

# HOW CAN WE DELIVER A HEALTHY, SUSTAINABLE, CARBON-NEUTRAL UK FOOD SUPPLY?

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## SUMMARY

By 2050 we will have welcomed another 2 billion people to our planet, yet climate change is expected to cut global food production by up to 34% of current levels, making it harder to feed them<sup>(1)</sup>. The UK is not immune from this challenge.

The coronavirus pandemic has exposed the fragility and unsustainability of our food supply, with supermarket shelves left empty and record numbers of people relying on food banks, while farmers poured their milk down the drain, because they couldn't distribute it. Extreme weather events like heatwaves and flooding could also impact international food production, trade, and supply chains, resulting in increased food prices for UK consumers<sup>(2)</sup>.

Delivering a healthy, sustainable, and carbon-neutral food supply to the UK population will require an integrated approach across production, consumption, and retail. We must rethink the foods we grow and produce, and what we feed our livestock. We must also develop strategies to eliminate food waste and educate and incentivise people to make healthier, more sustainable food choices. This policy brief lays out some solutions to achieve these goals. Implementing them will help build a society in which everyone has access to affordable and nutritious food, and to secure more resilient and sustainable agricultural and food industries, supporting the livelihoods of their 4.1 million UK employees<sup>(3)</sup>.

## CONTEXT

Globally, one in five deaths are linked to poor diet<sup>(4)</sup>. The problem is not just one of supply: In England, two thirds of adults and a third of 10-11-year olds are overweight or obese<sup>(5,6)</sup>. At the same time, 19% of children live with an adult who is moderately or severely food insecure, meaning they regularly go hungry or compromise on the quality and variety of food<sup>(7)</sup>. Because unhealthy processed foods are often cheaper than fresh produce, people can eat too many calories yet still be malnourished.

By 2050, shifting weather patterns and rising sea levels will make it even harder to provide healthy food for all. Our food systems currently contribute up to 37% of global greenhouse gas emissions<sup>(8)</sup>, but this may get worse as average incomes in poorer increase and people can afford to eat meat more often. Livestock are a major source of carbon emissions, and they also compete with humans for food, reducing overall supply. Meanwhile, the use of water for irrigation can undermine the supply of clean drinking water. The UK isn't insulated from these global trends, since we import about 50% of our food, with 30% of it coming from the EU<sup>(9)</sup>. What happens to food systems outside our borders affects us.

Simply producing more food is not the answer. A fifth of the food that leaves UK farms is wasted, with household food waste accounting for 70% of this loss<sup>(10)</sup>. And, although processed foods are gradually becoming healthier, our diets still contain too much fat and sugar, and not enough fibre, vitamins and minerals<sup>(11)</sup>.

## ABOUT US

The University of Nottingham's Future Food Beacon was established in 2017 to explore ways of feeding a growing population sustainably within a changing environment, by bringing together researchers from multiple disciplines with food producers, retailers, and consumers. Its funders include Innovate UK and the Global Challenges Research Fund.

[nottingham.ac.uk/future-food](https://nottingham.ac.uk/future-food)

## KEY CONSIDERATIONS

Dramatic, rapid, and global-wide action is needed to limit and mitigate the impact of climate change. Modelling by University of Nottingham researchers suggests a global carbon-neutral food system can be delivered by 2050 by combining technological innovations with reduced production and consumption of animal products.

This could also have health benefits. University of Nottingham researchers have shown that halving the consumption of red meat and replacing it with plant-based protein alternatives leads to a reduction in blood cholesterol in healthy adults <sup>(12)</sup>, a factor known to reduce the risk of heart disease. However, systems are also needed to ensure equitable access to nutritious food for the whole population, regardless of income or location, and to connect consumers to producers more directly so food production is better understood and valued <sup>[13, 14, 15]</sup>.

To meet the global demand for greater quantities of nutritious and sustainable food we must also consider new and alternative sources. For instance, livestock currently consume large amounts of wheat, soya, and maize, which humans could be eating. Preliminary evidence from University of Nottingham researchers suggests that insect larvae and bacteria could replace a significant proportion of feed used in fish and livestock production. Insect larvae can be reared on human food waste, helping to reduce food losses at home and within the food system <sup>(16)</sup>. However, additional measures are also needed to cut food waste.

Food is a significant part of the UK economy, contributing £121.6bn annually <sup>(3)</sup>, so we should be mindful of the economic impact of any changes. Neither should they exacerbate other problems (e.g. exploitative labour practices, degradation of soil quality, or water shortages) in the UK or elsewhere.

We must also consider global food security. The UK government is committed to achieving the UN's Sustainable Development Goals - which aim to eliminate hunger, and provide good health and wellbeing, and access to clean water and sanitation - by providing technical assistance and support to poor and middle income countries.

## POLICY RECOMMENDATIONS

*Put the UK at the forefront of rethinking food globally by creating a **food systems innovation hub**. Researchers, business and social entrepreneurs would come together to think ambitiously about how to secure sustainable and healthy food for all. It would deliver a national capability in food systems research and innovation, in line with the "moonshot" ambition in the Government's R&D roadmap <sup>(17)</sup>.*

*Accelerate the **adoption of sustainable animal feed** through economic incentives for the livestock industry to use alternative sources of protein in feed (e.g. underutilised plants, insects, microorganisms, and food waste). These would replace the crops currently used, which could instead be eaten by humans <sup>(16)</sup>.*

*Empower consumers to make informed choices by **developing new technologies and business models to connect people with the food they eat**. This would encourage more sustainable patterns of food consumption and reduce food waste. Apps and other digital platforms could provide information on provenance, nutrition, advice on cooking – creating targeted, personalised supply chains <sup>(13, 14, 15)</sup>.*

*Tackle food waste by **actively supporting and rewarding social eating and food sharing initiatives**, working with producers, supermarkets, restaurants, charities, and local authorities <sup>(18,19)</sup>.*

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