

Agroecology as a Nature-based Solution

Food, Farming and Countryside Commission – APPG
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Summary

- The Food, Farming and Countryside Commission (FFCC) believes there is strong evidence to support the adoption of agroecology as a nature-based solution (NbS), noting strong alignment between the principles and practices of agroecology and the global standard for NbS set out by IUCN.¹
- The UK has committed to taking action and adopting national and international legislation to meet ambitious and necessary climate, biodiversity, and sustainable development targets by 2030. This mandate for action, as well as the growing scientific evidence base, supports the imperative for system-wide approaches that address the interdependent challenges for nature, climate, health, and the economy.
- FFCC welcomes the focus on NbS to deliver multiple outcomes to these connected challenges. FFCC argues that the growing evidence base supporting agroecology strengthens the case for accelerating the transition to agroecology as a practical and affordable solution available right now.
- **Agroecology is a nature-based solution for UK land use and agriculture and should be prioritised in UK government policy and legislation to support its adoption by 2030.**

We recommend a transition plan is developed with farmers to support the transition to agroecology, with a comprehensive toolkit to back adoption, including: fair and patient finance made available through an agroecological development bank; locally-led solutions prioritised, and pilots supported for landscape level agroecology collaborations through schemes such as ELMS and their devolved equivalents; agroecological produce made more accessible to local communities and included in dynamic procurement trials.

Agroecology as a Nature-based Solution – complementary outcomes for nature, climate, and people

FFCC adopts the UNFAO definition of agroecology, developed in collaboration with countries and communities, farmers, and growers, as a philosophy, a science, a practice, and a movement.² For many, it is about farming in a way that prioritises regenerative and locally led actions, removing the need for synthetic chemicals, relying on natural solutions to bring balance back to ecosystems, focussing on improving soils, removing synthetic inputs, recycling wastes and so on. But it is also about the role that citizens and policy makers can play in improving food systems. As a global movement, agroecology supports progress towards the Sustainable Development Goals, ensuring that it is easy for citizens to make healthy and sustainable choices while respecting different cultures and traditions in food and farming. It supports farmers to share and develop knowledge and skills that are directly relevant to them and their holdings. It empowers farmers and citizens in their communities to be more resilient, adaptable, and more able to tackle the climate, health, and nature crises.

FFCC supports the focus on nature-based solutions in policy making and as one of the five core themes at COP26 this year. It is clear from the growing scientific evidence base, and through the work of global collaborations like the Sustainable Development Goals, that governments and business need to act on complex challenges simultaneously – nature and climate, health

and wellbeing, economic and social wellbeing. Nature-based solutions and agroecology are two complementary approaches that recognise the need for practical ways forward that meet these complex challenges in concert.

NbS have been identified by many governments as key to helping them meet their net zero commitments as part of their Nationally Determined Contributions (NDCs), as well as in their international commitments to the Sustainable Development Goals by 2030. Research highlights that NbS have the potential to provide at least 30% of the cost-effective mitigation needed by 2030 to stabilise warming to below 2C and stay within the Paris Climate Agreement.¹ Crucially, agroecology provides practical ways of acting right now on land use that provides multiple benefits, and that is readily available, cost-effective and economically viable.

Nature-based solutions are defined by the IUCN as “actions to protect, sustainably use, manage and restore natural or modified ecosystems, which address societal challenges, effectively and adaptively, providing human well-being and biodiversity benefits”¹. IUCN’s global framework outlines a robust approach for assessing NbS based on 8 criteria; this has been augmented by a concise set of 4 NbS guidelines established by Oxford’s NbS initiative and backed by business and NGOs. Taking each criteria of the global framework in turn,

1. NbS effectively address societal challenges

Nature-based solutions are a response to multiple and complex social challenges such as: food security, biodiversity loss, climate change, human health, social and economic development, water security and so on.

“Not only do agroecological practices contribute to food security and nutrition, but they also contribute to 10 of the 17 SDGs (UN, 2015) through integrated practices that cut across many areas (FAO, 2018a) and help address poverty and hunger, education, gender equality, decent work and economic growth, reduced inequalities, responsible consumption and production, climate action, life on land, and peace and justice. Along with the SDGs,

agroecology can also contribute to the Koronivia Joint Work on Agriculture (KJWA) (St-Louis et al., 2018) on adaptation, soils, nutrient use, manure management and livestock systems (see points 2.c, 2.d, and 2.e of the KJWA), and help realize the aims of the Paris Climate Agreement, the CBD and the United Nations Convention to Combat Desertification (FAO, 2018a).”³

As stated above by the high-level panel of experts, agroecological farming has huge potential to deliver positive outcomes for climate, nature, health, and communities.

The latest modelling research commissioned from IDDRI by FFCC demonstrates how adopting agroecology in the UK could⁴:

- Deliver **climate reduction and sequestration at the scale needed to deliver net zero** in UK agriculture, as well as reducing our global deforestation footprint through the elimination of soy imports to feed UK livestock.
- Deliver **biodiversity gains** through eliminating costly synthetic pesticides and fertilisers and nearly doubling the amount of UK agricultural land dedicated to green and ecological infrastructures (ponds, hedges, meadows etc), as well as freeing up 7.5% of utilised agricultural land for nature.
- Meet the **food needs of a growing population** and ensure long term food security and resilience.
- Support diverse and **viable farm businesses** in the rural economy.

The Soil Association and EFTEC are currently conducting socio-economic analysis building on the IDDRI and FFCC modelling, to assess the micro and macro level economic impact of agroecology.

2. Design of NbS is informed by scale

Farming in the UK is an incredibly diverse sector, shaped by local landscapes, cultures, enterprises and community needs. It is now vital that UK government legislation recognises and values this diversity. Some types of farming enterprise are currently perceived to be at risk, through the differential impacts likely in the transition from BPS to ELM, SLM and the other UK systems, and which could have unintended or unforeseen consequences on the rural landscape and communities.

Agroecology takes a whole system approach, meaning it views the field, the farm, the farming cluster nested in the context of their landscape and its community. The metrics to evaluate agroecology consider how the interconnected elements are applied and adapted for local contexts, and using local knowledge, so that a farming sector based on agroecology is shaped by, and meets the needs of, local ecosystems, communities, and economies. This integrates well with the associated policy intentions of devolving power and levelling up in ways that work for different regions and communities across the UK.

Agroecology works well across different scales with its emphasis on partnership and collaboration from the farm to the landscape. FFCC is currently exploring with partners potential landscape pilots of agroecology to assess the benefits of agroecology when applied at scale in the UK.

3. NbS result in a net gain to biodiversity and ecosystem integrity

Global food and agricultural production are the number one cause of deforestation, decreasing biodiversity, and loss of topsoil.⁵ Agroecological farming systems restore and enhance biodiversity in a number of ways. As our report *Farming for Change* outlined, a transition to agroecology could deliver biodiversity gains through eliminating costly synthetic pesticides and fertilisers and nearly doubling the amount of UK agricultural land dedicated to green and ecological infrastructures (ponds, hedges, meadows etc), as well as freeing up 7.5% of utilised agricultural land for nature such as reforestation. A core principle of agroecology is ecosystem diversity:

agroecological practices integrate diversity across the farming system – from crop to landscape, increasing biodiversity and agrobiodiversity.

The IDDRI model examines the potential of an agroecological food system, built off a foundational layer of biodiversity and soil health in all aspects of the landscape.⁴ It doesn't confine biodiversity to set parts of the landscape or indeed set parts of the field, but rather seeks to embed ecological richness throughout the whole enterprise. And it is important to see this as a whole, because it is through using natural synergies between farming and nature that it can function without chemical sprays or synthetic chemicals, both major causes of pollinator and insect decline, air, and water pollution. This 'land sharing' approach sustains multiple ecosystem services such as pollination, natural pest control and watershed management that in turn support crop production.³

FFCC has recommended the development and use of natural capital accounts and baseline data gathering in establishing a clear evidence base for agroecological approaches that deliver biodiversity net gain through future schemes such as ELMS. We support the work of Sustainable Food Trust and their 'global farm metric' project, harmonising measurements of sustainability across important interconnected dimensions.



4. NbS are economically viable

FFCC's report *Farming Smarter: The case for Agroecological enterprise*⁶ argues that agroecological methods can be profitable, ensuring farmers' livelihoods, whilst enhancing the natural environment, therefore ensuring the farming sector can play a pivotal role in the country's transition to net zero emissions and nature recovery.

This positive economic assessment draws on three key components:

- The benefits of diversified agroecological farming are systematically undervalued by conventional measures of agricultural productivity.
- The financial position of existing farm businesses is overly reliant on inflated land values and direct farm payments through the Common Agricultural Policy (CAP).
- Despite fewer subsidies given to agroecology businesses, their focus on profit through synergies, layering different outputs and reducing non-labour inputs, instead of a focus on gross yield, have made it possible for agroecology enterprises to thrive.

As well as the environmental benefits already discussed, there are social benefits from agroecology, including the shift in land work from semi-skilled 'production line' operations to skilled knowledge work, exploiting innovation and automation, and improving both productivity and the quality of jobs. An increase in the quantity of jobs would also be likely, especially with a shift towards agroecological horticulture. We conclude that agroecology is both bankable at the enterprise level and desirable at the societal level based on its underlying economic characteristics.

Case study: Stephen and Lynn Briggs increased the profitability of their farm by [transitioning to agroforestry providing economic and ecological benefits](#).

5. NbS are based on inclusive, transparent, and empowering governance processes

A core principle of agroecology is responsible governance.² At a time when global food systems are under intense scrutiny, and leaders around the world are vying to set a future direction for food and farming, agroecology calls for responsible, inclusive and effective governance in the transition to more sustainable food and agricultural systems.² In such a foundational sector – all our lives depend on the food we eat and the ecosystem benefits from land and nature – future decisions must be inclusive and transparent – arguments playing out right now in preparations for the UN Food Systems Summit.

Both agroecology and nature-based solutions set out the need for responsible governance at the appropriate scales - from local/farm level to national policies and standards, to collective international governance of an increasingly globalised food system. The key for both NbS and agroecology is that governance needs to be appropriate to the challenge at hand. Farmer-led and community-based ways of organising are more likely to ensure high levels of engagement, benefiting community supported agriculture or cooperative models. At the other end of the scale, strong international governance ensures that countries and global companies raise standards in tandem (with no countries left behind; or able to undermine global commitments). This principle of responsible governance combined with the co-creation and sharing of knowledge ensure agroecological approaches are well adapted for local conditions both ecologically and culturally and are well embedded in the local community and context.

At present, the *application* of the helpful governance mechanisms already available is – at best – patchy. For example, the relationship between local governance of food procurement and community health and wellbeing, whilst well understood, is differentially applied around the country. The well-evidenced 'Preston' model, in which local food (as well as other products and services) is procured for local anchor institutions, using the Social Value Act, is a good example. South West Procurement Hub is travelling in the same direction. But these creative

uses of the enabling mechanisms are poorly distributed around the country. FFCC calls for ‘systems intelligent’ community food plans to underpin national food strategies. This has a direct impact on growing the market for agroecologically produced food, as well as demonstrating the importance of properly joined-up governance, legislative and regulatory environments.



6. NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits

A key principle of agroecology is to create virtuous circles and multiple benefits through utilising synergies or relationships at different scales. At a farm level this might be utilising ecological relationships to enable greater resource efficiency or resilience. For example, utilising the intercropping of pulses to support nitrogen fixation leads to a reduction in synthetic nitrogen, healthier soils and climate mitigation and adaptation. At a landscape level this could be increasing mixed farming approaches, utilising livestock to provide natural nitrogen cycling for crops; and agroforestry and silvo-pasture for providing additional sources of income, soil, and biodiversity benefits. While trade-offs are still inevitable, agroecological approaches highlight the importance of collaboration, partnerships and responsible governance involving actors at different scales.

Case study: An example of trade-offs being managed by communities is the use of the public value framework in Frome to deliver multiple public goods, which can be found in our [field guide to the future](#).

7. NbS are managed adaptively, based on evidence

Globally, agroecology has a long history as a movement, science, and practice.⁷ There is a strong and growing global evidence base on the role of agroecology in transforming global food systems to meet the critical social challenges set out in the Sustainable Development Goals; as well as meeting the need to quickly adapt food systems to support nature recovery and respond to climate change.³ The High Level Panel of Experts (HLPE) 14th report on food security and nutrition is an authoritative and substantial synthesis of the evidence supporting the transition to agroecology.³ The strength of agroecological approaches is that they are trans-disciplinary, participatory, and action-orientated; as the field develops, with good ground-level evidence gathering against agreed metrics, agroecology practitioners learn more about what works and share that learning and evidence, building the body of knowledge, whilst acting on pressing problems.

Sometimes perceived as a problem of agroecological approaches, it can seem difficult to say definitively what is or isn't agroecological practice. Comments about the definitions, and the differences between this and, say, regenerative agriculture, are all over social media. This is partly because people who are new to the field do not do their own due diligence and look it up. But it is also because it is a rapidly evolving field, largely led by developing countries and participatory academics, whereas the big R&D (and comms) money tends to come from, and go to, those working on innovations that bring further commercial benefits to global agribusinesses. It is also because – as an integrating approach meeting multiple challenges – agroecology draws on diverse and interdependent bodies of knowledge. Like the policy world, the academic world can become silo'd by an emphasis on narrow and deep expertise, without also understanding the interdependent impacts of different fields on public value.

It is now crucial to work on this, since many much-vaunted net zero solutions would have unintended consequences on biodiversity and nature, or rural economies in communities around the world. A good example of efforts to mitigate this is the current UKRI call

for multi-disciplinary bids in the ‘Transforming Food Systems’ programme and including partnerships with grassroots groups. The other body of research, often excluded from the scope of these discussions, concerns the transition to more equitable and just global economies. Integrating the UNFAO agroecology principles, with these NbS criteria, helps resolve this issue, since it pays explicit attention to this (and is indeed one of the ways to differentiate between agroecology and more practice-based definitions of regenerative farming).

Furthermore, we anticipate that the regulatory baseline for farming will increase over coming years, to meet escalating commitments on climate and biodiversity. This mounting scientific evidence base and the changing social licence to operate for land management will, we argue, strengthen the case for the integrating and holistic approach of agroecology.

8. NbS are sustainable and mainstreamed within an appropriate jurisdictional context

With the exit from the European Union, the UK has the opportunity to reshape some important legislative structures. Agroecology, with the right framework of properly joined up legal powers, could help deliver numerous policy goals at local, national, and international levels for public value. Namely:

- **NDC commitments as part of the Paris Climate Agreement**, through pivoting away from carbon intensive methods of farming. Research carried out by IDDRI and cited above demonstrates how we can reduce carbon emissions from agriculture by at least 38% by 2050 with a complete transition to agroecology – through completely removing emissions connected to synthetic inputs, reduced emissions from enteric fermentation, better manure management and reducing the carbon emitted from poor use of agricultural soils. As well as reducing the carbon emissions of the sector, agroecology was shown to offer huge carbon sequestration potential through integrating more space for green infrastructures, better soil management

practices that increase soil carbon sequestration, forestry, and agroforestry.

- **Environment Bill and CBD targets**, through freeing up more space for nature and green infrastructure, helping to meet Environment Bill targets, providing an additional 500,000 hectares of wildlife-rich habitat outside the protected site network and increase woodland cover through afforestation and agroforestry. Since farmers are stewards of 72% of the UK’s land, it is essential that sustainable agricultural practices are championed to deliver on the Environment Bill and CBD targets.
- **Agriculture Acts and CAP successor schemes**, through enabling a transition to sustainable agroecological enterprises that are profitable, growing more healthy produce and delivering public goods such as carbon sequestration, biodiversity net gain, clean water and more.
- **Green Recovery and 10-point plan**, through increasing good jobs in the countryside and a green economic recovery in rural areas, as well as supporting sustainable land use management for delivering tree planting and peatland restoration and natural flood defence through good land management in our farmed area.
- **Achieving the Sustainable Development Goals by 2030**, through integrated agroecological practices, that help to contribute to 10 of the 17 SDGs. Agroecological practices also help to reduce the global impact of the food system by – for example - eliminating imports of soy currently responsible for deforestation, to feed UK livestock.



Our recommendation

Accelerate the adoption of agroecology as the nature-based solution, by 2030, to meet net zero targets and international commitments on climate, biodiversity, sustainable development, and health. Farming agroecologically provides a radical and practical way, available now, to map a broad pathway to deliver on NDC commitments, while meeting other societal needs for ecosystem restoration, healthy nutritious food, good rural jobs, and green economic recovery.

We recommend:

- Agroecology is recognised by UK government as a nature-based solution for agriculture and land use and targeted finance and investment is deployed to accelerate the transition to agroecology, including the establishment of an agroecological development bank (detailed in our paper Farming Smarter: <https://ffcc.co.uk/library/farming-smarter-investing-in-our-future>)
- A clear route map and kit bag is developed with farmers to help transition farming to agroecology by 2030, with targeted government support to enable that transition, supported by emerging and multiplying private finance instruments.
- Locally-led solutions are developed with farmers in places, to response to critical national and local priorities, for greater responsiveness, resilience and adaptative capacity. For example, landscape level pilots of agroecology could be funded through Tier 2 of ELMS which allow the benefits of agroecology to be applied at a landscape level through enhanced support for collaboration.
- Communities and local authorities are supported with funding to trial projects that deliver greater access to agroecological produce and develop local supply chains and infrastructure, such as prioritising healthy sustainable agroecological produce in dynamic procurement trials and testing out a beetroot bond (see P.26 of [Our Future in the Land](#))

What have we heard about the feasibility of a transition to agroecology by 2030

Over the last few months, FFCC has been holding several open inquiry sessions to explore aspects of a transition to agroecology that require more thought and development. More than 600 participants took part in the four open inquiry sessions with 22 different expert perspectives seeding and prompting the discussions.

The first session on '**changing agronomy**' strongly supported the prospects for a transition, with participants telling us agroecological farming practices were becoming increasingly accessible and achievable and were providing more flexibility to increase output off the same area of land. However, capturing the data consistently and benchmarking to back this up remains a challenge, given the complexity associated with these farming systems. *[Note: we support and work with Sustainable Food Trust's project to produce a globally harmonised and integrated set of farm metrics].*

The second session on '**changing land management**' pointed to the clear production benefits of diversity when integral to the whole farming system, rather than on the peripheries. While these methods would be more profitable, they were sometimes difficult to achieve due to the knowledge intensive nature of the associated practices. The session also pointed to the importance of both people (and good land-based jobs) and technology in the changing farmed landscape. Greater collaboration between land managers is essential to transitioning to agroecology, complemented by making the best use of technologies, to help shift the markets and supply chains, that would support more diverse land-based production systems and more jobs. *[Note: our work on a land use framework and locally led land use framework pilots helps to connect the multiple interests in questions of land use].*

The third session on '**changing economics**' got to the nub of where some of the big blockages to a transition to agroecology remain, particularly the lack of a properly joined-up approach across government, and not being up front about some the difficult trade-offs – specifically around the UK food price regime, trade regulation and

changing diets. As long as these trade-offs remain under-discussed in the political domain then a holistic approach to the economics of agroecology remains hard to achieve. Despite this some producers are already shifting to a 'less is more' production business model focusing on their land's natural fertility and maximum sustainable output driving margin, not yield. *[Note: this could provide fertile ground for the new No 10 Policy Unit, examining the public value implications of better join up on food and farming policy, health and wellbeing, business, trade and international development].*

The final session tackled '**changing culture**' where we heard the repeated message around changing mindsets. It was recognised that the establishment of farmer cluster groups and many more social learning and peer-to-peer networks is already having a big positive impact on the transition to agroecology. However, it was felt the agricultural education system needed to shift to become more relevant to today's means of learning and the challenges the sector faces, focusing on regenerative principles not extractive practices. *[Note: it is not just in farming sector that cultures need to change. From government to business to civil society, our other programmes across food and health, farming, and land use, locally led economic and social resilience all point to the need for widespread and fundamental changes in how we think about the world, and how we organise our institutions more effectively to meet the serious challenges in front of us].*

Overall, the sessions, have helped us understand that the agronomic and land management aspects of agroecology are readily achievable right now. For many, transitioning already makes economic sense, however not for all. To get to the scale and pace needed - to meet governments' net zero ambitions, reducing emissions from agriculture, to recover nature and biodiversity loss, in a healthy and flourishing society, whilst acting on the social and economic impediments to agroecology - focus must now go on the political levers for a more connected approach to the UK food system.

We know some difficult choices and serious changes are needed, facing into trade-offs around what we eat, what

it costs and how we trade. Agroecology as the nature-based solution for farming offers the most plausible and fair pathway to a more sustainable future.

What our speakers and participants said at the Routes to Action workshops

"We are entering a new period of agronomy where nature-based solutions look increasingly like the most achievable and realistic in the market." Lucy Bates LEAF

"We can build resilience by working with nature rather than spending time money and resources battling against it." Becky Willson FCCT

"We really don't have enough people managing the land. I'm really happy with idea of productivity in terms of delivering multiple private and public benefits from the management of land, but don't use productivity as a way of getting rid of more people from the management of our countryside. We need more people on the land and you can do it if you take the approach of building diversity into production systems." Janet Dwyer, CCRI

"Agroecology if done right, will be more profitable than conventional operations, even if total output does go down." Niels Corfield

"Central to making agroecology more investable is a supportive Government policy. Clearly more mixed farming systems have the potential to deliver a wide range of public goods, which could be well supported by emerging public payments for public goods policy in England." Susan Twinning CLA

"If the UK moves to transform its food system onto a plane of higher environmental quality and higher environmental standards – and I suggest higher prices consequently – are we prepared to deploy the necessary carbon and environmental border adjustments so that the domestic inducements don't simply provoke a flood of imports with cheaper, but polluting inputs?" Allan Buckwell

"When we talk about dietary change, we automatically go into a frame of mind that this is a citizen driven change...This is not all on citizens, the system needs to drive this dietary change and be set up to support this dietary change." Courtney Scott

"A fundamental change in our mindset of thinking about agriculture is rather than as a linear system with inputs and

outputs, it is a series of interlocking cycles that we're trying to manage to get produce out of those cycles. In doing this – in simple economic terms – we have reduced both our variable and our fixed costs over the last few years." Johnnie Balfour

"[We need to] make sure that we integrate the consumer into what we're doing on the farm...which is the whole basis of food sovereignty and a really key part of agroecology, that is not talked about enough. Then you start understanding that it's no longer about affordability, but it's about value. Two words that have broadly similar meanings to a lot of people, but they're actually really different." George Young

"The skills and mindset required to shift business as usual towards this path are not reflected in current agricultural education, which is still based on this post-industrial paradigm in terms of design and even when new qualifications are being developed, they are stuck in conventional patterns. And they're informed in the development stages by stakeholders and educators, [who are] also stuck in those conventional patterns of being heavily reliant on inputs and fossil fuels. The chemical prescription approach teaches our students to address symptoms, not the root cause. We have agriculture and horticulture students who know more about sheds than soil, more about business planning than biology and more about machinery than ecological functioning. And that is not to say that business planning, machinery and sheds aren't important, but they absolutely require context and consideration within a wider agro-ecosystem" Nikki Yoxhall

"There's a risk that the big landowners will be beneficiaries of big schemes and that the farmers will stop farming - and we can't let that happen. What we need to do is find a way of all these inspired conventional farmers transition into regenerative agriculture not effectively be pushed off to become park keepers and tourism managers." Jenny Phelps FWAG

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