligns with Defra's ambitions for sustainable food production, delivering the 25-Year Environment Plan and improving on-farm animal welfare through the proposed Animal Health and Welfare Pathway. It also integrates with government priorities for a green economic recovery and tackling the climate and nature emergency.

We have also laid out the need for Defra to structure payments in a way that is fair and incentivising. If schemes do not provide earned recognition or the encouragement to move up to higher standards, then delivery of public goods could potentially be minimal. This is about what farmers and growers actually do on the land to deliver those positive outcomes.

We would very much welcome the opportunity to discuss this further. As a group, we would like to engage constructively with policy-makers and politicians as part of the process of co-design.

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Annex 1

Wildlife and Countryside Link (WCL) 'Key Principles for Environmental Land Management, the Future Farming and Countryside Programme and the agricultural transition period'.

A number of WCLs key principles align with recommendations and reasons for our paper:

- Key principle 1: A robust and coherent package of support is required to facilitate a safe and fair transition to a new agricultural and land management policy, which is based on the principle of public money for public goods. It should represent a decisive change in the purpose of payments, but make use of effective components of existing schemes which are proven to deliver public goods.
- Key principle 2: The Sustainable Farming Incentive Component must not reinvent the status quo; it needs to be able to support farmers and land managers to transform their farm and rural businesses, while recognising that a healthy environment underpins a resilient farm and rural business. Rewards should be directed towards practices that rebuild vital natural assets such as pollinators, heritage assets, soil health, key habitats, and farmland plants and wildlife, for example.
- Key principle 4: The Local Nature Recovery Component should be able to support the delivery of national environmental and access objectives in a locally responsive way, supporting existing and expanding high nature value farming systems and wildlife species and habitats.
- Key principle 9: all components of ELM need to help transform farming and forestry, helping to reframe a healthy environment as central to a resilient business as opposed to a bolt-on or luxury. As a

minimum, the government should be supporting the adoption of whole system approaches (such as organic) as they reduce negative externalities and deliver public goods.

- Key principle 10: Entry requirements and conditions are vital to create a baseline standard for farmers and other land managers receiving public money. It must ensure that at the very least, land managers are meeting a minimum set of requirements that can be demonstrated to deliver public goods. On eligibility there should be no 'active farmer test' and the *de minimis* level should be kept as low as possible proportionate to administration costs.
- Key principle 11: Synergies should be maximised and objectives aligned between ELM and other policy drivers and funding mechanisms to ensure cohesiveness and complementarity. At the same time, care should be taken to avoid the dismantling of ELM as a holistic approach to environmentally sustainable farming and land management and ambitious environmental delivery.

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