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Implications of COVID-19 for UK food supply resilience

Risks to food and nutrition security during and after the pandemic

Richard King, Laura Wellesley, Helen Harwatt and Tim G. Benton



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Summary

The COVID-19 pandemic continues to test the resilience of human systems around the world, requiring them to respond to unprecedented circumstances. Despite its novelty, the current pandemic may augur further global turbulence and systemic shocks in the years ahead.

This paper collates the findings of a rapid risk assessment of the pandemic's impact on the UK's interactions with the global food system, conducted – iteratively, from mid-2020 to mid-2021 – to inform measures to build food-system resilience in the face of ongoing pandemic-related instabilities. Evidence from this period shows that:

- The UK food system was already in a state of readjustment prior to the pandemic, due to Brexit; moreover, the ramifications of the UK's withdrawal from the EU are ongoing.
- UK imports of food, drink, animal feed and agrochemical inputs have remained largely stable throughout the pandemic, although airfreighted fruit and vegetable imports contracted in March–May 2020, during the first national lockdown. In early 2021, food trade with Europe was acutely disrupted by the ending of the Brexit transition period.
- UK food prices rose during the first national lockdown but fell for much of the rest of 2020. In 2021, however, they have risen steadily, reflecting trends in global food prices, which have been increasing consistently since May 2020 despite generally plentiful food supplies.
- Globally, while some regions have been affected by supply-chain constraints, and some markets by significant price rises, impacts have mostly resulted from recalibrations in demand. Nor have food- and agriculture-related trade measures implemented by individual countries been as severe or harmful as those adopted during the global food price crises of 2007–08 and 2010–12.
- Economic pressures resulting from the COVID-19 pandemic could yet cause major crises around the world, if people are unable to afford nutritious food. While supply impacts to date have been relatively mild, there is little evidence that this is due to widespread effective or coordinated interventions. Millions more people are now suffering from nutrition insecurity than at the onset of the pandemic.

- The global impacts of the pandemic are likely to affect the UK's food system for some years. With significant global vaccination inequalities, and with global food prices at their highest levels in a decade, the full extent of the impacts may not yet have been realized. Such pressures, coupled with continued Brexit-related impacts on the food system and uncertainties about the pace and shape of the UK's post-pandemic economic recovery, could yet cause shocks initially realized elsewhere to compromise UK supplies.
- As the UK deliberates on a National Food Strategy for England and begins to implement new agricultural initiatives and trade deals under a raft of post-Brexit legislation, it should champion national and global environmental standards to improve the long-term sustainability and resilience of the food system.
- On the multilateral stage, the UK has had significant leadership potential in 2021, including in its presidency of the G7 and as host of the 26th UN Climate Change Conference of the Parties (COP26). As it seeks to assert its post-Brexit 'Global Britain' narrative, the UK must position itself both internationally and domestically in the vanguard of supporting and enabling post-COVID food systems that forestall short-term food insecurity concerns and that promote long-term nutritional, livelihood, and environmental security.

01

Introduction: a conceptual approach

Due to the complexity of global food systems, and of the UK's interactions with them, food and nutrition security faces multiple risks as a consequence of the COVID-19 pandemic. Many of these are yet to materialize.

Some 20 months after the initial outbreak of the coronavirus disease, which prompted a UK-wide lockdown between March and June 2020, the impacts of the ensuing crisis on UK food and nutrition security have, as yet, been more muted than originally feared. Unlike the global food price crises of 2007–08 and 2010–12, the COVID-19 pandemic has triggered a demand shock to the food system, rather than a supply shock. The initial outcome of panic buying behaviours – aisle upon aisle of bare supermarket shelves – was addressed quickly, and was not repeated when, between early November 2020 and the end of February 2021, the COVID-19 epidemic in the UK took a dramatic and deadly turn for the worse, forcing two further national lockdowns and resulting in one of the worst pandemic death rates anywhere in the world. As a result of these pressures, in addition to the ending of the Brexit transition period at the end of December 2020, more immediate and serious consequences for UK food import supplies might have been expected. Yet these impacts, by and large, have not materialized.

Although world markets – with some exceptions due to labour shortages – have remained well supplied throughout the pandemic, food and nutrition security outcomes for millions of individuals have been less benign. 150 million people are thought to have experienced severe food insecurity in 2020, and 10 per cent of people globally were chronically hungry – an increase of around 120 million people from 2019 levels. Much of this food insecurity has been due to reductions

in incomes stemming from the massive economic fallouts from the pandemic, which have also eroded the quality of people's diets and compromised the nutrition security of many more people than those facing calorific deficits.

Even for the UK, there are still considerable challenges ahead. International commodity and energy prices are rising as demand recovers in economies with high rates of vaccination against the coronavirus, and international food prices are at their highest levels in a decade: this is also affecting people in countries yet to unlock their economies. UK consumer food prices are ticking upwards, and some Brexit-related supply issues persist. Yet, 2021 has also offered the UK an opportunity to shape international post-pandemic recovery plans in ways that support the sustainability and resilience of UK and global food systems.

This research paper presents a high-level assessment of the COVID-19 pandemic's impacts on the UK's interactions with global food systems, and of these systems' capacities to keep the population fed and nourished. It considers the pandemic's impacts on the availability of, and access to, food in the UK as a result of changes to trade patterns and food prices: additionally, it examines a broader set of impacts and responses observed globally. From a UK perspective, the main focus is on risks that are propagated internationally, rather than on purely intra-UK dynamics or on individual nutrition security outcomes as a result of domestic food access issues. The paper considers both how short-term dynamics are playing out and how they may shift as the pandemic, and responses to it, progress.

It also considers what lessons might arise for the UK, both from the range of global responses to support food systems during the pandemic and from conceptual approaches to managing exposures and vulnerabilities in relation to different risks within food systems.

Following on from this introductory chapter, which will outline some concepts and illustrate some ways in which impacts can cascade through food systems, Chapter 2 looks at the UK's dependence on global food systems and Chapter 3 examines how the pandemic has affected the availability of food nationally through these channels. Chapter 4 looks at the broad impacts of and responses to the pandemic across food systems at the global level, and Chapter 5 identifies some ongoing pressures that the UK's food systems continue to face. Chapter 6 concludes with some suggestions for proactive UK approaches to making post-pandemic food systems more sustainable and resilient.

Food and nutrition security

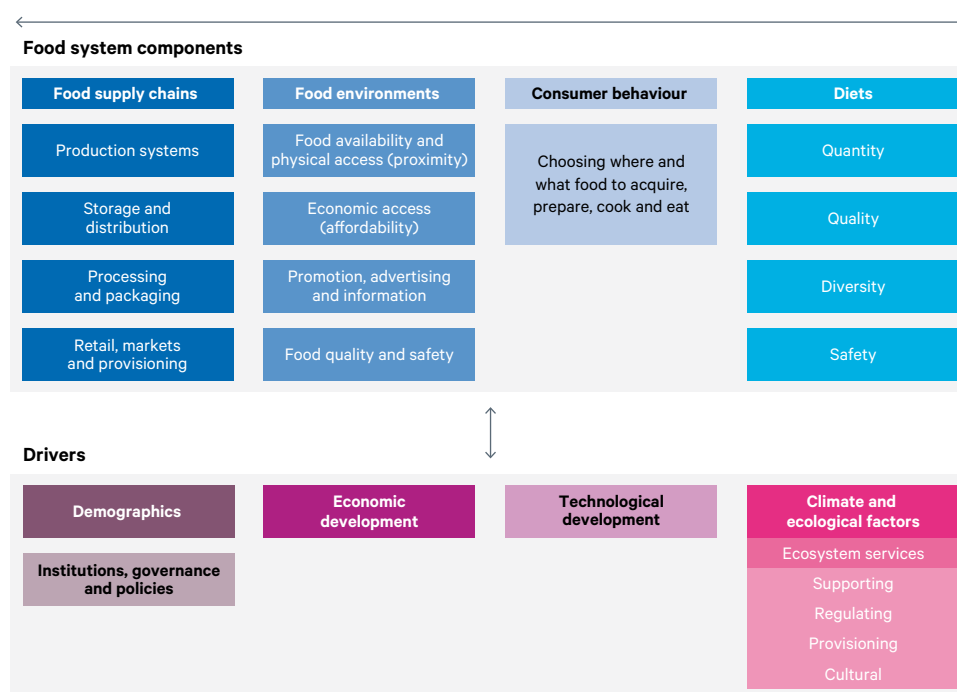
The UN Food and Agriculture Organization (FAO) defines food security as 'when all people, at all times, have physical and economic access to sufficient safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life'.¹ From this definition the FAO identifies four 'pillars' or main dimensions of food security: availability, access, utilization and stability

¹ Food and Agriculture Organization of the UN (2008), *An Introduction to the Basic Concepts of Food Security*, Food Security Information for Action Practical Guides, <http://www.fao.org/docrep/013/al936e/al936e00.pdf>.

over time.² Discussion of food security has tended to focus on averting calorific deficits. However, achieving food security as defined above means eliminating all forms of malnutrition.³ It therefore requires tackling overweight and obesity alongside undernutrition, micronutrient deficiencies (‘hidden hunger’), diet-related non-communicable diseases and environmental factors, such as inadequate healthcare and insanitary conditions, that inhibit nutrient uptake. In this paper the term ‘food and nutrition security’ will be used, to keep these broader issues in focus.⁴

The varied components of food systems

Figure 1. Food systems: an overall framework



Source: Developed by the authors from The High Level Panel of Experts on Food Security and Nutrition (2017), *Nutrition and food systems: A report by the High Level Panel of Experts on Food Security and Nutrition*, Figure 1, ‘Conceptual framework of food systems for diets and nutrition’, p. 26, Rome: High Level Panel of Experts on Food Security and Nutrition/Committee on World Food Security, <http://www.fao.org/3/a-i7846e.pdf>, and Table 1 in O’Neill, B. C., Kriegler, E., Riahi, K. et al. (2014), ‘A new scenario framework for climate change research: the concept of shared socioeconomic pathways’, *Climatic Change*, 122, pp. 387–400, <https://doi.org/10.1007/s10584-013-0905-2>.

The potential impacts of the COVID-19 pandemic on food and nutrition security are extraordinarily diverse, stemming not only from the disease itself but also from its indirect consequences and from responses to it. COVID-19-related risks can cascade through food systems, potentially affecting nutrition outcomes for people

² Ibid.

³ The High Level Panel of Experts on Food Security and Nutrition (2017), *Nutrition and food systems: A report by the High Level Panel of Experts on Food Security and Nutrition*, Rome: High Level Panel of Experts on Food Security and Nutrition/Committee on World Food Security, <http://www.fao.org/3/a-i7846e.pdf>.

⁴ Ingram, J. (2020), ‘Nutrition security is more than food security’, *Nature Food*, 1(1): p. 2, <https://doi.org/10.1038/s43016-019-0002-4>.

and societies far from the sites of primary impacts. Individual food-supply chains may be linear, but the overall supply of food is frequently organized in much more complex networks. Thus, rather than considering food production or consumption – or even entire supply chains – in isolation, it is important to recognize the systemic nature of these components, their interactions with each other, and the broader drivers of the socio-economic, political and environmental conditions in which they occur. This will help to identify the potential pathways through which pandemic-related food and nutrition security risks may be propagated and/or mitigated through food systems, even if these outcomes have not yet materialized.

A food system contains all the elements – environment, people, inputs, processes, infrastructures and institutions – and activities connected to the production, processing, distribution, promotion, preparation and consumption of food, and the output of these activities, including socio-economic and environmental outcomes (Figure 1). Food systems influence consumer choices and diets, driving food and nutrition security outcomes; consumer behaviours, in turn, inform and interact with decisions taken throughout networks of food supply chains and in the broader food environment, all of which shape the overall nature and sustainability of food systems.⁵ The latter are also shaped by and interact with a series of drivers which determine the socio-economic and environmental context within which food systems operate, including the capacity of competing and supporting ecosystem services.

Improving sustainability and resilience in food systems

Food and nutrition security is both an outcome and an enabling condition of sustainable food systems and sustainability more generally. The Committee on World Food Security's High Level Panel of Experts defines a sustainable food system as one that 'ensures food security and nutrition for all in such a way that the economic, social and environmental bases to generate food security and nutrition of future generations are not compromised'.⁶

Sustainable food systems must function, and support ecosystem services, in ways that permit them to nourish future generations. They must also be resilient in the face of shocks, in a manner that ensures short-term nutrition security is not compromised.

Food system resilience – defined as the capacity over time of a food system and its units at multiple levels, to provide 'sufficient, appropriate and accessible food to all', in the face of various and even unforeseen disturbances⁷ – is therefore a key component of food system sustainability. It depends on four characteristics: 1) robustness, or the capacity to withstand shocks; 2) capacity to absorb shocks; 3) flexibility, and thus rapidity to recover from shocks; and 4) resourcefulness and adaptability to recover from shocks.⁸ To develop these characteristics, systems need to be anticipatory and

⁵ The High Level Panel of Experts on Food Security and Nutrition (2017), *Nutrition and food systems*.

⁶ The High Level Panel of Experts on Food Security and Nutrition (2017), *Nutrition and food systems*.

⁷ See Tendall, D. M., Joerin, J., Kopainsky, B., Edwards, P., Shreck, A., Le, Q. B., Krutli, P., Grant, M. and Six, J. (2015), 'Food system resilience: defining the concept', *Global Food Security*, p. 17–23, <https://doi.org/10.1016/j.gfs.2015.08.001>.

⁸ Ibid.

adaptive, transforming and reorienting themselves to become more resilient to future risks. The more resilient a food system is, the fewer impacts it will experience from any disturbance, and the more capacity it will have to recover rapidly to – or improve upon – pre-shock functioning to support nutrition security and ecosystem services.

Impact transmission pathways

If considered in overly simplistic terms, a hazard has a direct impact on anything that is both exposed and vulnerable to it. Additionally, most hazards can lead to chains or cascades of risk where the initial impact can have knock-on effects on other parts of the system, depending on the exposures and vulnerabilities of each part of the system to each subsequent impact. A hazard therefore has the potential to cause impacts that propagate through time and space to affect actors and activities far removed from the initial event.

An example of indirect effects in food systems is when a major drought affects cereal harvests in a ‘breadbasket’ region and leads, not just to food insecurity in the drought-affected region, but to the imposition of export restrictions by the affected country, which then commonly affects global cereal supplies and global food prices, and can even cause political instability in import-dependent and food-insecure countries where lack of food or unaffordable prices lead to hunger.

In such instances, the cascade of risk and/or responses to events within the cascade may amplify the initial impact. In other cases, a dissipation of risk and appropriate responses may reduce or deflect the harm, depending on how resilient different components of the system are prior to the materialization of impacts and how successful the responses to those impacts are at reducing exposures and vulnerabilities.

There are multiple ways in which hazards can trigger a series of impacts, including across borders, through remote linkages such as price signals and climate-variability links (‘teleconnections’), and by interacting with and compounding the effects of other prior, coincidental or subsequent risks.

Under such circumstances, the impacts can cause whole systems to fail. This is systemic risk, defined as ‘the threat that individual failures, accidents, or disruptions present to a system through the process of contagion’.⁹

There are therefore three important considerations in examining the risks that the COVID-19 pandemic poses to food and nutrition security in the UK:

- Other than for those directly infected by the COVID-19 virus, the pandemic is unlikely to be a direct cause of nutrition insecurity. Rather, it is a potential catalyst which may trigger or amplify changes in the food system, either in series or in parallel. Understanding the nature of these pre-existing circumstances, the potential changes that they might undergo and the likely risk-transmission cascades is key.

⁹ OECD (2019), ‘Averting Systemic Collapse’, 17–18 September 2019, Conference report, <http://www.oecd.org/naec/averting-systemic-collapse>.

- Just because any given impact has not yet materialized does not mean that it will not do so in the future. To understand potential risks, it is important to consider the various exposures and vulnerabilities of different activities and actors within global food systems, and how these interrelate.
- In seeking to reduce the risks that the COVID-19 pandemic poses to food and nutrition security in the UK and elsewhere, interventions need to reduce exposures and vulnerabilities. Responses can target the immediate risks faced by the focal populations, or they can be designed to interrupt or reduce the severity of risk transmissions further upstream by reducing exposures and vulnerabilities elsewhere in the system. Equally, the design and implementation of risk-reduction measures need to take account of the various ways these may interact with system dynamics and affect the resiliency or fragility of activities, actors, and outcomes in food systems beyond the UK.

02

The UK's interactions with global food systems

UK food production and consumption are intimately connected to global food systems, especially those involving the EU. Brexit has been changing these relationships and, as a consequence, the UK food policy landscape.

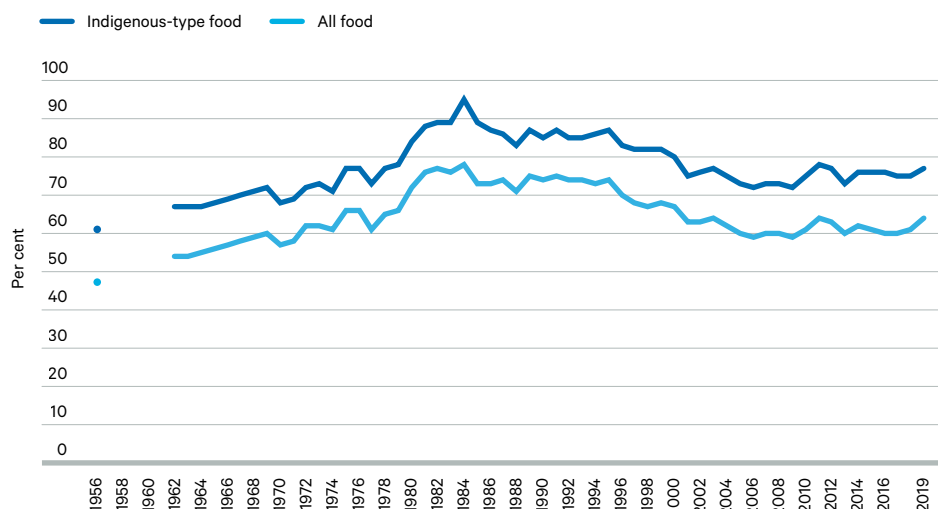
Globally, one out of every five calories consumed by humans has crossed at least one international border: a proportion which has risen by more than 50 per cent in the last four decades.¹⁰ The UK is both a significant importer and exporter of agricultural products.

In 2019, the UK's food production-to-supply ratio – i.e. the proportion of food consumed in the UK that is produced, including for export, in the UK – was 64 per cent. For 'indigenous-type' foods (i.e. only those foods that can be produced within the UK under current climatic conditions), the ratio is higher, at 77 per cent in 2019.¹¹ These 'self-sufficiency ratios' have remained relatively stable since 2000, but are some way below the peaks recorded in 1984 (of 78 per cent and 95 per cent respectively), and well above the ratios of the 1950s and 1960s (see Figure 2).

¹⁰ Torero Cullen, M. (2020), 'A battle plan for ensuring global food supplies during the COVID-19 crisis', FAO.org, <http://www.fao.org/news/story/en/item/1268059/icode>.

¹¹ UK Department for Environment, Food and Rural Affairs (2020), 'Food Statistics in your pocket: Global and UK supply', <https://www.gov.uk/government/publications/food-statistics-pocketbook/food-statistics-in-your-pocket-global-and-uk-supply>.

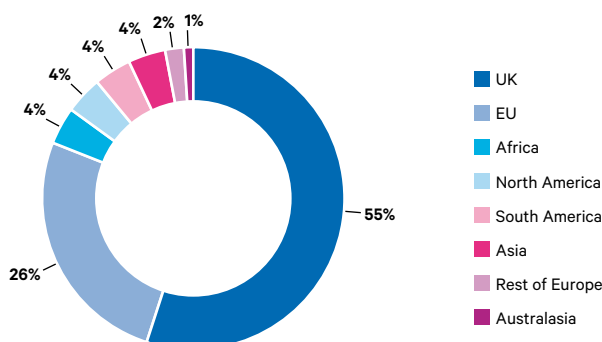
Figure 2. UK production-to-supply ('self-sufficiency') ratios, 1956–2019



Source: UK Department for Environment, Food and Rural Affairs (2020), 'National Statistics: Food statistics pocketbook', <https://www.gov.uk/government/statistics/food-statistics-pocketbook>.
Note: Based on the farm-gate value of raw food production.

Because the UK is a significant agricultural exporter, only 55 per cent of food consumed in the UK in 2019 was actually produced domestically (see Figure 3). The vast majority of the remainder (26 per cent of all food consumed in the UK) was imported from the EU,¹² although in total the UK imports food, animal feed and drink (FFD) from more than 200 countries and territories – around 85 per cent of all the nations in the world.¹³

Figure 3. Origins of food consumed in the UK, 2019



Source: UK Department for Environment, Food and Rural Affairs (2020), 'National Statistics: Food statistics pocketbook', <https://www.gov.uk/government/statistics/food-statistics-pocketbook>.
Note: Based on the farm-gate value of raw food production.

¹² Ibid.

¹³ Calculated from HM Revenue and Customs (2021), 'Statistical datasets: Overseas trade statistics', UK Trade Info, <https://www.uktradeinfo.com/trade-data/overseas>.

Sourcing food from a diverse range of producer nations, as well as producing it domestically, can enhance a country's food security¹⁴ and increase the resilience of the global system to small, localized disturbances: losses in one region can be compensated by surpluses in others. However, reliance on external sources does increase exposure to systemic shocks and global disruptions such as the COVID-19 pandemic. A high degree of self-sufficiency does not necessarily enhance food or nutritional security, especially in a changing climate with an increasing incidence of extreme events. Self-sufficiency concentrates dependencies and increases exposure to geographically concentrated shocks, such as the 2001 outbreak of foot-and-mouth disease in the UK. Another example would be the wet winter and dry spring that characterized the 2019/20 cropping season in the UK, resulting in sizeable losses in that season's arable crop yields.¹⁵

Even before the onset of the COVID-19 pandemic, the UK food system was preparing for significant changes as a result of the UK's withdrawal from the EU and the ending of the Brexit transition period on 31 December 2020. The Agriculture Act 2020 received royal assent and became law in November of that year, replacing the EU's Common Agricultural Policy and paving the way for 'a system based on paying public money for public goods'.¹⁶ The reforms contained in the Act were also intended to support the government's 25-year Environment Plan – to be delivered primarily by means of the Environment Bill, which was going through the final legislative stages in November 2021 – and help realize its commitment to achieving net zero emissions by 2050.¹⁷

Although the Brexit process was in train long before the onset of the COVID-19 pandemic, there were considerable uncertainties throughout 2020 over the exact ramifications for trade. The final UK–EU Trade and Cooperation Agreement was not signed until 30 December 2020, and many implementation challenges relating to the UK's exit from the EU Customs Union and the attendant customs checks have continued to have considerable impacts into 2021, not least on the supply of perishable goods.

The Trade Act 2021, which achieved royal assent in April 2021, provides the new legislative framework for the UK to develop new trade partnerships. For countries with which the UK does not have direct trade agreements, tariffs are now applied in accordance with the World Trade Organization (WTO) Most Favoured Nation principle under the UK's Integrated Tariff Schedule, active since January 2021. Under the new schedule, the number of products with zero import tariffs has almost doubled compared to the EU's Common External Tariff to which UK imports were previously subject.¹⁸ However, import protections remain on many agricultural goods.¹⁹ The UK has also announced its intention to develop an emerging markets

¹⁴ UK Department for Environment, Food and Rural Affairs (2010), *UK Food Security Assessment: Detailed Analysis*, <http://archive.defra.gov.uk/foodfarm/food/pdf/food-assess100105.pdf>.

¹⁵ Impey, L. (2020), 'Analysis: Cost of extreme weather on 2020 crop performance', *Farmers Weekly*, 20 October 2020, <https://www.fwi.co.uk/arable/harvest/analysis-cost-of-extreme-weather-on-2020-crop-performance>.

¹⁶ UK Department for Environment, Food and Rural Affairs (2020), *Farming for the future: policy and progress update*, 25 February 2020, <https://www.gov.uk/government/publications/the-future-for-food-farming-and-the-environment-policy-statement-2020>.

¹⁷ *Ibid.*

¹⁸ HM Revenue and Customs (2021), *The UK's Integrated Tariff Schedule*, Policy paper, <https://www.gov.uk/government/publications/the-uks-integrated-tariff-schedule/the-uks-integrated-tariff-schedule>.

¹⁹ Pickard, J. and Brunson, J. (2020), 'UK sets out post-Brexit tariff regime', *Financial Times*, 19 May 2020, <https://www.ft.com/content/057460b4-3716-4ab5-bd08-a1c2eca56983>.

trade scheme²⁰ to improve access to the UK market for producers in developing countries, although access is currently largely unchanged from the EU's 'Everything but Arms' trade-for-development scheme.²¹

These developments should be seen in the context of significant recent structural changes in the UK government, such as the amalgamation of the development and foreign ministries into the Foreign, Commonwealth and Development Office (FCDO), and the reduction (equivalent to 0.2 per cent of gross national income – GNI) in the official overseas development budget announced in the Spending Review 2020:²² the reduced allocation of 0.5 per cent of GNI was to apply from 2021, lasting until public finances are able to pass a series of post-COVID-19 fiscal tests.²³

In late 2021, with the COVID-19 pandemic having thrust the objectives and strategies underpinning the UK food system into even sharper focus, the UK government is preparing to publish its first National Food Strategy for England white paper in 75 years, in response to the recommendations of an independent National Food Strategy commission.²⁴

Food-bank dependence was estimated by different providers to have risen by 89 per cent and 175 per cent year-on-year in April 2020 – shortly after the UK coronavirus epidemic took hold – but had already been increasing for the past five years.

Although production, consumption and distributional dynamics within the UK are not the focus of this analysis, they have a significant bearing on food and nutrition security outcomes in the UK, with early evidence suggesting that the COVID-19 pandemic is exacerbating existing food-system inequalities and vulnerabilities.²⁵

For example, food-bank dependence was estimated by different providers to have risen by 89 per cent and 175 per cent year-on-year in April 2020²⁶ – shortly after the UK coronavirus epidemic took hold – but had already been increasing for the

²⁰ UK Department for International Trade and the Rt Hon. Elizabeth Truss, MP (2021), 'Opening statement on Global Britain debate', 11 January 2021, <https://www.gov.uk/government/speeches/opening-statement-on-global-britain-debate>.

²¹ Winters, L., Mendez-Parra, M. and Mitchell, I. (2020), *Post-Brexit Trade for Development: An Unfulfilled Promise*, Centre for Global Development, <https://www.cgdev.org/blog/post-brexit-trade-development-unfulfilled-promise>.

²² Dickson, A. (2020), 'Spending Review: Reducing the 0.7% aid commitment', UK Parliament, House of Commons Library, 26 November 2020, <https://commonslibrary.parliament.uk/spending-review-reducing-the-aid-commitment>.

²³ Ibid.

²⁴ National Food Strategy (2021), *The Plan*, <https://www.nationalfoodstrategy.org>.

²⁵ Rivington, M., Duckett, D., Iannetta, P., Hawes, C., Begg, G., Polhill, J. G., Loades, K., Newton, A., Aitkenhead, M., Lozada-Ellison, L. M., Neilson, R., Gandossi, G., Stewart, D., Wardell-Johnson, D., Udugbezi, E., Lorenzo-Arribas, A., Dinnie, L., Benton, T. G., King, R. and Burgess, P. (2021), *An overview assessment of the COVID-19 pandemic on the UK food and nutrition security*, The James Hutton Institute, https://www.hutton.ac.uk/sites/default/files/files/An%20Overview%20assessment%20of%20the%20COVID_19%20pandemic%20on%20UK%20food%20and%20nutrition%20security.pdf.

²⁶ The Trussell Trust (2020), 'UK Food Banks Report Busiest Month Ever, as Coalition Urgently Calls for Funding to Get Money into People's Pockets Quickly During Pandemic', 3 June 2020, <https://www.trusselltrust.org/2020/06/03/food-banks-busiest-month>.

past five years.²⁷ In each three-month period throughout the crisis, the number of parcels distributed by food banks (of which there are over 2,300 in the UK) has continued to be significantly higher than in the equivalent period in the previous year.²⁸ Overweight and obesity – which in adults are associated with neighbourhood deprivation²⁹ – have been identified as a risk factor for severe COVID-19 infection.³⁰ In the year to November 2020, 62.8 per cent of adults in England (rising to 67.5 per cent of black adults) were overweight or obese.³¹

Analysis by the Institute of Fiscal Studies reveals that in 2019 some 71 per cent of food sector workers in the UK earned less than £10 per hour,³² despite being defined by the government as critical workers.³³ In addition, wide gender disparities in relation to the time spent on unpaid care work – including food shopping and cooking – persisted throughout the UK's first lockdown, between late March and late April 2020.³⁴

²⁷ The Trussell Trust (2020), 'End of Year Stats', <https://www.trusselltrust.org/news-and-blog/latest-stats/end-year-stats>.

²⁸ Ibid.

²⁹ NHS Digital (2019), 'Health Survey for England 2018: Overweight and obesity in adults and children', 3 December 2019, <https://files.digital.nhs.uk/52/FD7E18/HSE18-Adult-Child-Obesity-rep.pdf>.

³⁰ Public Health England (2020), *COVID-19: review of disparities in risks and outcomes*, <https://www.gov.uk/government/publications/covid-19-review-of-disparities-in-risks-and-outcomes>.

³¹ Sport England (2021), 'Overweight Adults', 25 June 2021, <https://www.ethnicity-facts-figures.service.gov.uk/health/diet-and-exercise/overweight-adults/latest>.

³² Institute for Fiscal Studies (2020), *Differences between key workers*, <https://www.ifs.org.uk/publications/14818>.

³³ UK Department for Education (2021), 'Children of critical workers and vulnerable children who can access schools or educational settings', Guidance document, 9 March 2021, <https://www.gov.uk/government/publications/coronavirus-covid-19-maintaining-educational-provision/guidance-for-schools-colleges-and-local-authorities-on-maintaining-educational-provision>.

³⁴ Office for National Statistics (2020), 'Coronavirus and how people spent their time under lockdown: 28 March to 26 April 2020', 27 May 2020, <https://www.ons.gov.uk/economy/nationalaccounts/satelliteaccounts/bulletins/coronavirusandhowpeoplespentthetimeunderrestrictions/28marchto26april2020>.

03

International food system dynamics directly affecting the UK

UK food and agriculture imports remained broadly stable throughout 2020, despite the shuttering of hospitality businesses. Food trade with Europe contracted sharply in early 2021 after the Brexit transition period ended.

There are at least seven ways in which direct and indirect COVID-19-related risks to food and nutrition security can propagate across borders (see Table 1). These are not mutually exclusive and can occur within or between any component(s) of the food system to affect, for example, the supply of food reaching the UK, the ability of UK food producers to access factor markets, or the ability of consumers to afford and utilize the calories and nutrients they require.

In this chapter the focus is initially on vectors affecting the supply into the UK of FFD categories,³⁵ as well as fertilizers and pesticides used by UK farmers. The broader dynamics within contemporary global food systems – which could have knock-on impacts for the UK – are then considered.

³⁵ UK Department for Environment, Food and Rural Affairs (2021), 'National Statistics: Agriculture in the United Kingdom 2019', 25 June 2020, <https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2019>.

Table 1. Cross-border impact mechanisms

Vector of impact transmission	COVID-19-related example
Trade	Tariff and non-tariff barriers that restrict food/input supplies
Finance	Global food and/or agricultural input prices change in response to global supply availability and interest rate changes
Movement of people	Travel restrictions limit availability of migrant farm labour
Sentiment/ psychological	Worries about supply shortages lead to food hoarding or re-evaluations of the importance of food provenance
Geopolitical	Retaliatory trade sanctions imposed on countries blamed for pandemic or trade-restricting measures
Biophysical	Coronavirus contagion from people travelling from areas where the virus is currently prevalent
Infrastructure	Food transport supply and port capacity reduced due to labour shortages and extra phytosanitary checks

Source: Authors' compilation.

Below, these impacts are analysed through the lens of two of the four key pillars of food security (see Introduction): availability and access. Availability reflects the physical presence of appropriate food and nutrients in the country; access refers to whether people can physically reach the food and nutrients they require and desire and, if so, whether they can afford them. Of the other two pillars, utilization is less of a focus here, while stability and its temporal dynamics are considered throughout.

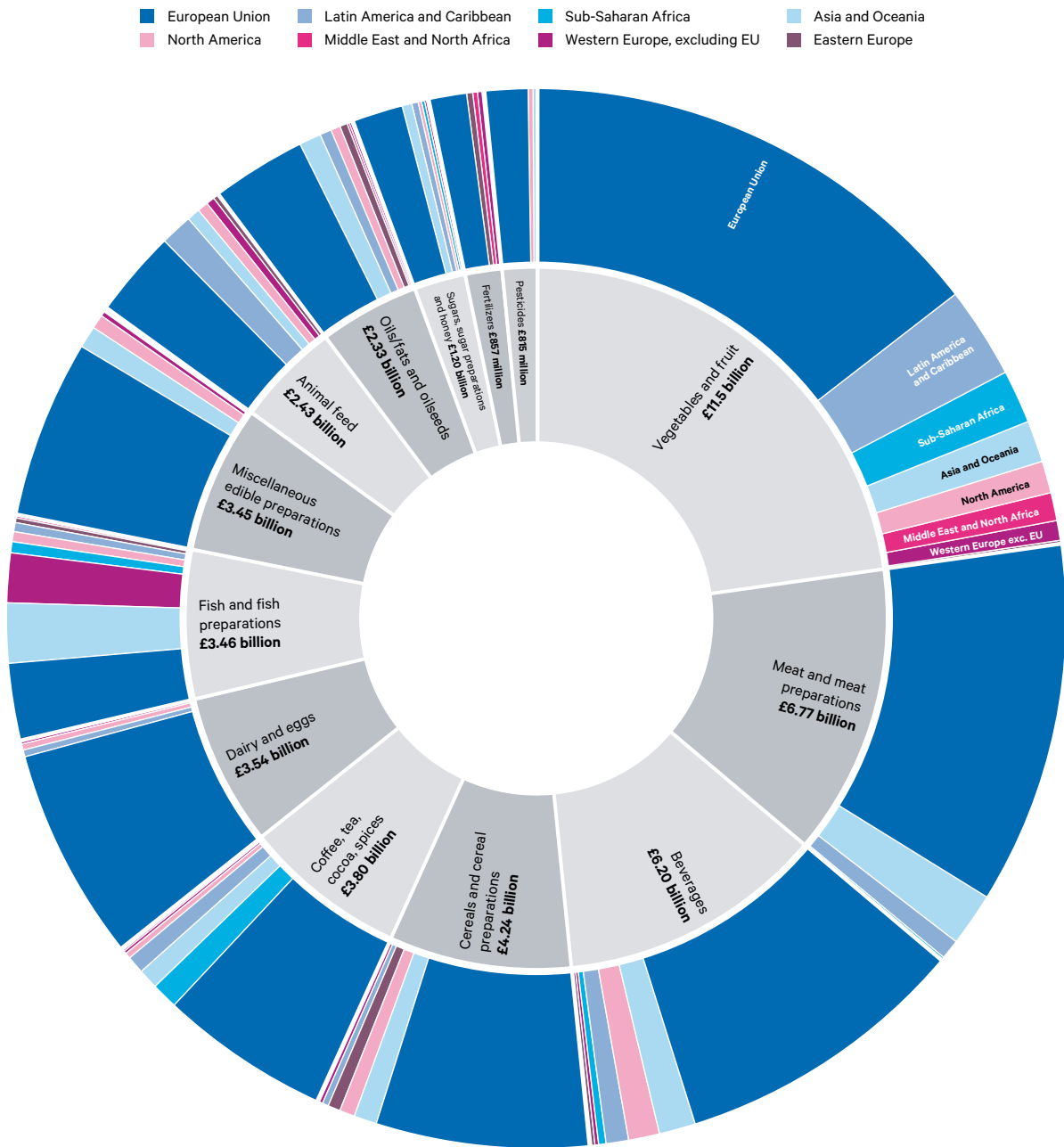
Food availability: trade dependencies and dynamics

Imports

The vast majority – 70 per cent by value, on average, since 2018 – of UK FFD imports come from the EU. Of the remainder, 36 per cent come from high-income countries, 41 per cent from upper-middle-income countries, 21 per cent from lower-middle-income countries, and 2 per cent from least developed countries. Geographically, Asia and Oceania are the most significant non-EU sources, followed by Latin America and the Caribbean, North America, and sub-Saharan Africa (see Figure 4).

The largest share by value of all UK FFD imports is that of vegetables and fruit (23 per cent) followed by meat and meat preparations (13 per cent) and beverages (12 per cent).

Figure 4. Origins of UK imports of food and agricultural inputs, 2019



Source: Calculated from HM Revenue and Customs (2021), 'Statistical datasets: Overseas trade statistics', UK Trade Info, <https://www.uktradeinfo.com/trade-data/overseas>. For additional layers of data, please see King, R. and Wellesley, L. (2020), 'UK food and nutrition security in a global COVID-19 context: an early stock take', Figure 4, [resourcetrade.earth](https://resourcetrade.earth/publications/covid-19-uk-food-nutrition-security), <https://resourcetrade.earth/publications/covid-19-uk-food-nutrition-security>.

While the total value and the regional and category shares of FFD imports exhibit seasonal fluctuations, there were no significantly abnormal changes to aggregate import patterns during 2020. A seasonal 'dip' and subsequent spike in import values between February and March 2020 reflected similar patterns in the equivalent months of 2018 and 2019. As this pattern was also observable in import volumes (see Figure 5), this suggests that international supply remained robust and that fluctuations in value did not reflect more widespread price increases. On a commodity basis, globally sourced imports of meats and fish appeared to fall dramatically during

April and May 2020, and there is also evidence of lower beverage import values during these months than in the equivalent periods in 2018 or 2019. All of these apparent changes are likely to be connected to the forced shuttering of hospitality venues in the UK over this period. Otherwise, fluctuations do not appear to have been abnormal in character.

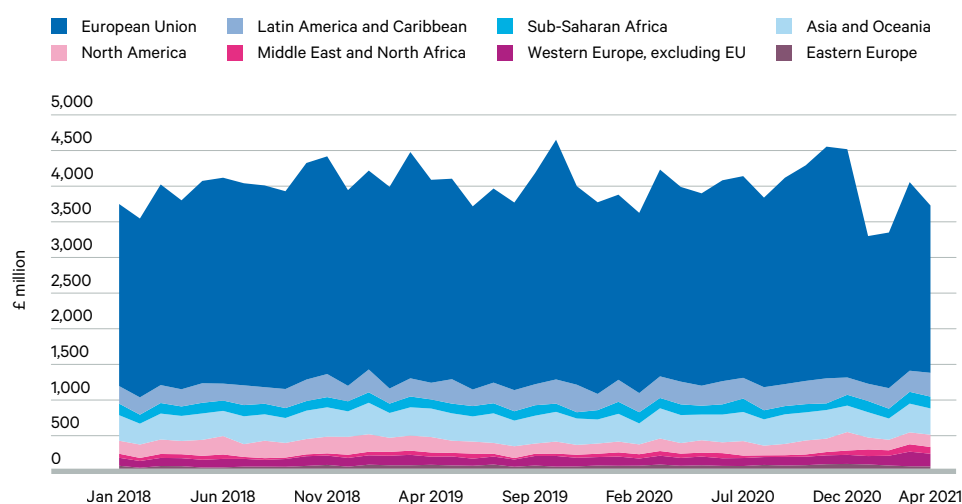
Figure 5. Comparative UK monthly imports of all food, feed, and drink, by value and by volume, January 2018–April 2021



Source: Calculated from HM Revenue and Customs (2021), 'Statistical datasets: Overseas trade statistics', UK Trade Info, <https://www.uktradeinfo.com/trade-data/overseas>.

However, there is a very noticeable discontinuity in the value of FFD imports from the EU in January and February 2021 after the end of the Brexit transition period (Figure 6). Imports appear to have recovered to some degree in March and April, but the medium-term consequences of Brexit on food trade with the EU are yet to be determined.

Figure 6. UK monthly imports of all food, feed, and drink, by region of origin, January 2018–April 2021



Source: Calculated from HM Revenue and Customs (2021), ‘Statistical datasets: Overseas trade statistics’, UK Trade Info, <https://www.uktradeinfo.com/trade-data/overseas>.

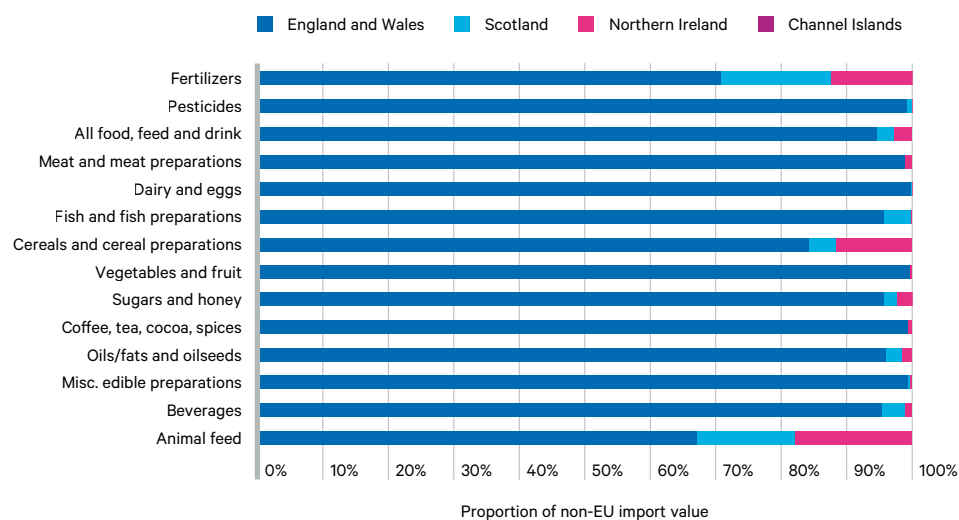
Import routes

The locations through which imports arrive in the UK have arguably assumed increasing significance due to both the COVID-19 pandemic and factors related to Brexit. The emergence of a new, highly transmissible coronavirus variant (later labelled the ‘Alpha variant’ by the World Health Organization) in the English county of Kent in late 2020 heralded an acceleration in the number of infections in the UK, leading the French government to close the two countries’ mutual border. This brought a temporary halt to cross-Channel supply chains reliant on ferry and rail transport. In the final months and aftermath of the Brexit transition period, there has been significant uncertainty over first the likelihood and then the nature of a UK–EU trade deal, and the implications this will have for intra-UK trade between Northern Ireland and Great Britain. Some adaptations, such as a new weekly roll-on-roll-off ferry route between Poole in Dorset and the Moroccan port of Tangiers, have been developed to bypass new Brexit-related complexities for trade with third countries.³⁶

Unfortunately, import location data are not readily available for FFD imports from the EU. However, data calculated from HM Revenue and Customs datasets (reproduced in Figure 7), show that the vast majority of imports from the rest of the world (86 per cent by value, since 2018) arrive in England and Wales. Half of Northern Ireland’s FFD imports by value are animal feeds, and over one-quarter are cereals; Scotland’s imports are also mostly comprised of animal feeds, followed by fish, which accounted for one-fifth of import value in 2019. These proportions changed little over the course of 2020.

³⁶ Poole Harbour Commissioners (2021), ‘Shipping Link Announced Between Poole and Morocco’, 3 March 2021, <https://www.phc.co.uk/shipping-link-announced-between-poole-and-morocco>.

Figure 7. Food and agricultural imports into the UK from non-EU countries, by country of arrival, 2019



Source: Calculated from HM Revenue and Customs (2021), 'Statistical datasets: Overseas trade statistics', UK Trade Info, <https://www.uktradeinfo.com/trade-data/overseas>.

Means of transporting imports

The overwhelming majority of UK FFD imports, by both weight and value, arrive by sea. Most imports from the EU arrive on articulated lorries, transported to British borders by means of roll-on-roll-off ferries, whereas imports from the rest of the world typically arrive on container ships or dry-bulk tankers.

Airfreight accounted for 5 per cent of all FFD imports from the rest of the world in 2019 by value, and only 1 per cent by weight. It is most significant for the transport of vegetables and fruit, accounting for 11 per cent of the value of such non-EU imports in 2019.³⁷ Airfreighted imports are particularly vulnerable to interruptions and delays in supply, as they are typically high-value perishable items – 61 per cent of the value of all FFD airfreighted imports from beyond the EU consists of vegetables and fruit.³⁸

Airfreight has been more susceptible to COVID-19 disruptions, as around 70 per cent of all air cargo by weight is carried to and from UK airports in the bellyhold of passenger planes, rather than on dedicated cargo planes,³⁹ and the sector has therefore witnessed a dramatic contraction as passenger demand collapsed during the height of the pandemic (Figure 8). In fact, as a result, some airlines embarked on refitting planes to enable cargo to be carried inside their passenger cabins.⁴⁰

About 90 per cent of bellyhold freight mass is transported through London airports, and overwhelmingly through Heathrow airport.⁴¹ As such, the value of airfreighted vegetable and fruit imports from outside the EU declined throughout 2020,

³⁷ Calculated from HM Revenue and Customs (2021), 'Statistical datasets: Overseas trade statistics'.

³⁸ Ibid.

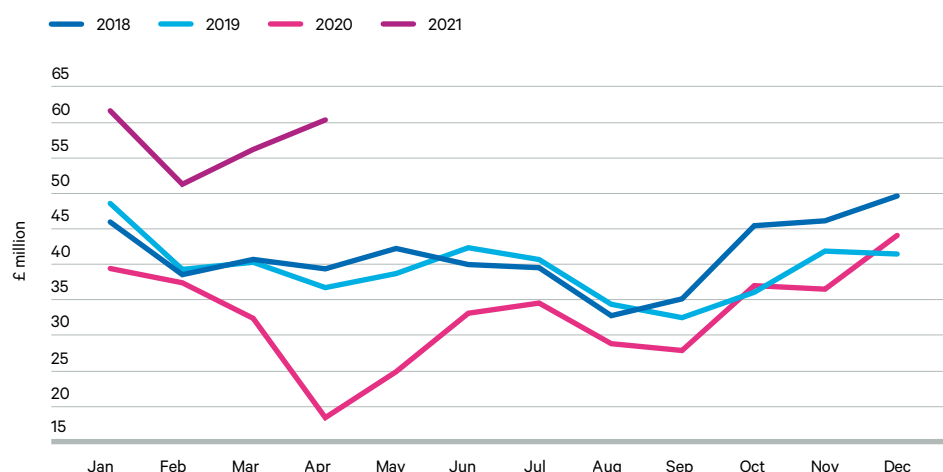
³⁹ Civil Aviation Authority (undated), 'Aviation Trends', <https://www.caa.co.uk/Data-and-analysis/UK-aviation-market/Airports/Aviation-Trends>.

⁴⁰ Smith, J. (2020), 'Passenger Airlines Start Shifting Idled Planes Into Freight Business', *Wall Street Journal*, 20 March 2020, <https://www.wsj.com/articles/passenger-airlines-start-shifting-idled-planes-into-freight-business-11584737793>.

⁴¹ Civil Aviation Authority (undated), 'Aviation Trends'.

compared with previous years. There was also a slight contraction in airfreighted horticultural imports during November 2020, coinciding with the second national lockdown in England: however, the decline was nothing like as severe as that witnessed during the first national lockdown in March and April 2020 (Figure 8).⁴²

Figure 8. Comparative monthly data for airfreighted vegetable and fruit imports into the UK from non-EU countries, January 2018–April 2021



Source: Calculated from HM Revenue and Customs (2021), ‘Statistical datasets: Overseas trade statistics’, UK Trade Info, <https://www.uktradeinfo.com/trade-data/overseas>.

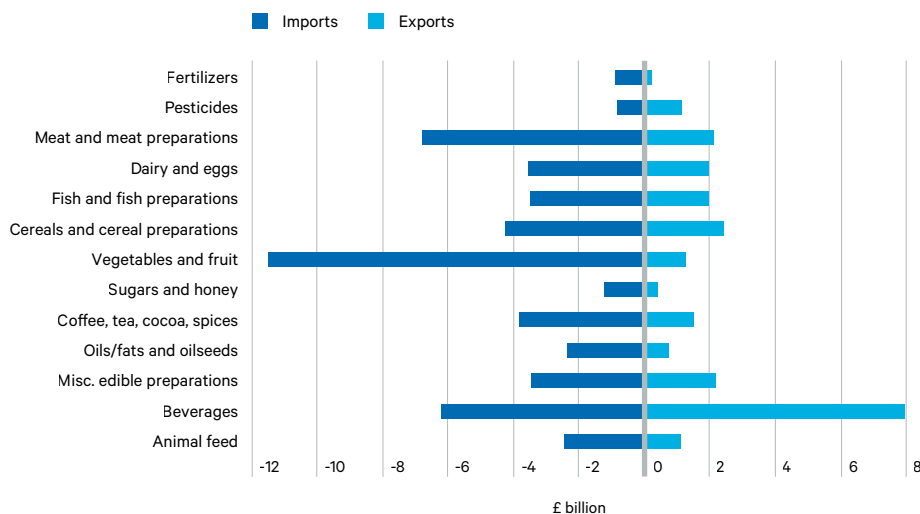
Exports

The UK exports food and agricultural products to around 220 countries. The US, China and Australia are the UK’s most lucrative export markets outside the EU, with the US alone accounting for 10 per cent of the value of all of the UK’s food and agricultural exports. Although the UK exported over £25 billion worth of FFD and chemical agricultural inputs in 2019, this equated to only half the value of its imports, so that the trade deficit for these categories was nearly equal to the value of UK exports (Figure 9). The deficit is largest for vegetables and fruit; the only categories in which there was a trade surplus were beverages and pesticides.

Unlike imports, the value (and, to a lesser extent, the volume) of UK FFD exports witnessed a significant contraction between March and May 2020 (Figure 10). This was observable to differing degrees across the categories of fish, vegetables and fruit, and beverages, although it was largely driven by the last of these given its disproportionately large contribution to FFD export earnings. The decline in beverage exports partly reflected a contraction in worldwide demand, due to the imposition by many countries of restrictions on hospitality venues, although the depreciation of the pound against the euro in early 2020 also played a role. Following this initial contraction, UK exports appeared to be largely unaffected by the pandemic during the second half of 2020, with more FFD products being exported from the UK in December 2020 than in the corresponding month of the previous two years.

⁴² HM Revenue and Customs (2020), *UK Trade Info: Overseas trade statistics*.

Figure 9. UK trade balance in food and agricultural inputs, by category, 2019



Source: Calculated from HM Revenue and Customs (2021), 'Statistical datasets: Overseas trade statistics', UK Trade Info, <https://www.uktradeinfo.com/trade-data/overseas>.

However, by early 2021, the end of the Brexit transition period was causing significant issues for UK export supply chains. As Figure 10 shows, FFD exports in January 2021 were only around half the levels (by value and volume) that they had been in January 2018, 2019 or 2020. Although FFD exports subsequently showed some recovery, they remained well below the levels of the previous three years throughout the first four months of 2021.

During the first third of 2021, complications and delays relating to new customs arrangements were constraining UK exports to the EU, as well as internal trade between Great Britain and Northern Ireland, which remains under EU internal market controls.

During that first third of 2021, complications and delays relating to new customs arrangements were constraining UK exports to the EU, as well as internal trade between Great Britain and Northern Ireland, which remains under EU internal market controls. This proved a particular problem for short shelf-life goods, such as horticultural produce and fish, which had already been hit hard by the closure of the hospitality sector. Indeed, UK retailers voiced concern that the impacts could worsen when short-term exemptions from some of the most burdensome bureaucracy expired⁴³ – this was initially due to occur in March 2021, but as the deadline approached, the UK unilaterally decided to extend the grace period for a further six months.

⁴³ Thomas, D., Eley, J. and Foster, P. (2021), 'N Ireland food shortages set to worsen, say UK supermarket heads', *Financial Times*, 12 January 2021, <https://www.ft.com/content/8bdb2a68-8124-42d6-a477-d4ddf03000d8>.

Figure 10. Comparative UK monthly exports of all food, feed, and drink, by value and by volume, January 2018–April 2021



Source: Calculated from HM Revenue and Customs (2021), 'Statistical datasets: Overseas trade statistics', UK Trade Info, <https://www.uktradeinfo.com/trade-data/overseas>.

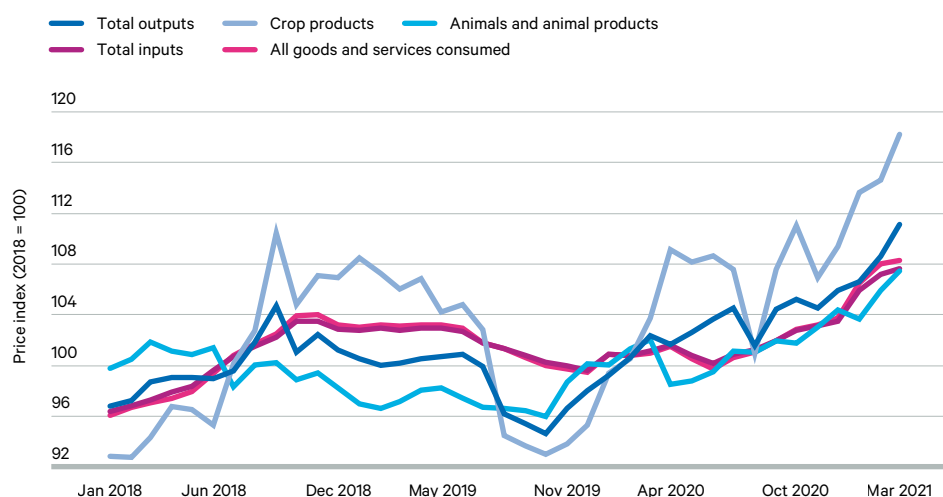
Food access: price trends

Despite the relative absence of agricultural input or food import constraints, the overall farm-gate prices for UK agricultural outputs have climbed steadily since September 2019, apart from a brief contraction in August 2020 (Figure 11). Although both crops and animal products generally contributed to this rise – and although both had, by the end of 2020, reached their highest values since 2014 – prices for animals and animal products fell by 4 per cent in April 2020. This was consistent with a decline in meat imports over the first phase of the pandemic and with a global fall in meat prices, reflecting a steep decline in demand from the lockdown-afflicted food services sector, as well as a reduction in discretionary spending (as a consequence of economic hardship) and logistical bottlenecks.⁴⁴

⁴⁴ Food and Agriculture Organization of the UN (undated), 'Bi-annual market reports: Meat and meat products', <http://www.fao.org/economic/est/est-commodities/meat/bi-annual-market-reports/en>.

Nonetheless, retail sales for in-home meat consumption actually rose during the first UK lockdown to levels normally only associated with the annual Christmas period.⁴⁵ Crop prices have been more volatile, but have generally moved ahead of input costs, which have been rising since the third quarter of 2020.

Figure 11. UK monthly agricultural price indices by category, January 2018–March 2021



Source: Calculated from UK Department for Environment, Food and Rural Affairs (2021), 'Agricultural price indices', <https://www.gov.uk/government/statistics/agricultural-price-indices>.

These farm-gate price dynamics do not necessarily translate into equivalent price movements for consumers, as consumer prices are affected by the costs of other supply-chain actors, especially for more highly processed goods and those that are imported or are the product of extensive supply chains. Following the supply constraints and largely rational grocery stockpiling purchases⁴⁶ that were witnessed in March 2020, the Office for National Statistics (ONS) introduced an experimental dataset reflecting weekly price changes for many foodstuffs sold by online retailers in the UK to provide a timely signal of possible price inflation.⁴⁷ Initially, this dataset covered only products in high demand (such as dried pasta, rice, tinned products and flour); since September 2020, it has reflected a broader basket of groceries. The data are consistent with the prices of food items included in the official consumer price index (CPI) measure of inflation, a lagging indicator in comparison to the ONS dataset. Aside from spikes in May and August 2020, the food and non-alcoholic beverages component of the CPI fell consistently during the last nine months of 2020, even though the overall CPI increased over the course of the year (Figure 12). Since the beginning of 2021, however, this trend

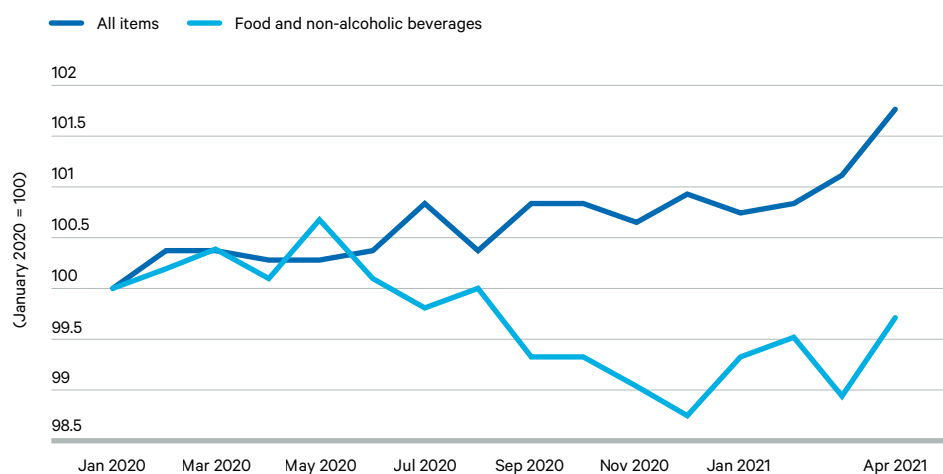
⁴⁵ Revoredo-Giha, C. and Russo, C. (2021), 'Purchases of Meats and Fish in Great Britain During the COVID-19 Lockdown Period', *Frontiers in Nutrition*, 1: <https://doi.org/10.3389/fnut.2021.648160>.

⁴⁶ For analysis of UK shopping patterns over this period, see Morley, C. (2020), 'Why stockpiling is not the crazy, selfish behaviour that it seems', LinkedIn, 21 March 2020, <https://www.linkedin.com/pulse/why-stockpiling-crazy-selfish-behaviour-seems-chris-morley>; and Morley, C. (2020), 'One third more shopping trips than Christmas (and other amazing COVID-19 grocery shopping facts)', LinkedIn, 31 March 2020, <https://www.linkedin.com/pulse/one-third-more-shopping-trips-than-christmas-other-amazing-morley>.

⁴⁷ Office for National Statistics (2020), 'Online price changes for high-demand products methodology', <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/methodologies/onlinepricechangesforhighdemandproductsmethodology>.

has been reversed, with generalized food price increases becoming observable in the CPI – although this signal is weaker in the ONS online prices dataset. It is not yet clear to what extent these recent UK price changes variously relate to the constraints of the COVID-19 pandemic or the expiry of the Brexit transition period, are a lagging reflection of farm-gate prices, or are starting to reflect more sustained increases in global food (and other) commodity prices, which have been rising since June 2020 (see Figures 15 and 16, below). In any case, price rises are likely to exacerbate economic pressures on those segments of society which have suffered income shocks because of the pandemic or where food and nutrition security was already challenged prior to 2020.

Figure 12. UK consumer price indices: overall and food indices, January 2020–April 2021



Source: Calculated from Office for National Statistics (2021), 'Consumer price inflation tables', Table 19, <https://www.ons.gov.uk/economy/inflationandpriceindices/datasets/consumerpriceinflation>.

04 Broader dynamics in international food systems

Despite plentiful supplies, 120–150 million more people worldwide have fallen into food insecurity during the pandemic, largely due to its economic impacts, which include upward pressure on global food prices.

Unlike the global food price crises of 2007–08 and 2010–12, the COVID-19 pandemic has triggered a demand shock to the food system, rather than a supply shock, and in contrast to the situation just prior to 2010–12, production and stock levels at the beginning of the pandemic were both at, or near, record highs.

Disturbances to international trade experienced at the outbreak of the pandemic were not the result of sudden production shortfalls, but of rapid recalibrations in demand as economies went into lockdown and hospitality and food services sectors across the globe were forced to suspend operations.

Producers found themselves unable to shift their goods to market – partly as a consequence of restrictions on transport and movement, but largely owing to the drop in demand from downstream businesses – and were left with no option but to dump their produce.

Although UK cereal yields declined in 2020/21, global production of staple crops in that cropping season is not estimated to have differed materially from 2019/20 levels (see Figure 14, below). Both national governments and international organizations – intergovernmental and non-governmental – have taken steps to protect producers against input shortages and falling farm-gate prices, while harvests in many major producing regions benefited from favourable weather conditions at the end of 2019.

Figure 13. Impacts and responses in international food systems to the COVID-19 pandemic across five areas: food supply chains, food environments, consumer behaviour, diets, and nutrition and health outcomes

Food supply chains				
	Production systems	Storage and distribution	Processing and packaging	Retail, markets and provisioning
Impacts	Increased food losses	Hoarding of food	Labour shortages due to illness/shielding	Closures/restrictions of/on restaurants, canteens, street food outlets, markets
	Labour shortages due to illness/shielding/ mobility restrictions	Reduced transportation capacity		Closure of school canteens
	Increased input costs due to supply constraints	Export bans/ quotas introduced		Labour shortages due to illness/shielding
	Reduced demand due to downstream constraints	Labour shortages due to illness/shielding		
Responses	Farm input subsidies	Export subsidies		Expansion of delivery services
	Price support to farmers (through procurement/regulation)	Provision of additional storage facilities		School meal/voucher provision through alternative modalities where schools are shut
	Targeted rural income support	Import bans		VAT waivers for businesses

Food environments				
	Food availability and physical access (proximity)	Economic access (affordability)	Promotion, advertising, and information	Food quality and safety
Impacts	Permanent/temporary shortage of staple foods	Relative affordability of different items in food basket changes		
	Permanent/temporary shortage of fresh and nutritious foods	Overall cost of food basket increases		
	Restrictions on personal mobility	Job losses/income reductions		
	Restrictions of public transport			
Responses	Monitoring food markets – availability and prices	Monitoring food markets – availability and prices	Campaign for responsible food purchase behaviour	Import bans
	Rationing food purchases	Financial support to vulnerable population (e.g. consumer food subsidy)		Enhanced sanitary and phytosanitary regulations
	Direct food delivery to older and vulnerable households	Provision of free food to vulnerable population (e.g. food aid, food banks)		
		Food price controls		
		Wage support		
	Other countercyclical social protection measures			

	Consumer behaviour	Diets		
	Choices	Quantity	Quality	Diversity
Impacts	More cooking of fresh food	Acute reductions in dietary quantity	Acute reductions in dietary quality	Acute reductions in dietary diversity
	Reductions in eating out	Chronic deterioration in dietary quantity	Chronic deterioration in dietary quality	Chronic deterioration in dietary diversity
	Direct additional purchases from local producers/distribution channels			
Responses	Reduction of consumer taxes			Nutrition and health outcomes
	COVID-19-secure measures to boost confidence			

Source: Authors' compilation.

International food trade logistics have proved fairly resilient in the face of the pandemic, although domestic systems have been more severely affected, particularly those on which informal traders depend.

Many countries imposed trade restrictions on exports and/or imports at the start of the pandemic to protect domestic supply. Although a significant share of these restrictions remain in place, there have been parallel efforts to liberalize international trade flows through, for example, the lowering or lifting of import tariffs.⁴⁸

The economic impacts of the crisis – the global recession, and the exchange-rate fluctuations and credit market contractions associated with it – are likely to continue affecting food markets in the longer term, particularly for smaller-scale producers and businesses.

The following sections discuss the broad trends in COVID-19-related impacts – and in responses to those impacts – and consider country-specific examples that indicate how these trends differ between regions and commodity supply chains. The trends themselves are broadly summarized in Figure 13. These international dynamics are instructive for both informing UK responses and considering how these more distant impacts and responses may cascade through global food systems to ultimately affect UK food and nutrition security.

Food production systems

Impacts

Input-dependent production systems have seen disruption in many regions. For labour-intensive production systems, particularly those that typically employ large numbers of migrant workers, labour shortages resulting from COVID-19 infections, quarantine measures and movement restrictions have interrupted sowing and harvesting activities.⁴⁹ In processing plants where workers operate in close proximity to one another – for example, in meatpacking sites in Argentina, Brazil and the US – localized outbreaks of COVID-19 have forced temporary closures, as they have in the UK. Travel restrictions have interrupted the delivery of key agricultural inputs such as seed and pesticides in eastern and southern Africa,⁵⁰ while in India there were reports of a shortage of seed ahead of the main monsoon season cropping period in July 2020.⁵¹ Indeed, in Bangladesh, the seafood industry has had to contend with increased input costs, for feed, medicine and labour, which has reduced producer margins, especially where retail prices for fish have fallen.⁵²

⁴⁸ For analysis of all measures, see International Trade Centre (2021), 'Market Access Map: COVID-19 Temporary Trade Measures', <https://www.macmap.org/covid19>.

⁴⁹ World Trade Organization (2020), *COVID-19 and Agriculture: A Story of Resilience*, Information note, 26 August 2020, https://www.wto.org/english/tratop_e/covid19_e/agric_report_e.pdf.

⁵⁰ Food and Agriculture Organization of the UN (2020), *Crop Prospects and Food Situation*, Quarterly Global Report 2, <http://www.fao.org/documents/card/en/c/ca9803en>.

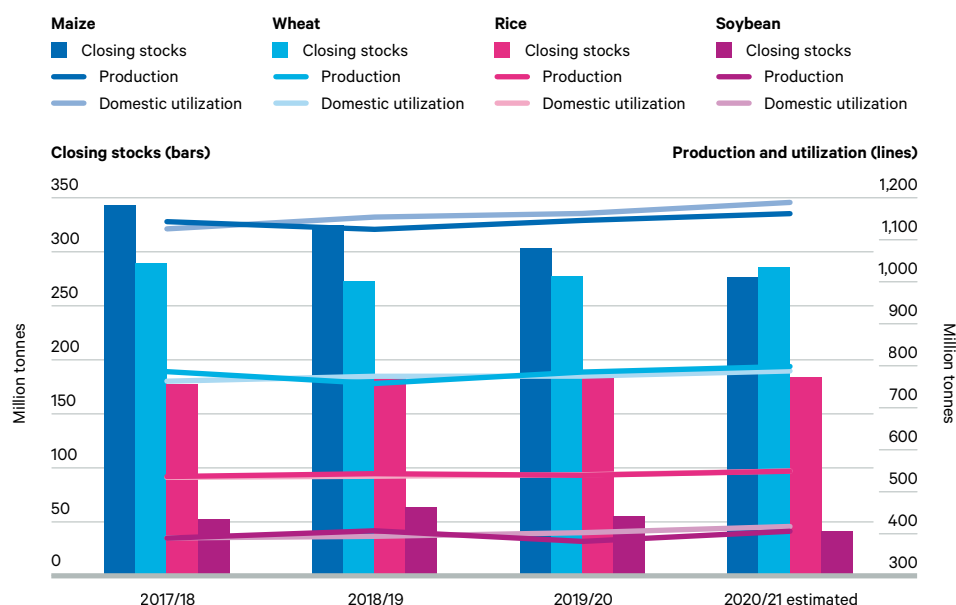
⁵¹ Amjath-Babu, T. S., Krupnik, T. J., Thilsted, S. H. et al. (2020), 'Key indicators for monitoring food system disruptions caused by the COVID-19 pandemic: Insights from Bangladesh towards effective response', *Food Security*, 12: pp. 761–8, <https://doi.org/10.1007/s12571-020-01083-2>.

⁵² WorldFish (2021), 'Impacts of COVID-19 in Bangladesh on aquaculture value chains and recommended coping strategies', 28 July 2021, <https://www.worldfishcenter.org/blog/impacts-covid-19-bangladesh-aquaculture-value-chains-and-recommended-coping-strategies>.

Furthermore, difficulty in accessing fixed capital – machinery, repairs and replacements, for example – can hinder agricultural activities, while movement restrictions and supply slowdowns continue.⁵³

Globally, production appears to have been minimally affected by the pandemic thus far. Global cereal harvests were estimated to be 2 per cent higher in 2020/21 relative to 2019/20,⁵⁴ and levels of production of rice, maize and wheat were thought to be at, or near, historic highs.⁵⁵ Nonetheless, rising demand means that closing stocks for maize and soybeans were estimated to be lower in 2020/21 than in the preceding years (Figure 14). As of June 2021 the assessment of the G20-mandated Agricultural Market Information System (AMIS), in its monthly ‘Market Monitor’ update, was that: ‘[global] grain and soybean inventories could prove barely sufficient in case of a major production shortfall, while a speedier recovery in global economic activity could spur demand for these crops at a much faster rate than currently anticipated.’⁵⁶

Figure 14. Staple crops: world stocks, supply and demand, 2017/18–2020/21



Source: Agricultural Market Information System (undated), ‘Supply and Demand Overview’, <https://app.amis-outlook.org/#/market-database/supply-and-demand-overview> (accessed 12 Nov. 2021).

Many major producing countries and regions – including Brazil, South Africa and countries in eastern and western Africa – saw strong yields in key export crops in 2020 due to favourable weather conditions in late 2019, in particular those whose planting season was already complete by the time the COVID-19 pandemic hit.

⁵³ Schmidhuber, J., Pound, J. and Qiao, B. (2020), *COVID-19: Channels of transmission to food and agriculture*, Rome: Food and Agriculture Organization of the UN, <https://doi.org/10.4060/ca8430en>.

⁵⁴ Agricultural Market Information System (undated), ‘Supply and Demand Overview’, <https://app.amis-outlook.org/#/market-database/supply-and-demand-overview> (accessed 12 Nov. 2021).

⁵⁵ World Bank (2020), ‘Food Security and COVID-19’, Brief, 21 October 2021, <https://www.worldbank.org/en/topic/agriculture/brief/food-security-and-covid-19>.

⁵⁶ Agricultural Market Information System (2021), ‘Market Monitor’, 89, http://www.amis-outlook.org/fileadmin/user_upload/amis/docs/Market_monitor/AMIS_Market_Monitor_Issue_89.pdf.

However, this beneficial situation followed a series of droughts and floods in Africa in recent years, and the pandemic is exacerbating difficulties in ongoing recovery and development in affected areas.

Certain regions of East Africa have also suffered the combined effects of record swarms of desert locusts and COVID-19-related disruptions, including to the distribution of pesticides, with severe implications for food security among affected communities.

However, the impact on aggregate production volumes from the region appears to be small. The informal sector in Africa accounts for approximately 90 per cent of employment, with over half of the total being related to the food system. This means that even relatively small localized natural and/or COVID-19-related impacts can have a significant impact on livelihoods.

The informal sector in Africa accounts for approximately 90 per cent of employment, with over half of the total being related to the food system. Even relatively small localized natural and/or COVID-19-related impacts can have a significant impact on livelihoods.

Paradoxically, localized shortages of pesticides and fertilizers may be bringing about a return to the use of traditional (and arguably more sustainable) natural pest management methods and organic materials.⁵⁷

Responses

Most national governments designated agriculture as an essential service when imposing lockdown restrictions in response to the COVID-19 pandemic. Exemptions from business closures and travel restrictions have, by and large, enabled agricultural supply chains – those operating in the formal sector, at least – to continue to function.

Governments in producing countries have taken steps to support businesses in the wake of demand slumps. Measures introduced include additional input subsidies, simplified and expedited access to credit, the relaxation of debt repayment deadlines, and direct cash payments to producers.⁵⁸

Some governments have, additionally, taken steps to facilitate the entry of migrant agricultural workers: Germany and the US both eased entry restrictions for seasonal workers, for example, while Australia, Italy and New Zealand all extended the working visas of temporary and seasonal migrant workers.⁵⁹

⁵⁷ Personal communication with Dr Richard Munang, UN Environment Programme, 2020.

⁵⁸ World Trade Organization (2020), *COVID-19 and Agriculture: A Story of Resilience*.

⁵⁹ Ibid.

Multilateral development banks (MDBs) and intergovernmental organizations (IGOs) have also stepped in to shore up production in low-income countries. In Senegal, for example, the World Bank issued a credit line of \$150 million to boost productivity among the country's dairy farmers and to support an increase in exports of high-value crops, including shelled groundnuts and horticultural goods.⁶⁰

In early July 2020, the African Development Bank introduced its Feed Africa Response to COVID-19, which includes as a strategic priority the extension of support services to producers and input access support, through both direct provision and subsidies.⁶¹

Finally, the FAO has provided direct services to farmers, including the distribution of seeds, cash assistance and the provision of hand tools for farmers and fishers, in order to support the continuation of production and harvesting activities.

Distribution and logistics

Impacts

Movement restrictions have significantly disrupted 'last mile' logistics, but have not had major impacts on international trade flows thus far. The introduction of COVID-19 testing at border crossings has impeded intraregional trade in sub-Saharan Africa: for example, it has caused delays of up to five days at Tanzania's borders with Kenya and Zambia, resulting in both higher transport costs and increased spoilage of perishable items.⁶²

In Bangladesh, a breakdown in transport logistics left seafood producers unable to transfer their foods to market.⁶³ Consequently, interruptions to export flows were witnessed – for example, as a result of the dramatic reduction in commercial flights which limited cargo capacity for certain perishable goods, causing airfreight prices to rise.⁶⁴ Overall, however, disruptions to key export infrastructure such as ports were initially short-lived and localized, while bulk freight prices remained low until demand increased as countries emerged from their initial lockdowns.⁶⁵

Export restrictions, together with increased transportation costs, have pushed up domestic prices of certain staple foods. In the first seven months of the pandemic, more than 300 temporary trade measures were enacted or under official investigation globally in response to the COVID-19 pandemic.⁶⁶ These

⁶⁰ World Bank (2020), *Strengthening Agriculture and Food Security in Senegal in the Face of the COVID-19 Crisis*, <https://www.worldbank.org/en/news/press-release/2020/05/12/strengthening-agriculture-and-food-security-in-senegal-in-the-face-of-the-covid-19-crisis>.

⁶¹ African Development Bank (2020), 'Feed Africa Response to Covid-19 – Brief', <https://www.afdb.org/en/documents/feed-africa-response-covid-19-brief>.

⁶² Personal communication, June 2021, with Agatha Kiama, a researcher at the Economic and Social Research Foundation, Tanzania.

⁶³ WorldFish (2020), 'Field Notes: Bangladesh in times of COVID-19. Impacts on aquaculture and fisheries'.

⁶⁴ Food and Agriculture Organization of the UN (2020), *Food Outlook – Biannual Report on Global Food Markets*, June 2020, <https://doi.org/10.4060/ca9509en>.

⁶⁵ OECD (2020), *Food Supply Chains and COVID-19: Impacts and Policy Lessons*, <http://www.oecd.org/coronavirus/policy-responses/food-supply-chains-and-covid-19-impacts-and-policy-lessons-71b57aea>.

⁶⁶ International Trade Centre (2021), 'Market Access Map: COVID-19 Temporary Trade Measures'.

aimed to restrict exports and liberalize imports of essential products, as well as to limit imports of goods deemed potentially harmful to domestic sectors or to public health.

By the fourth quarter of 2020 around one-quarter (81) of the measures applied in the wake of the pandemic related to food and agricultural goods: of these, 53 remained active. At this point, 63 per cent of the measures were restrictive, though nearly 40 per cent of these sought to limit imports rather than restrict exports. By the first quarter of 2021, the UK's exposure to food or agriculture trade measures had changed little, with just a slight reduction in the number of active measures restricting exports from elsewhere.⁶⁷

Recognizing the vital role of food assistance during a pandemic, and that tightening markets are likely to put further pressures on food availability and purchasing power, a group of nearly 80 WTO members – including the UK – issued a joint statement in January 2021 pledging not to impose export restrictions on foodstuffs purchased by the UN's World Food Programme (WFP) for humanitarian aid.⁶⁸

Figure 15. Index of global food prices, January 2000–May 2021



Source: Food and Agriculture Organization of the UN (undated), 'World Food Situation: FAO Food Price Index', <http://www.fao.org/worldfoodsituation/foodpricesindex/en>.

Extending such commitments to open markets and maintaining transparency around supplies could yet prove crucial in deflecting another food price crisis, or avoiding the triggering of a series of events that may cascade throughout food systems in unpredictable ways, causing avoidable impacts. Globally, these trade measures had a minimal effect on prices. Initially, lower energy prices, reduced demand from the biofuels sector and a strong overall supply–demand balance kept world food prices relatively low and stable.⁶⁹ Subsequent price rises have largely been driven by other causal factors, as well as by the subsequent increase in energy prices.

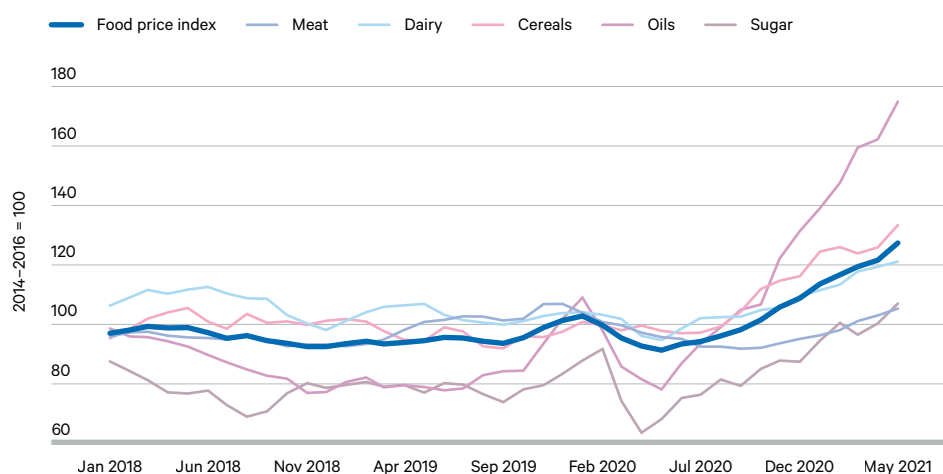
⁶⁷ Ibid.

⁶⁸ World Trade Organization (2021), 'Group of members issue joint pledge on humanitarian food purchases', https://www.wto.org/english/news_e/news21_e/agri_21jan21_e.htm.

⁶⁹ Schmidhuber, Pound and Qiao (2020), *COVID-19: Channels of transmission to food and agriculture*.

Global food commodity prices fell between January and May 2020, but have since been rising steadily. Indeed, as measured by the FAO, global food prices have experienced the sharpest and most sustained increases since the 2010–12 food price crisis: by May 2021, the aggregate index for all food prices had reached its highest monthly average level for a decade (since September 2011), and was running some 40 per cent higher than one year earlier, in May 2020 (Figure 15). This trend reflects generalized price increases across all food commodity types, although meat prices have remained relatively stable and prices for vegetable oils have risen most dramatically (Figure 16).

Figure 16. Index of global food commodity prices, January 2018–May 2021



Source: Food and Agriculture Organization of the UN (undated), 'World Food Situation: FAO Food Price Index', <http://www.fao.org/worldfoodsituation/foodpricesindex/en>.

In part, global food price rises have been driven by lower-than-expected maize production in the US, dry weather in South America affecting maize and soy production, and substantial maize purchases on the part of China, which has been seeking to restore its grain reserves as it restructures its agricultural sector following the devastating 2018/19 outbreak of African swine fever.⁷⁰

The COVID-19 pandemic is also starting to have an impact on global food supplies, with many import-dependent countries similarly moving to rebuild national stores of staple crops including cereals, oilseeds and sugars, in the face of uncertainty and declines in global grain inventories.⁷¹

Global lockdowns in early 2020 left many empty shipping containers stranded in Europe and the US, creating bottlenecks and driving up shipping prices when Western consumer demand for Asian goods recovered in the second half of the year.⁷² These impacts and port congestions have latterly spilled over to affect dry-bulk food freight as well.

⁷⁰ OECD/Food and Agriculture Organization of the UN (2021), *OECD–FAO Agricultural Outlook 2021–2030*, Paris: OECD Publishing, <https://doi.org/10.1787/19428846-en>.

⁷¹ Terazono, E. (2021), 'Food inflation concerns deepen as prices reach highest level since 2014', *Financial Times*, 4 February 2021, <https://www.ft.com/content/571a9d68-c8b5-4c56-a539-26fff81e9296>.

⁷² Steer, G. and Romei, V. (2021), 'Shipping costs quadruple to record highs on China-Europe 'bottleneck'', *Financial Times*, 20 January 2021, <https://www.ft.com/content/ad5e1a80-cecf-4b18-9035-ee50be9adfc6>.

Broader factors related to economic recovery are also at play, including the impacts of stimulus packages, rising oil prices (and forecasts) and positive sentiment in equity markets,⁷³ as well as a weak US dollar. Increasing demand from the biodiesel sector has also directly contributed to the rise in vegetable oil prices, as shown in Figure 16.⁷⁴ AMIS, in its June 2021 'Market Monitor', asserts that '[although] inflationary tendencies might appear to be driving commodity food prices higher, the evidence points more to the unique supply and demand conditions that unfolded over the past year', with fundamental factors driving prices higher.⁷⁵ This is likely to persist, given tight market expectations for 2021/22, but in the absence of any large production shock, international food prices could yet fall back.

Global lockdowns in early 2020 left many empty shipping containers stranded in Europe and the US, creating bottlenecks and driving up shipping prices when Western consumer demand for Asian goods recovered in the second half of the year.

Price volatility to date also remains less concerning than a decade ago. As measured by the Excessive Food Price Variability Early Warning System, a tool developed by the International Food Policy Research Institute (IFPRI), only hard wheat, rice and sugar, among the major staple commodities, experienced an excessive number of days of extreme futures prices in 2020.⁷⁶ In the case of wheat, during the second quarter of 2020 this was largely due to unfavourable weather in Europe, whereas rice price volatility between April and August 2020 was more likely to have been related to disruptions resulting from the COVID-19 pandemic. Both commodities subsequently returned to low volatility even as prices rose, with only maize prices exhibiting excessive volatility in 2021 (in the second quarter).

Prices on domestic markets have generally been more volatile from the outset of the pandemic. In a number of Asian countries, prices of rice and wheat have risen significantly. In Syria, prices for staple foods were reported to have risen by 40–50 per cent following the outbreak of the coronavirus in March 2020;⁷⁷ in Laos and Thailand, retail prices for rice rose by 20 per cent on average each month between January and April 2020, compared with the corresponding month in 2019. In India, Mongolia, Pakistan and Sri Lanka, increases averaging between 10 and 20 per cent were observed in the same period.⁷⁸ On average, in mid-2020

⁷³ Terazono (2021), 'Food inflation concerns deepen as prices reach highest level since 2014'.

⁷⁴ Food and Agriculture Organization of the UN (2021), 'Global food prices rise at rapid pace in May', 3 June 2021, <http://www.fao.org/news/story/en/item/1403339/icode>.

⁷⁵ Agricultural Market Information System (2021), 'Market Monitor', 89.

⁷⁶ Food Security Portal (2021), 'Excessive Food Price Variability Early Warning System', <https://www.foodsecurityportal.org/tools/excessive-food-price-variability-early-warning-system>.

⁷⁷ Food and Agriculture Organization of the UN (2020), 'Q&A: COVID-19 pandemic – impact on food and agriculture. Q5: How is the pandemic affecting or will affect food prices?', <http://www.fao.org/2019-ncov/q-and-a/impact-on-food-and-agriculture/en>.

⁷⁸ Asian Development Bank (2020), *Food Security in Asia and the Pacific amid the COVID-19 Pandemic*, ADB Briefs No. 139, <https://doi.org/10.22617/BRF200176-2>.

the World Bank calculated that food price rises of at least 12 per cent were being experienced across the most food import-dependent countries in the Middle East and north Africa, sub-Saharan Africa, Latin America and the Caribbean.⁷⁹

Responses

Many governments have moved to introduce measures to encourage and facilitate trade, for example through temporary tariff reductions, VAT exemptions and accelerated customs procedures.⁸⁰ Some governments have adopted measures to facilitate the continued distribution of both inputs and agricultural produce, such as the 'green channels' introduced in China, and the expedited border crossing checks, or 'green lanes', introduced in the EU. The UK government and major supermarkets introduced the 'Vulnerable Supply Chains Facility', to strengthen retailers' global supply chains by supporting workers in developing countries during the pandemic.⁸¹ Measures have also been introduced to provide direct support to smallholders: in South Africa, for example, the Department of Agriculture, Land Reform and Rural Development established an additional assistance programme for small-scale farmers; in Brazil, an emergency credit line has been set up specifically for smallholders; in Germany, monthly grants are being issued to small and medium-sized enterprises (SMEs) to cover their operating costs; and in Côte d'Ivoire, the government has introduced a public guarantee scheme for credit provided to informal businesses.⁸²

Several major IGOs have established programmes specifically targeting SMEs and smallholders and their access to key inputs, markets and credit. The International Fund for Agricultural Development, for example, has established a multi-donor Rural Poor Stimulus Facility with the specific aim of providing basic inputs to crop, livestock and fishery producers, facilitating continued market access, offering financial support, such as flexible debt repayment plans, and facilitating the use of digital services to improve producers' access to key weather and market information.

In comparison, the FAO has launched a four-year programme to boost resilience to the crisis among smallholders, including through insurance and credit schemes, cash transfers and technical support.

IGOs have also launched a range of response and recovery programmes to minimize interruptions to global, national and local food trade networks. Another FAO initiative launched in response to the crisis is a four-year trade facilitation project which will include a ramping-up of regular trade policy assessments, the convening of multi-stakeholder forums to encourage trade policy coordination and discourage distortive trade measures, and the provision of technical assistance in areas such as food safety control systems and the digitization of trade documents and bureaucratic procedures.

⁷⁹ Espitia, A., Rocha, N. and Ruta, M. (2020), *Covid-19 and Food Protectionism: The Impact of the Pandemic and Export Restrictions on World Food Markets*, World Bank Policy Research Working Paper 9253, <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/417171589912076742/covid-19-and-food-protectionism-the-impact-of-the-pandemic-and-export-restrictions-on-world-food-markets>.

⁸⁰ World Trade Organization (2020), *COVID-19 and Agriculture: A Story of Resilience*.

⁸¹ UK Department for International Development and the Rt Hon. Anne-Marie Trevelyan, MP (2020), 'UK aid to protect high street supply chain', Press release, 14 August 2020, <https://www.gov.uk/government/news/uk-aid-to-protect-high-street-supply-chains>.

⁸² Food and Agriculture Organization of the UN (2020), *COVID-19 crisis and support for agrifood: Public sector responses through the financial sector*, Policy Brief, <http://www.fao.org/3/ca9846en/CA9846EN.pdf>.

Retail, markets and provisioning

Impacts

The temporary closure of hospitality businesses in many regions around the world has harmed the seafood and livestock industries, but government support measures have dampened losses. Seafood producers have experienced a dramatic fall in demand with the shutting down of restaurants. Indeed, global shrimp production was expected to fall by 30–50 per cent in 2020 compared with 2019.⁸³

In major livestock-producing countries like the US, the slumping of demand from the restaurant and food services sectors has resulted in significant waste at the farm gate, with producers dumping milk and eggs – something that also happened in the UK – and, in some cases, culling livestock herds, to get rid of excess supply.

The temporary closure of hospitality businesses in many regions around the world has harmed the seafood and livestock industries, but government support measures have dampened losses.

Global dairy exports were, by June 2020, predicted to fall by 4 per cent relative to 2019 volumes, marking the most significant year-on-year reduction in three decades.⁸⁴

Horticultural producers have also been forced to dump huge volumes of produce in response to the closure of hospitality and food services.

Responses

A number of governments around the world have introduced policies to generate demand and mitigate oversupply in the wake of widespread hospitality closures. In the US, the federal Department of Agriculture ramped up the public procurement of fresh produce, dairy and meat products to compensate for the loss of demand from the hospitality sector.⁸⁵ In the EU, the European Commission allowed governments to offer private storage aid to those in the meat and dairy supply chains.⁸⁶ This will allow producers to claim support for the storage of products such as cheese, butter and beef for periods of two to seven months, with the aim of avoiding oversupply on European markets and subsequent drops in prices.

⁸³ Food and Agriculture Organization of the UN (2020), 'COVID-19 dampens the initially positive shrimp forecast for 2020', GLOBEFISH – Information and Analysis on World Fish Trade, 8 July 2020, <https://www.fao.org/in-action/globefish/market-reports/resource-detail/en/c/1296667>.

⁸⁴ Food and Agriculture Organization of the UN (2020), *Food Outlook – Biannual Report on Global Food Markets*.

⁸⁵ US Department of Agriculture (2020), 'USDA Announces Coronavirus Food Assistance Program', 17 April 2020, <https://www.usda.gov/media/press-releases/2020/04/17/usda-announces-coronavirus-food-assistance-program>.

⁸⁶ European Commission (2020), 'Coronavirus: Commission announces exceptional measures to support the agri-food sector', Press Release, 22 April 2020, https://ec.europa.eu/commission/presscorner/detail/en/IP_20_722.

A handful of other countries, including Egypt, India and Saudi Arabia, also ramped up public procurement and stockpiling as a means of supporting producers and protection against food shortages.⁸⁷

Economic access

Impacts

Food access, i.e. the capacity of individuals to acquire the foods needed for a nutritious diet, has continued to be the dimension of food security most affected by the COVID-19 pandemic and related restrictions – particularly through the impacts of income losses and macroeconomic shocks, although isolation and shielding restrictions have also played a part.⁸⁸ However, it is not yet clear where the converging impacts of COVID-19's economic effects, rising food import bills and other supply and demand factors are most likely to result in deteriorating food security outcomes in the short term, nor the degree to which potential price increases will transmit to markets serving the marginally food-secure.⁸⁹

Nonetheless, rates of household poverty and nutrition insecurity have risen across many countries, primarily as the result of lost employment. Although global cereal production has remained strong,⁹⁰ the effects of a global recession and of the loss of employment – together with a significant reduction in remittances⁹¹ – among low-income households and informal workers are expected to lead to reduced nutrition security as economic access to nutritious diets falls – a trend also observable in the UK.^{92,93} Even before the pandemic, it is estimated that around three billion people worldwide were unable to afford a healthy diet in 2019.⁹⁴ By April 2020 the WFP was warning the UN Security Council that it would be projecting that 130 million additional people would be facing acute food insecurity by the end of 2020, nearly doubling the total from 135 million in 2019 to 265 million in 2020.⁹⁵

The World Bank has been conducting high-frequency telephone surveys to monitor the impacts of the pandemic in developing countries.⁹⁶ These show that as of December 2020, on average one-half of all households in the poorest countries

⁸⁷ World Trade Organization (2020), *COVID-19 and Agriculture: A Story of Resilience*.

⁸⁸ World Food Programme and Food and Agriculture Organization of the UN (2020), *FAO-WFP early warning analysis of acute food insecurity hotspots: October 2020*, Rome: WFP/FAO, <http://www.fao.org/documents/card/en/c/cb1907en>.

⁸⁹ Agricultural Market Information System (2021), *'Market Monitor'*.

⁹⁰ Schmidhuber et al. (2020), *COVID-19: Channels of transmission to food and agriculture*.

⁹¹ Food and Agriculture Organization of the UN (2020), *Crop Prospects and Food Situation*, Quarterly Global Report 2.

⁹² The Trussell Trust (2020), *Lockdown, Lifelines and the Long Haul Ahead: The impact of Covid-19 on food banks in the Trussell Trust network*, <https://www.trusselltrust.org/wp-content/uploads/sites/2/2020/09/the-impact-of-covid-19-on-food-banks-report.pdf>.

⁹³ Schmidhuber et al. (2020), *COVID-19: Channels of transmission to food and agriculture*.

⁹⁴ Food and Agriculture Organization of the UN, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme and World Health Organization (2021), *In Brief to The State of Food Security and Nutrition in the World 2021: Transforming food systems for food security, improved nutrition and affordable healthy diets for all*, <https://doi.org/10.4060/cb5409en>.

⁹⁵ Beasley, D. (2020), 'WFP Chief warns of hunger pandemics as COVID-19 spreads (Statement to UN Security Council)', WFP, 21 April 2020, <https://www.wfp.org/news/wfp-chief-warns-hunger-pandemic-covid-19-spreads-statement-un-security-council>.

⁹⁶ World Bank (2020), 'Household Monitoring Systems to Track the Impacts of the COVID-19 Pandemic', Brief, 11 December 2020, <https://www.worldbank.org/en/topic/poverty/brief/high-frequency-monitoring-surveys>.

had an adult skipping at least one meal due to lack of resources in the 30 days before the survey.⁹⁷

Furthermore, in 16 per cent of households across all surveyed countries, at least one adult had gone without food for a full day in the week before the survey. The extent to which this is directly attributable to the impact of the COVID-19 pandemic is not clear, but in almost all countries, food insecurity is more frequently reported in households that had suffered job losses following the pandemic.⁹⁸ The coronavirus has proved to be a compounding factor to conflicts, extreme weather events and pests in driving global food insecurity. According to the FAO, this was the case for many of the 45 countries assessed as being in need of external food assistance at the end of 2020 (up from 42 at the end of 2019).⁹⁹

Globally, 148 million more people are thought to have experienced severe food insecurity in 2020 than in 2019. The prevalence of moderate or severe food insecurity in 2020 was 10 per cent higher among women than men (up from 6 per cent in 2019). In total, the number of people facing chronic hunger increased (by around 120 million) to 10 per cent of the global population – the first significant change in the last five years.¹⁰⁰

Responses

By April 2020, 181 countries had either introduced social protection programmes to support vulnerable households, or had announced plans to do so.¹⁰¹ In India, for example, the government made an early announcement of a \$22.6 billion relief package which included both cash and food transfers.

Among the 181 countries, 26 country programmes were specifically aimed at informal workers.¹⁰² In the Philippines, for example, temporary employment opportunities in sanitation services were offered to informal workers, and in Indonesia the government provided subsidized vouchers to workers in this category to support upskilling and reskilling training programmes.

MDBs and IGOs are working independently, in concert with each other and in collaboration with national governments in order to mitigate the effects of the pandemic on food and nutrition security. In the Democratic Republic of the Congo, the government and the World Bank are monitoring food price and consumption data in order to inform the design and roll-out of social protection and emergency response measures.¹⁰³ In Pakistan, the World Bank is providing direct livelihood

⁹⁷ Yoshida, N., Narayan, A. and Wu, H. (2020), 'How COVID-19 affects households in poorest countries – insights from phone surveys', World Bank Blogs, 10 December 2020, <https://blogs.worldbank.org/voices/how-covid-19-affects-households-poorest-countries-insights-phone-surveys>.

⁹⁸ Sánchez-Páramo, C. and Narayan, A. (2020), *Impact of COVID-19 on households: What do phone surveys tell us?*, World Bank Blogs, 20 November 2020, <https://blogs.worldbank.org/voices/impact-covid-19-households-what-do-phone-surveys-tell-us>.

⁹⁹ Food and Agriculture Organization of the UN (2020), *Crop Prospects and Food Situation*, GIEWS – Global Information and Early Warning System on Food and Agriculture, <http://www.fao.org/giews/reports/crop-prospects/en>.

¹⁰⁰ Food and Agriculture Organization of the UN, International Fund for Agricultural Development, United Nations Children's Fund, World Food Programme and World Health Organization (2021), *In Brief to The State of Food Security and Nutrition in the World 2021*.

¹⁰¹ Food and Agriculture Organization of the UN (2020), *Impact of COVID-19 on informal workers*, <http://www.fao.org/3/ca8560en/CA8560EN.pdf>.

¹⁰² Ibid.

¹⁰³ World Bank (2020), 'Food Security and COVID-19'.

support to 18,000 households – the majority of them female-headed – in the form of kitchen garden development and extension services to support small-scale livestock rearing and agricultural activities.¹⁰⁴

The WFP has adapted existing food provision programmes to meet the needs of vulnerable households, for example through shifting school meal programmes to take-home rations, and has scaled up its emergency food distribution by 17 per cent (in comparison with 2019 levels) to meet growing demand.

The impact of the COVID-19 pandemic on global food systems

The COVID-19 pandemic is clearly contributing to new and deeper segments of vulnerability in food systems around the globe. Certain supply chains have had acute moments of significant impacts, and many communities have evidently experienced worsening food and nutrition security, largely due to income reductions associated with the deep economic crises resulting from the pandemic and at risk of being exacerbated by rising food prices. Responses that have been implemented have tended to be piecemeal rather than the result of proactive coordination across states, supply chains, or food environments, and it is likely that between 120 million and 150 million more people have become food insecure because of the pandemic. Yet the situation could have been even worse. The systemic shocks that were initially feared have not yet materialized, and there have been few significant trade disruptions. This can be largely attributed to two factors: the fact that the outbreak of COVID-19 generated a primarily demand-side shock, and the existence of plentiful global food stocks at the onset of the pandemic. Although the worst-case scenario has not materialized, it would be misguided to conclude that global food systems are resilient.

¹⁰⁴ Ibid.

05

Pressures on UK food and nutrition security

While pandemic-related supply impacts have been relatively mild, there is little evidence that this is due to widespread effective or coordinated interventions. Questions persist about the resilience of UK food systems.

International food-related supply chains into, and out of, the UK fared reasonably well throughout 2020 and the first half of 2021, notwithstanding the acute interruptions to cross-Channel flows at the end of 2020 and the Brexit-related contraction in trade with the EU in the first quarter of 2021. Yet, despite nutrition concerns not being as severe as in many developing countries, there is little room for complacency, as the world contends with a second year of the pandemic and faces a potentially worsening food security outlook.

Interviews conducted for this research during 2020 with various stakeholders in UK food systems confirm the authors' understanding that the COVID-19 pandemic is exacerbating existing inequalities and vulnerabilities within the UK and is challenging nutrition security for many people who have suffered income shocks as the pandemic has progressed.¹⁰⁵ This emblemizes the new terminology of a 'K-shaped' recovery, which many are using to describe the likely bifurcating nature of economic recoveries from the pandemic.¹⁰⁶

¹⁰⁵ Resolution Foundation (2021), 'Almost two million workers have not worked for at least months of the crisis', 17 February 2021, <https://www.resolutionfoundation.org/press-releases/almost-two-million-workers-have-not-worked-for-at-least-six-months-of-the-crisis>.

¹⁰⁶ Bheemaiah, K., Esposito, M. and Tse, T. (2020), 'Are we experiencing a K shaped recovery from COVID-19?', World Economic Forum, 22 December 2020, <https://www.weforum.org/agenda/2020/12/k-shaped-covid19-coronavirus-recovery>.

The prolonged closure of the UK hospitality sector removed the usual channel of around one-quarter of consumers' food.¹⁰⁷ In turn, it exposed the difficulties of switching out-of-home-oriented supply chains to meet increased in-home demand, and threatened the nutrition security of those in the sector that lost their jobs or were placed on long-term furlough.

Other structural changes in food access, such as increases in online ordering and the forced closure of traditional food markets, have made business survival more difficult for many smaller suppliers, and have also made it harder for some marginalized groups to maintain dietary quality. While lockdowns appear to have stimulated more community-based food networks and shorter supply chains, such as vegetable-box schemes,¹⁰⁸ in most cases these have served higher-income communities who are able to afford the premiums.

Structural changes in food access, such as increases in online ordering and the forced closure of traditional food markets, have made business survival more difficult for many smaller suppliers, and have also made it harder for some marginalized groups to maintain dietary quality.

There is also evidence that, in some instances, maintaining continuity of supply is having adverse (as well as beneficial) impacts on producers. One UK retailer reported to the authors¹⁰⁹ that pressures to meet increased demand had led to the rapid recruitment of new suppliers in developing countries – without proper due diligence of suppliers' practices, and in the knowledge that employees did not have access to personal protective equipment. In this case, the COVID-19-driven demand shock resulted in compromised worker safety and upward pressure on local prices.

If exploitative practices undermine producers' trust in UK buyers, then, in a sellers' market, the UK may find access to preferred supplies more challenging. Given that global food supplies are tightening and that waves of COVID-19 infections may reverberate for months and years to come, especially in many developing countries where vaccination rates are likely to be low for some time, there is still the potential that supply issues will emerge and that global food production could be adversely impacted by uncertain harvests in both the near and medium term.

By mid-2021, concerns were rising that a loss of up to 100,000 lorry drivers from the UK (due to the restrictions on movement imposed during the COVID-19 pandemic and the circumstances of the Brexit process, since many of these workers were from Eastern Europe) could lead to further temporary food shortages, analogous

¹⁰⁷ Lang, T., Millstone, E. and Marsden, T. (2021), 'An Open Letter on the Food Emergency to the Prime Minister and Government', Food Research Collaboration, 29 January 2021, <https://foodresearch.org.uk/wp-content/uploads/sites/8/2021/01/Open-Letter-on-the-food-emergency-to-the-Prime-Minister-and-Government.pdf>.

¹⁰⁸ Wheeler, A. (2020), *COVID-19 UK Veg Box Report*, Food Foundation Report, <https://foodfoundation.org.uk/wp-content/uploads/2020/05/Food-Foundation-COVID-19-Veg-Box-Scheme-report.pdf>.

¹⁰⁹ Off the record, in a personal communication.

to a series of ‘rolling power cuts’, preventing both UK and imported fresh produce reaching shelves before it expired.¹¹⁰ Similar labour shortages were also becoming increasingly evident throughout the supply chain, including in packaging, production facilities and warehouses. There were particular concerns that the coexistence of the labour shortage and the end of the ‘grace period’ for post-Brexit food import checks – in October, having already been unilaterally extended by the UK for six months – could result in empty shelves. In response, the UK government first announced in September that the checks at the Irish border would remain suspended indefinitely;¹¹¹ then, at the end of October, it implemented a legislative extension of road haulage cabotage, allowing foreign lorry drivers to make an unlimited number of deliveries while in Great Britain over a period of 14 days, up from the previous limit of two journeys within seven days of entry.¹¹² The extension was to apply until the end of April 2022 in order to alleviate pressures in supply chains which, it was feared, might become particularly acute over the Christmas period.

As elsewhere in the world, responses to COVID-19-related impacts on food systems within the UK have not been particularly well planned. To a large extent, private sector actors filled the gaps where state-based civil protection planning was found lacking.

The Civil Contingencies Act (CCA) 2004, for which the Cabinet Office is responsible, is the main piece of legislation for dealing with civil emergencies in the UK.¹¹³ It gives additional powers to ministers to make emergency regulations in a crisis and places a series of duties on local bodies to assess risks and to maintain plans for dealing with potential emergencies.

However, it has not been used as part of the UK government’s COVID-19 response, with ministers instead favouring bespoke legislation and arguing that the onset of the pandemic was not sufficiently fast for the CCA to be utilized.¹¹⁴ Beyond the legislation itself not being deployed, some have argued that the lessons learnt from previous crises leading to the CCA’s enactment have not been heeded. Given that future shocks are inevitable, there are certainly lessons that need to be learnt from the COVID-19 pandemic, and adaptations that need to be implemented. In an open letter to the prime minister, three eminent food security professors argued that the government should have been far more proactive in the early days of the pandemic in advising consumers ‘whether or when to stock up with food supplies, and which foods to choose to protect health’.¹¹⁵ They cautioned that food policy cannot be left to the food industry, given the concentration of supply and the systemic risks

¹¹⁰ Butler, S. (2021), ‘Lorry driver shortage: UK government and retailers in emergency talks’, *Guardian*, 28 June 2021, <https://www.theguardian.com/business/2021/jun/28/lorry-driver-shortage-uk-government-and-retailers-in-emergency-talks-covid-brexit>.

¹¹¹ Allegretti, A., Boffey, D. and O’Carroll, L. (2021), ‘UK extends post-Brexit grace period over Northern Ireland indefinitely’, *Guardian*, 6 September 2021, <https://www.theguardian.com/politics/2021/sep/06/uk-and-eu-extend-post-brexit-grace-period-over-northern-ireland-protocol>.

¹¹² HM Revenue and Customs (2021), ‘Temporary extension to road haulage cabotage’, Policy paper overview, 27 October 2021, <https://www.gov.uk/government/publications/temporary-extension-to-road-haulage-cabotage>.

¹¹³ According to the CCA, the definition of an emergency could be satisfied by ‘[events] such as a terrorist attack, disruption of fuel supplies, contamination of land with a chemical matter and an epidemic [...] should they reach the required level of seriousness’. See <http://www.legislation.gov.uk/ukpga/2004/36/notes/division/5/1>.

¹¹⁴ UK Parliament, Publications and Records (2021), ‘The Government’s approach to legislation and the framework for Parliamentary Scrutiny’, <https://publications.parliament.uk/pa/cm5801/cmselect/cmpubadm/377/37705.htm>.

¹¹⁵ Lang, Millstone and Marsden (2021), ‘An Open Letter on the Food Emergency to the Prime Minister and Government’.

inherent in just-in-time logistics, arguing instead that a policy of ‘decentralisation and diversity would be more appropriate for food resilience’.¹¹⁶ They also called for a review of food defence planning, focusing on the needs of civil society and consumers in relation to food supply resilience and crisis preparedness and giving ‘due attention to the role and responsibilities not just of central government but also of the devolved administrations, regions, cities and community levels’.¹¹⁷

Many approaches to agriculture are increasing longer-term systemic risks to food systems, including from zoonoses as a result of habitat pressures, land conversions and intensive animal production. The COVID-19 pandemic has served as a wake-up call to the reality of such risks.

¹¹⁶ Ibid.

¹¹⁷ Ibid.

06 Conclusions: towards a proactive recovery

As the UK establishes new food policies following Brexit, its assertive ‘Global Britain’ narrative needs to be accompanied by actions to promote post-COVID food systems that are equitable, sustainable and resilient.

With the governance of the UK food system now substantively decoupled from the EU, albeit with ongoing ‘teething problems’,¹¹⁸ the UK has considerable agency in determining the nature, resilience and sustainability of the food systems in which it participates: new primary legislation in the areas of agriculture, trade and environment is at various stages of being established, new trade partnerships are being negotiated and a new National Food Strategy for England is being developed. However, the UK has also reduced its agency over the EU food system, on which it is substantially dependent. In addition, the COVID-19 pandemic has illustrated the relatively minor role that public sector mechanisms (maintaining emergency food inventories and diversifying reliance on trade and logistics chokepoints, for example) currently play in developing and governing resilience relative to competitive private sector actors, whose primarily profit-driven motivations have made useful, though partial and uneven, contributions to developing systemic resilience.

The ways in which the UK contributes to food system resilience globally will also be shaped by the recent merger of its diplomatic and development assistance

¹¹⁸ Schomberg, W. (2021), ‘Johnson says lots of Brexit teething problems, employers fear worse to come’, Reuters, 28 January 2021, <https://www.reuters.com/article/uk-britain-eu-johnson-idUSKBN29X25U>.

ministries and the temporary, though indefinite, reduction in the official development budget announced in the November 2020 Spending Review.¹¹⁹

In many respects, the COVID-19 pandemic has not had as severely negative impacts on food systems – in the UK or globally – as expected, but it has provided a tragically costly reminder about the ways in which low-probability hazards can cascade across borders through human, ecological and economic systems to cause untold levels of harm. Food systems – if not the food and nutrition outcomes for the more disadvantaged segments of society – have been affected relatively lightly this time but may not be so resilient in the face of future shocks with different characteristics or preconditions.

The nature, extent, and rapidity of pandemic responses globally, beyond food systems, have also invalidated arguments about the intractability of changing the status quo in response to existential threats, such as those posed by climate change and ecological collapse. Yet the cost of uncoordinated ex-post responses clearly underlines the necessity of mitigating risks and investing in resilience ex-ante.

For food systems, this requires harmonization across policy domains, across supply chains, across borders and throughout food environments to ensure resilience is built systemically to benefit the health and well-being of all stakeholders. While UK civil contingency planning was lacking in this regard, there is some evidence to suggest that measures taken to prepare for Brexit may have left the UK food system in a better position to respond to pandemic dislocations than it otherwise would have been. Nonetheless, UK food system governance and policy processes remain fragmented across government departments and devolved administrations. In responding to the recommendations of the independent National Food Strategy commission¹²⁰ and in meeting the commitments established in the 25-year Environment Plan,¹²¹ a more coherent, whole-of-government approach will be imperative, with opportunities to learn lessons from the EU Green Deal's Farm to Fork Strategy.¹²²

The UK will remain reliant on international food trade for security of supply – it is clear that, by trading off systemic shocks for idiosyncratic or localized ones, full self-sufficiency is not an appropriate risk mitigation strategy. Nonetheless, both Brexit and the COVID-19 pandemic are likely to bring about reconfigurations in food supply chains into, and out of, the UK.

As the trading environment changes and new trade deals are struck, it is important to question the extent to which international trade is genuinely providing diversification and contributing to systemic resilience. Globally, although progress has been made on avoiding the imposition of unilateral export restrictions and improved transparency around logistics, production sources and stocks, further efforts are required, particularly around stock levels, to better understand aggregate risk exposure.

¹¹⁹ Dickson, A. (2020), 'Spending Review: Reducing the 0.7% aid commitment'.

¹²⁰ National Food Strategy (2021), *The Plan*.

¹²¹ UK Department for Environment, Food and Rural Affairs and the Rt Hon. Michael Gove, MP (2019), *A Green Future: Our 25 Year Plan to Improve the Environment*, <https://www.gov.uk/government/publications/25-year-environment-plan>.

¹²² European Commission (2021), 'Farm to Fork Strategy', https://ec.europa.eu/food/horizontal-topics/farm-fork-strategy_en.

Presently, it is questionable to what extent the predominant just-in-time models of food trade (both international and domestic) provide effective risk buffers against acute shocks. They have very little redundancy, supply-chain control is concentrated, and, for some commodities, global supplies are geographically concentrated in only a few 'breadbasket' regions, meaning that concurrent events in just a couple of regions could cause significant food access and availability consequences. Without due regard to the production environments from which food is sourced, the cheap food paradigm will undermine the viability of UK producers, the long-term resilience of overseas food landscapes, and the benefits of the UK's increased domestic focus on payments for ecosystem services.

At present, much of the UK's food footprint and the associated negative environmental and social costs occur offshore. Changes to the UK food system should ensure that the UK reduces the negative impacts of both its offshore and domestic footprints. Rather than offshoring the UK's food footprint, environmental and social costs and benefits need to be internalized and regulated. This will require an increased focus on developing long-term, stable relationships with trading partners, supporting them to develop more resilient and sustainable supply chains, building capacity to meet high-level sustainability standards, and accounting for the impact of trade deals on nutrition security.¹²³ The Trade and Agricultural Commission (TAC), an independent advisory board established in 2020 to advise and inform the government's trade policies, has recently had its term renewed and been put on a statutory footing, aiding parliamentary scrutiny of the implications of new trade deals on animal welfare, food production and environmental standards.¹²⁴ However, there are already concerns about UK trade governance and oversight, with trade deals being struck that ignore the TAC's recommendations – and indeed, being struck before the TAC has been properly resourced.¹²⁵ One of the TAC's recommendations is that the UK should champion the creation of a global standards framework for the environment and clear metrics for measuring environmental sustainability, while establishing a corresponding set of rigorous national standards.¹²⁶

On the multilateral stage, the UK had significant leadership potential in 2021. As G7 president, it played an important role in reinvigorating international diplomacy, and it has had a certain degree of success in galvanizing some ambitious agendas and plurilateral commitments as host of the COP26 UN Climate Change Conference in Glasgow in November 2021. While these achievements and the negotiated text of the Glasgow Climate Pact offer some encouragement, the cumulative climate finance pledges and national emissions reduction targets still fall short, even if fully implemented, of achieving the level of climate support and emissions reductions

¹²³ Van Schalkwyk, M. C. I., Barlow, P., Siles-Brügge, G. et al. (2021), 'Brexit and trade policy: an analysis of the governance of UK trade policy and what it means for health and social justice', *Globalization and Health*, 17, 61: <https://doi.org/10.1186/s12992-021-00697-1>.

¹²⁴ UK Department for International Development, UK Department for Environment, Food and Rural Affairs, the Rt Hon. Elizabeth Truss, MP, and the Rt Hon. George Eustice, MP (2020), 'Trade and Agriculture Commission put on statutory footing', Press release, 1 November 2020, <https://www.gov.uk/government/news/trade-and-agriculture-commission-put-on-statutory-footing>.

¹²⁵ Parish, N. (2021), 'Parliament must scrutinise the Australian trade deal to ensure British farmers are not undercut', *The House*, 17 June 2020, <https://www.politicshome.com/thehouse/article/parliament-must-scrutinise-the-australian-trade-deal-to-ensure-british-farmers-are-not-undercut>.

¹²⁶ Trade and Agriculture Commission (2021), *Final Report*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/969045/Trade-and-Agriculture-Commission-final-report.pdf.

that equity and science demand.¹²⁷ For its own part, the UK still needs to ensure its commitments to progress are not undermined by the cuts to its official development assistance budget. While G7 and COP26 are not food-specific forums, they are crucial in shaping the nature of pandemic recovery plans and in ensuring these are coherent with ambitious actions to tackle climate change in the context of other Sustainable Development Goals.

Furthermore, the UN Food Systems Summit, the G20 summit, the Conference of the Parties to the UN Convention on Biological Diversity (CBD COP15) and the Nutrition for Growth Summit have all provided further opportunities in 2021 (extending into 2022 in the case of CBD COP15) to ensure food systems proactively support and benefit from these agendas, as was recommended by the HM Treasury-commissioned *Dasgupta Review* (2021) of the economics of biodiversity.¹²⁸ Mobilizing climate finance, making progress on carbon border tax adjustment mechanisms, and progressing biodiversity targets and trade standards will all be crucial in developing resilient food systems. While a degree of progress and many positive words have emerged from some of these forums, these now need to be rapidly backed up by concrete actions.

The COVID-19 pandemic has served as a wake-up call to the reality and predictability of cascading risks. Ultimately, both domestically and internationally, the UK needs to be in the vanguard of supporting and enabling post-COVID UK and international food systems that prevent short-term food insecurity and that promote long-term nutrition, livelihood, and environmental security, considering the gamut of risks related to climate change, biodiversity loss and zoonoses.

¹²⁷ Åberg, A., Benton, T. G., Froggatt, A., Giritharan, A., Jeffs, N., Quiggin, D. and Townend, R. (2021), *COP26: What happened, what does this mean, and what happens next?*, Briefing, London: Royal Institute of International Affairs, <https://www.chathamhouse.org/2021/11/cop26-what-happened-what-does-mean-and-what-happens-next>.

¹²⁸ Dasgupta, P. (2021), *The Economics of Biodiversity: The Dasgupta Review*, London: HM Treasury.

About the authors

Richard King is a senior research fellow in the Environment and Society Programme at Chatham House. His work focuses on various issues related to the sustainability of, and climate risks to, food, agriculture, land use and soft commodity resource trade. He has a particular interest in the emergent sustainability issues arising from growing global competition for land-based ecosystem services and resources. Prior to joining Chatham House, Richard was deputy head of research at Oxfam GB. He has an MSc in Economics and Management of International Development from the University of Manchester and a BSc in Geography from the University of Durham.

Laura Wellesley is a senior research fellow in the Environment and Society Programme at Chatham House. Laura's main areas of research interest are policy strategies to promote healthy and sustainable diets, and approaches to managing systemic risks to global food trade. She has also worked on approaches to delivering an inclusive circular economy in low-income countries, and on innovative alternatives to meat. Laura's past Chatham House publications include the 2017 report *Chokepoints and Vulnerabilities in Global Food Trade*, and the 2015 report *Changing Climate, Changing Diets: Pathways to Lower Meat Consumption*. Laura is a member of the London Food Board and, prior to joining Chatham House in 2013, was a researcher for Global Witness. Laura has an MSc in Africa and international development from the University of Edinburgh, and an MA in modern and mediaeval languages from the University of Cambridge.

Dr Helen Harwatt is a senior research fellow in the Environment and Society Programme at Chatham House. Helen focuses on food system shifts to identify pathways towards creating food systems that minimize adverse environmental impacts, maximize public health benefits and address ethical issues. Prior to joining Chatham House, Helen completed a research fellowship at Harvard Law School, looking at options for creating Paris Agreement-compliant food systems, and remains a visiting fellow. Helen has also completed research fellowships at Loma Linda University in California, and at the University of Leeds' Sustainability Research Institute and Institute for Transport Studies.

Professor Tim G. Benton is director of the Environment and Society Programme and research director for emerging risks at Chatham House. Tim's areas of expertise include global food security, food systems and resilience, ecology and natural resources and climate change impacts. He joined Chatham House in 2016 as a distinguished visiting fellow while also serving as dean of strategic research initiatives at the University of Leeds. He is one of the authors of the Intergovernmental Panel on Climate Change's special report on climate change and land, and the UK Climate Change Risk Assessment 2017, and has published more than 175 academic papers. Tim holds a PhD from the University of Cambridge and a BA from the University of Oxford, both in zoology.

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Cover image: Freight lorries and heavy goods vehicles stacked at Manston Airport near Ramsgate, southeast England, on 23 December 2020, where freight transport was diverted to wait after France closed its borders for 48 hours to contain the spread of a new strain of COVID-19.

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**The Royal Institute of International Affairs
Chatham House**

10 St James's Square, London SW1Y 4LE

T +44 (0)20 7957 5700

contact@chathamhouse.org | chathamhouse.org

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