

# Feeding Britain



PATRICK HOLDEN

## For climate, nature and health

**We are what we eat, or, in the case of animals, what they eat. To put it another way, what we do to nature we do to ourselves. The simple and eternal truths concerning the relationship between humans, nature, food and health have been forgotten during a chapter of human history which spans the period of the industrialisation of agriculture.**

The reasons why this has happened are complex. A combination of the absence of the application of the polluter pays principle, the misdirection of subsidies, a misguided obsession with cheap food (that in actual fact comes with huge hidden costs) and a lack of awareness about the impact of the farming systems upon which we have become dependent during the post war period – all of these factors, and more, have contributed to soil degradation, climate change, biodiversity loss and damage to human health.

But now, things are beginning to change. Not before time, millions of people are realizing that we are in the last chance saloon when it comes to reversing the damage caused by more than half a century of industrial agriculture to our ecosystems. The patient planet is sick, and the primary culprit is intensive agriculture.

The extractive, chemically based industry which mainstream farming has become is now being blamed by climate scientists, conservationists and governments alike for being a major contributor to the destruction of our natural capital, to the pollution of the atmosphere and biosphere, and, yes, to the degradation and undermining of human health. In response, more and more citizens are asking a critically important question:

“If I want to be part of the solution, what should I eat to be healthy and sustainable?”

The answer from the Sustainable Food Trust is that our future diets should be aligned to the productive capacity of the regenerative and sustainable farming systems which need to replace the ones we have at the moment. But all this leads to a question – how much food and in which proportions would the sustainable farming systems in any particular nation or region produce? Knowing this is crucial before we can decide what our future diet should be.

Somewhat surprisingly, very few organisations or individuals have asked this question, with the notable exception of the Food Farming and Countryside Commission and Simon Fairlie. Instead, a number of extremely influential reports, perhaps most famously that from EAT-Lancet, have all discussed the issue and recommended diets, mostly plant-based, without relating their recommendations to the sustainable food output of a particular region. They have, in other words, generally taken a ‘top down’ approach.

For this reason, the Sustainable Food Trust decided to commission a desk-based study to ascertain firstly, the impacts on land use and food production following a UK-wide transition to biological-based farming

systems; and secondly, to calculate the per capita daily allocation – ration, if you like – of foods that a citizen would have available to eat, were they to make a commitment (at least in relation to the staple foods) to try to eat in relation to the sustainable productivity of the country where they live.

The first step in answering this question was to define what exactly we mean by ‘sustainable and regenerative’ farming. There are a number of existing biologically-based approaches to farming (such as regenerative, organic and, of course, biodynamic) all of which we believe can and should feature in a food system that builds and maintains human and natural capital. However, rather than adhering to a specific set of existing standards that could serve to alienate the wider farming community, we defined a sustainable farming system according to a set of key principles: managing the farm as an ecosystem, adhering to the rules of the circular economy, and promoting health and wellbeing in every part of the food system. In practice, this meant we modelled a farming system based around a minimal use of non-renewable inputs, with fertility and pest, weed and disease control instead delivered through diverse rotations, the integration of crop and (pasture-

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based) livestock production and the creation of plentiful on-farm wildlife habitats.

Next, we divided the UK's farmed area to reflect the huge variation in agricultural capability that exists across the country, from prime agricultural land in lowland areas capable of growing a wide range of crops, to land limited to supporting low densities of grazing livestock in the uplands. After designating some marginal land for woodland expansion and nature restoration, we then used the principles set out above to design a set of sustainable farming 'systems' and allocated the nation's farmland to each of these, taking into account not just the suitability of each system to different grades of land, but also the need to avoid over- or under-production of different foods.

We then calculated the amount of food that these systems would produce, using current data on organic yields, but adjusted upwards by 20% to reflect the potential that exists to improve productivity through practices like intercropping and the

development of improved breeds.

Finally, we divided the nation's total modelled food production by a UK population of 70 million people (projected for 10 years in the future) to estimate what individual diets might look like, were we to align our consumption of staple foods to what the UK can sustainably produce. We also investigated what these changes in production might mean for the nation's self-sufficiency, assuming a change in diets and a reduction in food waste.

So, what did we find? Perhaps the biggest change in output we modelled was a 50% reduction in cereal production, thanks to a fall in the area used to grow grains and the elimination of chemical fertilisers and pesticides. This, alongside our decision to prioritise crops for human food rather than animal feed, as well as our assumption around no use of imported protein feeds (which are associated with huge environmental costs) resulted in a major reduction in pork and poultry production, which we modelled would fall by around 75%. We also modelled a 50% reduction in egg production - though it is important to emphasise that pigs and chickens would still play an important role, converting food waste and crop by-products into meat and eggs.

Beef, lamb and dairy, on the other hand, would see much smaller falls in production, due to the critical importance of grazing livestock in sustainable farming systems - though the move to pasture-based, high welfare management practices did

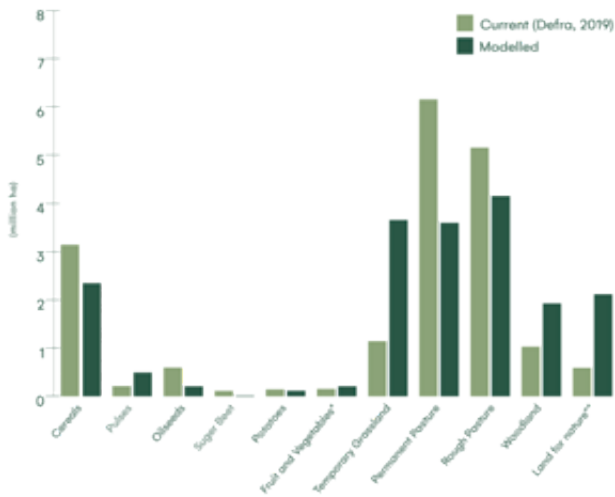
result in a 25% fall in milk output in our model. Other foods, meanwhile, would see major increases, with fruits, vegetables and pulses being grown much more widely across the country and doubling in production compared with the present day, often being grown as part of diverse, mixed farming systems.

Added together, the transition we modelled would result in an overall decline in food output - a finding that for some, may validate the concern that biologically-based farming systems do not produce enough food. However, we found that by eating more healthily and reducing the amount of food we waste, the UK would actually be able to at the very least maintain, and likely improve, its self-sufficiency in calories and major nutrients. Not only would this allow the UK to reduce its reliance on imports, but it would also drive down the size of its overseas environmental footprint. And although we didn't attempt to measure environmental impacts, achieving the kind of transition modelled in this study - a more diverse landscape with a much greater number of trees, hedgerows and natural habitats, a smaller number of livestock, reared in pasture-based systems, and much less in the way of chemical and fossil fuel inputs - would deliver huge benefits for soil health, biodiversity and the climate, too.

Of course, realising a nationwide transition to biologically-based farming, and the changes in diet needed to make this possible, will not

Pictures of Love Lane Farm by Jason Taylor

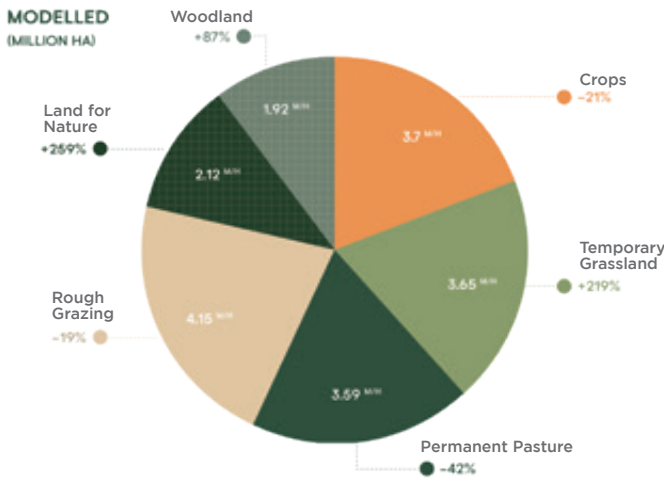




**IMPACTS ON FOOD PRODUCTION**

**If the UK were to switch to sustainable farming methods:**

- We would produce double the amount of fruit and vegetables.
- Grain production would halve due to a phase out of chemical inputs and less land being used for intensive crop production.
- Much less grain would be fed to livestock and intensive livestock production would be phased out, resulting in a 75% decline in pork and chicken production.
- We would produce double the amount of pulses (peas and beans).
- Beef and lamb, reared mainly on grass, would continue to be produced at similar quantities as today and would become our staple meat.



**IMPACTS ON LAND USE**

- **Mixed farming:** There would be a general shift to mixed farming, resulting in the reintroduction of grassland and grazing livestock in arable areas (mainly in the south and east) and cropping in some areas which are currently dominated by grassland in the north and west of Britain.
- **More land for trees and nature:** We assumed that woodland cover would increase by close to a million hectares, and many more trees would be integrated into the farmed landscape through agroforestry. There would also be more land for nature, complementing the improvements to farmland biodiversity enabled by the shift to biologically based farming.

be easy – in fact, it will require the most radical transformation in the food system of modern times, with action necessary across every section of society. Government will obviously have a key role to play in creating the necessary financial and regulatory conditions, and in delivering proper food and farming education, but financial institutions, retailers, processors and researchers will also all need to provide their full support, to help farmers and citizens make the changes in behaviour which so urgently need to happen.

We also cannot forget the current context, with the Ukraine war causing major disruptions to the global food and commodity trade, driving up prices for farmers and consumers alike and threatening a food crisis. Shifting to a farming system which would produce less food overall, and for some products like chicken an increase in price, might therefore be seen as problematic by some people at this time.

However, while ensuring the continued supply of food to those in need is, of course, the immediate priority, the war in Ukraine, alongside the Covid pandemic and the ever-worsening climate crisis, have also shown that we can no longer continue to rely on our current globalised, chemical- and fossil fuel-reliant food system. Furthermore, the fact that the UK has amongst the lowest food prices in the developed world, but still has five million people living in food poverty, shows that cheap food is not the solution many make it out to be – though governments should, of course, step in to support those on low incomes to access healthy and sustainable foods where required, in a similar way to how they have acted in response to the surge in energy prices.

Ultimately, our current food system is not fit for purpose. Radical changes are required, if we are not to dangerously exceed planetary boundaries and further erode

human and planetary health. The aim of this report was to add to the debate around how we achieve this transformation. Others will disagree with the approach modelled in our study, and that is why we have tried to be as transparent as possible – in fact, we welcome any feedback and criticism! However, our hope is that this report will help inform the national discussion about how best to feed ourselves and build on the growing body of evidence showing that biologically-based farming systems can play a key role in feeding the planet, while also helping us meet our climate and biodiversity goals.

To download the report, please go to <https://sustainablefoodtrust.org/our-work/feeding-britain/>

Patrick Holden is Founder and Director of the Sustainable Food Trust as well as Patron of the Biodynamic Association.

