

Research Paper

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Food Politics and Policies in Post-Brexit Britain



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Summary

- For almost half a century, the UK's food system – comprising the totality of food production, transport, manufacturing, retailing and consumption – has been intrinsically and intricately linked to its membership of the European Community and, subsequently, the EU. Arguably, for no other sectors are the challenges and opportunities of Brexit as extensive as they are for UK food and agriculture.
- Reforming the UK's food system won't be easy. The 21st century economic, market, regulatory and political systems are exceedingly resistant to change, locked into the way they have evolved over decades. The tight Brexit timeline, the complexities of negotiations and the political pressure to secure new trade deals could easily lead to hasty decisions that are poorly conceived and become near impossible to correct.
- There is a risk of a two-tier regulatory system emerging whereby, after its withdrawal from the EU, the UK produces food at higher standards but imports cheaper and potentially lower-quality food from countries with reduced welfare or environmental standards. These developments could affect consumer confidence and cause public distrust.
- Meanwhile, new market conditions could incentivize greater intensification and/or reduce the number of small farms, affecting the profitability and structure of the UK farming sector. This should be managed carefully to ensure that the cultural link between British citizens and their rural environment is not negatively affected.
- The UK will also need to invest in more reliable supply chains and develop resilience in prospective partner countries to help them respond to the combined threats of climate change and global environmental degradation, as this could impact the resilience of the UK's food system, food prices and availability.
- Currently, the UK operates on a 'just in time' food system, maintaining five to 10 days' worth of groceries in the country (often less in the case of fresh produce). Once the UK is outside the EU, its food industry will need to factor in time for longer inspections of food imports at its borders, and build the necessary infrastructure to conduct these checks.
- The UK has an unprecedented opportunity, in the context of Brexit, to equip its food system to withstand these challenges, but the transition will need to be managed carefully. Any reconfiguration will first need to understand and take account of what citizens and consumers value most about the food system. Second, a UK-wide and cross-government approach will be necessary to foster a holistic, profitable, healthy and sustainable food system for all. Processing, supply chains and labelling must be transparent, and must take full advantage of new technologies available.

1. Introduction

The UK's withdrawal from the EU will have wide-reaching consequences for the UK and the remaining 27 member states. Arguably, for no other sector are the challenges and opportunities of Brexit as extensive as they are for food and agriculture.

For almost half a century, the UK's food and agricultural sectors have been intrinsically and intricately linked to its membership of the European Community and, subsequently, the EU. The UK's food system is shaped by EU agricultural policy (which influences what and how food is grown), UK regulatory policy (which is informed by EU standards for food safety, quality and the environment), and EU trade agreements and associated tariffs. The availability and price of foodstuffs are the product of an interplay between this regulatory framework (the 'rules' of the market), market actors delivering food for profit, and consumer demand for different types of foods and prices. Ultimately, the food and agriculture sectors are influenced by the strength of the economy, particularly inflation and currency exchange rates, which affect consumers' ability and willingness to pay. Outside the EU, the UK will need to redesign many of its food and farming policies, as well as strike its own trading arrangements.

The complexities of reforming post-Brexit food and agriculture sectors run deeper than economic and institutional entanglement. Price, safety, nutritional content and provenance of food are all deeply emotive among populations.

But the complexities of reforming post-Brexit food and agriculture sectors run deeper than economic and institutional entanglement. Price, safety, nutritional content and provenance of food are all deeply emotive for consumers. Food and landscape management have high social, cultural and political salience. For instance, farming currently occupies three-quarters of the UK's land area, providing a range of 'ecosystem services' and contributing to the nation's cultural and environmental heritage beyond the food and fibres that are harvested from the land itself. The countryside informs the UK national identity and is associated both with bucolic imagery and more traumatic shared experiences such as the devastation of livestock as a result of the 2001 outbreak of foot-and-mouth disease. Meanwhile, improvements in science and technology are providing sufficient 'big data' to shed light on the immense environmental, social and health costs that food production and consumption impose on society – whether the healthcare costs resulting from conditions linked to poor air quality arising from intensive agriculture,¹ or the global burden of ill health arising from obesogenic food environments.²

The challenges of Brexit are clear. The tight timeline imposed by the Brexit negotiations, the complexities of the process, and the political pressure in the UK to secure new trade deals could easily lead to hasty decisions that are poorly conceived and that may become impossible to correct. Put simply, the opportunities presented by this transformative juncture could be easily squandered.

¹ Lelieveld, J., Evans, J. S., Fnais, M., Giannadaki, D. and Pozzer, A. (2015), 'The contribution of outdoor air pollution sources to premature mortality on a global scale', *Nature*, 525(7569): pp. 367–71, doi: 10.1038/nature15371 (accessed 9 Oct. 2018); Paulot, F. and Jacob, D. J. (2013), 'Hidden cost of U.S. agricultural exports: particulate matter from ammonia emissions', *Environmental Science & Technology*, 48 (2): pp. 903–908, doi: 10.1021/es4034793 (accessed 9 Oct. 2018).

² NCD Risk Factor Collaboration (2016), 'Worldwide trends in diabetes since 1980: A pooled analysis of 751 population-based studies with 4.4 million participants', *The Lancet*, 387(10027): pp. 1513–1530, doi: 10.1016/S0140-6736(16)00618-8 (accessed 9 Oct. 2018).

However, a carefully managed Brexit could also offer a historic opportunity for the UK to reassess and reformulate legislation, policies, practices and institutional arrangements that take into account the needs of different actors in the food system (such as farmers, retailers, consumers, or health-conscious and environmentally aware citizens³). A well-implemented food policy after Brexit, as acknowledged in early 2019 by the Secretary of State for Environment, Food and Rural Affairs, Michael Gove,⁴ could encompass:

- A food strategy that takes better account of the socio-economic factors and trends relating to diet and health conditions such as obesity, type 2 diabetes and other diet-related illnesses, and allows for interventions to promote better health through diet;
- An end to support for inefficient area-based payments, and a move to support genuine productivity enhancement, as well as support for public goods like clean air or climate change mitigation which stem from the improvement of soil health, the improvement of water quality and or the improvement of pollinator habitats;
- Better support for organic farming, landscape restoration and biodiversity enrichment, as well as improved public access to the countryside; and
- Maintaining high environmental and animal welfare standards, and ensuring that these are not bartered away in pursuit of a necessarily short-term trade-off.

This paper explores the existing agriculture and food systems within the UK and the challenges the government faces in delivering a sustainable, affordable and healthy food system. It addresses the political realities of Brexit and the roles of the UK government and the devolved administrations in determining food policy after Brexit. It considers the impact that new trading arrangements could have on food prices, environmental and food standards, and what this may mean for the UK's reputation internationally. It then sets out the options available for devising a more holistic UK food system for the future. UK fisheries policy is out of the scope of this paper.

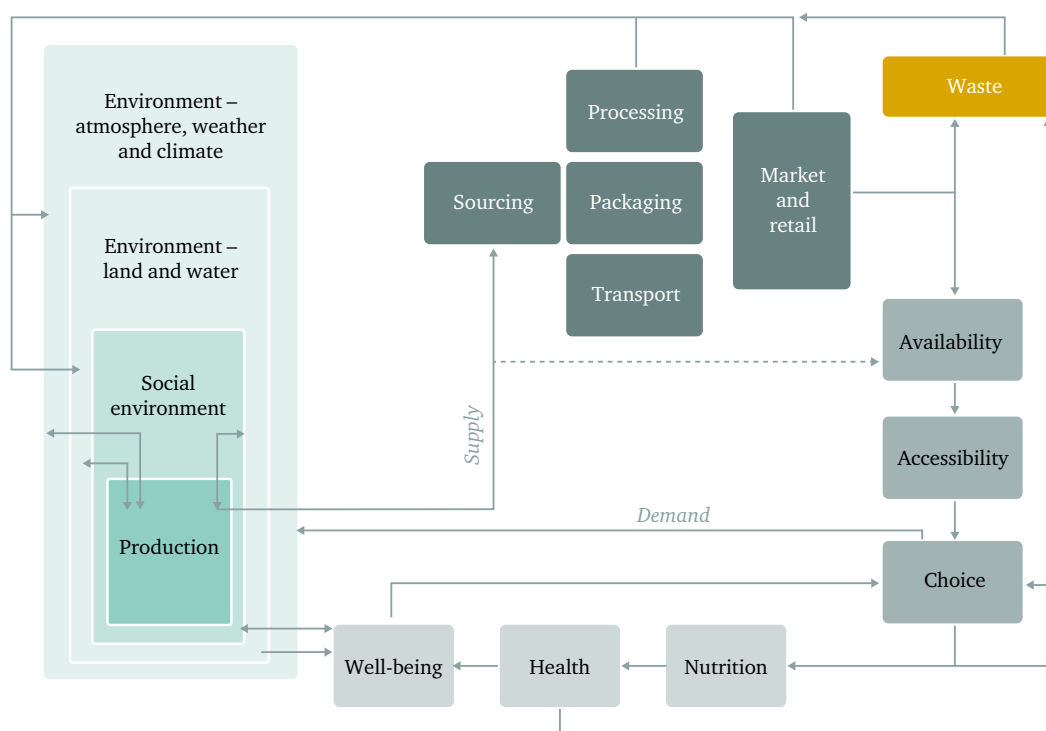
³ The terms 'consumer' and 'citizen' are used here to reflect the different roles that an individual may have: a citizen's concerns (for the look of the countryside, for example) may be somewhat independent from a consumer's concerns (about food price/quality).

⁴ Department for Environment, Food & Rural Affairs and The Rt Hon Michael Gove MP (2019), 'Oxford Farming Conference 2019 address by the Environment Secretary', 3 January 2019, <https://www.gov.uk/government/speeches/oxford-farming-conference-2019-address-by-the-environment-secretary> (accessed 6 Jan. 2019).

2. The UK's Food System: Function, Reach and Outcomes

The food consumed in the UK is a mix of domestic produce and food imported from elsewhere. The food system is complex, spanning not only production, transport, manufacturing, retailing and consumption, but also food waste throughout the cycle, and the effect of each stage on consumers' nutrition, health and welfare as well as on the environment (Figure 1). There are, moreover, across a wide range of policies, a multitude of actors and arrangements mediating the system.

Figure 1: How the food system is structured



Source: Tim G. Benton, 2018.

Any reconfiguration of supply chains, food processing and trade will have social, economic and environmental implications not only for the UK and the EU, but also for numerous other non-EU partner countries. The nature and extent of the changes that will arise from the UK's intended departure from the EU are intricate and difficult to fully anticipate, which partly explains why debates on the impact of Brexit on the food system have been largely restricted to single issues.⁵

The UK government will need to understand what citizens and consumers value about the food system if it is to design effective food policies that integrate the needs of its population

⁵ For example, some debates have focused on the principles of trade and agriculture policies, others on the tension between differing variables – specifically, how the UK's departure from the EU could affect price, provenance and perceived quality of food.

(whether producers or consumers) and their concerns about health and the environment. The only logical bridge between the two competing visions of *value* and *values* is consumer choice – i.e. narrow concerns over availability and price, set against wider cultural expectations of sustainability, quality, provenance, etc.

Value versus values: what do people really care about in the food system?

The values that people associate with food are not simply encapsulated by price and provenance. For many, the way farming shapes the countryside and its environmental and social sustainability is important. Many expect that food produced unsustainably, unethically (as regards welfare) or in ways that are detrimental to health is not promoted through policy or the market.

In recent years, a number of in-depth reports on common attitudes to food in the UK⁶ have pointed to low public awareness of some of the challenges facing the food system. For example, citizens may value the countryside deeply but not necessarily connect food purchasing decisions to their impact on agriculture and the environment, partly because the link is not always obvious or transparent. However, once informed of these challenges, people tend to be more willing to change their buying and consumption habits, and/or seek assurances that government and industry are striving to reduce the sustainability risks.⁷

One such report, published in 2013 by the consumers' association Which?, found that many participants in its 'citizens' juries' began 'thinking more about where their food has come from and how it has been produced, considering changing the balance of what they eat (e.g. less meat or dairy or more fruit when it is in season) and reducing how much food they waste'. A 2016 Food Standards Agency report noted:

[P]articipants were surprised and concerned to realise they knew so little about the complex global food system. There was a strong desire to know more about the processes that bring food to our tables;⁸

and that:

Participants wanted more than just data provision; they hoped that the food industry would play a critical role in consumer education, raising awareness of global challenges and empowering consumers to make better decisions about food.⁹

When it comes to food policy then, citizens and consumers are concerned with a range of social goods, from nutrition, price and provenance to the environmental and air-quality impacts of production. The following sections discuss some of the issues related to food that, directly or indirectly, impinge on people's values.

⁶ See for instance Global Food Security Programme (2012), *Exploring Public Views*, <https://www.foodsecurity.ac.uk/publications/global-food-security-programme-exploring-public-views.pdf> (accessed 10 Oct. 2018); Which? (2013), *The future of food – giving consumers a say*, https://press.which.co.uk/wp-content/uploads/2013/04/Future-of-Food-Report-2013_Final.pdf (accessed 10 Oct. 2018); Food Standards Agency (2016), *Food Futures*, <https://www.food.gov.uk/sites/default/files/our-food-future-full-report.pdf> (accessed 10 Oct. 2018).

⁷ Which? (2013), *The future of food*, p. 31.

⁸ Food Standards Agency (2016), *Food Futures*, p. 4.

⁹ Food Standards Agency (2016), *Ibid.*, p. 11.

UK agriculture and land management

The food and agriculture sectors have a significant impact on the environment and land use. Both are responsible for up to 30 per cent of all global driven greenhouse gas emissions;¹⁰ and, according to one estimate, 30 per cent of global biodiversity loss is linked to livestock production.¹¹

The British landscape has been formed over centuries of agricultural management, including the acts of enclosure, whereby previously common land was amalgamated into farms, typically with single ownership – a process that began in the 13th century and continued into the early 20th century. In 2016, the area of agricultural land in the UK was 17.4 million hectares (m. ha), about 72 per cent of the UK land area, of which 3.1m. ha was used for cereals and 0.61m. ha for oilseeds.¹² Livestock included 1.9 million dairy cows, 4.9 million pigs and 33.9 million sheep.

In 2016, the agriculture sector was responsible for 10 per cent of the UK greenhouse gas end-user emissions; of this, methane was responsible for 55 per cent and nitrous oxide 30 per cent. Greenhouse gas emissions from the sector have decreased by 19 per cent since 1990, due to a fall in animal numbers, a decrease in the use of synthetic fertilizers, and increasing imports of animal feed. Over the same period, CO₂ emissions from the industrial sector (largely from the power sector) halved.¹³ Each person in the UK is thought to use about 4.6 tonnes of water per day, nearly three-quarters of which derives from water used in food production (including rainfall and irrigation water for plants and drinking water for livestock).¹⁴ Of the water used for agricultural products consumed in the UK, 62 per cent is used overseas, and it is ‘embedded’ in the food imported into the UK.¹⁵

There is also a deep connection between the UK’s ‘green and pleasant land’ and its citizens’ cultural identities. This dates back to Elizabethan times in England,¹⁶ where the bucolic identity is particularly deep-rooted and the notion of landscape has also defined Scottish and Welsh identities.¹⁷ UK farmland provides a range of other important goods and services for society, including providing a home for biodiversity that helps support agriculture (such as pollinating insects) and for iconic biodiversity (such as skylarks, butterflies and meadow flowers), storing carbon and water and contributing to clean water and flood control. Land provides access to the countryside for recreation and amenity.

These public goods can be undermined by agriculture and its intensification. Excessive agricultural fertilizer in the countryside can enrich water courses, leading to growth of algae and a reduction in biodiversity. This could make the countryside less attractive for visitors and adds further costs to water bills for urban dwellers. Poor use of fertilizer also increases greenhouse gas and particulate emissions into the atmosphere, which can drift over cities and contribute to particulate matter affecting respiratory health.

¹⁰ Vermeulen, S. J., Campbell, B. M. & Ingram, J. S. I. (2012), ‘Climate Change and Food Systems’, *Annu. Rev. Environ. Resour.* 37, 195–222, <https://www.annualreviews.org/doi/10.1146/annurev-environ-020411-130608>; Bajzelj, B., Allwood, J., Cullen, J. (2013), ‘Designing Climate Change Mitigation Plans That Add Up’, *Environ. Sci. Technol.*, 2013, 47 (14), pp. 8062–8069.

¹¹ Ramandutty, N. et al. (2018), ‘Trends in Global Agricultural Land Use: Implications for Environmental Health and Food Security’, *Annual Review of Plant Biology*, 69(14): pp. 1–14.27, doi: 10.1146/annurev-arplant-042817-040256 (accessed 4 May 2018).

¹² Department for Environment Food & Rural Affairs (2016), *Agriculture in the UK 2016*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/672119/AUK-2016-08jan18.pdf (accessed 4 May 2018).

¹³ Department for Business, Energy and Industrial Strategy (2018), *Annex: 1990–2016 UK Greenhouse Gas Emissions, Final Figures by End User*, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/695470/Annex_1990-2016_UK_GHG_Emissions_final_figures_by_end_user_sector_by_fuel_and_uncertainties_estimates.pdf (accessed 10 Oct. 2018).

¹⁴ *Ibid.*

¹⁵ Chapagain, A., Orr, S. (2008), *UK Water Footprint: the impact of the UK’s food and fibre consumption on global water resources*, Volume one, WWF, https://waterfootprint.org/media/downloads/Orr_and_Chapagain_2008_UK_waterfootprint-vol1.pdf (accessed 2 Jan 2018).

¹⁶ See for example Strong, R. (2011), *Visions of England*, London, Bodley Head, pp. 240.

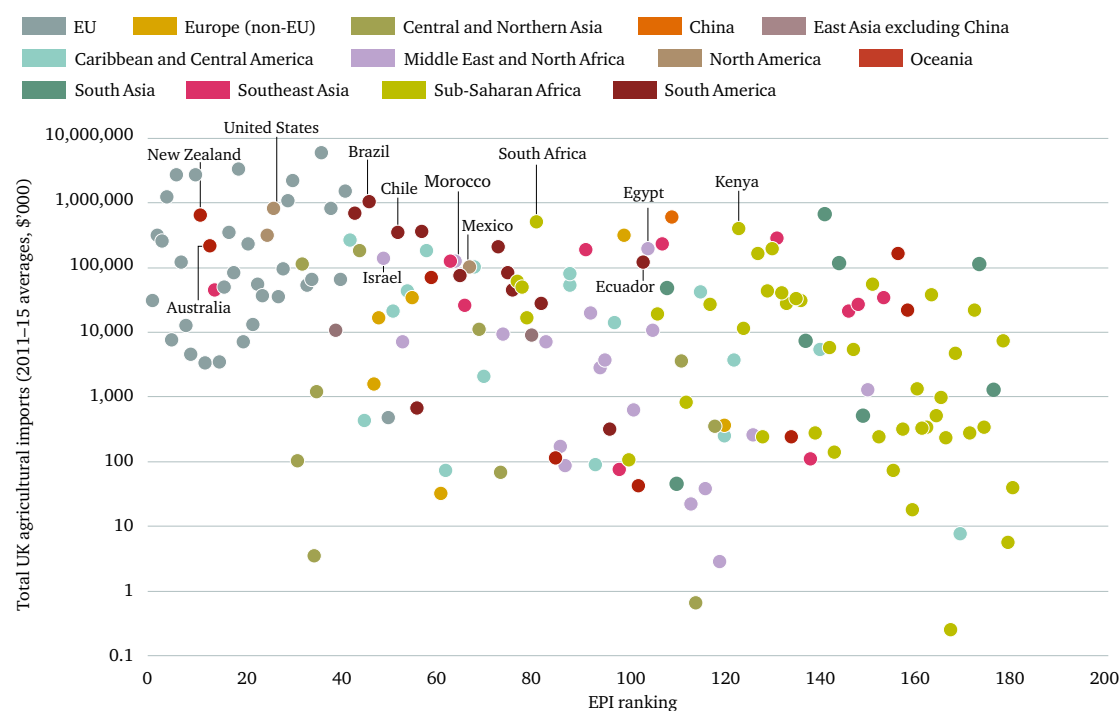
¹⁷ Notably, survey data from research conducted for the BBC by YouGov in April–May 2018 showed that landscape was ranked highest by respondents in England, Scotland and Wales as a determinant of their sense of national belonging. For survey results, see https://d25d2506sfb94s.cloudfront.net/cumulus_uploads/document/re4ybugml/BBC_EnglishIdentity_March18_Results_for_website.pdf (England); https://d25d2506sfb94s.cloudfront.net/cumulus_uploads/document/wu79qtafb2/BBC_180430_ScottishResults.pdf (Scotland); https://d25d2506sfb94s.cloudfront.net/cumulus_uploads/document/qwgdgkhy4e/BBCResults_180501_Wales.pdf (Wales) (all accessed 7 Jan. 2019).

Exporting countries' land resources and environment

Although 52 per cent of the unprocessed products eaten in the UK in 2016 were produced nationally,¹⁸ recent estimates of the total area required to grow crops to meet the demands of the UK food system suggest that over two-thirds of the UK's land footprint is overseas.¹⁹

There is a clear pattern across current UK food commodity imports: imports from outside the EU tend to be associated with lower environmental performance and lower quality (Figure 2). Proponents of a 'Global Britain' approach to trade have, *inter alia*, highlighted the benefit of providing cheaper food, which is widely seen as a public good. Contrary to what may be expected, lower environmental performance of exporting countries outside the EU is not necessarily directly correlated to lower prices. EU prices on imports tend to be lower in most categories of goods – except for milk and dairy produce, and sugar. Nor is poor environmental performance simply a product of shipping distances (for example, imports from Australia and New Zealand have comparable aggregate environmental performance ratings to those of the EU).

Figure 2: The UK currently imports the largest amounts of food from EU suppliers, which have the highest environmental rankings



Countries that are currently major suppliers of food imports to the UK (mainly the EU27, shown in the top left-hand corner of this figure) generally have high standards for environmental protection (shown in the Environmental Performance (EPI) ranking on the x-axis). Countries that are currently less significant as suppliers of UK imports currently tend to have less environmentally friendly agriculture. If the UK imports less from the EU, the implication is that it will import more from countries with lower standards for environmental protection. For comparison, the UK has an EPI ranking of 12.

Sources: Chatham House, Resourcetrade.earth; and Yale University, Environmental Performance Index.²⁰

¹⁸ Department for Environment Food & Rural Affairs (2017), 'Food statistics pocketbook 2017' <https://www.gov.uk/government/statistics/food-statistics-pocketbook-2017> (accessed 4 May 2018).

¹⁹ de Ruiter, H. et al. (2016), 'Global cropland and greenhouse gas impacts of UK food supply are increasingly located overseas', *Journal of the Royal Society Interface*, 13, pp. 1–10, doi: 10.1098/rsif.2015.1001 (accessed 4 May 2018).

²⁰ Trade data from resourcetrade.earth, and values average of 2011–2015 flows; Environmental Performance Index, <https://epi.envirocenter.yale.edu/epi-country-report/GBR> (accessed 10 Oct. 2018).

Post-Brexit trade deals with third countries, including food and agriculture sectors, could culminate in an increase in food imports to the UK from non-EU countries. While this would allow third countries to increase their share of exports at reduced tariffs, this must not be at the cost of exploitation, regardless of whether trade is transparent or not. For example, importing food from countries with weak social and environmental governance risks undermining the conditions – such as water supply – available for their own citizens and local markets. This could also increase the UK's net impact on the global environment. Whether these impacts are felt locally or overseas, they will be of concern to both consumers and citizens. The challenge will be to ensure that Britain's new trade relationships incorporate good social, environmental and welfare governance.

Economic outcomes and health

The UK's food system contributes to a large amount of economic activity. It is also the UK's largest industrial sector. It produced 6.4 per cent of the national total gross value added²¹ in 2016,²² and directly supported the livelihoods of 3.9 million people (13.1 per cent of the UK's jobs); commercial farms alone employed 466,000 people.²³

Food systems also provide important social benefits with healthy diets often underpinning healthy lives. Until recently, UK food prices were close to the EU average.²⁴ That said, 'food poverty' – the inability to afford, or to have access to, food to make up a healthy diet – has increased in recent years. Food Standards Agency figures suggest that about 21 per cent of people are marginally (13 per cent) or severely (8 per cent) food insecure²⁵ – that is, when food runs out before there is money to buy more. In the 2017/18 financial year, the Trussell Trust distributed 1.33 million parcels of food (each with three days' worth of supplies) to people in crisis, a rise of 13 per cent on the previous year.²⁶

The nutritional quality of food is often related to price, and the reality is that people living in poverty often eat what they can afford rather than what is necessarily healthy, which tends to lead to diets that are rich in calories from sugar, oil and starch, but poor in nutrients.

Poorly functioning food systems can lead to malnourishment, which covers the effects of too few nutrients and too few, or too many, calories. The nutritional quality of food is often related to price,²⁷ and the reality is that people living in poverty often eat what they can afford rather than what is necessarily healthy, which tends to lead to diets that are rich in calories from sugar, oil and starch, but poor in nutrients. For instance, depending on the survey, between 26 and 40 per cent of people

²¹ GVA: the difference between prices of materials and prices goods are sold for.

²² DEFRA (2018), 'National Statistics Food Statistics in your pocket 2017: Food Chain', 9 October Update, <https://www.gov.uk/government/publications/food-statistics-pocketbook-2017/food-statistics-in-your-pocket-2017-food-chain> (accessed 2 Jan. 2019).

²³ Lightfoot, W., Burke, J., Craig-Harvey, N., Dupont, J., Howard, R., Lowe, R., Norrie, R., Taylor, M. (2017), *Farming Tomorrow, British agriculture after Brexit*, Policy Exchange, July 2017, see https://policyexchange.org.uk/wp-content/uploads/2017/07/Farming_Tomorrow.pdf (accessed 2 Jan. 2019).

²⁴ Eurostat (2017), 'Comparative price levels for food, beverages and tobacco', http://ec.europa.eu/eurostat/statistics-explained/index.php/Comparative_price_levels_for_food,_beverages_and_tobacco (accessed 4 Apr. 2018).

²⁵ Food Standards Agency (2017), *The Food and You Survey, Wave 4* (<https://www.food.gov.uk/sites/default/files/food-and-you-w4-exec-summary.pdf>) (accessed 4 Apr. 2018).

²⁶ The Trussell Trust (2018), 'End of Year Stats', <https://www.trusselltrust.org/news-and-blog/latest-stats/end-year-stats/> (accessed 14 Sep. 2018).

²⁷ Darmon, N. and Drewnowski, A. (2015), 'Contribution of food prices and diet cost to socioeconomic disparities in diet quality and health: a systematic review and analysis', *Nutrition Reviews*, 73(10): pp. 643–60. doi: 10.1093/nutrit/nuv027 (accessed 14 Sep. 2018).

admitted to hospital in the UK are malnourished.²⁸ This scenario also results in an association between low income and obesity.²⁹ Currently, it is estimated that one in four adults in the UK is obese, with almost two-thirds being overweight.³⁰ The UK government estimates that the economic costs of obesity are £27 billion per year,³¹ a figure approximately equivalent to the Department for Education's entire budget for further and higher education, including student loans.³² Obesity and being overweight are associated with a range of non-communicable diseases, such as type 2 diabetes, cardiovascular diseases, some cancers and even Alzheimer's and other forms of dementia.³³ Children who are obese can suffer ill health throughout their lifetime, and through a range of biological mechanisms can pass on to their own children an increased propensity for obesity and ill health.³⁴

Food standards

EU regulations³⁵ cover the safety and quality of food and feed, plant health, animal health and welfare in the EU as well as import controls on animals and goods entering the EU from third countries.

Outside the EU, the UK could choose to import produce from countries with lower environmental, welfare or safety standards than is currently allowed in the EU – whether from countries that use growth hormones and pathogen reduction treatments in meat production (a frequently cited example being chlorine-washed chicken) or genetically modified (GM) food, or countries with low environmental governance so cheaper produce can arise through damaging the environment. The argument often deployed in support of such arrangements is that governments should 'let the market decide' whether certain technologies or production processes are acceptable – through the demand from consumers – rather than ban them on people's behalf.

However, there are risks with this model.

The first risk is around processing. Maintaining two separate processing streams – for GM and non-GM cereal, for example – may be prohibitively expensive, meaning that many processed foods would include GM and non-GM ingredients.

²⁸ Schenker, S. (2003), 'Undernutrition in the UK', *Nutrition Bulletin*, 28, pp. 87–120, doi: 10.1046/j.1467-3010.2003.00303.x (accessed 14 Sept. 2018); BAPEN (2014), *Nutrition screening in hospitals in the UK, 2007–2011*, <http://www.bapen.org.uk/pdfs/nsw/bapen-nsw-uk.pdf> (accessed 4 Apr. 2018).

²⁹ Cohen, M. (2018), 'It's poverty not individual choice that is driving extraordinary obesity levels', *The Independent*, 27 February 2018, <https://www.independent.co.uk/life-style/health-and-families/poverty-individual-choice-driving-obesity-health-a8219831.html> (accessed 4 Apr. 2018); Public Health England (2017), 'Guidance Health matters: obesity and the food environment', <https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2> (accessed 4 Apr. 2018).

³⁰ National Health Service (2018), 'Obesity: Overview' <https://www.nhs.uk/conditions/obesity/> (accessed 24 Oct. 2018).

³¹ Public Health England (2017), 'Guidance Health matters: obesity and the food environment', <https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment--2> (accessed 4 Apr. 2018).

³² Department for Education (2017), *Consolidated annual report and accounts, for the year ended 31 March 2017*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/630523/DFE_Consolidated_annual_report_and_accounts_2016-17_WEB.pdf (accessed 4 Apr. 2018).

³³ Kivimäki, M., Luukkonen, R., Batty, G. D., Ferrie, J. E., Pentti, J., Nyberg, S. T., Shipley, M. J., Alfredsson, L., Fransson, E. I., Goldberg, M., Knutsson, A., Koskenvuo, M., Kuosma, E., Nordin, M., Suominen, S. B., Theorell, T., Vuoksima, E., Westerholm, P., Westerlund, H., Zins, M., Kivipelto, M., Vahtera, J., Kaprio, J., Singh-Manoux, A., Jokela, M. (2018), 'Body mass index and risk of dementia: Analysis of individual-level data from 1.3 million individuals', *Alzheimer's & Dementia*, 14(5): pp. 601–609; DOI: 10.1016/j.jalz.2017.09.016 (accessed 20 Dec. 2018).

³⁴ Catalano, P. and Ehrenberg, H. (2006), 'Review article: The short- and long-term implications of maternal obesity on the mother and her offspring', *BJOG: An International Journal of Obstetrics & Gynaecology*, 113: pp. 1126–1133, doi: 10.1111/j.1471-0528.2006.00989.x (accessed 14 Sept. 2018).

³⁵ European Council (2000), 'Council Directive 2000/29/EC of 8 May 2000 on protective measures against the introduction into the Community of organisms harmful to plants or plant products and against their spread within the Community', <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX:32000L0029> (accessed 4 May 2018); European Council and Parliament (2004), 'Regulation (EC) no 882/2004 of the European Parliament and of the Council of 29 April 2004', <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=celex:32004R0882> (accessed 4 May 2018).

The second is that this approach fails to acknowledge the growing recognition that lower food prices are not necessarily in the public interest if they are at odds with either environmental sustainability or positive health outcomes. For example, standards of food imports have also taken centre stage in debates about a potential bilateral trade deal between the UK and the US – particularly the impact on animal welfare and environmental regulation. The risk of increased imports of different quality food could undermine the trust and satisfaction of consumers and citizens, with implications not only for the food industry but also for government.

The third is that the market may lack transparency, thus constraining people's ability to choose. For instance, under current labelling regulations, chicken pies manufactured in the UK using imported chicken can be labelled 'British'. Therefore, if the chicken has some perceived negative attributes associated with its 'real' country of origin (e.g. reared under low welfare standards), consumers would not necessarily know this from the labelling. Consumers would likely expect such ingredients to have come from the UK. In such cases, consumers could only be able to exercise their choice by paying considerably more, perhaps through buying organic produce; consumers unable to pay such a premium would have little choice.

The fourth is that importing food from countries with different standards may allow them to produce food more cheaply than UK farmers can, potentially undercutting UK markets. This, coupled with the potential for tariff changes to affect UK farm exports, risks the potential for significant structural changes to the UK farm sector.³⁶ While this is clearly an issue for the sector, the potential for wider changes in the countryside has implications for citizens generally.

Food prices and availability, and the resilience of supply chains

The 'Global Britain' approach to trade has partly been sold on the promise of providing cheaper food. This has had some resonance given that food purchasers, at the point of sale, have tended to be more sensitive to price than to other food attributes.

What is grown in the UK is a pragmatic outcome of domestic comparative advantage (what can best be grown) and market economics (what can be grown profitably).

What is grown in the UK is, essentially, a pragmatic outcome of domestic comparative advantage (what can best be grown) and market economics (what can be grown profitably). So the impact of Brexit on food prices and availability is hard to predict. Price changes will result from an interaction between the source of imports, the tariff and non-tariff barriers (NTBs) associated with imports (see Box 1), the exchange rate (and the UK's economic performance), and the UK agricultural sector's response to market forces. Certainly, the latter is dynamic: if Brexit leads to higher import costs, for example on vegetables, it might make it profitable for UK horticulture to expand.

³⁶ van Berkum, S., Jongeneel, R. A., Vrolijk, H. C. J., van Leeuwen, M. G. A. and Jager, J. H. (2016), 'Implications of a UK exit from the EU for British agriculture', LEI Report 2016-046, LEI Wageningen UR: Wageningen.

Box 1: Tariffs and non-tariff barriers (NTBs)

Tariffs are the taxes imposed at the border. Historically, they have largely been implemented both as a revenue stream and as a means of protecting local industries from being undercut. But in reality, NTBs – like phytosanitary standards and inspections – can have a much greater impact on prices than tariffs. They can make it more difficult for a country to export to another, or slow down trade flows at borders. UNCTAD estimates that the costs of meeting NTBs for lower-income countries to export to higher-income countries is three times greater than the equivalent tariff.³⁷

Furthermore, both tariffs and NTBs will vary according to product, and the final consumer price will vary greatly depending on whether the import is a finished product (e.g. cheese) or an ingredient (e.g. cereal) for processed food or the service industry, where the price of ingredients may be a small component of final price. This is particularly important for the island of Ireland, where for some products, the border is crossed multiple times along the value chain (so-called ‘pancaking’) – produced in one country, processed across the border, packaged back in the first, and so on. A hard Brexit – in particular the return of a harder border and new tariffs and NTBs – may necessitate a structural change in supply chains from a price perspective to minimize the risks of multiple imposition of tariffs/delays.

A study for the National Farmers’ Union in 2016 estimated additional costs, through NTBs, for the whole of the UK to be between 5 and 8 per cent.³⁸ The potential for rapid regulatory divergence – especially around sanitary and phytosanitary standards, and particularly so in some scenarios of ‘no deal’ – may increase this figure considerably.³⁹

Meanwhile, new trade relationships and/or any structural adjustments to the UK farming sector are likely to impact the resilience of the UK’s future food system. For example, the reintroduction of inspection requirements at the borders for imports from the EU, as well as new trade relationships, could interrupt flows.

As things stand, the UK has a ‘just in time’ food system, with 5–10 days of groceries in the country⁴⁰ (often less in the case of fresh produce). Even small interruptions can result in big impacts on price and availability, which runs the risk of hoarding or panic buying on the perception of curtailed supply. Brexit may increase the prospect of discrete supply shocks and expose the UK to greater generalized price volatility in both the short and the longer term.

Meanwhile, weak social and environmental governance in partner countries could prevent good management of water, which may create instability in fulfilling UK trade demands in a timely and efficient way. Already, many of the non-EU countries from where the UK currently imports are vulnerable to climate impacts and water scarcity such as Egypt, South Africa, Chile, Morocco and Israel.⁴¹ Relying on sourcing from drought-prone countries, rather than the relatively assured EU production, puts trade flows at risk from volatility in the water supply in the coming years.

Access to food and agricultural products from new trading partners also needs to be sustainable and resilient to the vagaries of changing weather patterns as the climate changes. The undercurrents induced by climate change and demand growth will make the market more competitive and dynamic in the medium term; so, the situation immediately post-Brexit and the situation in decades to come

³⁷ UNCTAD (2016), ‘Trading into sustainable development’, http://unctad.org/en/PublicationsLibrary/ditctab2015d3_en.pdf.

³⁸ van Berkum et al. (2016), ‘Implications of a UK exit from the EU for British agriculture’.

³⁹ Ries, C. P., Hafner, M., Smith, T. D., Burwell, F. G., Egel, D., Han, E., Stepanek, M. and Shatz, H. J. (2017), ‘After Brexit: Alternate forms of Brexit and their implications for the United Kingdom, the European Union and the United States’. Santa Monica, CA: RAND Corporation, 2017, https://www.rand.org/pubs/research_reports/RR2200.html (accessed 2 Jan. 2019).

⁴⁰ Full Facts (2013), ‘Is the UK’s food supply hanging in the balance?’, 4 June 2013, see <https://fullfact.org/economy/uks-food-supply-hanging-balance/> (accessed 4 Apr. 2018).

⁴¹ Hess, T. and Sutcliffe, C. (2018), ‘The exposure of a fresh fruit and vegetable supply chain to global water-related risks’, *Water International*, 43:6, pp. 746–761.

might diverge considerably. Take the example of citrus, the current supply chain for which has a significant EU component. The EU (principally Spain) provides 41 per cent of the UK's annual citrus imports, followed by South Africa and Morocco.⁴² Climate change suggests that extreme temperatures and water scarcity are likely to limit the productivity of these sourcing locations, which may lead to the need to source citrus from other countries. Peru and Chile are likely to be the most resilient alternative sources in future. Currently, these countries supply nearer and/or potentially less demanding markets: the US and China, for instance.

Another instance of the evolving pressures on supply chains is that of bananas. UK imports account for 7 per cent of the global market,⁴³ the supply chain for which is challenged by hurricanes, storms, extreme heat, extreme cold, flooding and drought. The rise in the frequency and severity of these events contributes to the several indirect effects of increased soil loss, worker displacement, damage to farmland and transportation links. Simultaneously, there is an increase in the likelihood of fungal diseases, leading to a rise in cost and the toxic burden of fungicide application. Increased frequency of shock events raises the probability of multiple and simultaneous events that could result in fiercer competition for a smaller volume of the product. Ecuador, a linchpin of the UK banana supply, already trades preferentially with the US and China due to their relative proximity and strong transport links. Against these competitors, the UK (outside the EU single market) is a less attractive target market with its relatively lower volumes and high specifications. There is a risk that the UK will not be able to agree comparably favourable trade terms at an acceptable price.

⁴² Baker, P. and Morgan, A. (2012), *Resilience of the Food Supply to Port Disruption: Final annex report 8: UK citrus fruit imports*, DEFRA Project FO0108, http://randd.defra.gov.uk/Document.aspx?Document=10400_Annex08_Citrusimports_final.pdf (accessed 17 Oct. 2018).

⁴³ Open Access (2017), 'Exeter University tackles banana supply chain threat', 9 January 2017, <https://www.openaccessgovernment.org/exeter-university-tackles-banana-supply-chain-threat/30931/> (accessed 4 Apr. 2018).

3. The Realities of Brexit for the UK Food System

EU influence over the UK food system

The UK food system is closely entwined with the EU in five key areas:

- **Funding:** The EU's Common Agricultural Policy (CAP) shapes UK farming practices and landscapes and provides £2.3 billion of subsidies per year. Without this financial support, many UK farms would have been forced to change how – and what – they produce, or else would have faced closure or been driven out of business. Brexit will also leave a hole in the EU budget, which could reduce the overall funding available to member state farmers through the CAP.
- **Intra-EU trade:** EU countries are responsible for the majority of the demand for UK food, feed and drink exports (60 per cent in 2016), and the UK is similarly dependent on member states for 70 per cent of its imports⁴⁴ in these areas (and 30 per cent of total UK food consumption).⁴⁵
- **Labour:** UK agriculture depends heavily on EU nationals for labour, particularly seasonal migrant labour, which some estimate at 98 per cent of the 75,000 seasonal workers needed each year.⁴⁶ A further 116,000 EU nationals worked in the UK food manufacturing sector in 2016, representing a third of all people employed in the sector.⁴⁷
- **Regulation:** EU legislation and institutions provide a tight framework governing the environmental and safety standards of food produced and consumed in the UK. These regulations cover the safety and quality of food and feed, plant health, animal health and welfare within in the EU as well as import controls on animals and goods entering the EU from third countries.⁴⁸
- **Extra-EU trade:** The EU has an extensive web of trade agreements from which the UK benefits. In 2016, around 54 per cent of UK exports went to the EU or to countries with which the EU has a full or provisional trade agreement.⁴⁹ Today, the UK imports food from 168 countries.⁵⁰

⁴⁴ Department for Environment Food & Rural Affairs (2017), *Agriculture in the United Kingdom 2016*.

⁴⁵ Department for Environment Food & Rural Affairs (2017), 'Food statistics pocketbook 2017'.

⁴⁶ McGuinness, T. and Grimwood, G. G. (2017), 'Migrant workers in agriculture', House of Commons Briefing, <http://researchbriefings.parliament.uk/ResearchBriefing/Summary/CBP-7987> (accessed 10 Oct. 2018).

⁴⁷ Ibid.

⁴⁸ Directive 2000/29/EC controls importation of plant and plant products; Regulation (EC) No 882/2004 controls live animals and animal products.

⁴⁹ The EU currently has 37 full trade agreements with countries and regions around the world, with a further 44 partially in place and nine pending. For details: Negotiations and agreements, <http://ec.europa.eu/trade/policy/countries-and-regions/negotiations-and-agreements> (accessed 4 Apr. 2018); Full Fact (2018), 'Over half of UK exports were via EU trade agreements in 2016', <https://fullfact.org/europe/UK-EU-trade-agreements/> (accessed 4 Apr. 2018).

⁵⁰ Department for Environment, Food and Rural Affairs (2012), 'Food Statistics Pocketbook 2012', <https://www.gov.uk/government/statistics/food-statistics-pocketbook-2012> (accessed 26 Mar. 2018).

EU negotiations in three steps: withdrawal, transition and future agreement

Withdrawal

Barring an extension of negotiations, the UK will leave the EU on 29 March 2019. Based on the terms of Article 50 of the Treaty on European Union, the UK and EU must first negotiate a withdrawal agreement outlining the terms of exit before they can discuss their future relationship. By November 2018, the UK and the EU27 had reached a draft Withdrawal Agreement⁵¹ which proposed a 21-month transition period (the so-called implementation phase) to discuss the terms of UK–EU reciprocal trade after the end of the transition. This period can be extended once. The two parties also published a declaration outlining their aspirations for their future relationship.⁵² This is subject to final agreement by the UK and European parliaments, in advance of the UK's planned exit in March 2019.

Transition/implementation phase

Throughout the proposed transition period, the UK would continue to participate in the single market and the EU customs union.⁵³ In other words, current arrangements for production standards and trade (including EU customs tariffs, customs duties and border checks for produce from third countries) would continue to apply.⁵⁴ Similarly, the UK would continue to be bound by EU trade agreements (37 are fully in place and 44 partially in place) and be part of the EU's full and partial customs union arrangements (with Andorra, Turkey and San Marino).

For some in the UK, the transition proposals would make the country a 'vassal' state, trapped between EU membership and independence and forced to adopt EU standards while having no direct role in their development and implementation. That said, the UK would be able to negotiate, sign and ratify its own trade deals, but these could only come into force at the end of the transition period. Much of the scope of any such trade agreements will be dependent on the future relationship between the UK and the EU27 (see Chapter 4).

⁵¹ European Union/HMG (2018) 'Agreement on the Withdrawal of the UK from the EU', https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759019/25_November_Agreement_on_the_withdrawal_of_the_United_Kingdom_of_Great_Britain_and_Northern_Ireland_from_the_European_Union_and_the_European_Atomic_Energy_Community.pdf (accessed 4 Dec. 2018).

⁵² European Union/HMG (2018) 'Political Declaration setting out the Framework for the Future Relationship', https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759021/25_November_Political_Declaration_setting_out_the_framework_for_the_future_relationship_between_the_European_Union_and_the_United_Kingdom_.pdf (accessed 4 Dec. 2018).

⁵³ European Commission (2018), Draft Agreement on the withdrawal of the United Kingdom of Great Britain and Northern Ireland from the European Union and the European Atomic Energy Community, https://g8fip1kplyr33r3krz5b97d1-wpengine.netdna-ssl.com/wp-content/uploads/2018/03/draft_agreement_coloured-2.pdf (accessed 26 Mar. 2018).

⁵⁴ European Council (2017), 'European Council (Art.50) meeting (15 December 2017) Guidelines', <http://www.consilium.europa.eu/media/32236/15-euco-art50-guidelines-en.pdf> (accessed 26 Mar. 2018).

Table 1: Brexit timetable

	January 2019	Pre-29 March 2019	April 2019–end of transition period (Dec. 2020?)	After end of transition period (1 Jan. 2021?)
Financial settlement	Agreement in principle	EU and UK approval needed	UK's EU contribution valid	Possible sector specific budgets (R&D, European Food Safety Authority, etc.)
Freedom of movement	Continues	Continues	Continues	Unknown
Compliance with EU standards	Continues	Continues	Continues	Unknown
UK–EU deal	Non-binding political declaration	Non-binding political declaration	Negotiation	In force or extension of negotiations
New UK–third country trade deals			Negotiation, signing and ratification possible	Enter into force at the end of the transition period

Future agreement (or no deal)

As things stand, there seem to be four potential endgame (or potentially interim) scenarios, with a multitude of routes by which these can be reached. Some could involve significant political disruption and/or more time to come to pass. These scenarios are set out in fuller detail in Chapter 4.

The role of the devolved administrations

When it comes to Brexit and agriculture, many areas of competence will be directly transferred from Brussels to Belfast (if and when the Northern Ireland Assembly is restored), Cardiff⁵⁵ and Edinburgh.⁵⁶ This is because the UK's agricultural policy is already devolved to Northern Ireland, Wales and Scotland, each of which is responsible for the implementation of the EU CAP in its respective territory. The Scottish government has already asked that the legislative power that currently resides primarily in Brussels be transferred to Edinburgh in accordance with the Scotland Act 1998. It has been clear that the UK's withdrawal from the EU must not result in the centralization of control at Westminster.⁵⁷

In March 2018 the UK government published its provisional assessment of the areas in which European law intersects with the competences of the individual devolved administrations. It highlights 49 policy areas where no further action is needed and 82 areas where non-legislative common frameworks may be required. It also highlighted 24 areas for which a common UK-wide framework might be needed; those that relate to agriculture and the food sector are set out in Table 2.

Already, there are fears that time is running out. The House of Commons Committee on Public Accounts notes that 80 per cent of the functions of the Department for Environment, Food and Rural Affairs (Defra) concern devolved areas of policy, and that: 'Failure to reach timely agreements with devolved administrations in these areas would have a far-reaching impact across its EU Exit programme.'⁵⁸

⁵⁵ UK Parliament (2018) 'The Agriculture Bill 2018', <https://publications.parliament.uk/pa/bills/cbill/2017-2019/0266/18266.pdf> (accessed 10 Oct. 2018); The Agriculture Bill sets a UK framework (e.g. on WTO compliance), with detailed provisions for agricultural policy in England, Wales and Northern Ireland.

⁵⁶ UK Government (2018), 'UK Government Agriculture Bill – Scotland myth-buster', <https://www.gov.uk/government/news/uk-government-agriculture-bill-scotland-myth-buster> (accessed 10 Oct. 2018).

⁵⁷ Scottish Government (2016), *Scotland's Place in Europe*, <https://beta.gov.scot/publications/scotlands-place-europe/> (accessed 10 Oct. 2018).

⁵⁸ House of Commons Committee of Public Accounts (2018), *Exiting the European Union: The Department for Environment, Food & Rural Affairs and the Department for International Trade*, <https://publications.parliament.uk/pa/cm201719/cmselect/cmpubacc/699/699.pdf> (accessed 10 Oct. 2018).

The repatriation of powers in the field of agriculture will also need to be managed carefully. While increasing the subsidiarity of decisions over agriculture, food policies and budgets allows local values and cultures to be recognized, diverging regulatory and support regimes may have implications for the functioning of a coherent single market across the UK. For example, the Agriculture Bill implies that in England, there may be a mandatory provision to share supply chain data. This means that food produced in Scotland but processed in England could be subjected to different supply chain rules than food produced and processed in England.

Consultation, consent and coordination between Westminster and the devolved administrations is essential to the integrity of the UK's internal single agricultural market. They are also key to avoiding any risk of dissonance between the UK's agriculture and trade policies, particularly if external trade commitments lead to changes in the direction of UK's agricultural policy.⁵⁹

Table 2: Brexit implications for agriculture and food policy intersects between UK and devolved law (Northern Ireland, Scotland, Wales)

Policy areas where no further action is needed
Environmental impact assessment
Environmental quality – flood risk
Environmental quality – water and water resources
GM organisms (GMO)
Land use
Policy areas where non-legislative common frameworks may be required
Environmental quality – air quality
Environmental quality – biodiversity
Environmental quality – natural environment and biodiversity
Policy areas where it is uncertain if a legislative common framework will be needed
Agriculture support
Agriculture – fertilizer regulations
Agriculture – GMO marketing and cultivation
Agriculture – organic farming
Agriculture – zoo technology
Animal health and traceability
Animal welfare
Environmental quality – pesticides
Fisheries management and support
Food and feed safety and hygiene
Food compositional standards
Food labelling
Nutritional health claims, composition and labelling
Plant health, seeds and propagating material

Source: UK government, 2018.⁶⁰

⁵⁹ House of Lords (2017), *Brexit: agriculture, European Union Committee 20th Report of Session 2016–17*, https://publications.parliament.uk/pa/ld201617/ldselect/lddeucom/169/16907.htm#_idTextAnchor066 (accessed 10 Oct. 2018).

⁶⁰ UK Government (2018), *Frameworks analysis: breakdown of areas of EU law that intersect with devolved competence in Scotland, Wales and Northern Ireland*, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/686991/20180307_FINAL_Frameworks_analysis_for_publication_on_9_March_2018.pdf (accessed 10 Oct. 2018).

4. Risks and Opportunities of Brexit for the UK Food System

The UK's trading relationships with the EU27

In November 2018 the EU27 and the UK government issued both the draft Withdrawal Agreement and a Political Declaration setting out the framework for the future relationship between the UK and the EU. While the Withdrawal Agreement runs to almost 600 pages, the Political Declaration is less than 30 pages. The detail and much of the shape of the future relationship is still to be negotiated, but according to the Political Declaration, the EU and the UK:

envisage having a trading relationship on goods that is as close as possible, with a view to facilitating the ease of legitimate trade.

and

envisage comprehensive arrangements that will create a free trade area, combining deep regulatory and customs cooperation, underpinned by provisions ensuring a level playing field for open and fair competition.⁶¹

The UK government's stated aim is to secure long-term trading arrangements with the EU by December 2020, the end of the transition period. However, Article 132 of the Withdrawal Agreement makes clear this transition period could be extended once. This is in recognition that negotiations around the future relationship may not be completed within 21 months.

Scenarios for UK–EU27 trade and implications for the UK food system

Scenario 1: Close relationship with the EU

Under this scenario, the UK would remain very closely aligned with the EU either through membership of the EU's single market and/or a customs arrangement with the EU.⁶² For example, the UK could look to join the European Free Trade Association (EFTA) and European Economic Area (EEA), aligned with the so-called 'Norway model'. The Norway model would almost certainly necessitate sacrificing one of the UK's red lines – the commitment to ending freedom of movement.

Maintaining close regulatory equivalence and a common customs arrangement would facilitate cross-border checks for EU produce and limit delays to trade. This is important because, collectively, NTBs can have a much greater impact on prices than do tariffs (see Box 1).⁶³ In a study for the National

⁶¹ European Union/ HMG (2018) 'Political Declaration Setting out the Framework for the Future Relationship' https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759021/25_November_Political_Declaration_setting_out_the_framework_for_the_future_relationship_between_the_European_Union_and_the_United_Kingdom_.pdf (accessed 4 Dec. 2018).

⁶² EC (2018), 'EC Factsheet: Protocol on Ireland and Northern Ireland' http://europa.eu/rapid/press-release_MEMO-18-6423_en.htm (accessed 3 Dec. 2018).

⁶³ The UN Conference on Trade and Development (UNCTAD) estimates that the costs of meeting NTBs for developing world countries to export to developed countries is three times greater than the equivalent tariff. UNCTAD (2017), 'The Unseen Impact of Non-Tariff Measures. Insights from a New Database' <https://unctad.org/meetings/en/SessionalDocuments/ditc-tab-MC11-UNCTAD-NTMs.pdf> (accessed 24 Oct. 2018).

Farmers' Union, van Berkum et al.⁶⁴ assumed that additional costs after Brexit through NTBs would amount to between 5 per cent and 8 per cent for imports from and exports to the EU.

One example of this is the phytosanitary checks required for fresh produce. Currently, the European Commission's Directorate-General for Health and Food Safety (DG SANTE), through its Health and Food Audits and Analysis Directorate, is responsible for inspections of EU produce and production in EU member states. It also checks non-EU exports to the EU for compliance with EU standards.⁶⁵ These checks and controls can take up to 48 hours. Were the UK to diverge from EU standards – especially around sanitary and phytosanitary standards and under some 'hard Brexit' scenarios – this could increase this interval considerably.

Under this scenario, the UK would remain very closely aligned with the EU either through membership of the EU's single market and/or a customs arrangement with the EU.

Moreover, estimates suggest that it could take between five and 10 years to build the necessary infrastructure at UK ports.⁶⁶ The remit and resourcing of the UK Food Standards Agency would need to be significantly enlarged to cope with additional responsibilities that are currently undertaken by the European Food Safety Authority, particularly with regard to assuring food safety and authenticity.

A close post-Brexit scenario would be likely to restrict the scope of free-trade agreements that the UK is able to conclude with third countries, as these agreements would almost certainly need to comply with EU standards. It would also mean that the UK became a 'rule-taker', whereby it would need to comply to a high degree with EU rules and regulations but would have little or no say in their design.

This scenario may also arise if the UK and the EU fail to reach a free-trade agreement by the end of the transition period and the Irish 'backstop' arrangement comes into being. The backstop is intended to serve as an insurance policy that would come into force if no option (whether technological or legal) is found to prevent the reimposition of a hard border between Northern Ireland and the Republic of Ireland. This arrangement would in effect keep the whole of the UK in a customs arrangement with the EU, but would subject Northern Ireland to more EU rules than the rest of the UK. This proposed arrangement has been highly controversial, with critics and opponents asserting that it would undermine the constitutional integrity of the UK. In particular, Northern Ireland's Democratic Unionist Party, with which Theresa May's Conservatives reached a 'confidence and supply' agreement on critical votes in Parliament following the 2017 general election,⁶⁷ has been implacably opposed to the arrangement.

⁶⁴ van Berkum, S. et al. (2016), *Implications of a UK exit from the EU for British agriculture*, study for the National Farmers' Union (NFU), LEI Wageningen: Warwickshire, <https://www.nfuonline.com/assets/61142> (accessed 4 May 2018).

⁶⁵ European Commission (undated), 'Official controls and enforcement', https://ec.europa.eu/food/safety/official_controls_en (accessed 4 May 2018).

⁶⁶ O'Carroll, L. (2018), 'Post-Brexit port checks could disrupt fresh food supplies, say freight bosses', *Guardian*, 3 May 2018, <https://www.theguardian.com/politics/2018/may/03/post-brexit-port-checks-could-disrupt-fresh-food-supplies-say-freight-bosses> (accessed 4 May 2018).

⁶⁷ Under the 'confidence and supply' agreement, the DUP agreed, *inter alia*, to support the government on legislation pertaining to the UK's exit from the EU, as well as legislation pertaining to national security; for fuller details of the agreement, see Cabinet Office (2018), 'Confidence and Supply Agreement between the Conservative and Unionist Party and the Democratic Unionist Party', policy paper, updated 23 October 2018, <https://www.gov.uk/government/publications/conservative-and-dup-agreement-and-uk-government-financial-support-for-northern-ireland-agreement-between-the-conservative-and-unionist-party-and-the-democratic-unionist-party-on-support-for-the-government-in-parliament> (accessed 23 Nov. 2018).

Box 2: The UK's decision to leave the single market and customs union and the implications for the Irish border

The UK's intention to leave the EU single market and customs union is particularly problematic for trade between the Republic of Ireland (ROI) and the UK. The value of trade across the Irish border is estimated at around £5 billion per year (although this is notably less than the trade between Northern Ireland and the rest of the UK, or between the whole of the UK and the ROI). The wider concern is that any barriers to trade (either customs or regulatory) or visible border infrastructure would threaten the political settlement in Northern Ireland.

Food and live animals are also a significant part of the trade between Northern Ireland and the ROI, contributing about a third of the total value of goods traded between the two. Northern Ireland exports £1.5 billion of food to the EU, of which around 70 per cent goes to or through the ROI. In 2015 exports of food and live animals from Northern Ireland to the ROI were valued at £732 million (from a total export value of £2.2 billion); exports from the ROI to Northern Ireland were valued at £796 million (from a total export value of £2.6 billion). Food and live animal exports from Northern Ireland to the ROI are more than three times the volume that goes to the UK. For many food products, the border is crossed multiple times along the value chain (so called 'pancaking'): for example, foods may be produced in one country, processed across the border, packaged back in the first territory, and then sold into the other.

While the UK's proposal for a free-trade area for goods combined with a facilitated customs arrangement would help to minimize friction at the border, some checks would inevitably take place. This is because the UK would no longer share a common regulatory space with the EU. In practice, a British company exporting to the EU would need to prove that its products still comply with EU rules, including VAT, phytosanitary and rules of origin (whereby different requirements apply to imports that include materials from more than one country). The same will apply for EU companies exporting to the UK.

Research for the European Parliament has highlighted a range of potentially useful technologies that are currently in use at borders internationally.⁶⁸ These include automatic number-plate recognition, enhanced driving licences, smartphone apps and barcode scanning. In the case of Northern Ireland and the ROI, these measures could be linked with additional bureaucratic approaches such as mutual recognition of authorized economic operators, or a simplified customs declaration system to significantly reduce or even remove the need for processing at the border. However, the House of Commons Northern Ireland Affairs Committee (NIAC) is less optimistic, stating: '[W]e have had no visibility of any technical solutions, anywhere in the world, beyond the aspirational, that would remove the need for physical infrastructure at the border'.⁶⁹ In any case, such technological solutions would require considerably more time to be developed, tested and deployed than is currently available.

Scenario 2: Looser relationship (Canada-style agreement)

Under this scenario, the UK would have a looser relationship with the EU, outside the EU's customs union and the EEA. Such a relationship is a looser version than is envisaged in the negotiated Political Declaration on the future relationship,⁷⁰ and is broadly in line with the Comprehensive Economic and Trade Agreement (CETA) between the EU and Canada. This so-called Canada model would potentially allow the UK greater autonomy in developing trade relationships with third-party states, governed by standards that may not align with the EU's. (For a fuller discussion, see the section below on the UK's trade relationships with the rest of the world.)

⁶⁸ European Parliament (2017), 'Smart Border 2.0, Avoiding a hard border on the island of Ireland for Customs control and the free movement of persons', study for the Policy Department for Citizen's Rights and Constitutional Affairs, PE 596.828, November 2017, [http://www.europarl.europa.eu/RegData/etudes/STUD/2017/596828/IPOL_STU\(2017\)596828_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2017/596828/IPOL_STU(2017)596828_EN.pdf) (accessed 26 Nov. 2018).

⁶⁹ UK Parliament (2018), 'The land border between Northern Ireland and Ireland', <https://publications.parliament.uk/pa/cm201719/cmselect/cmniaf/329/32902.htm> (accessed 4 May 2018).

⁷⁰ European Union/ HMG (2018) 'Political Declaration Setting out the Framework for the Future Relationship' https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/759021/25_November_Political_Declaration_setting_out_the_framework_for_the_future_relationship_between_the_European_Union_and_the_United_Kingdom_.pdf (accessed 4 Dec. 2018).

However, such an arrangement would almost certainly result in the reimposition of some tariffs on EU imports to the UK, and vice versa. Existing EU tariffs vary considerably between sectors and products. A Canada-style agreement could go some way in eliminating tariff barriers, although even under CETA tariffs remain for a number of agricultural products such as eggs and poultry – as do limits on tariff-free trade across many other agricultural areas, including wheat and pork.⁷¹ In other words, a Canada-style trade agreement could result in a double penalty of higher prices for UK imports from the EU, due to NTBs and/or tariffs, together with more (cheaper) imports from non-EU countries with poorer quality and sustainability standards. While UK farming sectors that depend on EU markets (for example lamb, where the UK imports little from the EU but exports a high volume to the EU) would suffer because their exports would become expensive, those competing with other EU countries might gain (an example being pork, imports of which to the UK mainly come from the EU, but a significant amount of exports are with third countries).

This kind of trade deal would also require the EU to revisit its tariff rate quotas (TRQs).⁷² Currently, the EU's WTO TRQs are shared between all member states, including the UK. There are currently 128 TRQs on EU agri-food imports, which apply to approximately 6 per cent of such imports by value.⁷³

In October 2018, the EU Council endorsed a joint UK–EU agreement on the initial reallocation of TRQs with respect to a number of agricultural, fisheries, industrial and processed agricultural products. The adjustment of the EU's TRQs entails dividing up the existing quantities between the UK and the EU based on previous trade patterns. The EU and UK will now have to engage in negotiations with WTO partners for each of these TRQs. Some major exporters of agricultural products have already expressed objections to the agreement, asserting that the changes go beyond reallocation and result in reduced market access. Negotiations between the EU and UK and WTO members are ongoing.⁷⁴

Scenario 3: 'No deal'

The 'no deal' option would be the default scenario if no withdrawal agreement has been ratified by the time the UK leaves the EU (currently set for 29 March 2019).

Under this scenario, the UK would be outside any existing agreements involving the EU, and would therefore be considered a third country. Exports from the UK to the EU would be subject to the EU's external tariff system, which would significantly increase the costs of food exports and, presumably, imports if the UK imposed reciprocal tariffs on agri-food products coming into the UK in order to protect British producers or maintain leverage for future negotiations. NTBs would also apply. Immediately, there would be issues at the borders for exports to the EU (and potentially for imports to the UK). For example, any meat supplier would need first to be certified through the EU's existing system to ensure it complied with EU standards and measures. Transport companies would also need to complete new licensing paperwork in order to export from the UK to the EU. For example, exports to the EU of food of animal origin is prohibited unless the establishment in the UK from which the food is dispatched or prepared is 'listed' by the European Commission for public health purposes.⁷⁵

⁷¹ European Parliament (2016), 'Agriculture in the EU-Canada Comprehensive Economic and Trade Agreement (CETA)', July 2016, [http://www.europarl.europa.eu/RegData/etudes/ATAG/2016/586638/EPRS_ATA\(2016\)586638_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/ATAG/2016/586638/EPRS_ATA(2016)586638_EN.pdf) (accessed 7 Jan. 2019).

⁷² A TRQ applies a reduced tariff rate to a quota of imports of a single, or group of, products and an increased tariff rate beyond that quota to control preferential access into the EU single market.

⁷³ UK Parliament (2018), 'Tariff Barriers', <https://publications.parliament.uk/pa/cm201719/cmselect/cmenvfru/348/34805.htm> (accessed 4 May 2018).

⁷⁴ European Parliament (2018), Background: Brexit and tariff rate quotas in the WTO, see <http://www.europarl.europa.eu/legislative-train/theme-a-balanced-and-progressive-trade-policy-to-harness-globalisation/file-brexit-tariff-rate-quotas-in-the-wto> (accessed 7 Jan. 2019).

⁷⁵ European Commission (2018), Notice to Stakeholders, Withdrawal of the United Kingdom and EU Food Law, 1 February 2018, see https://ec.europa.eu/info/sites/info/files/file_import/eu_food_law_en.pdf (accessed 20 Dec. 2018)

It is unclear how long border checks would take under a ‘no deal’ scenario, so pressure on warehouses to stock fresh produce is likely to increase dramatically. As previously noted, the UK currently operates a ‘just in time’ food system, maintaining five to 10 days’ worth of groceries in the country (and often less for fresh produce). Already, concerns are growing that food warehouse capacity is likely to be inadequate, putting ‘just in time’ at risk.⁷⁶

A ‘no deal’ Brexit is not necessarily an endgame scenario, but it could well happen by default if the UK and the EU are unable to approve a withdrawal agreement before the end of Article 50 negotiations. The reality is that the UK’s relationship with the EU is so deep, complex and multidimensional that it is difficult to imagine an outcome in which the UK does not reach a free-trade agreement with the EU in the long run. Given the current volume of UK–EU trade, there would be an imperative to develop a free-trade agreement between the UK and the EU to reduce friction at the borders – through minimizing tariffs and NTBs – and maximize market openness.

CETA, which entered provisional effect between the EU and Canada in September 2017, is relevant in this context. In 2017 Canada exported €2.2bn of agricultural produce to the EU,⁷⁷ as against the UK’s £13.3 billion (some €15 billion).⁷⁸ Given the scale and interdependency of trade between the UK and the EU⁷⁹, it is reasonable to suppose that the UK and the EU would aim to develop a trade agreement – i.e. a deeper relationship than WTO (‘rules only’) – in due course, although this in itself would likely be a protracted and complex process.

Scenario 4: No Brexit

The potential for no Brexit, should not be disregarded. The UK remaining in the EU could arise with or without a second referendum. Under this scenario, the UK would continue to be a party to the EU’s extensive web of trade agreements. As an illustration, in 2016 over 50 per cent of UK goods and services exports went to the EU or to countries with which the EU has a full or provisional trade agreement.⁷⁹ Today, the UK imports food from 168 countries.⁸⁰

The EU’s trade agreements not only open global markets for EU food products, but also drive competition for EU producers and manufacturers within the EU. Research published by the European Commission highlights that 90 per cent of additional demand for agriculture products in the next decade will come from outside the EU – with greater benefits for the EU economy and consumers.⁸¹

⁷⁶ O’Carroll, L. (2018), ‘UK running out of food warehouse space as no-deal Brexit fears rise’, *Guardian*, 18 November 2018, <https://www.theguardian.com/politics/2018/nov/18/uk-running-out-of-food-warehouse-space-as-no-deal-brexit-fears-rise> (accessed 17 Dec. 2018).

⁷⁷ European Commission (Directorate-General for Trade) (2018), ‘European Union Trade in goods with Canada’, 16 April 2018, http://trade.ec.europa.eu/doclib/docs/2006/september/tradoc_113363.pdf (accessed 17 Dec. 2018).

⁷⁸ Food and Drink Federation (2018), ‘2018 Exports Statistics. UK food and drink export statistics’, <https://www.fdf.org.uk/exports/ukexports-2017-full.aspx> (accessed 17 Dec. 2018).

⁷⁹ The EU currently has 37 full trade agreements with countries and regions around the world, with a further 44 partially in place and nine pending. For details: Negotiations and agreements, <http://ec.europa.eu/trade/policy/countries-and-regions/negotiations-and-agreements> (accessed 4 Apr. 2018); Full Fact (2018), ‘Over half of UK exports were via EU trade agreements in 2016’, <https://fullfact.org/europe/UK-EU-trade-agreements/> (accessed 4 Apr. 2018).

⁸⁰ Department for Environment, Food and Rural Affairs (2012), ‘Food Statistics Pocketbook 2012’, <https://www.gov.uk/government/statistics/food-statistics-pocketbook-2012> (accessed 26 Mar. 2018).

⁸¹ Copenhagen Economics (2016), *Impacts of EU trade agreements on the agricultural sector*, https://ec.europa.eu/agriculture/sites/agriculture/files/external-studies/2016-bilateral-trade-agreements/final-report_en.pdf (accessed 10 Oct. 2018).

The UK's trading relationships with the rest of the world

For many proponents of Brexit, the extent to which the UK could diverge from the EU, reshape domestic policies and strike independent trade agreements are the key opportunities presented by Brexit.

However, agriculture is frequently one of the most contested sectors in trade negotiations, often excluded entirely. Tariffs often remain in place. To illustrate, the EU's average agricultural tariff on imports from countries with which there is no free-trade or preferential agreement is 8.5 per cent⁸² but for trade with the US it averages 11.1 per cent.⁸³ This compares with an average tariff between the US and the EU of 3 per cent.⁸⁴

The US has already indicated that it would seek an agreement with the UK that had zero tariffs across a clear majority of goods traded. This could be possible.

The US has already indicated that it would seek an agreement with the UK that had zero tariffs across a clear majority of goods traded. This could be possible. In the case of the Australia–United States Free Trade Agreement, for example, all tariffs have been eliminated for imported products from the US into Australia, while most tariffs have been removed in the reverse trade.⁸⁵ But there would likely be new conditions. US trade secretary Wilbur Ross suggested that changing UK regulations such as the current ban on chlorinated chicken in the EU would form a 'critical component of any trade discussion' with the UK.⁸⁶ This is likely to be the case with other candidate countries for new bilateral trade agreements, such as New Zealand and Australia. Geographical indications could also become an issue (see Box 3).

Meanwhile, choices to increase food imports from one country could adversely affect UK exports to another country. For example, a free-trade agreement with the US that allowed imports of hormone-treated beef, which is banned in the EU, may necessitate longer and more rigorous checks at the border to avoid the banned product entering the EU. It is notable that neither Switzerland nor Norway – which are bound to the EU Sanitary and Phytosanitary Standards (SPS) to ensure close regulatory alignment with the EU – have been able to strike wider free-trade agreements encompassing the agriculture sector.

⁸² Ward, M., (2018), 'Statistics on UK-EU trade', House of Commons Library Briefing paper, 30 November 2018, see <https://researchbriefings.files.parliament.uk/documents/CBP-7851/CBP-7851.pdf> (accessed 8 Dec. 2018).

⁸³ Farm Bureau (2018), 'U.S. Tariffs in the Global Landscape', Market Intel, 22 August 2018, <https://www.fb.org/market-intel/u.s.-tariffs-in-the-global-landscape> (accessed 8 Dec. 2018).

⁸⁴ European Commission, 'Countries and Regions', http://ec.europa.eu/trade/policy/countries-and-regions/countries/united-states/index_en.htm (accessed 7 Jun. 2018).

⁸⁵ Department of Foreign Affairs and Trade, Australia-United States FTA, <https://dfat.gov.au/trade/agreements/in-force/ausfta/official-documents/Pages/official-documents.aspx> (accessed 7 Jun. 2018); Evidence to the House of Commons Select Committee on International Trade suggests this is 94% tariff free. See UK Parliament (2018) UK-US Trade Relations Second Report of Session 2017–19, <https://publications.parliament.uk/pa/cm201719/cmselect/cmtrade/481/481.pdf> (accessed 7 Jun. 2018).

⁸⁶ *FarmingUK* (2017), 'Senior Trump adviser tells UK to accept chlorinated chicken as part of trade deal', 7 November 2017, https://www.farminguk.com/news/Senior-Trump-adviser-tells-UK-to-accept-chlorinated-chicken-as-part-of-trade-deal_47835.html (accessed 28 Mar. 2018).

Box 3: A UK–US trade deal and agriculture: protected geographical indications – the example of Scotch whisky

Geographical indications (GIs) apply to products that have a specific geographical origin and possess qualities or a reputation that are due to that origin. Currently, the UK has 86 protected regional and traditional foods and drinks⁸⁷ – including Scotch whisky, which is by far the UK’s most valuable food and drink export, contributing around £4 billion in annual export revenues and accounting for more than 20 per cent of total food and farming products by value.⁸⁸ UK goods are currently covered by the EU’s system of GIs and there is a different system in place in the US.

When it comes to the production of whisky, EU legislation requires that the product is aged for at least three years. Yet, the US Trade Representative is arguing that the EU’s age requirements are too restrictive and should be eased.⁸⁹ In July 2017 Scotland’s then economy secretary, Keith Brown, urged the UK government to protect the Scotch whisky industry after Brexit by applying the current EU definition of whisky in UK law, emphasizing that the industry supports some 20,000 jobs.⁹⁰

The risk of a two-tier system

For supporters of the UK’s withdrawal from the EU, one of the benefits of an independent trade policy would be the freedom to import food from regulatory regimes that the EU currently rejects. In fact, some third countries may push the UK to increase its openness to importing their agricultural outputs – particularly if the UK lowers standards for food imports. The former UK ambassador to Washington Sir Peter Westmacott was reported in May 2018 as saying:

The imported chicken may not taste very good and it may be chlorine-washed, but it will be very competitively priced ... That is going to be the price of a free trade agreement.⁹¹

Despite assurances from environment secretary Michael Gove that the government would not allow a trade agreement with a third country that has lower animal welfare standards and hygiene issues,⁹² not all Cabinet ministers feel the same way. While giving evidence to the Commons International Trade Committee, the Secretary of State for International Trade, Dr Liam Fox, suggested that there are ‘no health reasons’ why people should not eat chickens that have been washed in chlorinated water, and that he had ‘no objection’ to it being sold to the British public.⁹³

And while UK food producers could continue to compete ‘at the top of the value chain’ on provenance and quality, a rigorous and transparent sourcing and labelling system would need to be in place that allows British consumers to choose and have confidence that ‘when they are buying British

⁸⁷ Department of Environment, Food & Agriculture (2018), ‘Protected food name scheme: UK registered products’, see <https://www.gov.uk/government/collections/protected-food-name-scheme-uk-registered-products> (accessed 26 Nov. 2018).

⁸⁸ Department of Environment, Food & Agriculture (2016) ‘British food and farming at a glance’, https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/515048/food-farming-stats-release-07apr16.pdf (accessed 28 Mar. 2018).

⁸⁹ Office of the United States Trade Representative (2018) ‘National Trade Estimate Report on Foreign Trade Barriers’, <https://ustr.gov/sites/default/files/files/Press/Reports/2018%20National%20Trade%20Estimate%20Report.pdf> (accessed 10 Oct. 2018).

⁹⁰ Scottish Government (2017), ‘Brexit and Scotch Whisky industry’, 30 July 2017, <https://beta.gov.scot/news/brexit-and-scotch-whisky-industry> (accessed 10 Oct. 2018).

⁹¹ Colson, T. (2018), A Brexit trade deal with Trump would put British farmers under ‘severe threat’ warns former ambassador to US, *Business Insider UK*, 28 May 2018, <http://uk.businessinsider.com/uk-us-brexit-trade-deal-would-put-british-farmers-under-severe-threat-2018-5> (accessed 10 Oct. 2018).

⁹² Gove, M. (2017), ‘Oral evidence, Environment, Food and Rural Affairs Committee’, <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/environment-food-and-rural-affairs-committee/the-work-of-defra/oral/70444.pdf> (accessed 28 Mar. 2018).

⁹³ Fox, L. (2017), Oral evidence: The work of the Department for International Trade, evidence given to International Trade Committee, House of Commons, 1 November 2011, see <http://data.parliament.uk/writtenevidence/committeeevidence.svc/evidencedocument/international-trade-committee/the-work-of-the-department-for-international-trade/oral/72941.html> (accessed 26 Nov. 2018).

labelled food, there will be a warrant that the product has met high quality and more sustainable standards'.⁹⁴ Given that consumer confidence in their own ability to choose goods based on attributes such as sustainability or health is already limited (and is typically impossible within the hospitality sector, where food is rarely labelled), to fully enable consumers to choose on provenance and wider attributes would require such a significant change in transparency and engagement that it is currently implausible.

This also assumes that UK farming would remain the same. Yet, the implications of new trade deals for UK farming will depend upon both market responses (and exchange rates) and the regulatory approaches applied to them after the UK has left the EU and the CAP. If UK farmers are subject to a level and open playing field with importers, this could result in a 'race to bottom' whereby values are compromised across the board. Ethically minded consumers who prioritize quality in provenance or animal welfare may only be able to exercise individual choice by paying higher prices, such as buying organic produce – over and above the post-Brexit changes in food prices – through tariff and non-tariff barriers and exchange rate fluctuations.

This restructuring could lead to the creation of a 'double standards' system where a two-tier regulation system leads to two-tier consumption – with some produce been created (probably domestically) to higher animal welfare and environmental standards, while cheaper food products with lower standards are imported, without explicitly stating that these lower prices are in detriment of lowering current food standards. This could undermine the trust and satisfaction of consumers and citizens, with implications not only for the food industry but also for government.

In fact, the hidden costs of producing and consuming 'cheap' food can be transferred to other areas of public policy. As already noted in Chapter 2, lower food prices are not necessarily in the public interest if they are at odds with environmental or health outcomes. For instance, if nutritious diets become more expensive, access to cheaper food would encourage an overconsumption of calories and diets that do not provide complete nutrition, generating additional healthcare costs. One study has suggested that the impact of changing food prices post Brexit, under two scenarios, might create additional deaths of 2,700–5,600 people over the next decade, with a direct economic cost of £290m–£600m. Using current estimates of society's 'willingness to pay' to avoid unnecessary deaths, this extra mortality would increase NHS costs by 0.9–1.8 per cent.⁹⁵

The development of a food system with two regulatory regimes would require clear labelling, transparency and information to allow consumers to choose in a market place with double standards. The 2013 Which? report on the future of food in the UK recommends that local production should be supported, and that supply chains should be more transparent, although the report's authors did express reservations as to the potential for future UK administrations to implement measures to ensure these outcomes.⁹⁶

⁹⁴ Department for Environment, Food & Rural Affairs, Rural Payments Agency, Environment Agency, Animal and Plant Health Agency, and The Rt Hon Michael Gove MP (2018), 'Farming for the next generation', 5 January 2018, see <https://www.gov.uk/government/speeches/farming-for-the-next-generation> (accessed 26 Nov. 2018).

⁹⁵ Springmann, M., and Freund, F. (2018), 'The impacts of Brexit on agricultural trade, food consumption, and diet-related mortality in the UK'. Oxford Martin School Working Paper. Available at <https://www.oxfordmartin.ox.ac.uk/publications/view/2754> (accessed 25 Oct. 2018).

⁹⁶ Which? (2013), *The future of food*.

Interdependence of global trade

As has been seen in recent months, global trade relations are dynamic and domestic political choices can have global ramifications. Most starkly, President Donald Trump has followed through on campaign pledges to impose tariffs on numerous imported goods (including aluminium and steel, machinery and vehicles as well as agricultural commodities) that have impacted a wide variety of countries, among them China, Canada and EU member states (see Box 4).

With Brexit, the UK may be more susceptible to the vagaries of the global market and the actions of the key protagonists. For example, climatic and other environmental changes, and increasing global demand for food, are already making supply chains less resilient and more volatile. Careful consideration will need to be given to the UK's potential increased dependence on agricultural products from countries that are less politically aligned with its own values, and where the UK has less influence.

Box 4: US trade wars

In January 2018 the US starting imposing tariffs on a variety of Chinese goods and as China responded, the breadth of products which were affected, on both sides, has increased. Currently, additional tariffs have been placed on 279 product categories that China imports from the US, while China has 333 product categories that are now affected. The US has threatened to expand the list further, to include \$200 billion in imports.⁹⁷

For China this has included soybeans, grains and pork. The US is the world's largest exporter of soybeans, with a value of \$22.8 billion in 2016. China is the world's largest importer of the crop, importing \$34 billion, of which one third comes from the US.⁹⁸ China sourcing more of its soybeans outside the US will have global implications not only for the price of the commodity but also of livestock, as much of the bean is used for feedstocks.

The EU responded to the proposed US sanctions with suggested measures on iconic products, such as bourbon, jeans and Harley-Davidson motorbikes. However, in July, following a meeting between President Trump and the president of the European Commission, Jean-Claude Juncker, a joint EU–US statement concluded that both would 'work together toward zero tariffs, zero non-tariff barriers, and zero subsidies on non-auto industrial goods. We will also work to reduce barriers and increase trade in services, chemicals, pharmaceuticals, medical products, as well as soybeans'.⁹⁹

The 'impossible policy' triangle

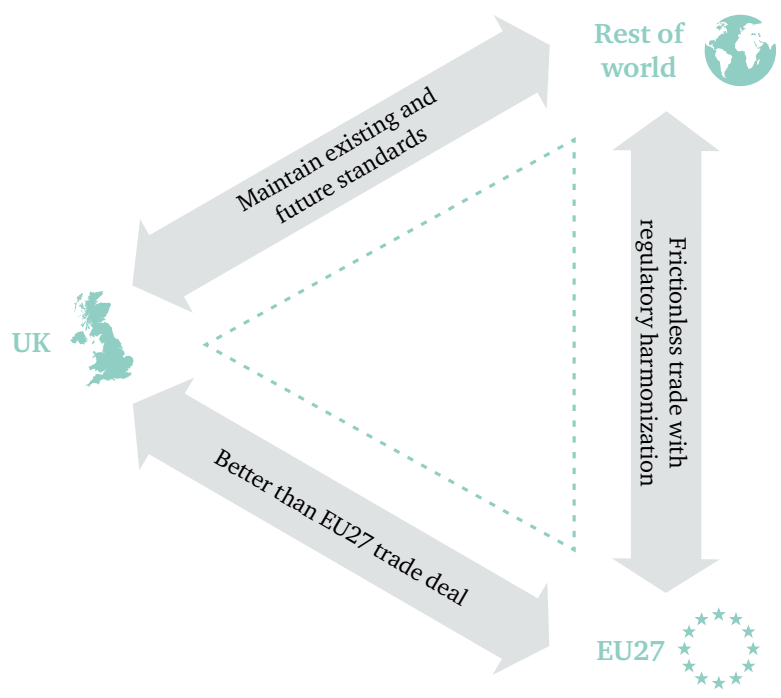
It is not clear in which direction UK trade policy will follow. Brexit negotiations have highlighted that the UK is pursuing an 'impossible triangle' of objectives: frictionless trade with the EU, ambitious new trade agreements around the world that respect existing standards and maintaining a profitable agriculture and food sector at home. Yet, as demonstrated above, benefiting from new trade deals is broadly incompatible with being close the EU (Figure 3).

⁹⁷ BBC (2018), 'US-China trade war: New tariffs come into force', 23 August 2018, <https://www.bbc.co.uk/news/business-45255623> (accessed 24 Aug. 2018).

⁹⁸ Sheldon, I. (2018), 'Why China's soybean tariffs matters', *The Conversation*, 5 April 2018, <http://theconversation.com/why-chinas-soybean-tariffs-matter-94476> (accessed 27 Jun. 2018).

⁹⁹ European Commission (2018), 'Joint U.S.-EU Statement following President Juncker's visit to the White House', http://europa.eu/rapid/press-release_STATEMENT-18-4687_en.htm (accessed 24 Aug. 2018).

Figure 3: The ‘impossible policy’ triangle: frictionless trade, maintaining existing standards and forging more favourable trade deals with the rest of the world



The UK government’s ambition is to grow trade outside the EU while remaining close to the EU27. However, significant regulatory divergence, as would occur in the case of significant new deals with the US for example, precludes alignment with the EU and vice versa. In effect, the UK government’s vision is something of an optical illusion, whereby each side of the triangle works independently, but together they are impossible to reconcile.

Source: Chatham House, 2018.

5. How to Get the Food System Right

Brexit presents an opportunity to reconfigure the food system to provide better health and environmental outcomes, whilst maintaining a profitable agriculture and food sector. make the most of this opportunity – and not simply chase the notion of ever cheaper food at whatever cost – has a number of requirements.

- **A food system that promotes public health:** While Defra’s February 2018 paper *Health and Harmony* goes some way to establishing a coherent vision for agriculture and the environment¹⁰⁰ (recognizing the links to the 25 Year Environment Plan, the Clean Growth Strategy and the Industrial Strategy), it has very little to say about the food system’s contributions to public health and nutritional outcomes.¹⁰¹
- **Alignment with UK industrial strategy:** The UK government’s industrial strategy recognizes the importance of the agriculture sector claiming that it will ‘put the UK at the forefront of the global move to high efficiency agriculture’ and ‘deliver benefits to farmers, the environment and consumers whilst driving growth, jobs and exports’.¹⁰² Meeting these objectives will require an increase in public and private sector research and development and deployment. The UK government should commit to matching or exceeding the current level of research funding received by UK institutes from EU research funds, or alternatively agree to participate as a third party in these programmes.
- **Close regulatory alignment with the EU, acknowledging domestic capacity constraints:** One way to maintain consumer confidence would be to reform agricultural policy while remaining fully aligned with EU legislation and standards, including on sanitary and phytosanitary standards. This would minimize price impacts and maintain strong supply chains and standards. In the long term, the UK could look to make use of new technologies to ensure greater transparency on provenance and labelling for consumers.
- **A trade policy that complements UK agriculture:** Trade agreements should be supportive of, and finalized after, developing a comprehensive vision for the UK’s food system. Trade agreements need to reflect a holistic vision for the UK food system that respects wider societal values: UK agriculture and land management, economic outcomes and health, exporting countries’ land resources and environment, food standards as well as food price and resilience of supply chains. Full account must also be taken of the seasonality of domestic production.
- **Investing in the agricultural systems of exporter countries to improve food standards and production methods and build resilience to climate change:** The threats of climate change and environmental degradation, increasing geopolitical instability and small interruptions caused by longer inspections of food imports at the border could all impact

¹⁰⁰ Department for Environment, Food and Rural Affairs (2018) *Health and Harmony: the future for food, farming and the environment in a Green Brexit*, February 2018, see https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/684003/future-farming-environment-consult-document.pdf (accessed 26 Nov. 2018).

¹⁰¹ Likewise, the 2018 Agriculture Bill recognizes the links between agriculture, productivity, supply chains and transparency and environmental harm, but role of food in public health (outside food safety) is not mentioned.

¹⁰² HM Government (2017), ‘Industrial Strategy – Building a Britain fit for the future’, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/664572/industrial-strategy-white-paper-print-ready-version.pdf (accessed 10 Oct. 2018).

the resilience of the UK's food system, food prices and availability. The UK should invest in more reliable supply chains and develop resilience in prospective partner countries. Investment could come through government 'aid for trade' strategies or from private capital.

- **A steady transition:** Changing market conditions could affect the profitability of the UK farming sector, be that through greater intensification or structural change (e.g. a reduction in small farms through inability to remain profitable). In line with Defra's Command Paper¹⁰³ and subsequent 2018 Agriculture Bill, the UK should aim to have an agricultural transition that would phase out direct payments, simplify existing schemes and change the regulatory culture prior to moving to a new regulatory regime. This transition could start as soon as the UK has the freedom to move away from the CAP (i.e. assuming no extension of the transitional period allowed for in the draft Withdrawal Agreement, at the end of 2020) and last for a number of years. This would allow for greater planning for a new environmental land management system that would reward farmers and land managers for greater environmental practices. A no deal scenario would make this transition almost impossible.

In line with Defra's Command Paper and subsequent 2018 Agriculture Bill, the UK should aim to have an agricultural transition that would phase out direct payments, simplify existing schemes and change the regulatory culture prior to moving to a new regulatory regime.

- **A stronger but coordinated role for the devolved administrations in defining the strategic direction and oversight of British food and farming:** Consultation, consent and coordination between Westminster and the devolved administrations will be essential to maintain the integrity of the UK's internal single agricultural market. They will also help to minimize any risk of dissonance between the UK's agriculture and trade policies, particularly if external trade commitments lead to changes in the direction of UK's agricultural policy.
- **Taking advantage of technological change:** New data sources and technologies will not provide complete or quick solutions, but they may hold considerable potential to manage some of the risks and enhance the scope of food and agriculture policy in the medium-term (see Box 5). Notably, with particular reference to GM, the Agriculture Biotechnology Council has argued that EU regulations have constrained innovation.¹⁰⁴ Outside of the EU, the UK could decide to align with the US's regulatory standards, which would help the development of new technologies (although any disruption to the current level playing field with the EU could result in reduced access to the single market).

¹⁰³ Department for Environment, Food and Rural Affairs (2018), 'Open Consultation, The future of food, farming and the environment', https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/684003/future-farming-environment-consult-document.pdf (accessed 10 Oct. 2018).

¹⁰⁴ Buckingham, M. (2018), 'Science shunned by Brussels can deliver us a green and pleasant Brexit', The Telegraph, 7 May 2018, <https://www.telegraph.co.uk/politics/2018/05/07/science-shunned-brussels-can-deliver-us-green-pleasant-brexit/> (accessed 7 Jan. 2019).

Box 5: The role of data and technology

- **New data sources:** Increases in the availability of production and consumption data are enabling greater understanding and scrutiny of production and supply chain impacts and improving transparency around the externalities generated – making the full costs and benefits of food production more apparent. The additional insights that such novel datasets provide have the potential to permit improvements in targeting public finances for public goods, enforcing standards, and encouraging positive behaviours. Remote sensing technologies have the potential to reduce the costs of monitoring compliance with environmental standards in agriculture.
- **Pre-competitive consumer data:** new trade arrangements will benefit from incorporating an understanding of consumer values beyond price. Pooling and anonymizing existing retailer data on consumer behaviour could be used pre-competitively to generate greater insights of existing behaviours and predict reactions to plausible new conditions and policy decisions post-Brexit.
- **Blockchain:** The UK government’s vision for future customs arrangements, as set out in a 2017 position paper,¹⁰⁵ was met with considerable scepticism, particularly regarding the role it foresaw for implementing ‘technology-based solutions to make it easier to comply with customs procedures’. Commonly understood to be referring to blockchain distributed ledger technologies to verify chain of custody and border-check compliance, it is certainly true that this is still a very nascent technology lacking regulatory oversight or existing deployment at enough scale to offer a short-term cross-sector solution. Nonetheless, in the medium term, distributed ledgers could prove useful not just for border and standards agencies, but for instilling confidence in consumers regarding the provenance of their food by providing irrefutable transparency in supply chains, especially if the UK adopts a more expansive approach to sourcing food and agricultural imports after Brexit.

¹⁰⁵ HM Government (2017), ‘Future customs arrangements A Future Partnership Paper’, https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/637748/Future_customs_arrangements_-_a_future_partnership_paper.pdf (accessed 10 Oct. 2018).

6. Conclusions

- People care deeply about food, and are concerned with a range of social goods: nutrition, price, provenance, and the environmental and air-quality impacts of food production – be that in the UK or abroad. The public puts significant trust in well-regulated supply chains that reflect their personal and cultural values. For no other sectors are the challenges and opportunities of Brexit as extensive as they are for food and agriculture.
- The complexity of the food system and the ongoing uncertainties of the Brexit process create multiple risks and make specific forecasts of its impact difficult to quantify. The food consumed in the UK is the outcome of a complex set of dependencies, interactions, market forces and governance frameworks across a wide range of policy areas. Brexit, for better or worse, means a major structural change in policy and in how people think about the food they eat.
- The greatest risk is that of poor management where, in the interests of expediency, insufficient attention is given to the values that create a healthy and sustainable food system. A two-tier regulatory system could emerge whereby the UK produces food at higher standards but, under new trade relationships, imports cheaper and potentially lower-quality food from countries with reduced welfare or environmental standards.
- Cheaper food typically derives not only from comparative advantage or scale, but also from willingness to transfer costs to other areas, particularly the environment and public health. For instance, increasing the availability of cheap but calorie-dense and nutrient-poor foods may add further to the burden on health services arising from overweight and obesity. This is not in the public interest, and may undermine confidence in the food system.
- But a carefully managed Brexit could also offer a historic opportunity to reassess and reformulate legislation, policies, practices and institutional arrangements that take better account of the needs of different actors in the food system (such as farmers, retailers, consumers, and health-conscious and environmentally aware citizens) in the UK and abroad. It could also be opportunity to equip the UK's food system with the tools and resilience necessary to tackle challenges emanating from climate change, environmental degradation and increasing geopolitical instability.
- The UK must take a comprehensive, cross-government approach to fostering a post-Brexit food system founded on clear, coherent goals across trade, agriculture and food policy that protect the environment, ensure animal welfare, improve public health and guarantee the availability of nutritious food for the current and future generations. Aligning policy across multiple domains, including the devolved administrations, will require consultation, deliberation and agreement among a multitude of actors.

About the Authors

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Cover image: A general view of fruit and vegetable products inside Morrisons supermarket in Rochdale, UK, on 23 January 2017.

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