

RETHINK FOOD

The Need for Change



July 2022



Foreword

This report, Rethink Food: The Need For Change, from the Nature Friendly Farming Network, maps the legacy of our food system's past and presents the case for why we need a monumental change in how we farm our land and feed our nations.

The COVID-19 pandemic and the war in Ukraine have exposed the fragility of a food system close to breaking point. The costs of commodities have skyrocketed, and farmers are facing unprecedented input costs while navigating changes in domestic agriculture policies and labour shortages. Rising food prices will hit those vulnerable the hardest with the grim reality of increasing household food insecurity.

While immediate interventions to reduce the severity of these impacts mean maintaining supplies from current farming systems, we mustn't forget the need for systemic change that will positively shape food and farming to deliver genuine food security. Right now, we are experiencing the knock-on implications of decisions about land use following the Second World War, which supported farming practices that made little room for environmental concern, to the detriment of biodiversity, which has been in steep and unrelenting decline.

Today we find ourselves in a food system powered by fossil fuels and dominated by calorie-rich, nutrient-poor produce¹. We have reached a fork in the road where we must question what we currently produce, how we produce it and if more of the same is the answer. We must boldly reimagine how healthy food farmed in nature-friendly systems can reach more tables, how extractive supply chains are shortened and localised, and how active food citizenship and community-led initiatives engage more of society with where and how our food is produced.

How can we mainstream low-carbon, nature-friendly farming, food waste reduction and demand for sustainable food options at scale?

This is a challenging time to address how farming moves forward. But the past few years of comprehensive scientific assessments have pushed the urgency of restoring nature, protecting ecosystems and adapting to a future where climate change is to the fore. Farming is central to this. Without extensive and widespread adoption of nature-friendly agriculture, where diversity spans the landscapes of our farms, we risk a future with greater instability. Producing bountiful nutritious food without a biodiverse and fertile natural environment will be impossible.

We must re-examine what a good food system looks like to encompass the multiple dimensions of a truly equitable food economy instead of focusing on the volume of output as our only indicator of success. Food needs nature as much as people do. Our resilience to a changing climate relies on ecosystems that can weather the storm, quite literally. Crops and animals need a functioning landscape to exist symbiotically to benefit our soil, water and air quality.

This first report in our Rethink Food campaign sets the stage for the coming months as we dive into rethinking farming's role in a sustainable food future, and this is a stepping stone to further analysis.

Farming can be the cornerstone of a fair and resilient food system that is vibrant and functional for citizens, farmers, rural communities, the economy, nature and climate. But to get there, we cannot afford to repeat past mistakes or delay our journey to the future.

- Martin Lines, UK Chair, Nature Friendly Farming Network

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The UK's food system – a cog in a global machine

The food we eat and how we produce it is fundamental to our health, wellbeing and prosperity now and in the future. In seeking readily available supplies, the UK's food system has undergone significant change as part of a complex and interconnected global food system.

Since the 1950s, technological advances and an aim to increase self-sufficiency transformed farming. Following the end of the Second World War, global food production became centrally focused on delivering a growing abundance of food². During this time, we have witnessed increasing yields³, improved productivity⁴ and lower prices. Production-focused agricultural subsidies, technological advances and increasingly liberalised international trade pushed productivity to the top of the agenda, leading to a system favouring monocultures, high inputs and export-led production.

As a result, farms have become larger and more specialised, adopting various innovations to maximise productivity. These included the widespread increase in chemical fertilisers and pesticides, the separation of arable and livestock production and the adoption of more machinery and automation.

This approach has shaped food production throughout much of the world. Global institutions such as the World Bank, the International Monetary Fund and the World Trade Organisation promoted, supported and often loaned to developing countries to adopt measures to increase production based on this model. In developed countries, governments promoted crop yield and protected their domestic farm sectors from the full effects of increasing global competition by heavily subsidising their production. Although these changes have secured many gains, a narrow vision of success has created a flawed food system, contributing to an ever-warming climate and widespread biodiversity loss.

As global and national institutions continue to grapple with long-term attempts to bolster food security, the conflict in Ukraine has brought mounting pressure to confront the implications of industrial farming. Against a post-Brexit backdrop, efforts have been made to transition agriculture into an era of sustainable production and environmental stewardship.

With food security at the forefront of political agendas, we believe that achieving future food system viability will also rely on designing ways to tackle the twin crises of climate change and nature loss.



What is food security?

Food sustains and nourishes us, providing the energy and nutrition we need to live healthy lives. Its production is central to resilient local and regional food systems, with a raft of economic and social benefits in food's growing, rearing, processing and distribution.

Access to food is an indicator of a nation's prosperity, and food security is considered a primary objective of a stable society. Broadly speaking, achieving food security is recognised when:

“All people, at all times, have physical, social and economic access to sufficient, safe and nutritious food which meets their dietary needs and food preferences for an active and healthy life⁵.”

On this basis, achieving food security has focused on four key dimensions:

- **Availability:** When there is an adequate supply of food, determined by the level of food production, stock levels and net trade
- **Access:** When all people have economic and physical access to food
- **Utilisation:** When food provides a sufficient level of energy and nutrition to meet physiological needs
- **Stability:** The ability to access sufficient food at all times. Access to food should not be compromised by sudden shocks (e.g. an economic or climatic crisis) or cyclical events (e.g. seasonal food insecurity)

Recently, there have been growing calls to incorporate the additional dimensions of sustainability and agency within the formal definition of food security⁶.

- **Sustainability:** Food system practices that contribute to long-term regeneration of natural, social and economic systems, ensuring the food needs of the present generations are met without compromising the needs of future generations
- **Agency:** Individuals or groups having the capacity to act independently to make choices about what they eat, the foods they produce, how that food is produced, processed and distributed, and to engage in policy processes that shape food systems

Achieving genuine, long-lasting food security depends on meeting these interconnected dimensions. If food is not produced sustainably, stability and utilisation are threatened, which risks long-term availability and access⁷.

Despite the need to simultaneously deliver each of the dimensions of food security, availability often takes precedence. This narrow focus has shaped the global food system and is one of the driving forces behind current food production, farming and land management in the UK.



UK food production and land use

The UK's food system has achieved impressive feats. Yields increased at a scale unimaginable just half a century ago with low financial costs to the consumer and year-round access to produce from around the globe. While this has created a food system synonymous with choice and convenience, we now face multiple unforeseen consequences that threaten to weaken an already brittle system.

Driven by the pressures of a centralised and globalised marketplace, UK farming and food production has become increasingly specialised. Livestock farming dominates land use, with over two-thirds of UK farmland used to feed around 230 million animals in 2019⁸. The production of pigs and poultry uses a fraction of the UK's land area to produce over 187 million animals per year. Supporting this level of livestock farming cannot be sustained by grass and homegrown feed and requires significant quantities of imported livestock feed⁹, using an estimated 850,000 hectares of land abroad¹⁰. Much of this feed is sourced from land rich in biodiversity and at risk of deforestation¹¹. In addition, 2 million hectares representing 40% of the UK's entire arable land area are used to grow crops for animal feed¹², with roughly 60% of wheat, barley, and oats being used to feed animals in 2020¹³.

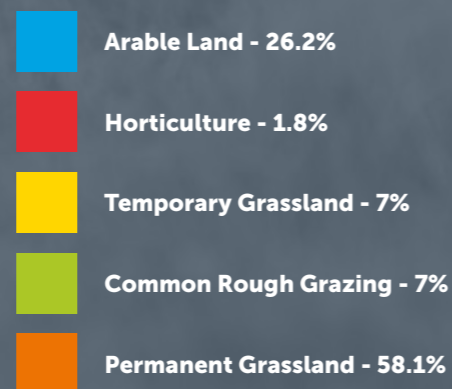
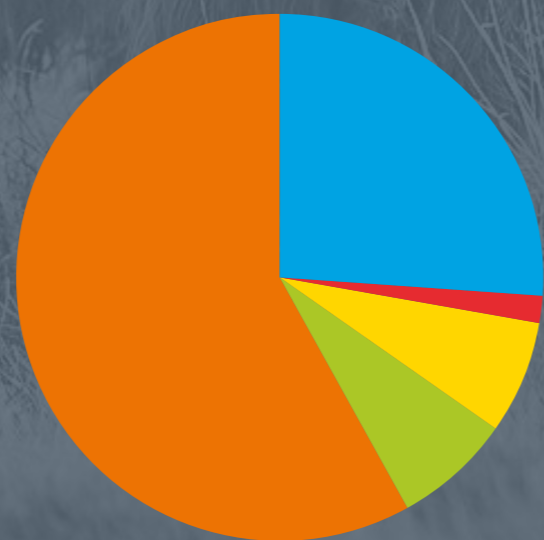
Structuring our farming like this means we are using more land than necessary to feed people well and are relying heavily on energy-intensive chemical inputs which damage nature and the environment, degrade soils¹⁴, pollute rivers¹⁵ and contribute to climate change¹⁶.

In comparison, horticulture production comprises around 2% of the UK's land area¹⁷, with approximately 240,000 hectares dedicated to the production of sugar beet and potatoes, 119,000 hectares for vegetables, such as roots and onions, brassicas, salad crops and approximately 34,000 hectares for orchards and soft fruit combined.

There are other emerging pressures on land use with a concerted push for bioenergy. In 2020, around 2% of UK farmland¹⁸ was used for bioenergy crops, including 75,000ha of maize, 29,000ha of wheat, 7,000ha of sugar beet and 8,000ha of miscanthus. Land for energy already dwarfs that of soft fruit production and is roughly the same as the total UK land area dedicated to horticulture. Although the Climate Change Committee suggests there is potential to increase bioenergy crop production to cover around 7% of current agricultural land¹⁹, concerns have been raised around the risk that it poses to nature and the climate²⁰.

Considering the agricultural make-up of what UK farmland produces, it raises the question of whether our food system is giving precedence to feeding people, animals or energy consumption.

Figure 1. Agricultural land use in the UK²¹



Increasing costs and diminishing returns

As the food system has evolved to prioritise specialisation over diversity and yield over profitability²², many farms have become dependent on artificial inputs, such as fertilisers and pesticides. In 2020, the cost of animal feed, fertilisers and pesticides amounted to nearly £8 billion²³ - over double that paid out in farm subsidies each year. In 2021, these costs rose by an additional £160 million²⁴, largely due to rising gas prices. Decoupling of crop and livestock production both spatially and at a farm level has led to imbalances in nutrient cycles²⁵. In some areas, farmers are facing losses in fertility, resulting in a continued reliance on chemical inputs to maintain production. In others, surpluses are common, leading to different forms of pollution which incur significant costs to the environment²⁶ and society²⁷.

High-input, fossil fuel-based systems make farms susceptible to market volatility and price fluctuations^{28, 29}. At the same time, these inputs

damage soils³⁰ and make farmland ecosystems less able to self-regulate pest or disease outbreaks. This makes the cycle of input reliance tougher to break, alongside increasing problems with pesticide resistance³¹ and reducing the capacity for the land to recover from extreme weather.

These once-hidden costs³² of input vs impact are increasingly apparent through the pollution of our water³³ and air³⁴, losses in yield due to herbicide-resistant weeds and the emission of greenhouse gases.

As the Ukraine crisis has evidenced, input costs are subject to dramatic fluctuations³⁵. The dependence on natural gas for their production, alongside the high price to the farming sector and implications to the environment³⁶, raises concern that the high use of inputs is to the detriment of viable farm businesses and ecologically functioning landscapes.

Twin pillars of UK food: waste & junk

There is an inherent contradiction in a food system that pushes production at a farm level while wasting considerable volumes of food and drink along the way.

Waste can be found in every facet of the food supply chain: from farm fields to food manufacturing, hospitality, retail and households. In the UK, around 9.5 million tonnes³⁷ of food were wasted in 2018 post-farmgate, equating to roughly 15 billion meals with an estimated value of £19 billion and accounting for 36 million tonnes of greenhouse gas emissions³⁸. This volume of wasted food and drink would require an area close to the size of Wales for production³⁹. If every UK household stopped wasting food for one day, it would do the same for greenhouse gas emissions as planting 230 million trees yearly⁴⁰. Every tonne

wasted is an unnecessary burden on our already overstretched planetary resources.

At the farm level, food is wasted due to unpredictable and inefficient external influences that range from weather conditions, pest infestations, overproduction and market saturation to excess production, fluctuating market prices, quality control and aesthetic standards^{41, 42, 43}. Despite improvements to on-farm mechanisation and infrastructure, research has indicated that farm waste is higher in middle- and high-income countries⁴⁴, such as the UK. To reduce this waste, manufacturers must be held to account for over-ordering, unnecessary cosmetic standards and marketing which incentivises over-buying foods high in fat, sugar and salt.

While everyone should have access to the food they need to live healthy lives, access is far from equal. The UK ranks as one of the most food-secure nations⁴⁵ in a world that produces more than enough food to feed everyone⁴⁶. Yet, we have the highest rate of reported food insecurity in Europe, with 2.2 million people recognised as highly food insecure in 2018⁴⁷.

High levels of food insecurity are coupled with increasing rates of obesity and dietary ill-health linked to the overconsumption of ultra-processed

foods⁴⁸. For many, access to nutritious food is precluded by a lack of financial resources and a food system that values corporate profit over health. These complexities highlight that achieving true food security is less linked to the number of calories produced, but results from various different factors, including dietary choice and physical and financial access to food. We believe the fundamental principles of a food-secure nation must also bridge the gaps between people's health and the health of our land.

The nature and climate emergency

Many farmers are now struggling in systems under intense stress. Environmental breakdown, climate change, and declining soil fertility threaten food production worldwide⁴⁹. Disruptive weather, including droughts and floods, is already impacting production on UK farms, and many of the species we share our land with are in freefall⁵⁰ due to the impacts of the food system.

The UK is one of the most nature depleted countries in the world⁵¹, having lost 133 species since 1950. Meanwhile, 41% of species are in steep decline, and over one in ten (15%) are now threatened with extinction⁵². There are multiple factors driving nature's decline, but the evolution of farming over the last 50 years has had the most significant impact⁵³.

The increased use of pesticides and fertilisers, higher stocking rates, changes in crops and cropping patterns, greater mechanisation, increased farm size and loss of on-farm habitats has pushed nature to the margins. Many birds^{54, 55, 56, 57}, mammals, invertebrates⁵⁸ and plants^{59, 60} have been squeezed out of increasingly homogenised landscapes. As biodiversity diminishes, society is losing vital ecosystem services making food production costly and increasingly unviable.

Agriculture and land use is the fourth largest contributor to total greenhouse gas emissions, making up 12% of the UK's total emissions⁶¹. Of farming's emissions, nitrous oxide and methane make up the vast majority, at 31% and 56%, respectively. Farming's role in helping the UK meet net zero means an urgent need for adopting on-farm climate mitigation and adaptation strategies⁶², or the sector risks contributing to further runaway warming.

The government's efforts to reduce agriculture's climate impact have come under fire in the

Climate Change Committee's (CCC) recent assessment of the UK's progress in reducing emissions. The CCC claims that plans to decarbonise the agriculture sector heavily rely on the uptake of low-carbon farming, which it says is lacking in progress⁶³.

41% of species are in steep decline, and over 1 in 10 (15%) are now threatened with extinction



Current research predicts that the land's overall productive capacity will reduce due to climate change⁶⁴. It will significantly affect the livestock sector, including the risk of heat stress, infertility, welfare and mortality⁶⁵. Some analysis has suggested this will make livestock farming in certain parts of the UK increasingly unviable⁶⁶.

The costs of a warming planet continue to rise, with extreme weather events becoming the norm. In 2016-17 Scotland's agriculture sector incurred losses estimated at £161 million due to severe weather⁶⁷. In 2018, drought severely affected harvests, resulting in a rise in farm gate prices⁶⁸ and the need to source food from elsewhere to fill shortages in domestic supply⁶⁹, while in 2020, wheat yields dropped by 40% due to heavy rainfall and droughts at bad times in the growing season⁷⁰.

In the context of future food security issues, stabilising climate change and adapting to predicted changes in our weather system are necessary to reduce the risks of production failures, food shortages and subsequent economic costs.



Nature underpins food security

The challenges facing the UK's food system are immense and complex. Nevertheless, the interrelated crises of climate breakdown, biodiversity loss and rising insecurity, combined with the Ukraine war, have accelerated the pressure for change.

We must move from a system typified by vulnerability, disruption and inequality to one of economic, social and ecological prosperity. This is no simple task and requires transformative change across the entirety of the food system.

Already many farmers across the UK are capitalising on nature's business benefits⁷¹. Research shows that integrating a diverse range of habitats and features on farmland can maintain and even increase yields⁷². For example, a large-scale study found that incorporating nature-friendly habitats on just 8% of arable farmland boosted the yield of flowering crops by 25% and resulted in no losses of yield for wind-pollinated crops due to an increase in pollinators and crop pest predators arising from wildflower margins and other habitats⁷³. In livestock systems, a partnership with nature can bolster profitability and build resilience to external shocks by reducing inputs such as feed, fertiliser, housing costs and veterinary medication⁷⁴.

Nature builds our capacity to adapt and creates the resilience to withstand the pressures of a warming world. Semi-natural habitats found on farms,

including peatlands, woodlands, heathlands and species-rich grasslands, provide valuable nature-based solutions⁷⁵ which capture carbon and help farms adapt⁷⁶ to the effects of climate change, such as reducing the impact of flooding⁷⁷, aiding resilience to drought and pests and contributing to functional ecosystems.

Farming can help build a better food system that works with nature rather than against it. This requires long-term support from governments, a clear direction of travel and a well-managed transition. Crucially, this means supporting actions that place nature at the heart of our food system. This depends on suitable schemes to help farmers transition to nature-friendly farming through reliable income free from the market's vagaries.

Payment schemes to support farmers in creating greater ecological and agricultural diversity, including wider crop choices and livestock breeds, will help farms manage natural or economic shocks with less reliance on inputs⁷⁸. The benefits of these interventions significantly outweigh the costs. Environmental actions that benefit species and habitats and improve soil health and air and water quality have also been proven to return at least £3.20 worth of benefits for every £1 invested⁷⁹. In contrast, investments which seek to subsidise food production miss out on these benefits by offering little value for money, making the public pay for food twice, once through their taxes and again at the till.



Image: Top: ©Abbstowmarket Bottom: ©Sorcha Lewis

The key ingredients for a food secure system from a nature-friendly farming perspective:

Our modern food system has overlooked the golden thread between a stable climate, nature and food security. UK farming has the potential to produce diverse, nutrient-dense foods while restoring nature, locking carbon into healthy soils and reducing vulnerability in a global marketplace. For this to happen, all its assets must be recognised and managed well, with all outputs rewarded as part of a fair food and farming system. This is imperative to secure thriving businesses and the best outcomes for society.

Building genuine, long-lasting food security spans beyond the farm gate, but this is where change begins from the farm ground up.

The Nature Friendly Farming Network wants:

To safeguard food production through a nature-friendly transition - Across the UK, we urgently need a shift to nature-friendly farming to unlock its potential to build resilient farm businesses that produce healthy food while simultaneously addressing the nature and climate emergency. We need a clearly defined transition which provides the roadmap for the future.

A solid pathway to a net zero future - Farmers need a long-term strategy which provides the right tools to deliver widespread climate mitigation and adaptation. We need support to cut our food system's reliance on fossil fuels and help farmland sequester and store more carbon to help reach net zero.

The right outputs in the right areas - We must prioritise the right outputs in the right places to avoid unnecessary trade-offs and to maximise co-benefits between food production, nature's restoration, climate mitigation and adaptation.

To deliver greater diversity - Help farmers harness opportunities to produce a wider variety of foods from the land, where position, and support a transition to diverse farming systems.

Food for healthy landscapes and healthy people - We need to move away from a food system focused on calories produced to one which prioritises health through optimal nutrition. We must strengthen the link between what we produce and what we need, while empowering people to make healthier, more sustainable choices, for example, through clear food labelling.⁸⁰

Nature-friendly food on more tables - Improvements to markets, supply chains and infrastructure can support a transition to widespread nature-friendly farming, ensuring that farmers receive a fair return for the food they produce and provide access to healthy, sustainable food for all.

Transformative food system change - Production forms just one part of a highly connected food system. We need the right policy and legislative frameworks that tackle issues in tandem, ensuring that actions are coherent and mutually reinforcing. Such interventions are necessary to ensure that efforts on dietary change, waste, access, trade, food production and land management are joined-up.

Quotes from supporting organisations



Vicki Hird
Head of Sustainable Farming, Sustain Alliance

"It is so heartening to see farmers understanding the need for urgent action to protect our health, nature and climate and being realistic in what that means. We have choices in how we support farming in the UK and this report by NFFN lays out a clear path we must take, as government, society and industry, if we want to feed ourselves and the next generations in healthy, sustainable and equitable ways whilst reducing our global impact. It makes it clear that we can produce enough good food, but only if we make the right policy choices – both on farm support which needs to come faster and be bigger in ambition and budget, but also a wider food system policy shift on waste, diets and to ensure access for all to high quality, affordable food with nature at its heart."



Joan Edwards
Director of Policy, The Wildlife Trusts

"Farming can hold the key for restoring nature and tackling climate change, but we need to do things better. For that to happen, the current system must change. The ways we produce food currently leaves us trapped in a dangerous cycle. For too long, farmers have been rewarded for farming as much land as possible, causing biodiversity loss and contributing to climate change. This forces farmers to rely even more on dangerous chemicals and to further intensify methods, which leads to more problems for nature. Continuing down this path would be a disaster for people and planet. It's time to rethink how we manage land to produce healthy, sustainable food and restore our fractured and fragmented natural world."



Gill Perkins
CEO, Bumblebee Conservation Trust

"The dramatic declines in wild pollinators, including bumblebees in the UK poses a serious threat to the UK food industry. Bumblebees are major pollinators of many crops including soft fruits, tomatoes and beans. They also help pollinate nitrogen-fixing, leguminous plants that play a key role in enhancing the productivity and forage value of pasture systems for livestock grazing. Our work is showing that the use of legume-rich herbal leys and cover crops can help reduce reliance on expensive synthetic fertilisers. We need policies that strongly support a nature-friendly farming approach and that encourage farmers to create and restore wildflower-rich pollinator habitats. The NFFN's new Report makes the case for steps in the right direction. Together we can build a resilient and sustainable agricultural sector alongside a thriving natural ecosystem."



Gareth Morgan
Head of Farming and Land Use Policy, Soil Association

"The Soil Association fully supports the call to Rethink Food. A transformation in what we eat and the way we farm is an urgent priority and we are working closely with NFFN to find practical ways to accelerate the transition to an agroecological food and farming system."

Quotes from supporting organisations



Nick Rau
Campaigner, Friends of the Earth

"Global food insecurity is being exacerbated by the climate emergency and nature loss. This means farming is facing some tough choices. This timely report acknowledges the consequences of decades of damaging farming practices which have left us with impoverished soils, polluted rivers, and declining pollinators. It sets out the urgent need for a resilient and thriving food system that works with nature to deliver productivity, sustainability and restores our lost biodiversity."



Becky Speight
Chief Executive, RSPB

"The case for redesigning our food system to deliver better for people and nature as set out in this report is overwhelming. With benefits such as resilience in the face of our changing climate, reversing the declines in wildlife and providing healthy food from robust businesses it makes a compelling case for change."

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About Rethink Food

The Nature Friendly Farming Network's Rethink Food campaign examines the myths, challenges and opportunities presented to farmers in the current food system. It seeks to explore the role of UK farmers in shaping a better food system from the farm ground up.

About the Nature Friendly Farming Network

The Nature Friendly Farming Network (NFFN) is a UK-wide, farmer-led organisation that champions working harmoniously with nature to produce food, fibre and other products from our land. For many years, nature-friendly farming has been building momentum in response to resource-intensive systems that have driven our landscapes to degradation.

Nature-friendly farming comes in all shapes and sizes as part of a bigger transition towards a fairer food and farming future. What unites the NFFN is how food and farming can positively influence change.

Report and research



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