# House of Commons EFRA Committee – Food Security Inquiry

## Written evidence submitted by the Transforming UK Food Systems Programme's research community, September 2022

This evidence is submitted by Kelvin Balcombe, Michael Bourlakis, Neil Boyle, Bob Doherty, Tracey Duncombe, Peter Jackson, Alexandra Johnstone, Rachel Loopstra, Ben Lowe, Emmanuel Sawyerr; Carol Wagstaff, Martin White and Gabriel Yesuf on behalf of the 'Transforming UK Food Systems for Healthy People and a Healthy Environment' Strategic Priority Fund (TUKFS) research community[1]. TUKFS is a £47.5M programme supported by UKRI's strategic priorities fund (2020-2026), in partnership with the Global Food Security Programme, BBSRC, ESRC, MRC, NERC, Defra, DHSC, OHID, Innovate UK and FSA[2]. It aims to fundamentally transform the UK food system by placing healthy people and a healthy natural environment at its centre, addressing questions around what we should eat, produce and manufacture and what we should import, taking into account the complex interactions between health, environment and socioeconomic factors. The programme has built the capability and capacity, bringing together researchers, government, business and civil society from across the UK, to determine what interventions might be needed, co-producing solutions and providing evidence to underpin policy, as well as training the next generation of food system thinkers.

### Introduction

- This submission constitutes a response to questions 1, 3, 4, 5, and 6 in the call for evidence.
- In relation to the Committee's consideration of the Government's food strategy policy paper, throughout our submission we include evidence from predominantly secondary sources on how and why a systems-based approach is vital to address the scale of the challenges facing the UK in terms of food security, diet and health inequalities and environmental sustainability, and with the urgency needed.

### Executive Summary

- Current approaches to resilience in supply chains fail to account for the complexity and the temporal and spatial dimensions of agrifood value chains. This can lead to oversimplification regarding building and measurement of resilience, and create unintended negative social and environmental consequences.
- Food expenditure is often the only flexible household cost that can be reduced. The rapidly worsening cost of living crisis, increasing energy costs and increasing food prices has resulted in reduced demand for food products, particularly healthy and nutritious foods, and this is expected to continue. This is because unhealthier foods, especially highly processed foods, are cheaper per calorie than healthy foods. This will worsen diets and, consequently, inequalities in

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[2] https://ukfoodsystems.ukri.org/

diet-related health outcomes, such as obesity and non-communicable diseases, placing increased pressure on the NHS.

- Food systems research can inform decisions on whether to further integrate our food systems through trade or seek to support greater consumption of locally produced food, for example to understand how changes in trading policies and dietary preferences might affect the food security of essential macro and micronutrients.
- Promoting the multifunctional attributes of agricultural systems could also enhance the complementary potentials of Britain's farming systems where multiple targets (e.g., food production and biodiversity conservation) can be achieved and this could in turn have net positive feedback on the entire system

## Q1: What are the key factors affecting the resilience of food supply chains and causing disruption and rising food prices – including input costs, labour shortages and global events? What are the consequences for UK businesses and consumers?

1. Climate change presents a major source of disruption to the supply of food. As an example, Spain, South Africa and Morocco – from whom the UK imports significant volumes of fruits and vegetables – have been identified as countries that face the high risk of water scarcity[3]. Events such as the recent floods in Pakistan also present a challenge to the UK, as food and drink imports from that country were valued at over £160 million in 2021[4].
2. Geopolitical issues are also sources of disruption in food supply to the UK. In 2021, the UK imported £200 million of food and live animals from Ukraine[5]. The ongoing war in Ukraine therefore disrupts this source of food supply to the UK. The war has also led to a decline in fertiliser imports from both Russia and Ukraine. This, along with China's ban on fertiliser exports, has led to a sustained increase in fertiliser prices. Furthermore, increased fuel prices add to the cost of both food processing and transport.
3. Brexit and the resultant trade negotiations have already caused challenges in importing speciality products such as cooked meat and fish[6]. New legal and processing requirements at the nation's borders has seen a decline in the import of various food products. Thus, challenges in food imports for small and medium-scale enterprises (SME) continue to contribute to delays, limited availability, and increasing prices of food products in the country.
4. Additionally, the food and drink sector has suffered chronic labour shortage, estimated to be in excess of half a million job vacancies, exacerbated by Brexit-related changes to immigration rules[7]. This is particularly acute in sectors such as horticulture that rely on seasonal labour peaks.
5. Overall, these supply and demand disruptions and stresses have resulted in increasing food prices and increased consumer anxiety which have also led to reduced sales, profit and reduced business confidence in the sector. Sector giants like Ocado and Just Eat Takeaway have suffered significant drops in stock prices[8]. However, SMEs represent the largest proportion (over 90%) of food businesses in the UK, and these factors, combined with rising interest rates, will lead to increasing business failure, which will impact on the resilience of the food system.
6. These highlight the need to have a food system that can withstand the various disruptions whose effects are most felt by the most vulnerable in the society.
7. And yet, according to the 2021 UK Food Security Report: '*The UK is resilient to potential shocks in the food supply chain. Supply systems, which are owned and operated by the private sector, are adaptable and flexible in responding to problems. Government monitors risks and works with*

[3] Dormido, H. (2019), These Countries Are the Most at Risk from a Water Crisis, Bloomberg.
[4] Trading Economics (2022), Pakistan Exports to United Kingdom.
[5] Office for National Statistics (2022), What did the UK trade with Ukraine in 2021?
[6] Speciality Foods (2022), How Brexit will impact the food sector in 2022, January.
[7] Grant Thornton UK LLP, Establishing the labour availability issues of the UK Food and Drink Sector.
[8] Devlin, E. (2022), Food & drink in the stock market: who's up and who's down?, The Grocer.

*industry to respond to emerging issues and maintain supply chains'.*[9] Given the threats highlighted above, this presents us with a paradox, which we now consider.

***Understanding the complexities of resilience across the UK food system***

8. To date, research on the analysis of resilience within the food value chain has been mainly taken up by studies in the sub-fields of supply chain management (SCM) and logistics. The focal point for these perspectives is the company – primarily the buyer – rather than a broader range of actors within the value chain.
9. While this has improved buyers' abilities to manage risk and improve their sourcing efficiency and performance, paradoxically this has made supply chains as a whole more vulnerable to disruption. More specifically, the widespread adoption of 'lean sourcing' approaches, and just-in-time systems has generally tended to neglect within chains both collaboration and social and environmental embeddedness.
10. The complexity of agrifood value chains means any discussion of resilience needs to be much more than just a short-term risk management approach and requires an in-depth understanding of the consequences of different production, exchange and distribution practices.
11. Research led by Doherty as part of the IKnowFood project[10] highlighted that this analytical blindness regarding the intrinsic complexities of agrifood value chains is problematic on a number of levels:
    i) Because agrifood value chains are diffuse and seasonal, supply chain actors can source from a large number of producers and in many cases from smallholders (cocoa, coffee, spices, vanilla, vegetables plus tropical and citrus fruits) from a wide diversity of climates and social conditions (temporal and spatial). Therefore, there is a wide range of risks regarding production conditions, including political (e.g. Brexit), social (e.g. gender inequality, child labour and modern slavery), climatic (e.g. changing weather patterns), ecological (e.g. deforestation and biodiversity loss) and biological (e.g. pest and diseases).
    ii) There appears to be a difficulty in identifying illegal, unsafe and unethical practices of second or third tier suppliers, as illustrated by the 2013 'horsemeat scandal'. There is a need for improved traceability e.g. Blockchain.
    iii) There is a concentration of power at certain nodes of the supply chain. For example, just three supermarkets in the UK now account for over 70% of the UK grocery market.
    iv) Producers share of value is decreasing – e.g. Oxfam reported in 2015 that farmers receive an estimated 4% of the value added to green beans while supermarkets receive 40%. This is at a time when cost of inputs for producers is increasing. This unfair distribution of value brings into question governance and transparency in supply chains.
    v) Complexity is further compounded by the embeddedness of inputs, which can lead to incorrect assumptions regarding the resilience of local foods such as UK cheddar, whose origin of inputs in animal feed include the high risk commodity soy sourced from Brazil and Argentina.
    vi) There are also difficulties with aggregation in studying agrifood value chains as indicators are not comparable because they are measured at different scales[11].
12. When discussing the key factors that affect the resilience of supply chains that deliver value-laden food products, it is important to take a holistic approach that accounts for the whole system and not just individual parts: different types of ecological, economic, social and geopolitical factors trigger disruptions in different parts of the system[12]. Broad measures of supply chain success may also exclude other issues that might be important, including the mental health of farmers, labour conditions of farm workers, and the nutritional content of supply.

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[9] Defra, UK Food Security Report, 2021

[10] Funded through the 'Resilience of the UK Food System in a Global Context' programme, 2016-2021, a fore-runner to TUKFS which was also supported through the cross-government Global Food Security programme

[11] Doherty *et al*. Food Systems Resilience: Towards an Interdisciplinary Research Agenda. Emerald Open Research 2019, 1:4 https://doi.org/10.12688/emeraldopenres.12850.1

[12] GFS Policy brief: Exploring the resilience of the UK food system in a global context. Ingram *et al.* (2019).

13. The challenge ahead is to ensure sufficient, healthy and nutritious food for a growing, urbanising population, while minimising further environmental degradation, but also maintaining vibrant enterprises and livelihoods. Thus, there is an urgent need to enhance the resilience of food system 'outcomes' (including food security, other ecosystem goods and services, health status, and employment and livelihoods) due to an increasing diversity, frequency and intensity of shocks and stresses – see Box 1 for a recent case study on the UK's fresh fruit and vegetable value chain.
14. **Conclusion:** Current approaches to resilience in supply chains fail to account for the complexity and the temporal and spatial dimensions of agrifood value chains. This can lead to oversimplification regarding building and measurement of resilience, and create unintended negative social and environmental consequences. The complexity of agrifood value chains means any discussion of resilience needs to be much more than just a short-term risk management approach and requires an in-depth understanding of the consequences of different production, exchange and distribution practices[11].

**Box 1: Understanding risks to resilience across the UK fresh fruit and vegetable value chain**
The recent Fresh Fruit and Vegetable (FF&V) project[10] explored water-related risks to resilience across the UK FF&V value chain. Viewed by broad metrics such as tonnage, the UK FF&V supply chain can be regarded as relatively resilient at the moment. However, following interviews with actors across the FF&V system from producers to retailers, the FF&V team led by Ingram identified a lack of integrated resilience practices across actor groups, and that this was determined largely by actors' individual level of exposure to risk.

The team recommended that platforms are needed through which strategy development, capacity development and capital investment (reservoirs, irrigation infrastructure, cold storage etc.) interventions can be devised for the system's most vulnerable actors. Such platforms should be developed in a precompetitive space so that all actors can convene, discuss and understand the risks at different levels of the system and develop resilience-building strategies that do not inadvertently compromise the resilience of overall supply or that of any individual actor. They were clear that resilience-building activities can (a) have a positive impact on the resilience of others, i.e., better water practices on farms can have a positive impact on downstream actors (and on the environment); or (b) compound the risks for others, i.e., abandoning one supply base for another increases the resilience of supply but compounds the risks for the abandoned supply base[13].

## Q3: How are the rising cost of living and increasing food prices affecting access to healthy and nutritious food?

15. Food prices have risen substantially over the past year. As a result, the cost of people's weekly food shop has increased. However, the ability to afford food is not only affected by food prices, but also by the amount of income families have and the costs of other essentials.
    i) There has been a significant increase in the cost of living since early 2021 with the Consumer Prices Index including owner occupiers' housing costs (CPIH) rising from 0.7% (Feb 2021) to 8.8% (July 2022). Inflation has not been this high since 1990, and continues to increase at the time of writing.[14]
    ii) Household income growth has failed to keep pace with rising inflation and this has led to squeezed levels of personal disposable income over the same period. No ONS data on household incomes is available as of September 2022 but Asda's Income Tracker (Centre for

[13] Zurek *et al*. Increasing Resilience of the UK Fresh Fruit and Vegetable System to Water-Related Risks. *Sustainability* (2020), *12*, 7519. https://doi.org/10.3390/su12187519
[14] https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/l55o/mm23 (accessed 23rd September 2022)

Business and Economic Research) reveals record falls in household spending power with an annual contraction of 18% (June 2021 to June 2022). This has happened across all of the UK.[15]

iii) Cross-EU country research on food price inflation and wage growth over 2004 to 2012 showed an association between the food price-wage inflation gap, with a widening gap associated with a growing levels of household food hardships.[16]

iv) Around 80% of UK households showed a disposable income decrease between September 2021 and September 2022.[17]

v) The growing cost of energy is restricting the types of foods that the poorest households are consuming, with reports from food banks that increasing numbers of users are requesting foods that do not need cooking due to an inability to afford energy bills[18] .

16. Households in the bottom income decile spend up to 20% of their household disposable income on food, and food tends to be the first item on their expenditure budget that gets cut when there are financial difficulties[19]:

i) Over 7 million adults living in households reported experiences of food insecurity in April 2022[18]

ii) The Office for National Statistics reported in August 2022 that 16 million people have cut back on food and essentials[20].

***Increasing burden of diet inequalities***

17. In 2022, the cost of healthier foods per calorie continues to be markedly higher than unhealthy foods[17]. This disparity is not a new phenomenon and has been widely reported for over two decades:

i) A longitudinal study (2002-2012) found significant differences between the prices of healthier foods and less healthy alternatives[21]. The authors of this study also found that the price of healthier food rose faster during this period than foods deemed to be less healthy

ii) A comprehensive a meta-analysis of 27 existing studies, published in 2013, concluded that the healthiest diets can cost USD1.50 per day more than the least healthy diets[22].

18. However, it points to a significant and growing burden on lower income households in the current cost of living squeeze when limited budgets are being pulled in many different directions. Food expenditure is often the only flexible household cost that can be reduced in the face of cost-of-living pressures. The Food Foundation reported in October 2021 – before the cost-of-living crisis fully intensified – that 50% of households with children expected that an increase in energy bills would result in having to consider buying less food; this rose to 67% in households with children on Universal Credit[23].

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[15] https://corporate.asda.com/media-library/document/asda-income-tracker-july-2022/_proxyDocument?id=00000182-34a3-d424-a1fa-7ee36f4b0000 (accessed 23rd September 2022)

[16] Reeves, A., Loopstra, R., & Stuckler, D. (2017). The growing disconnect between food prices and wages in Europe: Cross-national analysis of food deprivation and welfare regimes in twenty-one EU countries, 2004–2012. Public Health Nutrition, 20(8), 1414-1422. doi:10.1017/S1368980017000167

[17] https://corporate.asda.com/newsroom/2022/09/23/disposable-income-continues-fall-for-majority-of-households (accessed 23rd September 2022)

[18] https://www.foodfoundation.org.uk/initiatives/food-insecurity-tracking

[19] The Broken Plate Report: Food Foundation, 2022. The State of the Nation's Food System

[20] Sky News (2022), Sixteen million people cut back on food and essentials during cost-of-living crisis, ONS survey finds.

[21] Jones *et al*. The Growing Price Gap between More and Less Healthy Foods: Analysis of a Novel Longitudinal UK Dataset (October 8, 2014) https://doi.org/10.1371/journal.pone.0109343

[22] Rao *et al.* Do healthier foods and diet patterns cost more than less healthy options? A systematic review and meta-analysis. *BMJ Open* 2013;**3:**e004277. https://doi.org/10.1136/bmjopen-2013-004277

[23] Food price hike puts pressure on poor families struggling to feed their children, Food Foundation press release 20 October 2021.

19. Other studies have made similar observations:
    i) Research supported by the Food Standard Agency has highlighted food affordability and food insecurity as the foremost influences of consumer decision making about food[24].
    ii) The wave 3 report of the biannual *Food and You 2* survey indexed changing food habits behaviours with 31% of respondents reporting purchasing items on special offer, 23% seeking cheaper alternatives by changing where they shopped, and 21% 'trading down' swapping usual foods for cheaper alternatives[25].
20. Reduced nutritional quality of diets will be an inevitable impact of the cost-of-living pressures on household budgets, and will be felt most acutely by those most at risk of low quality diets. In context, for those on low incomes (the poorest fifth of UK households) to consume a healthy diet according to the Eatwell guidelines[26], they need to spend 47% of their disposable income on food, which compares to just 11% for the richest fifth[19]. This means that the current government recommended healthy and nutritious diet is simply out of reach for many of the poorest households.
21. There is also an issue around parity in relation to access to affordable healthy foods for those most at risk of low quality diets. For example, research has shown that foods in Scotland considered to be part of a Healthy Eating Indicator Shopping Basket were generally readily available. However, there were large variations in price across different store formats and geographic area[27]. This would imply that financially constrained consumers – particularly those without adequate access to larger store formats – may find it harder to access affordable healthy and nutritious food. Shopping baskets tend to retain foods of high calorific value (to feel full) rather than high nutritional value.
22. **Conclusion**: Food expenditure is often the only flexible household cost that can be reduced. The ongoing cost of living crisis, increasing energy costs and increasing food prices have resulted in decline in demand for food products, particularly healthy and nutritious foods, and this is expected to continue. This will worsen diets and, consequently, health inequalities.

## Q4: How will the proposals in the Government's food strategy policy paper affect:

### i. the resilience of food supply chains?;

23. The Government's food strategy policy paper includes a commitment to reduce greenhouse gas emissions in order to achieve the government's net zero targets. But many of the proposals restate existing environmental and farming policies that are unaligned with systems thinking and have little concern for what Dimbleby's National Food Strategy Independent Review[28] called "the invisibility of nature", whereby what we don't see or measure tends not to be valued (such as the role of beneficial bacteria in soil or the diversity of birds and insects). Without redefining the purpose of the food system for integrated planetary and human health, the policy paper fails to define a framework based on interventions, regulations, behaviours and actions that will transform the system to the healthier and more sustainable one that is so urgently required[29].

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[24] Connors *et al*. The UK Public's Interests, Needs and Concerns Around Food (May 2022) Research conducted for the Foods standards Agency and Food Standards Scotland by Bright Harbour, in partnership with Esposito Research and Strategy and AndGood.

[25] Armstrong *et al*. Food and You 2 – Wave 3 report (January 2022)

[26] The Eatwell Guide, Public Health England (2016).

[27] Dawson *et al*. Accessing healthy food: availability and price of a healthy food basket in Scotland, Journal of Marketing Management, 24:9-10, 893-913 (2008). DOI: 10.1362/026725708X381957

[28] The National Food Strategy: The Plan (July 2021).

[29] Doherty, B., Jackson, P., Poppy, G.M. *et al.* UK government food strategy lacks ambition to achieve transformative food system change. *Nat Food* **3**, 481–482 (2022). https://doi.org/10.1038/s43016-022-00558-z

**ii. the agri-food and seafood sectors?;**

24. We have some concerns about the lack of any clear indication of intentions to maintain and protect food rearing and quality standards in trade deals as these will affect UK producers and the quality of food available. There is little or no attempt to connect agri-food innovation with benefits to public health as could have been done, for example, in the case of alternative proteins[28].

**iii. access to healthy, nutritious food?**

25. Dimbleby's Review presented a diagnosis of system failure: it recognised the complex issues in the UK, where obesity and diet inequalities exist, and food system solutions must consider environmental impact, and suggested recommendations to 'escape the junk food cycle', 'reduce diet-related inequality' and 'create a long-term shift in our food culture'. This is needed because:
    i) 63% of adults in England are overweight or obese, with figures projected to keep rising[30].
    ii) Obesity is disproportionately represented in socially disadvantaged groups, a trend that has become more marked over the past 60 years[31].

26. The Food Strategy Policy paper restates previous government targets, such as the commitment to halve childhood obesity by 2030, to reduce the healthy life expectancy gap between local areas where it is highest and lowest by 2030, and to add five years to healthy life expectancy by 2035. However, serious doubt has already been cast on whether these targets can be achieved[32,33]. While there is an acceptance that finding a solution to obesity is "a shared responsibility", the strategy policy paper perpetuates the notion that individual consumers "empowered with better information" will make healthier choices[34].
27. And yet, there is evidence that government and industry intervention can make a difference. For example, research suggests that in the year after the UK soft drinks industry levy was introduced, the proportion of intervention drinks over the lower levy sugar threshold of 5g/100ml had fallen by 33.8 percentage points (95% CI: 33.3–34.4, $p < 0.001$)[35]. In addition, The SDIL led to reductions in purchasing of sugar from soft drinks, without any reduction of the total volume of drinks purchased[36]. This illustrates the benefits achieved by reformulation.
28. We also note that a previous government commitment to develop policy on folic acid fortification of flour has not made progress. This could dramatically reduce neural tube defects overnight, which are socio-economically patterned.
29. Until the policies and architecture governing our food systems address the issue of the affordability of healthy diets, neither food manufacturers nor consumers will be motivated to change their current practices. In this context, the question we should consider is how might the rising cost of living and increasing food prices affect a transition to more healthy/sustainable food?

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[30] NHS Digital, 2020. Statistics on obesity, physical activity and diet.

[31] Bann *et al*. Socioeconomic inequalities in childhood and adolescent body-mass index, weight, and height from 1953 to 2015: an analysis of four longitudinal, observational, British birth cohort studies. Lancet. 2018 3(4), E194-203 https://doi.org/10.1016/S2468-2667(18)30045-8

[32] Marteau TM, *et al*. Increasing healthy life expectancy equitably in England by 5 years by 2035: could it be achieved? Lancet. 2019 Jun 29;393(10191):2571-2573. doi: 10.1016/S0140-6736(19)31510-7

[33] Theis DRZ, White M. Is Obesity Policy in England Fit for Purpose? Analysis of Government Strategies and Policies, 1992–2020. Milbank Q. 2021;99(1):126-170. https://onlinelibrary.wiley.com/doi/full/10.1111/1468-0009.12498

[34] https://www.nature.com/articles/s43016-022-00558-z

[35] Scarborough P, Adhikari V, Harrington R, *et al*. The impact of the announcement and implementation of the UK Soft Drinks Industry Levy on sugar content of soft drinks in the UK, 2015-18: controlled interrupted time series analysis. PLoS Med 2020;17(2):e1003025. https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1003025

[36] Pell D, Mytton O, Penney TL, *et al*. Changes in soft drinks purchased by British households associated with the UK soft drinks industry levy: controlled interrupted time series analysis. *BMJ* 2021;372:n254. doi: 10.1136/bmj.n254

***Shifting UK dietary patterns towards better public and planetary health***

30. A healthy diet can be a sustainable diet. Healthy eating patterns have been associated with improved health outcomes, such as reduced risk of obesity and reduced rates of diabetes and heart disease and could result in reductions in total mortality by 6–16%[37]. Research also shows that following government-backed healthy eating advice, such as the UK's Eatwell Guide, can deliver environmental benefits: The Carbon Trust estimates that if individuals moved from current eating patterns to the Eatwell Guide recommendations, a 31% reduction in GHG emissions, 17% saving on water use and 34% reduction in land use could be achieved[38].
31. The main principles of a sustainable diet (as provided by the Food and Agriculture Organization of the United Nations/World Health Organization) are to consume a variety of unprocessed or minimally processed foods, mainly as wholegrains, pulses, fruits and vegetables, with moderate amounts of eggs, dairy, poultry and fish and modest amounts of ruminant meat. This is consistent with the current UK healthy eating recommendations (*e.g*. Eatwell Guide). However, less than 1% of the UK population are currently achieving all of the Eatwell Guide recommendations[39].
32. Recent modelling has shown that dietary change interventions that incentivize adoption of healthy and sustainable diets can help consumers in high-income and upper-middle-income countries to reduce costs while, at the same time, contribute to fulfilling national climate change commitments and reducing public health spending[40].
33. A recent systematic review of randomised control trials of grocery store interventions indicates that the retail food environment has an important role to play in influencing food purchasing patterns as a key antecedent to consumption. This includes manipulating price, suggesting swaps, and managing product availability, as a public health strategy to improve health[41]. Reducing prominent placement of unhealthy foods in food stores can also have a positive impact on purchasing and inequalities, as demonstrated by evaluation of supermarkets' own policies on checkout displays[42, 43].
34. For families on low incomes, 76% of monthly food budgets are spent in supermarkets, so decisions that the retail food sector make around advertising, promotions and store design has a huge impact on public health within this vulnerable group[44].
35. While these and similar studies provide some recognition of unhealthy food environments, there is a paucity of evidence on the availability and unaffordability of healthy food in disadvantaged communities, and little understanding of food decision making for this group of consumers beyond income (e.g., time, store format accessibility, connectivity online).
36. The Government's pledge to fund a programme of randomised control trial interventions in the food system to encourage and enable healthier and more sustainable diets for all is welcome, but the insights from these works are unlikely to be available until 2025[45].

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[37] One Blue Dot report (2020) Eating patterns for health and environmental sustainability. British Dietetic Association. https://www.bda.uk.com/resource/one-blue-dot.html

[38] The Eatwell Guide: a More Sustainable Diet. https://www.carbontrust.com/resources/the-eatwell-guide-a-more-sustainable-diet

[39] https://www.nutrition.org.uk/news/2021/adherence-to-government-s-eatwell-guide-key-to-more-sustainable-diets/

[40] Springmann *et al*. The global and regional costs of healthy and sustainable dietary patterns: a modelling study. Lancet Planet Health. 2021 Nov;5(11):e797-e807. doi: 10.1016/S2542-5196(21)00251-5. Epub 2021 Oct 27.

[41] Hartmann-Boyce *et al*. Grocery store interventions to change food purchasing behaviors: a systematic review of randomized controlled trials. Am J Clin Nutr. 2018 Jun 1;107(6):1004-1016. doi: 10.1093/ajcn/nqy045

[42] Ejlerskov, K., Sharp, S.J., Stead, M. *et al*. Socio-economic and age variations in response to supermarket-led checkout food policies: a repeated measures analysis. Int J Behav Nutr Phys Act 15, 125 (2018). https://doi.org/10.1186/s12966-018-0755-4

[43] Ejlerskov *et al*. Supermarket policies on less-healthy food at checkouts: Natural experimental evaluation using interrupted time series analyses of purchases. PLOS Medicine. 2018 Dec 18 https://doi.org/10.1371/journal.pmed.1002712

[44] A report from one year of the Collaboration for Healthier Lives in the UK (CHL UK). Consumer Goods Forum:

[45] https://www.ukri.org/opportunity/food-system-trials-to-encourage-healthy-sustainable-diets/

***Support healthy and sustainable eating through public food procurement***

37. Changing the food in public anchor institutions can have a significant impact on diets across some of the populations most in need of access (e.g. school, hospitals etc). We know that eating breakfast – the most frequently skipped meal, especially among adolescents – can improve attainment, wellbeing and readiness to learn[46]. So we note positively the commitment in the Government food policy strategy paper to continue the National School Breakfast Programme for schools in disadvantaged areas.
38. We also note positively the step to increase access to healthy and sustainable diets with the recommitment to expand the successful (see Box 2) Holiday Activities and Food programme (HAF) to all 151 top-tier authorities in England.
39. However, there is more that could be done to ensure consistent and equal access to healthy and nutritious food to children via schools. National family-based surveys commissioned by the Food Foundation (August-September 2020 and January-February 2021, combined n=2,166 children), with data analysis by TUKFS-funded researchers, suggest that of all the children who reported experiencing food insecurity (n=763), nearly half were not eligible for free school meals (FSM)[47].
40. The eligibility threshold for FSM is set at an annual household income of less than £7,400 prior to benefits, while parents receiving Working Tax Credit are ineligible for FSM support regardless of their level of income. This suggests that many families on low incomes are going hungry.
41. The survey data also showed that a concerning number of children who reported experiencing food insecurity had parents employed in professional-level occupations. Together with reports in September 2022 that demand is massively outstripping the support provided by schools and food aid charities for children who are coming to school hungry[48], the findings confirm a need to reconsider the current criteria for assessing eligibility for the provision of FSM as a means to provide more families with support to overcome food insecurity.
42. **Conclusion**: Until the policies and architecture governing our food systems address the issue of the affordability of healthy and sustainable diets, neither food manufacturers nor consumers will be motivated to change their current practices.

## Q5: Is the current level and target of food self-sufficiency in England still appropriate?

43. Our understanding is that there is no published target of food self-sufficiency in England – although there have been recent, public calls for a government commitment for UK food production not to slip below 60%[49].
44. Our globalised system enables the UK to access food that can be grown more efficiently and cheaper elsewhere as well as providing consumers with access to seasonal fresh produce year-round. It also allows countries where the agricultural economy is a major part of the national economy to export and benefit from this:
    i) Imported food accounted for just under half of UK food consumed in 2015 (48%),
    ii) In 2011 UK imports of food came from 168 countries but 90% came from just 24 countries including the Netherlands (5.9% of all our food), Spain (5.1%), France (3.3%), Irish Republic (3.2%) and Germany (2.6%)
45. The UK Food Security report states: alterations in the proportion of domestic production to supply would change the level of exposure to national scale risks[9]. We have already outlined

[46] Adolphus *et al*. The Effects of Breakfast and Breakfast Composition on Cognition in Children and Adolescents: A Systematic Review, Advances in Nutrition, Vol 7, Issue 3, May 2016, p590S–612S, https://doi.org/10.3945/an.115.010256
[47] Yang *et al*. Are free school meals failing families? Exploring the relationship between child food insecurity, child mental health and free school meal status during COVID-19: national cross-sectional surveys. BMJ Open 2022;12:e059047. doi: 10.1136/bmjopen-2021-059047
[48] https://www.theguardian.com/business/2022/sep/25/schools-in-england-warn-of-crisis-of-heartbreaking-rise-in-hungry-children
[49] https://www.nfuonline.com/updates-and-information/public-backs-calls-to-keep-up-food-self-sufficiency-levels/

many of these risks in our response to Q1, but there are some risks that are more relevant to changing the balance of trade:

i) Global food production is concentrated in a few 'breadbaskets'. Climate change is increasing the risk of 'multiple breadbasket failure' e.g. through severe drought or flooding, and the war and humanitarian crisis in Ukraine have had a massive effect on the global supply of major staple foods
ii) The transport of goods are also subject to weather changes and can be disrupted by the failure of infrastructure (e.g. ports), labour disputes, civil unrest and wars
iii) Leaving the EU customs union and the European single market in January 2021 led to substantial disruption in UK trade and it remains to be seen how permanent and impactful these disruptions are while alternative trading supplies are developed
iv) The concentration of international sourcing options makes supply chains vulnerable to protectionism, as producers and supermarkets come under pressure from local populations to secure food supplies for their area
v) The globalised trading system can absorb small events but when they are big or interact it may falter or even fail.

46. At which point might we call time on further integration of our food systems through trade, and seek to support greater consumption of locally produced food? Food systems research can help inform these decisions, see Box 3: the role of micronutrients in assessing food security supply and demand. The Food, Farming & Countryside Commission (partners in several TUKFS projects) are currently commissioning research to explore arguments for and against setting explicit national ambitions for food production and trade.

**Box 2: Evaluation of HAF programme pilot**

FixOurFood researchers undertook an evaluation of the implementation of the scheme, focussed on delivery across four local authority areas (York, North Lincolnshire, Bradford and Sheffield) in the summer holidays of 2021[50]. This included focus groups with parents and interviews with local authority HAF leads as well as HAF activity providers. Data were also collected through a nationally representative survey of 1,418 children aged 7-17, conducted by Childwise Research Ltd, and by gathering information from local authorities.

They showed that meals served during HAF had a positive impact on food insecurity and provided children with a more varied, healthier diet than if not attending the clubs. The benefits of attending the holiday clubs were felt both by children and their wider families. Children enjoyed the opportunity to socialise and learn new skills and some were reported to be better behaved at home as a result. With their children attending the clubs, parents were able to work. Parents also benefited from opportunities to socialise within their local community. Ongoing evaluation of the scheme is needed to ensure it is fit for purpose and to ensure the quality of provision from different providers. Furthermore, making places on the programme available to all children, not just those with Free School Meal (FSM) status, would help to reduce stigma – 1 in 10 children who affirmed that they received a FSM reported that receiving FSM is embarrasing[47] – and continue to provide a lifeline for families regardless of FSM eligibility.

[50] A Yorkshire-based review of the implementation and impact of the Holiday Activities and Food Programme. Preliminary Findings Oct 2021.

**Box 3: the role of micronutrients in assessing food security supply and demand**

There is an increased recognition that micronutrients (e.g. vitamin A, vitamin C, Calcium, Iron, and Zinc) need more attention when assessing a country's food security to ensure the dietary health of a country alongside planetary health. Such analyses could help explore where pinch points might arise where discussions emerge regarding the role of being self-sufficient and which solutions in supply and/or demand will need to be introduced as dietary preferences continue to change and trading patterns face uncertainty in a post-COVID-19 world.

Poppy *et al* recently analysed how the UK's micronutrient security has changed over the past 60 years[51]. In comparing a baseline in 2016 with data going back to 1961, they observed changes in domestic/imported supplies, largely indicating a move towards imports for most of the micronutrients analysed. They then developed scenarios to illustrate how micronutrient supply and security could change in the future as new trading deals and dietary preferences emerge. For example, movement towards the EAT-*Lancet* planetary reference diet and increased domestic supply will have differential effects on each micronutrient in terms of how a change in demand or supply will affect the security, and not always in the same direction. This illustrates that change may affect each micronutrient differently and the ability to secure one nutrient through trading polices and/or changing dietary preferences may not be sufficient for other nutrients.

## Q6 How could the Government's proposed land use strategy for England improve food security? What balance should be struck between land use for food production and other goals – such as environmental benefit?

47. Today, agriculture accounts for 69% of land use across England[52]. But, now more than ever, there are growing, multi-factorial demands on this land notably food production, farm business diversification, environmental stewardship, renewable energy generation, carbon sequestration, flood protection, amenity and leisure. A 2020 report for the Royal Society noted these demands as being 'ostensibly competing but often potentially complementary pressures'[53].
48. The proposed land use strategy for England should strive to be more coherent across different levels of government to ensure that developmental goals (e.g., urbanisation) and energy needs from alternate sources (e.g., biofuels) do not compromise the availability of rural and high-grade agricultural lands.
49. Agricultural land management practices (e.g., tillage) that have the potential to degrade soil, compromising crop yields and increasing emissions, need to be revised to be consistent with the Government's commitments to sustainable food systems and achieving net-zero emissions.
50. The stability of access to food should be pivotal to food security strategies. Presently, there are no similar provisions in the legislation to promote the nutritional and social values of food. Farmers interviewed in the H3 project, many of whom were practising regenerative agriculture, repeatedly criticised the absence of food production in policies such as ELMS.
51. There is also a need for initiatives that engage the public sector in diet and food choices and how this might impact land use. Some research initiatives within TUKFS already include community engagement with vulnerable groups[54] to better ascertain dietary needs, but there is an argument for similar programmes with a broader remit (including policy implications) to fully understand the role of cultural practices and social status on food security.

[51] Poppy, G.M., Baverstock-Poppy, J.J. & Baverstock, J. Trade and dietary preferences can determine micronutrient security in the United Kingdom. *Nat Food* **3**, 512–522 (2022). https://doi.org/10.1038/s43016-022-00538-3

[52] Agricultural land use in England at 1 June 2022, Defra

[53] Burchardt, J., Doak, J., and Parker, G. Review of key trends and issues in UK rural land use. Living Landscapes Project Final Report to the Royal Society (August 2020)

[54] FoodSEqual Project

52. The exit of the UK from the European Union represented an opportunity to rephrase the national dialogue around the multifunctionality of agricultural land. Although, current proposals acknowledge the need to optimise the multifunctionality of agricultural lands, there is limited knowledge on how individual or group choices as well as socio-economic events may impact sustainable land use[55,56].
53. Multifactorial and evidence-based assessments could also help clarify the risks associated with pursuing conservation targets at the expense of food production. Promoting the multifunctional attributes of agricultural systems could also enhance the complementary potentials of Britain's farming systems where multiple targets (e.g., food production and biodiversity conservation) can be achieved and this could also in turn have net positive feedback on the entire system.

***Balancing land use for food production and other goals***

54. There are a range of natural ecosystem/environmental services provided by land which have both use and non-use values. The 'economics answer' as to what balance is struck is where the marginal rates of substitution for all goods and services is equal to their relative prices. The trouble is that these services are non-market goods for which we do not know the value in monetary terms.
55. There is a vast field of research trying to value environmental services of one sort or another[57], yet these only scratch the surface when trying to value the totality of services that are provided by the environment. What we know is that if we just let the market dictate then the implicit values they assign to environmental goods will be very low and in some cases zero. We know that's wrong, but that does not lead to somehow knowing what the value should be.
56. Environmental sustainability targets (e.g., rewilding) could potentially impact the availability of land needed to cultivate food. There needs to be a short- and long-term process in place to evaluate against the environmental objectives and the long-term viability of the food system.
57. Implementation of sustainable environmental initiatives needs to be contextualised and spatially differentiated to avoid adopting a one-size-fits-all approach. For instance, South-East England is characterised by a dense network of arable land and therefore, it is unlikely that any plans to implement large-scale land sparing programme in that region would lead to long-term benefits for food production.
58. The Foresight Land Use Futures project (2011) identified the need for incremental land use changes when dealing with agricultural lands[58]. This is still relevant especially when dealing with rural and high-grade agricultural lands (e.g., arable fields in Southeast England and the Uplands). Environmental benefits, such as rewilding needs to be assessed against the demand for food and the capacity of the existing lands to meet such demand. Incremental land use change would ensure that there is a low-cost low-regret characteristic to transitioning agricultural land for the sole purposes of achieving environmental targets[59].
59. Agro-forestry should be central to any sustainable food production policy that is implemented in the future. Management practices that promote agro-forestry should be prominent in future agricultural systems, this would ensure that food production goals would have minimal impact on biodiversity conservation.

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[55] Ingram *et al*. 2013. Priority research questions for the UK food system. Food Sec. 5, 617–636.

[56] Gaupp *et al.* (2021) Food system development pathways for healthy, nature-positive and inclusive food systems. Nat Food 2, 928–934 https://doi.org/10.1038/s43016-021-00421-7

[57] Summers *et al*. (2021), Current carbon prices do not stack up to much land use change, despite bundled ecosystem service co-benefits. Glob Change Biol, 27: 2744-2762. https://doi.org/10.1111/gcb.15613

[58] Foresight Land Use Futures Project (2010) Final Project Report. The Government Office for Science, London

[59] Land Use: Policies for a Net Zero UK Report. Committee on Climate Change (January 2020).