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Main report to the
National Preparedness Commission

Just in Case: narrowing the UK civil food resilience gap

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February 2025

MAIN REPORT

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Preface

For some years, analysts and academics in the UK and internationally have discussed whether and how different sources of potential food system disruption might affect the food systems of affluent economies such as the UK's. Such studies recognised the potential impact of geopolitics, ecosystems stress, climate heating, food and input price volatility, social pressures and changed trade relations. Britain's exit from the EU ('Brexit') in theory 'renationalised' its policy horizons while at the same time heightening awareness of international connections. The UK might be wealthy, but it relies on food imports.

Calm consideration of the possibility of disruptions to the food system was not helped by tumultuous political times with ministerial and governmental churn and the shock of the Covid-19 pandemic. The need for cool analysis was partially filled by two special House of Lords committees: firstly, the 2019-20 Hungry for Change inquiry into the mismatch between food supply, food poverty, health and the environment,¹ and secondly the 2020-21 report of the Arbutnot inquiry into extreme risks and disruptions.² The Commons' Environment, Food and Rural (EFRA) Committee also conducted parallel inquiries into food security and the public interest.^{3,4}

HM Government's own Independent Inquiry into a National Food Strategy (NFS), led by Henry Dimbleby under the auspices of the Department for Environment, Food and Rural Affairs (Defra), produced a preliminary report in 2020.⁵ This was a response to the Covid-19 crisis and concern about how people on low incomes and at-risk groups fared. Mr Dimbleby produced a final report – *The Plan* - in 2021,⁶ only for that to be mostly brushed aside by the incumbent Government.¹ Disappointment and dismay across the food sector – industry, academia and civil society - was palpable. The one idea from the NFS to gain some traction was the recommendation to act on food data. A food data transparency initiative and partnership began.⁷

The research presented in this report had a different starting point. It has taken the 2022 UK Government Resilience Framework – the official approach to preparing for shocks and crises – and considered whether the UK food system, and more specifically the public, is prepared for food shocks. As the following pages show, the civil aspects of risks to food security and resilience have received surprisingly little attention. What little there is has been almost entirely on supply rather than consumers, on ecosystems more than people.

In 2023 over three days, 28-30 March, as the present research was underway, the British State conducted *Exercise Mighty Oak* to assess what would happen if there was a major national power outage. Many people in many official positions were involved. A number told the present study informally of their surprise at the apparent assumption that people would stay calmly at home after a few days of severely reduced (or non-existent) access to services, even though a 'reasonable worst-case scenario' acknowledged food and other sectors would be seriously disrupted. Almost everything in modern living depends on energy continuity. Yet it was assumed that normal life would pick up; there would be no significant shift in social dynamics as a result of energy outage. This is not an assumption that should be made lightly, if indeed there was such an explicit assumption. Either way, it is not an assumption the present study repeats. On the contrary, it was encouraged to consider 'what if?'

¹ <https://www.gov.uk/government/groups/food-data-transparency-partnership>

Beginning to interview people of diverse viewpoints, experience and work, it became quickly clear that the need for a wide-ranging look at security and resilience was appropriate. Business-as-usual is losing its gloss.

The awe in which 'Just-in-Time' (JiT) supply chains have been held, for example, is now being replaced by acceptance that preparations for a 'Just-in-Case' food system should be accelerated, hence the choice of title for the report. A recent US academic paper suggested just-in-case planning is almost internal-looking and something that can be resolved by hi-tech solutions such as vertical farming.⁸ Such technology may have a role in resilience preparation but our research suggests 'Just-in-Case' to be a societal and policy approach applicable beyond the business of logistics. In that spirit, the report is offered as a contribution to the public for debate.

Much hangs on whether the public, not just supply, has the capacity to bounce back after shocks. Our focus on *civil* food resilience drove the process of data gathering, interviews, case studies, literature trawls and analysis reported in these pages.

It quickly became clear that food resilience cannot be addressed as a political or policy problem on its own. It is not a standalone issue. It sits in a web of other issues. For the purposes of this report, food resilience is defined as 'the capacity to bounce back after or in shock'. That simplicity actually requires policy clarity in addition about: food infrastructure (who is looking after it?); the mode of delivery for food security (upstream or down? by whom?); the necessity of making food systems more sustainable (which impacts? how to deliver?); the identification of risks (which shocks? affecting whom? prevented how? assessed by whom?); the capacity to defend food systems (whose responsibility?); and democratic issues (who decides what? can it all be left to industry? does the public need to know?).

These are important strands in the resilience web and raise deep questions. The report explores them because they emerged consistently from interviews, case studies and international inquiries. The authors are clear that it would be a mistake for the UK government to see food resilience as a stand-alone matter. It is not. A major rethink about the conceptual framework of food resilience is proposed. Thoughts on what this might be are presented at the end (see Chapter 10).

A key issue from the outset was something that troubles governments: whether and when to engage the public in its food security preparedness. While some insiders and many outside Whitehall are beginning to think about the security element in the term food security, others resist the public being engaged. A 'don't frighten the horses' mentality persists for food. Deciding which policy position to take on food resilience is a significant matter, as is who should make the decision and how openly. Some argue this is only for governments, and top-level decision-makers. The present report also considers whether it is also for the public, and the 'sub-national' level of food governance. Achieving the appropriate range of engagement could be a momentous political responsibility. Keeping everything tidy and centralised may tick the official box, but it's at the local level that lack of civil food resilience will hurt most.

Whatever the policy decision taken, we know the immense skills, planning, expertise and data required for the public to be as reasonably prepared for shocks as can be. For a country to be more rather than less prepared for food shock, it must take a deep breath and scope implications beyond the actual food itself. Normality cannot be assumed. Expectations may not be reality. Few consumers are conscious of how complex are the food flows through systems. The UK food system is enormous. It is the biggest employer in the UK. Food is

constantly on the move and can be disrupted. As the research was being conducted, three major illustrations of how food systems can be disrupted as scale were unfolding in Ukraine, Sudan and Gaza.

In theory, the purpose of the food system is to feed the people, but there are cracks in the system. Diet-related ill-health in the UK is a drag on the NHS, society and economy. Inequalities warp access to food. Such dynamics could hamper resilience. Interviewees pointed this out from the start of our study. Good people, despite the cracks and sometimes against the odds, are thinking and trying to work out how to build resilience. Therein lies hope.

History suggests that if food crises hit, it is best to have been well prepared beforehand. That truism is akin to the wry public health nostrum that it's a good idea to 'choose your parents wisely'. Unlike genetics or chance of birth, however, we can address the challenge of improving civil food resilience. Events can still overwhelm the best laid preparedness plans. Stocks can run out or be destroyed in the crisis, whether by floods, war, time or pillaging. But people's resilience in extreme crisis can be built. Preparations are better than no preparations. Focussing on resilience offers optimism to policy-maker.

UK food history also reminds us that to duck decisions about food issues (such as whether there is sufficient production, an adequate skills set, detailed planning, or thought about public dynamics) means that, when and if shocks come, planning and preparation have to be conducted at break-neck speed. Forewarned is forearmed. The UK was lucky not to be hit by food shocks early in World War II. Even so, it was a near thing.⁹ Harold Macmillan's apocryphal 'events, dear boy, events' view of statecraft still resonates, but the point of resilience analysis and preparedness is to reduce events' impact, not to wallow in their inevitability.¹⁰

Noting such experience, the motivation for the present report has been to consider the currently unthinkable, and to explore the possibility that food might be affected by crises or be the crisis. As the research extended through 2023-24, interviewees and discussants consistently argued the public's food resilience deserves more attention than it currently receives and that this requires more active engagement with that public. After all, it is the mass of consumers who are sometimes said to be in charge.

The purpose of the report is:

- to assess the state of food resilience in the UK, with an emphasis on:
 - societal and civil resilience – is the population prepared? What could make it so?
 - institutional architecture – are there appropriate structures to aid civil food resilience?
 - what existing policies are involved – what gaps exist?
- to consider the possibility and types of disruptions to the public's food in and after shocks.
- to review how existing and improved policy frameworks might apply more closely to UK food systems.
- to make recommendations for strengthening UK civil food resilience.

The work reported here is, in a sense, preliminary because, to our knowledge, there is nothing like it in the public domain from recent decades. To food analysts and researchers this is little surprise. Food is ubiquitous and a major industry – the UK's largest manufacturing industry for example – yet tends to be taken for granted. Policy about food security and food defence has become somewhat sloppy. Food is assumed to be there; it's plentiful; it's run by big efficient companies. *Ergo*, leave alone. Even resilience analysts tend

to consider food resilience as a matter of supply. Demand is assumed to be known, as though civil dynamics are fixed and constant when they might be volatile and more uncertain.

The report is also preliminary in anticipation that a wider discussion is sorely needed. This detailed report calls for others to engage. It is written to build on the lessons learned about food and conflict, and to note what other countries are doing to prepare their people for stresses and disruptions affecting their food. All this is informed by what the science and interested analysts think might lie ahead. It has been enormously strengthened by many interviews and case studies conducted at home and abroad. Heartfelt thanks are due to all those who gave their time and experience to a process which surely is in the public interest to be continued.

The report has been written to provide, we hope, sufficient information and thoughts for very diverse audiences and interests. They include the public, policy-makers, academics, commercial sectors and civil society organisations. Civil food resilience requires all of them to be engaged.

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Outline of the Report

Part One ‘Introduction’ contains two chapters. **Chapter 1** outlines the problem to be explored, and why civil food resilience is a matter for the National Preparedness Commission’s attention. **Chapter 2** explains what is meant by resilience and how food resilience is framed as an issue. It explains why the concept of civil food resilience is central to the report. Resilience, for our purposes, is the capacity to bounce back in or after shock. It explains why the report looks at food through the lens of the 2022 UK Government Resilience Framework and its three principles – (1) to develop a shared position on civil contingencies, (2) to promote preparation and preparedness on ‘prevention is better than cure’ basis, and (3) to take a ‘whole of society approach’.ⁱ Are these being applied effectively for food?

Part Two ‘The Challenge of Food Resilience for the UK’ fleshes out what resilience and security mean for food. **Chapter 3** suggests that, while the UK has undoubted food strengths (it is a wealthy country and can buy in food), the food system is subject to new geopolitical, climate, social economic uncertainties. It asks: are 67 million people adequately prepared for shocks? **Chapter 4** provides a detailed account of the current state of policy on food security and resilience and the UK’s key institutions and policy actors. **Chapter 5** identifies over 20 vulnerabilities, ranging from the possibility of ‘hard’ and direct attacks on food supply chains to ‘soft’ interventions such as misinformation. It distinguishes between chronic and acute vulnerabilities.

Part Three ‘Improving Civil Food Resilience’ is in five chapters all of which focus on civil or consumer or public ‘room for manoeuvre’ in potential shocks to the food system: what can the public do? what would help the public become more food resilient? What options do people have? **Chapter 6** presents findings from international inquiries in 10 countries to find out what and how they approach civil food resilience. **Chapter 7** considers what would be required to build civil food resilience. It considers the low level of public engagement by government so far. **Chapter 8** considers the main options and scales for public action, from household up to community level, asking what is necessary to facilitate civil resilience. **Chapter 9** considers the experience of cities, regions and areas beyond the current Whitehall focus. It discusses the growth of organisational structures at city level beginning to address food resilience, and why this deserves more support and attention. **Chapter 10** considers whether Local Resilience Forums (the emergency services co-ordination under the Civil Contingencies Act 2004) and community risk assessments are aware of coming shocks involving food. It proposes the creation of new Local Food Resilience Committee or equivalent bodies.

Part Four ‘Recommendations and Conclusions’ proposes ways forward. **Chapter 11** summarises lessons from the report and offers eight Reorientations necessary to build civil food resilience. Specific Recommendations are made for each.

ⁱ The wording of the 2022 Government Resilience Framework’s three principles is: (i) “A developed and shared **understanding of the civil contingencies risks** we face is fundamental”; (ii) “Prevention rather than cure wherever possible: a great emphasis on **preparation and prevention**”; (iii) “Resilience is a **‘whole of society’** endeavour, so we must be more transparent and empower everyone to make a contribution.”

PART ONE

INTRODUCTION: SEEING FOOD AS SECURITY AND RESILIENCE

Chapter 1: The study's scope, purpose and process

Why this assessment is needed: gaps in the current policy mix

In 2006, a report *Resilience in the Food Chain* was presented to the Department for Environment, Food and Rural Affairs (Defra) assessing the UK food system's state of resilience. It was prepared by the Department of Defence Studies at Shrivenham, previously part of the Ministry of Defence but by then merged into Cranfield University, now Cranfield Defence and Security. It painted a sober picture of the UK food system, should it be subjected to various known as well as unexpected sources of shock.¹¹ The message from the study was essentially reassuring, however. It argued that the UK supply chains could bounce back from shocks such as terrorist attacks, transport disruptions, biosecurity breakdowns, floods, fires, loss of people, and much more...but only if there were good risk management procedures in place. The upper echelons of Defra breathed a sigh of relief. If not all was well in the best of all worlds, it was at least containable.

Except that very shortly it was not. Less than two years later, world oil prices had exceeded \$100 a barrel, and world food prices rocketed. Oil and gas underpin the 20th century food revolution and were key to its intensification and output and efficiency gains.¹² The 2007-08 food price rises nevertheless seemed to be a shock to Western governments.¹² Its scale had not been fully anticipated, or they had assumed the troubles would affect low-income not high-income countries. But the discomfort was sufficient for the UK government to institute a Cabinet Office food review in 2007-08,¹³ from which an extensive policy rethink developed.¹³

A subsequent two-year process of consultation and food security review culminated in *Food 2030*, a new national food strategy agreed by industry, civil society and scientists and signed off by the Prime Minister, with accompanying new security metrics.^{14,15} It reframed UK food security policy as requiring fairly radical change centred on tackling climate change and public health impacts – a 'carbon + calories' approach - while addressing systemic risks. It was an ambitious document seeking to link environmental and human health with a realigned food economy - a position requiring considerable negotiation with food industry leaders of the day. But it garnered support not just in the UK but across leading EU member states who recognised similar pressures, and began processes of European-wide rethinking which continued even when, six years later, the UK voted to leave the EU. This found expression in more recent EU policies such as the Farm to Fork Strategy and the Green Deal on Food.¹⁶

But back in 2010, an election brought a change of government and the *Food 2030* strategy was dropped. A few elements limped on, such as a working party on dietary change,¹⁷ and

various drafts of possible new agriculture and environment Bills, but little saw the light of day as politics were overtaken by Brexit arguments. With the EU Referendum in 2016, withdrawal dominated all in government. As arguments waxed and waned in Westminster over how 'hard' Brexit should be, the food politics gradually coalesced around how to replace the Common Agricultural Policy, a policy long criticised by the UK and particularly HM Treasury.¹⁸ Now was the moment, a process which meant firstly deciding how, if at all, to replace EU farm subsidies and secondly to set out what, if any, purpose there was for food production within wider UK land use.¹⁸

After various political upheavals and two more elections, the policy landscape began to settle when the 2018 *Health and Harmony* Green Paper from Defra proposed that both financial support and the purpose of land should prioritise environmental considerations.¹⁹ This laid the framework for ensuing and separate Agriculture and Environment Acts.²⁰ Agri-food policy was to centre on ecosystems resilience, rather than food resilience, with the rationale that human survival depends on vibrant and viable ecosystems.

Critics of this new policy focus did not dispute the importance of environment but questioned the lack of attention on food. The Secretary of State responded to this in 2019 by appointing entrepreneur Henry Dimbleby to lead a national food strategy (NFS) review for Defra, only for Covid-19 events to disrupt the NFS team. It did, however, produce a first report in Covid-19 urging ameliorative interventions on food poverty in that time of crisis need.²¹ And the final NFS report – *The Plan* – was published a year later in 2021,⁶ only for most of its recommendations to be sidelined, dismissed as 'nanny state-ism' for recognising that people's health was diet-related and in need of change, not least to reduce healthcare costs.¹ A short *Government Food Strategy* (GFS) document followed a year later in 2022 but made few significant commitments to change.²² It suggested that UK food security was broadly satisfactory and there was, for example, little need to alter production levels which were to stay broadly the same. The challenge for Defra was not to be food – forgetting the 'F' in its title - but to address land use and the crises of climate change and ecosystems sustainability. Food was falling through the gap.

Another policy strand progressed more smoothly and incrementally from the 2000s. This was national thinking on resilience and preparedness for shocks. This strand can be traced from the Civil Contingencies Act 2004,²³ through the creation of the *National Risk Register* (at one point with the expanded title of ... *for civil emergencies*) and to fairly regular framework updates, the most recent of which was published in the December 2022 as the *UK Government Resilience Framework* (UKGRF).²⁴ This offered a rather different tone for UK society than that adopted for food and farming. Whereas the food and farming messages were about the wider environment, the UKGRF is in theory about the entire working of society and the political economy – yet it barely considers food, an omission it shares with the GFS.

The juxtaposition of these two policy packages, their differences and commonalities, is central to the inquiry and analysis presented in this report. We see this as **a policy failure cementing a food resilience gap that now urgently needs to be narrowed.**

No-one thinks food politics are easy. Like all countries the UK's food system has some idiosyncratic features of culture, history and supply but it also shares characteristics seen in other affluent Western societies. These include: ubiquity of food compared to shortages in earlier centuries; tensions over prices after many years of relative predictability; a reliance on

¹ This had been recognized back in 2002 and 2004 in two large reviews of health costs for the Treasury by former banker Sir Derek Wanless that saw the devastating effects of diet on NHS capacities, which in turn was partly why the Cabinet Office conducted the *Food Matters* review in 2007-08 and why there was top-level political support for *Food 2030*.

sophisticated logistics and longer food supply chains; and lock-ins to technical dependencies.

The net effect is that the UK faces a mix of old and new risks to its food security that raise questions of sustainability, defence, governance, and thus for the challenge of building resilience. The politics can surface in deciding the national and the public interests, and how to plan sensibly for resilience. Yet time and again, interviewees note the importance of putting more effort into how to bounce back after shocks when and if those risks turn into 'events'. What do we want from our 'normal' food system? How is it measuring up? Is it delivering what today's conceptual language calls 'public goods'? Who is in control?

From an entirely different perspective, NATO gives guidance on how to interpret Article 3 of the North Atlantic Treaty Organisation's treaty (agreed at the 2016 Warsaw Conference). This sees maintaining resilient food and water resources as one of seven baseline 'tests' for whether a country is adequately prepared, and can contribute to collective defence.²⁵ We note this test as a wise recognition that food can be and is being weaponised with renewed vigour in conflicts in Ukraine, and the Middle East.²⁶⁻²⁹ Attacking supply can be a direct attack on demand. If so, what can 'demand' – otherwise known as the public or the mass of consumers - do to protect and enhance their food security and resilience?

Scope and themes

This report is about civil food resilience; it does not assume civil food collapse. Its focus is on what the people, the nation's food 'citizens' and consumers can do, and what support they need to enhance resilience. The central challenge it explores is how to ensure the people are fed when and if dire shocks affect the food system. This requires us to consider more general aspirations such as food security – how well or inadequately the country is fed as well as whether supplies are secure and well defended. It also takes us into broader issues such as sustainability. We cannot conceive of the capacity to bounce back after shock unless we also consider whether modes of food production, processing, distribution and consumption are sustainable in the first place. While focused on resilience, the report thus has to consider the current state of food systems. And we make recommendations for how the key policy document in this terrain – the 2022 UK Government Resilience Framework²⁴ - could and should include food matters which at present it appears not to.

Politicians, if they consider food shocks at all, and whether or how civil society might protect itself, mostly likely assure the public that major shocks are unthinkable. Yet scientists, industry and some sections of the public are unsure that normality can be assumed, and are concerned to halt any decline in production and productivity.^{30,31} By addressing possibilities, this report is intended to encourage open public discourse about what many food system analysts now calculate is possible.

A recurring question is whether the UK could and should produce more food than it does at present and, if not, whether this matters. The first national *UK Food Security Report* (UKFSR) in December 2021 gave UK self-sufficiency as 54%.³² Other metrics and calculations are also possible - if hidden imported ingredients are included, actual self-sufficiency drops. In 2022 a Minister said HM Government (HMG) was content to maintain the UK's current rate of self-sufficiency at "broadly the same level in future".²² This assumes imports can or will remain sufficient to fill the gaps. What if that is not easy? There are known

chokepoints for food trade,³³ locations on shipping or road routes where freight lines converge and where attack or delays can cause major disruption.

There are many potential threats to food systems that could shake public confidence. Some are already present and set to worsen. They include accelerating climate heating, disruptions such as IT breakdowns, and malign interventions to normal food flows. There is a mix of known, sometimes mundane risks and of fast-changing, new risks. Food can also be 'weaponised', used to control or threaten populations.

The UK and its allies are not without protection systems. There are many state and para-state bodies and agencies charged with considering and preventing hostile actions on the food economy and thus indirectly on public confidence in food supplies. These include the Ministry of Defence (MoD) and its agencies and other emergency services as well as more civilian-oriented state functionaries. The main ministries concerned about food matters are the Department for Environment, Food and Rural Affairs (Defra), the new Department for Business and Trade (DBT) (the merger of the old Department for International Trade (DIT) and the Department for Business, Energy and Industrial Strategy (BEIS)).

This report does not investigate the processes and roles of the military, although some interviewees had connections there, and the 'hard' end of food control has to feature in our assessment of resilience and security. Food defence matters. Although this report leaves military and intelligence aspects of food defence to those state bodies, liaison between armed defence interests and civilian food defence deserves careful attention. And we noted that early in 2024, the Defence Secretary spoke of the country being in a 'pre-war' situation,³⁴ leading to discussion about whether the armed forces are in a suitable state of readiness and capacity.³⁵

We discuss Sweden's notion of Total Defence (see Chapter 4), and consider its application as what we have called here 'Total Food Defence' to cover mass scale public engagement in food resilience and security.

The term 'food defence' is used in this report, to mean the full range of what is required to protect and defend food systems (see Chapter 2). We draw on interviews and discussions with other countries, other protection systems, that engage differently with their publics than the UK currently does. Lessons may be drawn for the UK from that experience, and the report recommends more attention be given to learning from others how to provide a decent threshold of civil food resilience for all citizens - not just the worried or the power élite or the affluent. Civil food resilience, we argue, is a test for whether the UK has a common understanding of the national interest over food. If resilience planning should be about really delivering preparedness throughout society, as Lord Harris of Haringey rightly argues,³⁶ it is not happening yet in food.

Food needs attention not just because decent societies like to think every person should be able to eat for health and survival, but because we know the reality is different. The food system has gone through a remarkable period of change. New foods, processes, markets, sales, sectors, habits, tastes... all these have emerged in the last half century or so and have been celebrated by some as great advances. But they were advances as measured in particular political-economic contexts: rising incomes, confident globalisation, shared international rules, some level of international cooperation. Today, those contexts cannot be assumed. And we know that the era of food progress has also created vulnerabilities and risks that were not taken sufficiently seriously – such as intensive agriculture's fossil fuel dependency, the damage food systems do to ecosystems and public health, and the stubborn enormity of food waste. It is a truism of market economies that the perspective of

the consumer, the public, the mass of the people should play a central role in market performance. If so, the individualised version of supply-demand dynamics is either unaware of the damage food systems cause or is carrying on regardless. This matters when and if shocks to food systems occur.

People who have grown used to readily available supply are not necessarily prepared for blows to their food. And in societies such as the UK with deep levels of inequality, there are millions of people measured against official metrics of food insecurity who are unable to carry a stockpile of 3 days' of food for emergencies, as the former Deputy Prime Minister mooted in May 2024 pointing to guidance on the 'Prepare website'.^{37,38} As is explained later (see Chapters 3 and 7), those people can barely feed themselves adequately now. The 'whole of society' principle is breached before it is even applied to food resilience.

If we think it advisable to address people in communities, groups, streets, and regions both physically – as emerged in Covid-19 – and psychologically, policy-makers must recognise that resilience will not be a common good unless acute social inequalities are first addressed. Interviewees took us into the realms of food democracy and public health. There, at the sub-national level, is much experience and experimentation with building food resilience, as we found in different countries, cities and regions. There are ways to accelerate food resilience.

While collapse, *in extremis*, can never be off the table of possibilities – it features in TV, film and literature thrillers – we should remember that collapse and apocalypse are at the extreme end of a continuum. There could be softer types of disruption in the breaking of food normality.

Whatever the type of disruption, common questions apply. How quickly after shock or disruption could there be a pick-up of consumption? How could foresight research, planning administration, civil contingency measures help prepare the people for such food abnormality? And who is responsible for beginning the scale of national preparation that is probably required? It would be too simple and unrealistic a policy approach to 'leave this to the authorities' or even 'leave it to industry'. Part of the policy problem facing the UK on food resilience is that government's default position ('leave it to Tesco *et al*') sidesteps the issue that not even mighty retailers have the capacity to prevent climate heating or land flooding or mass zoonoses outbreaks or global conflicts affecting chokepoints in the event of major shocks. Nations throughout the world have experienced significant shock with the Covid-19 pandemic. The UK's National Risk Register and its hundreds of experts considers another pandemic the most likely shock to rock the UK.³⁹

The pursuit of civil food resilience takes us into the realm of 'mass psychology', of how populations and groups think and act. A large academic exercise (in which the lead author participated) recently made a strong case for addressing this with regard to food, suggesting that food shocks could engender strong public reactions, or even riots.³¹ The British stereotype is stoic with an attitude of 'keep calm and carry on' but that kind of message does not convey the whole picture of trust in food. It would be naïve to assume 'the public' in food shock would all be pliant, patient, calm and carrying on (see Chapter 7).

So used are consumer societies like the UK to having sufficient food that it is hard for us to consider less than sufficiency as anything but a collapse. It is not. Of the thousands of food products on retailer shelves, life could go on without many. But says who? And which food products are essentially unnecessary? What might be unnecessary nutritionally might be significant to morale. Sound resilience planning would advise what foodstuffs are necessities

and against which criteria. This would differ by groups, culture and demographics. So whose interests should triumph?

A distinction might have to be made between needs and wants, what is available and what would be desirable. Disaster emergency experience confirms that there are gradations of lack of food, just as there are gradations of success. Indeed, the report argues that the UK has already normalised and failed to resolve unequal levels of food consumption and access which for decades were considered unacceptable. Food poverty, use of food banks, volatile prices, occasional empty shelves, and more are now almost accepted; but how far that acceptance might go is not known. Many interviewees considered this matter of disrupted public expectations to warrant much more attention. We do not know how the public would react to different types of disruption (see Chapter 5).

Central or multi-level responsibilities?

The report and research behind it have taken particular note of thinking beyond the corridors of central power. Current organisational structures and lines of command are summarised (see Chapter 4). A key theme has been whether current national resilience thinking – exemplified by the formal processes such as the National Risk Register,³⁹ the bodies given responsibilities under the UK Government Resilience Framework,²⁴ and the current resilience administrative structures such as Local Resilience Forums and Emergency ‘blue light’ Category 1 responders - adequately addresses the need for support and funding at the sub-national, regional, local and domestic levels.

Many interviewees argued that more support is required to build ‘bottom-up’ food resilience. Where people live and exist is where food matters deeply. Food is the lifeblood of society, which is why food is one of 13 Critical National Infrastructures. So why is the state of UK food resilience so underwhelming?

There is a considerable amount of planning and thought given to defence, contingencies, emergencies and security. Yet there is an impression that resilience delivery becomes more vague – not just for food - the further away from the Cabinet Office Briefing Room (COBR) and central government emergency bodies one gets.

Besides resource difficulties and default beliefs that food can be left to market dynamics, there is another significant reason for the central state reluctance – a fear of frightening the public. This is not often expressed in writing but is in private. This is a shortsighted view. It ignores the potential to tap into a vibrancy of the UK civil society food scene – the interest in food, the democratic experimentation of town and city ‘food boards’, and the stubborn resilience of local food systems. This could and should be brought into resilience structures. Indeed, this could help deliver the Government Resilience Framework’s principles such as a ‘whole of society approach’.

Centralised planning and foresight are very important. It gives imprimatur, is the gateway to resources, and ensures a modicum of equitable delivery. The goal ahead almost certainly should be to facilitate more local and regional resilience; it cannot be left to the central state to pull all levers.

Some have argued that a flowering of local and regional food enterprise could replace the food retail giants if they were heavily disrupted (Chapters 8 and 9). We think, admirable though the small scale can be, this is unlikely to be the case at present. But more diversity of supply chains would contribute to resilience infrastructure. There are good templates and models of action by cities down to communities that could be replicated and expanded in the

UK if given legal and regional backing. The national argument over planning restrictions on land for housing should take note of the case for retaining food growing capacity around towns and cities. This recommendation can sit comfortably within the advice given in a previous report from the National Preparedness Commission.⁴⁰

Civil food resilience must be embedded in organisational structures. The institutional architecture and framework for resilience may exist at national level (see Chapter 4) but it is not clear nor helped by the national at the sub-national level. The resilience architecture and policy need a reset. A core recommendation is made for a legally-based framework that fills the legislative gap not just between the (English) Agriculture and Environment Acts - which somehow forgot food! – but also between Whitehall and the towns, districts, cities and devolved administrations of Wales, Scotland and Northern Ireland. They need to be given confidence to accelerate the leads on civil food resilience emerging across the UK (see Chapter 10).

Food system or civil food resilience?

The food system is enormous. The term ‘food system’ has slipped into public and policy use in recent decades because it is no longer reasonable to use agriculture or primary agri-food industries as key terms to cover everything that now happens from field or sea to mouth and beyond. Food rarely comes from farmers, or not directly. Raw commodities travel through myriad connections across primary industries, processors, distribution, retailers, caterers and consumers, all acted on by ancillary industries such as ingredients, packaging, marketing and many others across the sciences, infrastructure (transport, energy), finance, education and media. Woven throughout this complexity is the role of the state. This, as has already been indicated, is multi-headed and multi-level. Nominally ‘British’ food is affected by decisions internationally, continentally (even though the UK has left the EU, its governance still shapes roughly a third of UK food supply), nationally (this now means not just London but Cardiff, Edinburgh and Belfast), regionally (one thinks of the Metro Mayoral system and combined authorities), locally (via hundreds of local authorities), plus all the ancillary institutions of governance.

The state’s role in affecting resilience is manifest across this complex web of relationships and actors. This includes the role of defence and public protection bodies such as the ‘blue light’ services, social and health services, as well as the more ‘hidden’ sections of the state such as national intelligence services, the Cybersecurity and Infrastructure Security Agency⁴¹ or the National Security Secretariat and more recently created Resilience Directorate. All is overseen by Parliaments in the four nations.

Chapter 2: Civil food resilience: bouncing back from what to what?

Resilience

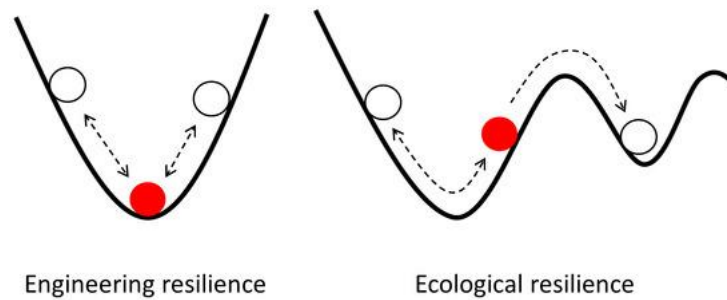
The term resilience is an old one, used by Ovid and Livy.⁴² Its Latin root is *salio*, to leap, with *resilio* indicating the action of rebound or springing back and even to recoil, to retreat, to shrink, to contract.⁴³ It was used in English centuries ago and has come to mean the **capacity to bounce back after some kind of shock or disruption, either to the previous state or to a new state of existence.**

Shock is not the only process through which such change can occur. Ecologists talk of stressors or ecosystem stress indicating forces which put the *status quo* under strain, encouraging adaptation and evolution in Darwinian terms. Much in the modern use of the term can be traced to the Hungarian scientist Hans Selye's articulation of stress.⁴⁴ Selye saw stress as intrinsic to life, not an aberration – hence the recognition that there can be 'good' and 'bad' stress. Anthropologists and historians have found other trajectories to destruction, too, such as societies which have gradually destroyed the infrastructure on which they depended to the point where existence became impossible or intolerable.⁴⁵ Ecologists might accept that plants or insects affected by significant climate change might adapt in a different conformation and terrain over time. They will not remain static but will shift. It is not beyond reason to envisage serious reduction of food production if, for example, ecosystem indicators for land and water use, pollution, biodiversity loss, soil degradation and climate changing emissions all worsen.^{46,47}

It is little wonder the word resilience has been adopted by many disciplines, or that their nuances, and differences of emphasis or focus can be significant.⁴⁸ The physicist notes that materials can be fluid but also constant under particular conditions. A metal structure may flex for so long but cannot go somewhere else if put under too much strain. It frays, erodes or collapses in metal fatigue. Thus, structural engineers building roads, bridges or skyscrapers need to know the tolerance and life expectancy of the materials used in the structure. They design structures to cope with winds or energy waves from pounding traffic or from earthquakes, but they cannot shift the structure to a new site. Collapse occurs when tolerance is exceeded. Figure 2.1 depicts this difference in the meaning of resilience for engineers and ecologists. The red ball in the graphic stays in its 'basin of attraction' or normal range and can bounce back within the basin, as long as the shock or stress does not push it to collapse. For the ecologist, when that happens, resilience means some kind of transfer to a new and different plane – or else extinction, depicted on the right.

As climate heating becomes daily more apparent, the concern of ecologists for how plant life can recover after fire or flood or other disasters is becoming a practical issue not just for them but also for growers and farmers.⁴⁹ In the past, ecosystems have ebbed and flowed over millennia, but recent variations appear to be being exceeded. This is why climatologists and soil scientists are sober about the likelihood of biodiversity loss. This will affect the capacity to grow food and thus alter the parameters for society's resilience. There is a scientific consensus that agri-food system resilience depends upon maintenance of ecosystems health.⁵⁰⁻⁵³

Figure 2.1: The cup and ball model of resilience for engineering and ecology



Source: Kinchin 2022⁵⁴

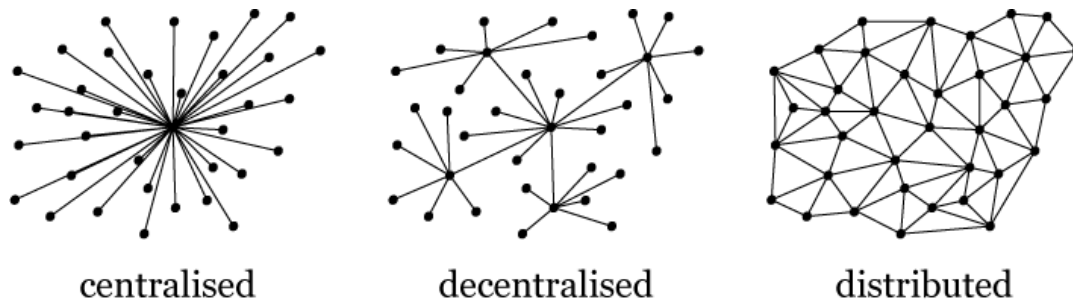
As climate heating becomes daily more apparent, the concern of ecologists for how plant life can recover after fire or flood or other disasters is becoming a practical issue not just for them but also for growers and farmers.⁴⁹ In the past, ecosystems have ebbed and flowed over millennia, but recent variations appear to be being exceeded. This is why climatologists and soil scientists are sober about the likelihood of biodiversity loss. This will affect the capacity to grow food and thus alter the parameters for society's resilience. There is a scientific consensus that agri-food system resilience depends upon maintenance of ecosystems health.⁵⁰⁻⁵³

Human sciences too have adopted the term resilience. In and after World War II, child psychologists explored what determined whether and how children recover from early lives affected by conflict, brutal upbringing and loss.⁵⁵ Stress and post-stress recovery have become an area for the study of human resilience over the life-course.⁵⁶ Public health specialists, too, use resilience to consider how populations recover after disease and physiological stress. Stress can take the form of 'chronic' long-term illness or can be 'acute' in sudden outbreaks. And acute illness can be worse if it comes on top of pre-existing chronic conditions of ill-health.⁵⁷ All of these variations and nuances matter for food system resilience analysis.

Clarity is needed, not just for what range and types of shock might shape the mass of consumers' room for manoeuvre when bouncing back, but also to what state of 'normality' the after-shock might shift. As will be argued later in the report, there is insufficient knowledge about how the UK population might react to mass food shock. Perhaps all these variants of what resilience mean will apply.

Facing this kind of intellectual challenge for telecommunications in the early 1960s, Paul Baran, a researcher at the RAND Corporation began to consider their vulnerability. Rand was created in 1948 to connect US military planning with research and development (hence R and D = RAND). Baran wrote a hugely influential account of how different structures could be more adaptable and resilient depending on whether they were 'centralised', 'decentralised' or 'distributed', and what would best survive a hostile 'first strike'.⁵⁸ His much-used graphic proposed three types of network (see Figure 2.2).

Figure 2.2: Paul Baran's distinction of centralised, decentralised and distributed networks



Source: Baran /RAND 1962

The centralised network entirely depends upon the working of one central hub or intersection point acting as gatekeeper to all nodes. This is conventional efficiency as command and control. The decentralised network (in his graphic) has five hubs so some activity at the nodes can be maintained by others if a hub fails, and still a centre is the key liaison. The distributed network, however, provides even more resilience and protection by de-emphasising gatekeeper functions and by maximising the routes available for any node to retain contact with others. These suggest very different types and routes for resilience planning, all for not dissimilar numbers of nodes.

That food systems require resilience planning is widely accepted. The Organisation for Economic Co-operation and Development (OECD), the Paris-based inter-governmental think tank for advanced economies, defines resilience in the context of food and agriculture as:

*“the ability to prepare and plan for, absorb, recover from, and more successfully adapt and transform in response to adverse events”.*⁵⁹

One academic interviewee for this report argued that food resilience requires a rethink about efficiency and that, in crises, what is needed is:

“less efficiency in the food system, ironically. Resilience comes from having more, not less surplus capacity and flexibility and diversity in production, distribution and labour force. This is counter-intuitive and would be hard for the UK to do on its own. Maybe things will emerge in times of shock.”

But how can Baran's decentralised or distributed models be organised in practice for food? The same interviewee continued:

“A more decentralised system is required, in my view, but what that means needs to be clarified. I think that co-ordination is necessary from the centre about what sub-national bodies could do, right down to what should be grown where. We need a national optimal approach to production which is currently lacking. Some sort of co-ordination will be needed for decentralisation to be a success with regard to increasing resilience. The UK has not yet begun that process; nor does it see the need for it.”

A senior civil servant said much the same from inside government:

“There is a problem of scale. The Government Resilience Framework says it takes a ‘whole of society’ approach but it's actually a ‘whole-of-society-as-seen-from-the-

centralised-bodies' approach. It doesn't allow for more decentralised, and more flexible food systems that might be needed. The way we currently think about resilience is implicitly about keeping the system the same."

Internationally, there are the beginnings of thinking through what is entailed by food resilience. The Food and Agriculture Organisation (FAO) of the UN now includes resilience as one of the criteria or lenses through which it analyses food systems: (1) diets, nutrition, and health; (2) environment, natural resources, and production; (3) livelihoods, poverty, and equity; (4) governance; and (5) resilience.⁶⁰⁻⁶²

Even though they use the term resilience, food system analysts are clear it is not a standalone issue. It draws on other principles and bodies of evidence. It requires multi- or inter-disciplinary analysis. No 'science' has the magic wand to wave over resilience.

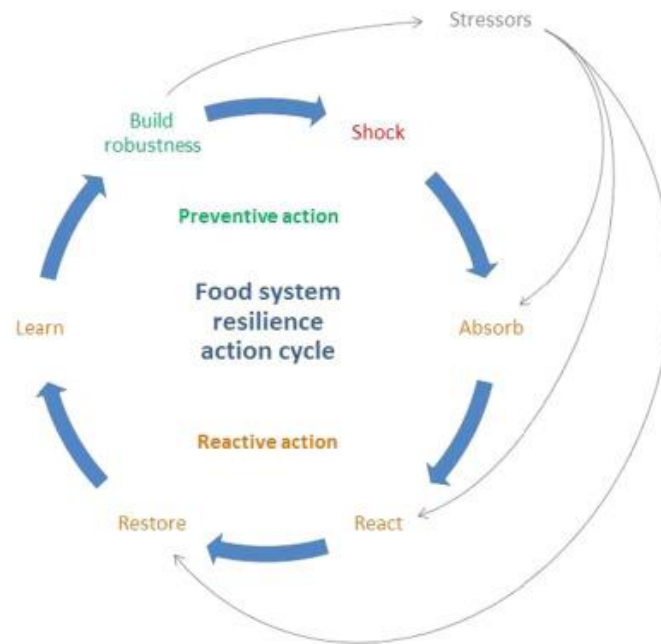
In this report, many avenues are cited. Preparation and food planning for after shock, for example, should note that mainstream nutrition has already had to shift away from thinking a 'good diet' is simply a matter of a fixed amount of nutrients and towards applying multi-criteria analyses that take note of socio-cultural, economic and environmental needs too.⁶³ As will be noted later, it is not appropriate simply to advise the public 'store enough food' if large numbers in the public has neither the income nor facilities to do so.

It might be tempting to put the notion of resilience to one side (or worse, dismiss it politically) simply because it is all too complex and thus unhelpful. This would be a mistake. Firstly, interviewees for this report almost all recognised the need for better preparedness for food resilience. Secondly, they were clear there is range of potential shocks and stresses, preparation for which must include the public. And thirdly, complexity is no reason to duck the issues. The uncertainties in food systems are real, and need not be an impediment to clarification of policy direction.⁸

Our research suggests there are multiple forms of food resilience, not one single path. Baran's typology might not completely fit today's vastly complex food system or stretch the information-crunching power of mighty computer systems and software.... but it still reminds us of the need to plan for diverse routes and sources and to allow for different dimensions of food shock and resilience. This theme returns throughout this report, particularly in relation to Just-in-Time food logistics.

For many analysts (and our interviewees), the notion of food resilience is centrally linked to the evidence on the unsustainability of current food systems. This was articulated by Tendall and colleagues in a much-cited 2015 paper that depicted agri-food resilience as a circular process of coping with and reacting to external stressors (see Figure 2.3).⁵⁰ To be resilient a system must be sustainable; and sustainability improves the capacity for resilience. The two are inter- or co-dependent (see Figure 2.4). This is an idealised approach.

Figure 2.3: The Food System Resilience Action Cycle



Source: Tendall *et al* 2015⁵⁰

Figure 2.4: The Co-dependency of Resilience and Sustainability



Source: Tendall *et al* 2015⁵⁰

John Ingram, Monika Zurek and colleagues at the Food Systems Transformation Group at Oxford University have refined such thinking specifically for food, proposing three Rs.⁶⁴⁻⁶⁸

- *Robustness*: the ability of the food system to resist disruptions to desired outcomes;
- *Recovery*: the ability of the food system to return to desired outcomes following disruption; and
- *Re-orientation*: the ability of food system actors to accept alternative outcomes after disruption.

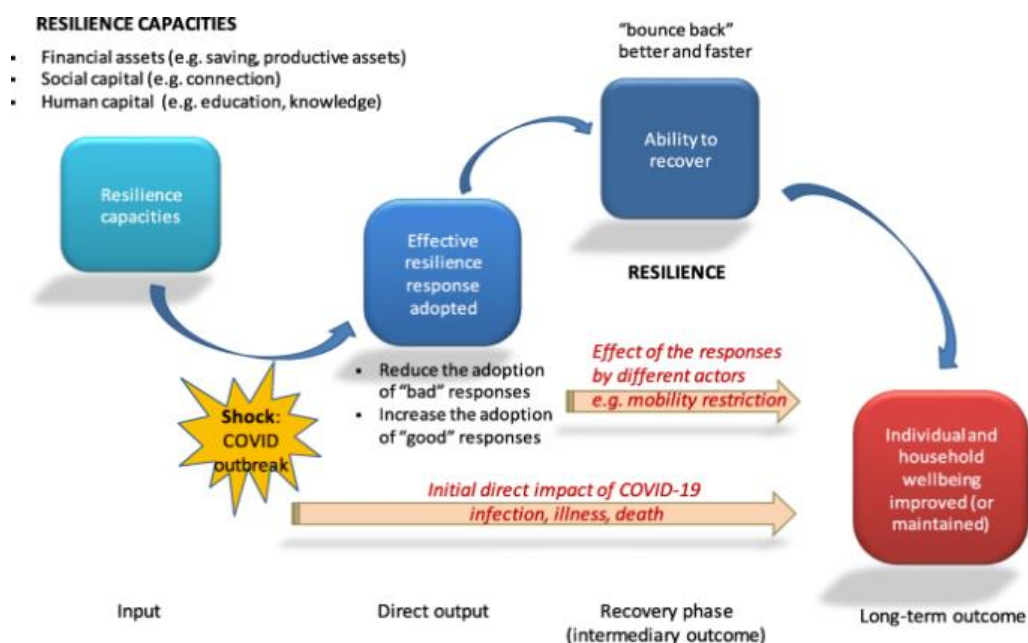
They suggest three potential approaches to enhance food system resilience:

- adapting food system activities;
- adapting food system drivers; and
- adapting world views on what is wanted from food systems.

Chris Béné has pointed out that while food security is usually conceived as a state where multiple criteria are all interdependent – access, availability, affordability, utilisation, stability, agency, sustainability etc – the notion of resilience is more linear. It occurs (or fails) in a sequence in time. A state of food prior to shock, that might or might not be food secure, is radically altered by an intervention or shock of some kind such as Covid-19 leading to short- and long-term reactions (see Figure 2.5).⁶⁹ Resilience is about events and processes in time.

For some analysts, diversity is a key feature of more resilient food systems.⁷⁰ Thus the pursuit of more diverse rather than concentrated food systems should shape how food systems are managed. This is not just a matter of supply diversity but also diversity of structures across society. But such thinking goes against the grain of decades of supply chain management and its efficiencies.

Figure 2.5: Resilience, Recovery and Capacities



Source: Béné 2020⁶⁹

Others argue that the key to resilience lies in preparation. The RAND Corporation, in work for the UK Ministry of Defence and focussed on societal not military resilience, produced a three-phase model (see Figure 2.6).⁷¹ This too conceived of resilience as a temporal concept, and was designed to stress that defence both relies on and can enhance societal resilience. Its three-phase model of Resilience is (a) enhanced by preparation, (b) the ability to respond post shock, and (c) having the capacity to recover. Each phase has three ‘sub-tasks’ or key features that should be enhanced. To our knowledge, this model has not yet been applied to food systems resilience planning in the UK. And, as is argued throughout this report, insufficient attention has actually been given to societal resilience, though it is perhaps not coincidental that the Emergency Planning College chose the term ‘Prepare’ as the title for its May 2024 resilience advice to the UK public.³⁸

Figure 2.6: RAND Europe’s 3 Phase Model



Source: RAND 2021⁷¹

In Part Three, we consider how the dynamics, expectations and demands that people bring into a shock situation ought to be fundamental to planning and improving preparedness for food crises. Here lies the relevance associated with Nobel Prize-winner Amartya Sen’s analysis, that people’s sense of worth – what he called ‘entitlement’ – shapes food crisis outcomes. People are actors in food dynamics, not cogs. They can change the dynamics. It’s why processes of decision-making that exclude people or are fixed as processes of top-down control rather than democratic engagement can fail.⁷² It’s why public involvement and live food democracy matters for resilience, and why later chapters consider the interplay of ‘command and control’ and ‘public engagement’ approaches to food system resilience.

So how do these theoretical issues raised so far emerge in the realities of UK resilience planning? An important point generated from the literature is that there is no single canon on resilience. There are disciplinary perspectives on what the term means. It is important not to assume agreement. The architect sees a building’s resilience as keeping the building standing. The child psychologist sees developmental resilience as overcoming trauma and

moving on without denial. The cyber specialist sees resilience as erecting defence walls to prevent harm in the first place. And so on.

We can detect some common features across resilience thinking, too. Facing cold realities rather than drowning or being frozen in fear is surely desired from policy and planning. It might not happen but it is the underpinning of action. Resilience is about having requisite foundations and resources to keep abreast of potential shocks and threats; the monitoring of potential shocks and being clear about potential types of shock (multiple, single or continual?); the dynamics of what is shocked, and whether outcomes resonate in short- and long-term.

A contrast can certainly be drawn between individualist and collectivist approaches to resilience. Psychologists, again, have helped stress the importance of personal characteristics that aid resilience such as flexibility, emotional skills, social connections, having a secure sense of self, and ability to balance competing demands.⁷³ Whether such psychological traits are well developed at the community level becomes important in shocks. A literature review by disaster specialists concerned about just that proposed what they called a 5 'S' approach.⁷⁴ Social resilience, they concluded is a function of social structures (i.e. organisation); social capital (i.e. cohesion); social competence (i.e. skills and being clear about the challenge); social equity and diversity (i.e. including all interests); and social beliefs and culture (i.e. being coherent about values, behaviour and norms).

In 2015, the Stockholm Resilience Centre published its now well-known Seven Principles for Resilience that recommend the need to:⁷⁵

1. maintain diversity and redundancy,
2. manage connectivity,
3. manage slow variables and feedbacks,
4. foster complex adaptive systems thinking,
5. encourage learning,
6. broaden participation, and
7. promote polycentric governance systems.

The following pages take note of the wider resilience literature indicated above, and its conceptual antennae. What particularly concerns this report is how this is (and is not) applied to UK food system security and resilience. At the end of the report (see Chapter 10), we return to the theory of resilience and make suggestions to improve and tighten the conceptual basis for UK preparedness for food shocks. With these conceptual considerations in mind, we now turn to what is meant by civil food resilience.

The Civil Food Resilience Gap

In 2008, the UK Cabinet Office initiated a **Communities Prepared** programme “to explore ways to support communities in becoming resilient to the range of probable emergencies”.⁷⁶ Its audience covered communities, business and potential volunteers, thus a broad set of societal interests and constituencies. In 2011, the Government produced more specific community resilience advice and five years later general advice on the need for community resilience.⁷⁷ By 2018 this had been updated by the Community Resilience Group in the Cabinet Office, and there was a toolkit giving a “step by step guide to help you and your community produce a Community Emergency Plan”.⁷⁷

The Toolkit proposed three simple if sensible steps: prepare the plan, activate it when necessary, and review it.⁷⁸ There is encouragement to get going, and to build a local network, with coordinators, volunteers, identification of risks, communication strategy and more. There is no funding or resource but there was advice in a page at the back on how to bid for funds, and the kinds of bodies which could play a part in reacting to emergencies such as the Local Resilience Forums and Royal Voluntary Service.

In this emergency advice package, there was no mention of food or its relevance to community resilience. One might argue it just was not practical to include it, but the counter argument is that this was just the community focus it needs. The UK meanwhile offers detailed advice to the corporate food sector on how it can protect itself.⁷⁹ To take just one potential shock to food - climate change - YouGov polling in November 2023 found only 5% of UK people feel prepared for climate change shock.⁸⁰ The resilience gap is also a confidence gap.

A former Defra civil servant, now in industry, saw threats ahead from climate change but was positive about the UK's ability to bounce back as demonstrated in Covid-19:

“There may have been gaps on shelves occasionally but fundamentally the system is working and the market remains effective.”

Others were less sure. A senior industry executive with an insight into how the state works, when asked to assess the state of civil food resilience, said:

“I would say, based on recent events, it is more fragile that some of us in the sector thought it was or should be. The lack of resilience is poorly understood by government departments. Industry has learned post Brexit, post Covid, and post the carbon dioxide shortage that government is not going to sort out food resilience problems. We're not able to expect ministers to sort it all out. They (ministers) don't have the necessary access to skilled staff who can provide advice on crises in real time.

“[...] If government listened to leading voices from the food system, it would provide a better sense of purpose and direction for food supply. What's missing is the direction (strategy) that government could give but is not giving. We lack a national food policy. Yet this is what's needed: for officials to look round corners to give the clear signal and framework that then gives industry the stability and clarity for them to invest in systems, processes of mitigation and that would give resilience a boost.”

To right this imbalance, this report centres on that **civil food resilience gap**. By this we mean the gap between what is desirable and what is, and the gap between different policy discourses. Some interests see resilience almost wholly as a matter of supply. The National Infrastructure Commission (NIC), for example, is aware of a resilience gap due to a lack of investment in infrastructure that would make the UK more resilient now. It might even be seen as a market failure.

Others see culture, consumption, demand and the public's role as wanting more than just a promise that supply will be all right in a crisis. There is a discourse gap over what is meant by food resilience and by civil food resilience. That gap impedes policy-makers' capacity to make sense of the policy possibilities and thus the tactics and strategies that might be invoked to enhance resilience.

If resilience policy is to help steer any system towards bouncing back after shock, certainly policy on food resilience must include and engage with the consuming public's preparedness

to bounce back. Not to engage the public is to assume that the public will be fine as long as there is sufficient food. This is not the case. There can be food crises even amidst plenty.

International experience (as is explored in Chapter 6) shows that, while the UK might not currently address the public's role in food resilience in any depth, other countries are beginning to and are prepared to be open about what might be required from the public in crisis or disruption. An expert in this field commented to this report:

“There’s no point aiming for resilience unless it includes the people. Resilience is actually all about getting to a ‘desired state for food’ in or after a shock. What that requires is clarity about who defines and applies this desired state, and how it’s to be achieved. Is this a return to the status quo or to something new and different? It’s the people – the consuming public – that matter in that process. They are the missing middle.”

In a paper for the National Preparedness Commission, Andy Hull recently proposed the need to build ‘everyday preparedness’.⁸¹ Some see civil food resilience as an individual responsibility whereas Hull and the present authors suggest that public strength of involvement in resilience requires thought about infrastructure, support and frameworks that are currently either withheld or beyond the capacity of individual households. This is explored in more depth later (see Chapter 7). Civil food resilience requires investment, not least to help people with minimal or no resources. This is not to say that citizens can wash their hands of responsibility for preparedness and can simply wait for help in crisis. It is to say that we cannot expect engaged preparedness or obedience in command-and-control situations if people are severely hampered to begin with.

The interviews suggested broad agreement among specialists – both outside and inside the food industries – that the scope for an individualised approach to resilience is limited, possibly self-limiting and may even be counter-productive and a waste of effort. If there were a big shock to the UK food system, everyone would be affected. Vanishingly few people in the UK are or could be self-sufficient in food. People might have big or small or no gardens but few feed themselves entirely across the year - almost everyone relies on purchased food. In shock, they (we) would rely on others. Times of war, emergency, shock and disruption show how feeding people is a collective matter. Hence use of the term ‘civil’.

Interviewees with long and senior Whitehall experience concurred that food has not been a high priority in security or resilience planning. Events are already putting pressure on that position. We discuss later how industry is aware of storm clouds gathering. A senior civil servant told us that:

“Our impression is that mostly the horizon is 1-2 years ahead, and that there is not much thinking about the climate consequences or biodiversity loss consequences for global food supply, thinking 10 or more years ahead – particularly ensuring that the next generation can be fed. We are not aware of a long-term vision yet, or one which includes issues such as a healthy diet and affordability, the stuff that matters for people. The default position appears to be to look at commodity-based short-term shocks such as the ones that have happened recently – like eggs and sunflower oil. It would be a mistake to assume that the past predicts the future, and to limit the scope of planning to things that have happened, rather than new or unlikely things. That’s why we need more long-term thinking for the UK and assessment of food resilience.”

“[...] The default perspective of policy makers in government on vulnerabilities seems to be that food isn't really a problem as one can always find substitutes for this or that food, and retailers are brilliant at amending their supply chains at short notice.”

The head of a large land-based membership body put the governance issue tartly:

“Defra is so focussed on the environment that it doesn't do the food thinking. [...] There's too much 'Friday afternoon policy making' where it's rushed and last minute and not thought through. Defra has had to address many crises over the years and to go onto a 'war footing' on some fronts. It has lots of experience tackling, for example, Foot and Mouth Disease, avian flu, blue tongue, flooding. But much of its work has been reactive not proactive about food. We need Defra to do food thinking now in peace time.”

For decades, scientists have been pointing to food system fragilities. There are many reasons for this, ranging from environmental concerns such as climate change and biodiversity loss, economic distortions such as inaccurate prices and unfair financial flows, and societal inequalities due to culture or class.⁶⁴ But the totality seems to elude action. Governments have been advised of the need for resilience policies on many aspects of society and the economy, including food; critics worry that these efforts are still too thin, not addressing fundamentals that the scientists and analysts warn are emerging.

It is to be welcomed that a new generation of food resilience studies is beginning now to assess governmental resilience thinking. A study by Jane Lloyd and colleagues, for example, found the governments of Australia, New Zealand, Sweden and the USA giving more attention to climate change than other potential or real threats of disruption to food.⁸² This is good in itself but by no means indicating the breadth of food threats. And there is a deficit of focus on food and the public.

Food risks and vulnerabilities

The notion of risk is inextricably linked to discussion of resilience. As one academic food specialist told this inquiry early on, the risks:

“are manifold, both to trading and to production. They're aligned to energy, labour force and extreme weather, and much more. These issues are well- and long-known and, if anything, are worsening. Threats to plants and animals and humans are increasing from zoonoses. There is even the possibility of economic collapses.”

A former government advisor, asked about risks to the food system, saw a constellation including:

“food poverty which is a societal and inequalities issue; damage to health caused by diet [that] has direct economic costs but damages quality of lives / family life; biodiversity loss of which food is the biggest cause by far; and climate change dynamics which are also heavily affected by food.”

Seeing such a range of risks was common among many specialists consulted. Another said:

“The food system is very fragile - more than we like to think. The trade system has many risks. It's not just reliant on UK food production but much from outside the UK.”

We've lost a lot of capacity and are reliant on areas much more at risk such as horticulture. Just think Spain and the stresses coming there.ⁱ We also have increasing dietary ill-health. The food system is economically very concentrated so it has pinch points as was discovered in Covid."

Amidst the current rush to exploit Artificial Intelligence (AI) as the new industrial revolution, there are voices warning of risks. One meeting we attended heard senior security personnel paint a sober picture of uncertainty, for example, about what a cyber secure economy would look like. Others were aware of the difficulty of achieving stability when the realities are weak infrastructure, lack of policy recognition, and corporate leaders who think they are in control of cyber risks yet contract out cyber defence. There should be no illusions that the food system is without major threats. The 2nd UK Food Security Report (UKFSR) recognised this more clearly as having localised and global food security impacts.⁸³

The UK applies a risk assessment approach to the entire society in a process of risk assessment now known as the National Risk Register, explained in the next chapter. Tight procedures for risk identification, assessment and management have been applied throughout the food system for decades, after a wave of food safety scandals in the 1980s-90s led the EU to introduce a supply chain system of risk analysis and management based on NASA-derived Hazards Analysis Critical Control Point (HACCP) methods.^{84,85} Concerned about the risk of astronauts falling sick from food poisoning in space flights, NASA developed and introduced a management system that first identified where most sources of risks lay and then implemented controls on those 'critical control points' to an appropriate level. Risk analysis has also been applied in famine analysis.

That there are risks and threats is self-evident. If food supplies dwindle, it makes sense to analyse the risks that might have helped anticipate the supply disruption. But a key issue is: risk for whom, defined by whom? Risk assessment may seem neutral but carries what science analysts call 'framing assumptions'. Risk assessment is about weighing up degrees of certainty. Risks can be known and not so well known, taken seriously and less so, adapted to by the public or not even communicated to the public. In theory, consumers know food can keep them healthy or make them ill, over the short- and long-term. Risk assessment thus requires analysts to consider the scale of threats. Something may have a high likelihood but a low impact; either way, it must be identified in the first place to warrant assessment. And as the late Queen Elizabeth II asked of economists six weeks into the financial crisis of 2007-08: why did no one see this coming? Usually, there is, as there was then, a group-think effect. The dominant explanations squeeze out the counterfactuals and dissident analyses. So one should always ask: who is listening? as well as: who is doing the risk analysis?

Until Russia's 2021 invasion of Ukraine, few people were aware how much European fertiliser availability and prices, and thus food prices, depended on Russian gas being converted into fertilisers via Norway. Even now, few are aware of the significant dependence on imported minerals.⁸⁶ The common policy discourse on scarcity is often narrowly cited as a matter of oil, when other resources are also implicated. Oil and fossil fuels *have* been fundamental in the 20th century success story of massive increases in food production. But now we are more aware of such dependency and the relevance of Baran's concern about over-centralised technical networks. It points to a reset of the goals for food system, and for highly centralised food economies and society to start to build more flexibility, substitutes and alternatives.

ⁱ Note that this interview was conducted a year before the catastrophic 2024 floods in Spain.

Injecting resilience into an oil-dependent food economy might require food to be grown in different ways, perhaps in different places, and to be more geographically spread, less concentrated. For that, consumers' expectations about prices would have to adapt.

The 2021 House of Lords special report on extreme risks chaired by Lord (James) Arbuthnot was highly critical of Government risk assessment:²

“[w]e found that the Government’s risk assessment process is unable to encompass the complexity of risks facing the UK. It fails to account for interconnected or cascading risks and chronic or long-term risks, and has a bias against low likelihood-high impact risks.”

It is conceivable that this verdict also applies to the vulnerability of food chains based on Just-in-Time logistics but no such study has apparently yet been conducted. As this report was being finalised, in January 2024 HM Government suddenly recognised this reality. The Department for Business and Trade announced a new Critical Imports and Supply Chains Strategy.⁸⁷ Initially this gave little attention to food but mostly focussed on pharmaceutical and economic ingredients such as lithium.

A switch away from EU sourcing to longer-distance sources such as the USA or West Africa could accentuate rather than reduce food supply risks. The UK navy today has far fewer vessels and sailors even than in 1939. As one former senior member of the armed forces reminded this report, today:

“the [Royal] Navy doesn’t have the capacity to secure supplies. [...] I see no preparedness today by Government. There’s a moral responsibility on Government to consider this. If we know things could happen, there’s a moral responsibility to do something to prepare the country. Preparedness won’t solve everything but it’s better to have when crisis comes. If I was PM, I’d want a food preparedness plan. The Ukraine war shows our energy vulnerabilities. People assume food arrives on their plate...”

A year after that interview, however, the Critical Imports Council was launched in April 2024 with 23 business specialists (only one academic) but no food involvement.⁸⁸ As following pages illustrate, there have been more announcements about resilience but the *food* resilience gap continues.

Food Security as national and household focus

Food security is one of the most used terms in modern food policy. Over the last half century, it has slowly entered everyday speech. Like ‘sustainability’, it can mean all things to all people, and be in danger of becoming hopelessly fluid.⁸⁹ Despite this, contemporary science and analysts attempt to nail down what is entailed. The term can be applied in at least four directions pertinent to food. One focusses on supply – how much is produced by a food system? The second focusses on access to people at the household level – can they afford it and gain access to it? The third is about whether food can be defended and protected – is access to food stable and secure? And the fourth is about the ecosystems infrastructure on which food depends – is how food is produced and consumed contributing to or undermining the means of production and their reliance on nature?

All four strands overlap in relation to health, either weakening or enhancing the health of food supply, the healthiness of consumption, the capacity to defend and protect food, and

health and stability of the environment on which life and food depend. The fluidity of the term food security, like the term resilience, is its strength and value for policy and planning.

At national level, the term food security is often reduced to self-sufficiency. This is discussed at more length below (see Chapter 3). A country or region can be food secure even if it does not produce its own food. Baroness Eliza Manningham-Buller, former head of MI5, stepped deftly into this terrain in her 2022 Lord Plumb Memorial National Farmers Union (NFU) lecture.⁹⁰ She argued firmly that food security - as maintenance of a decent level of supply - was a national security issue. Her argument at that time – even just a few years ago – was rowing against the dominant tide. Less so now. More concern about food security is being voiced.

In his first speech as Defra Secretary of State, Steve Reed said food security was one of his five priorities.⁹¹ It remains to be seen how that is translated and what difference it makes to government policy and the realities of the UK food system.

The UK Food Security Report concludes that the UK is secure because the balance of trade is broadly stable at approximately 60:40 ratio – 60% home-grown, 40% imported. Production, however, is being affected by extreme weather and the main dependency is for fruit, vegetables and seafood. The situation is made more risky by events such as the war in Ukraine, labour shortages, and energy costs. It acknowledges that single points of failure in supply chains are a risk, too.

Land use competition is growing internationally. Pressures from agriculture on ecosystems and forests is also intensifying, with much land use being for farmed animals or crops to feed them. This ‘big picture’ is well known and provides the backdrop to this report’s exploration. The UK has a strong policy tradition – arguably a default position - of arguing that supply is not a problem for an affluent country like the UK. It does not need to produce what it can afford to buy on ‘open’ markets. Others can feed it.

Interviewees suggested otherwise. A local government official, for example, told us:

“Looking ahead at our level of civil resilience, if there were really big crises ahead and disruption to food supplies, our local authority responsibilities would obviously be stretched and perhaps unable to deliver. Local authorities get relatively little sums for feeding children, £2+ per meal to feed children a meal, for example, and we are locked into ‘normal’ food supply chains. So, if there were threats to those normal systems, our systems would be under threat.”

Security of supply is made more risky if a country chooses not to produce what it could sustainably, and not to take the risks to and from food seriously. At present, for example, most food imports are from the EU while policy-makers have erected barriers to trade with it.

If it chose to, the UK could apply the inter-governmentally agreed approach to measuring and thinking of food (in)security. This tries to balance attention to both supply and consumption. In an early iteration for the 1996 World Food Summit (WFS), the UN’s FAO and WHO proposed a four-pillar approach, identifying (i) availability, (ii) access, (iii) utilization and (iv) stability as essential features for food security (see Table 2.1).

More recently in 2020, after years of realising the 1996 definition was too narrow and did not capture the range of what is entailed in food security, the High Level Panel of Experts advising the UN Committee on World Food Security proposed this be expanded to six ‘dimensions’ with the addition of (v) agency and (vi) sustainability.⁹² Table 2.2 gives more explanation for each dimension.⁹²

Table 2.1: 1996 World Food Summit's four elements for Food Security

Theme	What it means
Availability	Physical <i>availability</i> of food; ensuring enough food is produced
Access	Economic and physical <i>access</i> to food; ensuring people can get to the food and are able to afford it
Utilization	Food <i>utilization</i> ; making the best use of food and minimising wastage
Stability	<i>Stability</i> of the above; building confidence that the above can be delivered over time.

Source: FAO 1996⁹³

More recently in 2020, after years of realising the 1996 definition was too narrow and did not capture the range of what is entailed in food security, the High Level Panel of Experts advising the UN Committee on World Food Security proposed this be expanded to six 'dimensions' with the addition of (v) agency and (vi) sustainability.⁹² Table 2.2 gives more explanation for each dimension.⁹²

Table 2.2: The Committee on World Food Security's 6 Dimensions of Food Security, 2020

Dimension	Explanation
Availability	Having a quantity and quality of food sufficient to satisfy the dietary needs of individuals, free from adverse substances and acceptable within a given culture, supplied through domestic production or imports.
Access (economic, social and physical)	Having personal or household financial means to acquire food for an adequate diet at a level to ensure that satisfaction of other basic needs are not threatened or compromised; and that adequate food is accessible to everyone, including vulnerable individuals and groups.
Utilization	Having an adequate diet, clean water, sanitation and healthcare to reach a state of nutritional well-being where all physiological needs are met.
Stability	Having the ability to ensure food security in the event of sudden shocks (e.g. an economic, health, conflict or climatic crisis) or cyclical events (e.g. seasonal food insecurity).
Agency	Individuals or groups having the capacity to act independently to make choices about what they eat, the foods they produce, how that food is produced, processed, and distributed, and to engage in policy processes that shape food systems. The protection of agency requires socio-political systems that uphold governance structures that enable the achievement of food security and nutrition for all.
Sustainability	Food system practices that contribute to long-term regeneration of natural, social and economic systems, ensuring food needs of present generations are met without compromising food needs of future generations.

Source: HPLE / CFS 2020⁹⁴

While definitions such as the above convey the direction of thinking about what is entailed in food security and encourage governments to use it to shape national food policies, there is also practical experience relevant to the present report's concerns about preparedness for food shocks and enhancing civil food resilience. A coalition of agencies - Global Network Against Food Crises (GNFS) and Food Security Information Network (FSIN) - cooperate to produce an annual report on food crises, using agreed methods. The 2024 report pointed to the steady rise in the incidence and scale of food crises. The trends are sobering. Whereas in 2016, 48 countries experienced at least one food crisis (shortage), by 2023, 59 had done so. The share of the analysed population facing high levels of acute food insecurity increased from 14% in 2018 to more than 20% each year since 2020, reaching an eight-year high in 2022 (at 23%).⁹⁵ The UK is not among these but the geopolitical context of the global food system is troubling food analysts.

The FAO's Integrated Phased Classification (IPC) of Food Security provides an objective means for judging gradations of security / insecurity for diverse circumstances ranging from drought-induced food shortage to wars. Practical experience of famine management and international development added variations such as the differentiation between:

- *Transitory* food insecurity, which is temporary and can be more quickly fixed; and
- *Chronic* food insecurity, which is long-term and embedded by strong structural determinants.

In 2008, the FAO produced a five-phase classification of food (in)security, ranging from being generally food secure to, *in extremis*, a state of famine and human catastrophe (see Table 2.3). This is what lies behind warnings of famine heard on the news or justifying funding appeals. A full-time unit was created to conduct such monitoring and publish evidence.

It has been used, for example, from late 2023 to monitor the food situation in Gaza.⁹⁶ In December 2023, the UN warned of famine in Gaza by May 2024. By March 2024, it estimated half the Gaza population, 1.1 million people, would experience IPC phase 5 (famine) by May unless more food got through, with some likely to enter the ultimate sub-category of catastrophe.⁹⁷

The IPC's function is to alert decision-makers and to prevent vulnerability being turned into disaster (and avoidable deaths). It is the kind of assessment the UK could use or modify to assess potential food shocks. The sequence of food events that can lead to famine given in Figure 2.7 is from the IPC manual, a publication part-funded by the UK government.⁹⁸ The conventional narrative that people go without food because there isn't any may not tell the whole picture. Other dynamics affect what is there, or could be, or who receives it, and what drove the situation in the first place.

Not since World War II has it been necessary for the UK to apply crisis-relevant rationing or intervention using methods such as sketched above. But even prior to Brexit, the Government recognised the need to take UK food security more seriously. For three years, after the shock of oil hitting \$100 a barrel in 2007-08, affecting the world price of food, intensive work across Whitehall resulted in a new strategy for the UK food system *Food 2030*.¹⁴ This process signalled that Government recognised the need to modernise thinking about food security. The Food 2030 process involved analysing potential risks to both production and consumption.

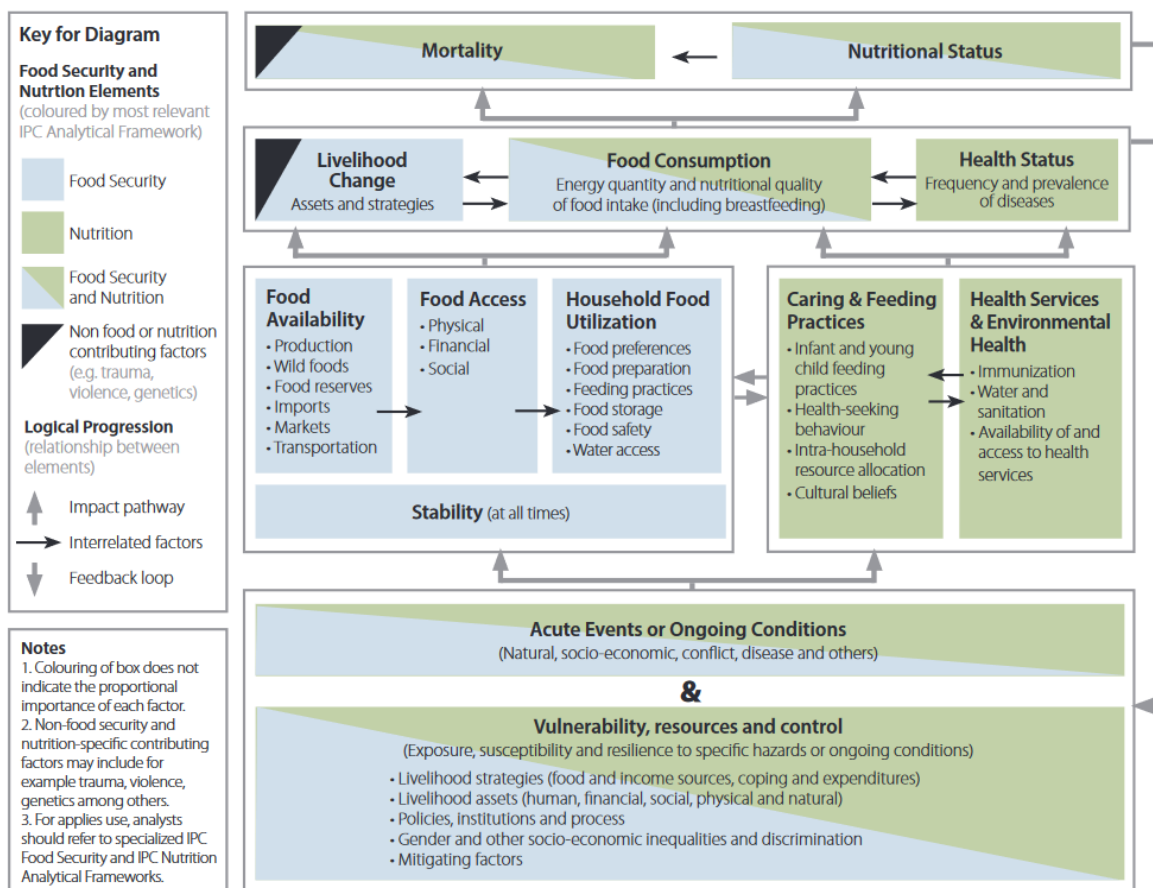
Table 2.3: the Integrated Phased Classification (IPC) of Food Security, 2008

<i>Integrated Phase Classification*</i>	<i>Indicators</i>
Generally food secure	○ Crude mortality rate
Chronically food insecure	○ Malnutrition prevalence
Acute food and livelihood crisis	○ Food access/availability
Humanitarian emergency	○ Dietary diversity
Famine/humanitarian catastrophe	○ Water access/availability
	○ Coping strategies
	○ Livelihood assets

*Note: the green to red colour coding is the FAO's

Source: FAO 2008⁹⁹

Figure 2.7: The IPC Integrated Food Security and Nutrition Conceptual Framework



Source: FAO IPC Technical Manual Fig 7⁹⁸

Table 2.4 is an illustration from security and risk analyses conducted at the time, showing threats to resilience were recognised then.¹⁰⁰ Not until the 2021 Dimpleby National Food Strategy (NFS) was there another UK attempt to provide a framework of such breadth. Although the NFS final report did not address national food security,⁶ it had concentrated attention more on the risks of *household* food insecurity for people on low incomes.²¹

Table 2.4: The 2009 framework for assessing UK food security (dropped in 2010)

Scorecard themes	Types of threats and challenges (illustrative)			
	Political	Technical	Demographic & economic	Environmental
Global availability	Wars Export restrictions Bilateral land deals Bio-fuel policies	Yield growth Investment and skills	World population growth Incomes growth	Floods, droughts Plants / animal disease Changing climate
Global resource sustainability	Wars; Institutional and policy failures	Farming practices	World population growth; Farming intensification	Water scarcities Desertification, Soil erosion Climate change; Ecosystems breakdown
UK availability and access	Trade embargoes, Breakdown in international trade; Breakdown in EU trade; EU Regulations	Decline in non-renewable energy; Port closures	Importance of fruit and veg consumption and imports; Sharp decline in UK competitiveness	Animal disease Coastal flooding of ports; Water scarcities; Bio-diversity risks
UK food chain resilience	Strikes / protests Regulation	Radioactive fallouts; IT corruption Contingency planning; Just-in-time	Oil shocks; Absenteeism due to pandemic flu; Food chain concentration; Financial crises	Extreme weather events
Household affordability and access	Planning restrictions	Lack of transport	Poverty; Food inflation; Currency devaluations; Unemployment	Extreme weather events
Safety and confidence	Malicious activity regulatory failures	Contamination;	Increasing demand for complex processed products; Longer supply chains	Pests and diseases

Source: Defra 2009¹⁰⁰

With the Food 2030 work discarded by the Coalition Government after 2010, concerns about risks to food security grew following the 2016 Brexit vote. As an (English) Agriculture Bill was taken through Parliament to replace the EU Common Agricultural Policy, members of the House of Lords argued that there should be an annual review of national food security. The Government acceded only to producing one every three years. In 2021, Defra produced its first UK Food Security Report.³² It painted a generally satisfactory picture of UK food resilience. The key paragraph warrants repetition:

“The UK is resilient to potential shocks in the food supply chain. Supply systems, which are owned and operated by the private sector, are adaptable and flexible in responding to problems. Government monitors risks and works with industry to respond to emerging issues and maintain supply chains.”

The report did acknowledge growing incidence of households dropping into food insecurity,³² but it assured readers the problem was in-hand. There was a tendency to present child poverty or hunger or food bank use as exceptional, for example. This may indeed technically be a minority experience but if one in six children live in food insecure households,¹⁰¹ 4.2 million children live in poverty (according to official measures),¹⁰² food bank usage has risen and the banks themselves report they cannot cope and see themselves as temporary not permanent policy ‘solutions’, these are surely disturbing indicators for a country as wealthy as the UK. The question of food resilience becomes a matter of: whose resilience? Are the indicators eliciting responses?

One food analyst told us:

“The nature of the challenges facing us is complex. And that requires there to be a platform of trust. In a crisis, if the Government of the day is to say: ‘we must all now do this...’, that advice must be trusted.”

This chapter has introduced key concepts that arise in any consideration of food resilience; it sits in a cluster, not on its own. We have also noted that policy concern about food resilience is subject to the kind of ebbs and flows that affect other matters of state experience. After a moment of interest in 2007-10, interest subsided. Although with the change of government in 2024, food security is again being acknowledged as important, this comes after a period of little attention on the *public* as active and potentially engaged players in building resilience. Later chapters dig deeper into what is entailed by civil food resilience for affluent if unequal societies such as the UK. This is a paradox beginning to be noted by other researchers.^{82,103}

Food and the law: there is no legal right to food security or resilience - does it matter?

The law has become a key arbiter of food matters at various times in UK food policy history. The UK has no law on either food security or resilience. There are obligations and duties associated with food, however, notably about quality, safety and commercial trading arrangements. Until the new government acts on food security, and shows what it means by that, there is as yet no firm steer on civil food resilience and security. Local authority interviewees reminded us there is no legal obligation to feed people in emergencies, or at any time. Should there be? Does the absence affect vulnerability? These questions enter into deep political and philosophical terrain, on which Britain has a long history.¹⁰⁴

This absence of legal duty today was not always the case. In 1967, Lord Thurlow answered a parliamentary question in the House of Lords:¹⁰⁵

“Under the Civil Defence emergency feeding regulations, emergency feeding authorities, the county councils and the county boroughs, are required to prepare plans for the emergency feeding of the civil population. Schools and the school meal service play a prominent part in these plans.”

But this obligation was a residue of war-time civil defence legislation and later revoked. Such obligations go to the heart of debates that have troubled the British social policy for centuries.

In 1601, the Poor Relief Act under Elizabeth I put responsibility on the parish (the legal area within which a local church operated) to collect taxes to pay for people who could not or would not work. This to some extent was an attempt to replace the mediaeval system under which anyone could expect to be fed in dire times by a neighbouring monastery. But the monasteries had been dissolved (abolished) and their assets annexed by Elizabeth's father in the transition to a state espousing the Protestant rather than Catholic faith.ⁱ Those Elizabethan Poor Laws were in turn subject to major reform in the transition to industrial and urban society in the late 18th century. In that period, responsibility was put more firmly onto the individual,¹⁰⁶ within a punitive system of welfare characterised by Workhouses for those unable to work or feed themselves, memorably pilloried by Charles Dickens in *Oliver Twist* and other writings. Their role was still being argued over in the 20th century and to some extent facilitated the shift to a welfare state based on rights to support, funded from national taxation,¹⁰⁷ replacing the workhouse where people were fed minimally in return for captive labour.

If rights to food is one issue raised by resilience planning, other legal canons can also be noted. The law has been used for centuries to frame how markets work, for instance by regulating systems of food's weights and measures (from the 12th century). Through much of the 19th century, as opportunities to adulterate food and defraud the consumer grew in urbanising society,¹⁰⁸ a long battle over food safety and contamination rolled until the 1865 Food Act stipulated what the British might expect from their food – that “food shall be of the nature, quality and substance demanded.”¹⁰⁹ But this law itself was subject to much politicking, with parts of the food industry furiously resenting its imposition on their rights, while public health and what we'd now call consumer interests insisting that no-one expected to be poisoned or defrauded when buying food.¹¹⁰

In WWII the Beveridge report caught the public imagination when it proposed a new system of National Insurance that would fund a cross-cutting system of welfare.¹¹¹ Beveridge's committee had analysed how the UK was fissured by failure to resolve what it termed the five giant evils: (i) Squalor (ii) Ignorance (iii) Want (iv) Idleness, and (5) Disease.ⁱⁱ The new national insurance tax that all would pay would create the means to insure everyone to be able to receive better quality of life and infrastructure such as housing, food, and income whether in or out of work. Welfare payment sufficient to provide an adequate diet was part of this package. In fact, the calculations for food costs were held back from public scrutiny. Today, the system of setting Minimum Income Standards and Minimum Wages is supposed to include the realistic cost of food. How such standards and costings are conducted should match the public health requirements for an adequate diet.

Another area in which the law should be of relevance to creating policy on food resilience is land ownership. This has also been a constant throughout British history. The political reaction to proposals to change farmland inheritance tax in 2024 proved again its sensitivity. Farmland might be hugely valuable but farm incomes can be relatively low from the actual farming. At the centre of this are notions of access to land, something that is raised in later chapters with regard to the public's ability to grow more food outside the market economy.

ⁱ Historians discuss how extensively this expectation changed after the dissolution but the dissolution severely restricted the options; see for example: RW Hoyle (1995), *Historical Journal*, 38, 2, 275-305 and R W Hoyle (2010) *Economic History Review*, 63, 4, 974-1002.

ⁱⁱ see the short account of Cabinet discussions about the Beveridge report 1942: <https://blog.nationalarchives.gov.uk/beveridge-report-foundations-welfare-state/>

From the 16th century dissolution of the monasteries, a series of Enclosure Acts gradually eroded the notion that land is a common asset, and favoured the extension of private ownership. Between 1604 and 1914, it is estimated that Parliament passed 5,200 Enclosure Bills.ⁱ Latterly, the law has been used to reopen rights to roam, and for public entities to buy land.

The UK does not have a written Constitution, so it cannot emulate those countries that have inserted the 'right to food' into theirs. These include South Africa (in 1996), Ecuador (2008), Bolivia (2009), Brazil (2010), India (2014).¹¹²⁻¹¹⁴ In 1976 the UK did 'ratify' the International Covenant on Economic, Social and Cultural Rights (ICESCR), under Article 11 of which the right to adequate food is (in theory) a legally binding human right, according to the UN FAO.¹¹³ Only four countries are signatories to the ICESCR, a further 24 are 'states parties' and 25 are signatories of its Optional Protocol. 45 countries have recognised the right to adequate food in their constitutions. But not the UK.

Does this matter, and does this make UK people more vulnerable? Some interviewees thought so and certainly that a legal basis for food resilience and food security was overdue in the UK.

The FAO recognises that there is a certain "flexibility" in how countries interpret and apply a legal basis for food rights. Its database on right to food has five gradations of commitment from the highest 'explicit protection of the right to adequate food', 'implicit protection of the right to adequate food', 'directive principles of state policy', 'national status of international obligations' and (the loosest category) having 'other pertinent provisions for the realisation of the right to adequate food'.ⁱⁱ

Some countries which have the obligation in some form still see ebbs and flows in how seriously it is taken. Brazil, for instance, put the right to food into its constitution, only for a change of President (from Lula da Silva to Bolsonaro) to see it weakened, and then for it to be restrengthened when Dr da Silva returned. The law itself does not in itself deliver food security. Laws can be set aside. But it makes 'side-stepping' harder. This is why Sweden's new Food Security law puts a duty on municipalities to ensure all citizens are fed in emergencies.¹¹⁵ It means they have to make preparations to do so.

The political reality is that the centuries-old arguments on food-related rights – summarised earlier - persist in the UK. Evidence of hunger or the rise in the proportion of the population who are cutting back on food to make ends meet are met by a range of positions: denial ('what problem?'), blame ('it's their fault'), or claims that insufficient welfare can be met by charity ('use food banks, etc'). A recent review of food resilience planning in London, for instance, placed a challenge on London authorities at least to be prepared to protect the most vulnerable people.⁶⁷ Without a legal basis and funding, that remains a moral appeal not a legal requirement. Assessing vulnerability to food insecurity and lack of resilience becomes an important consideration for national preparedness planning (discussed in Chapter 5).

Pending the Labour Government making its position clear on food security, and whether an overarching Resilience Act is put onto the UK statute book, the matter of legal rights should be noted as something that should not be ducked. It is at least a benchmark for how seriously the issues are taken and might easily become a rallying point for crisis preparation on which society could agree. This was the argument that HG Wells offered at the start of WWII in his 1940 Penguin Special *The Rights of Man: what are we fighting for?*.¹¹⁶ If crisis

ⁱ Parliament: <https://www.parliament.uk/about/living-heritage/transformingsociety/towncountry/landscape/overview/enclosingland/>

ⁱⁱ See the FAO Right to Food database: <https://www.fao.org/right-to-food-around-the-globe/constitutional-level-of-recognition/en/>

and hardships are to be experienced in conflict, there must be something better at the end. He won the argument for, within the decade, it had become the 1948 Universal Declaration of Human Rights which became the umbrella under which the notion of a Right to Food has been articulated ever since.¹¹⁷

Even though there is no obligation on the UK state to ensure people are fed in a crisis, there are some powers under state Emergency Powers. Pending those or new legislation, individualism currently holds sway.

It is often stated that a duty of the state is to protect its people and borders, but how should that protection be translated in food resilience terms? One interviewee, a leading climate specialist, had already flagged to this report the potential divisiveness of such advice unless carefully thought through. For instance, carrying a store of food might be possible for the more affluent but not everyone:

At a personal level, in my own home we keep a store of food – a very big bag of flour and other foods – a proper domestic store. This might be possible for the middle classes, but that kind of domestic storage isn't on for most people. Many are short of cash. They buy food for the short-term, often ready-made and ultra processed. They don't have kitchens or equipment. They don't have larders.

Whitehall insiders we spoke to worried that Defra did not do enough work on systemic food risks which are “seen as a bit unthinkable”. One told us, long before Dowden’s speech, that advising the public to have a store of food at home would be insufficient. Rather than government telling households to do this, they would rather see this addressed at the community level:

“perhaps we need to ask districts and communities to think about what would improve their food resilience.”

Food resilience and security can be viewed through the lens of individualism or as functions of more collective, shared responsibilities. They can be framed as a market dynamic – buy your way into security – or as a social safety net. They can be articulated as best left to top-down control or as strengthened by more decentralised, bottom-up engagement too. They can be seen as something to be left to the military to protect or seen through the lens of the public.

The following pages try to weave these various discourses into some order, with a focus on the mass of society. What is the people’s role in food security and resilience? And what is the role of the state and market to help them? As one interviewee said:

“For civil food protection to improve, we need a much better food supply system. This needs to be a well-regulated and structured food consumption environment. We need better choice architecture in the marketplace. There’s a whole policy toolbox which could be used – incentives, fines, taxes, role models. The capacity for change and to make the food system more resilient needs more clarity and firmer direction and leadership from government. There’s been more attention on resilience of supply than of consumption. Consumers need more help. The public interest need for transforming consumption has not received enough attention.”

PART TWO

UK FOOD SYSTEM RISKS, POLICIES & VULNERABILITY

Chapter 3: Why the UK food system affects food resilience

Why the UK should be concerned about food

Today's food system faces challenges of immense proportions at all levels from the planetary to the local. With the emergence of modern states and economies, responsibilities have broadened in complexity and political sensitivity. Yet as the data of the scale of the challenges has increased, the response has been patchy. Although, for example, the level of hunger worldwide has dropped since the mid 20th century, the means for maintaining production in the manner that progress has been achieved is now threatened. How the food system operates has sown the seeds of its potential undoing.¹¹⁸ Paths out of this dilemma can be charted.¹¹⁹⁻¹²¹ They point to fairly radical yet realisable and reasonable changes in how food is produced, what is eaten, how waste is managed and above all unity of purpose to put humanity on a sustainable food footing. Although debates about climate change or geopolitical disruption or resource reliance can be seen as in some respects a continuation of old themes, the scale and threat level are new. But why should this trouble the UK? And why should resilience or security feature in UK politics today?

At a small high-level meeting attended during the research for this report, held under the Chatham House rule, an eminent food industry leader asked why people keep using this term 'the food system'. At another large, more public event only a few weeks later, another equally senior industry person gave the entire lecture around the argument that unless the food sector is seen as a system, there is little hope of shifting it into a direction fit to face known challenges such as climate heating, healthy lives and viable economies.

The reason food analysts, industry and critics alike all now think systemically is because the connections between threats are so clear. No threat can be addressed on its own. The complexity of food's polycrisis necessitates clarification of what the food system is or should be for, and the role of people within it. A geopolitical defence specialist, interviewed for this report and asked what risks face the UK, put this overview pithily:

"Risk no 1 is not taking a systemic view of the food system. We are not looking enough at global trends which are going to affect the food system on which the UK depends."

A senior food retail analyst told us:

"Much depends on what is meant by resilience. You could see resilience as ensuring supply of nutrients and calories is sufficient. Or you could see resilience as maintaining the level of choice that consumers are used to. If we mean both measures of resilience, I do think achieving both at once is becoming harder ahead."

A seasoned food industry head was more stark and, when asked if UK food resilience planning is in a good state, responded:

“Unequivocally, the answer has to be no. We need a lessons-learned exercise or stock-take of where we are. And that’s not happening.”

This was despite different lessons from shocks such as Brexit, Covid-19, Ukraine and climate change, leaving food prices much higher. Climate change is:

“a wild card in this new mix: crops wasted, fields flooded, etc. But this is just beginning. If we experience deep and serious climate shocks, then entire populations will be affected and this will have enormous geopolitical consequences as nations seek to safeguard their own food supplies and resultant economic shocks affect global supply and demand and dramatically increase migration pressures.”

In the UK, where there is in theory no shortage of food, food price inflation in 2021-23 rose to 19% (more for some food items) and even when the rate of rise dropped, food prices stood 26% higher in real terms in June 2024 than in February 2022.¹²² In the preceding decade, real food prices had risen 9%. According to the Office for National Statistics (ONS), 44% of UK adults reported they were buying less food when shopping.¹²³ Where does a slow shock such as this leave civil food resilience?

Other forms of shock to food systems are possible. One with a long history is blockade. The post World War II policy framework set out to increase food supply to prevent the dependency on imports that had been exposed in both World Wars. The UK had blockaded Germany in World War I, only for Germany then to try to blockade the UK in World War II. Submarine warfare changed supply dynamics much as software malware could wreak havoc on logistics today. From 1945, politicians across the divide agreed, UK food insecurity as *national supply* would have to be addressed.

Part of the 1940s approach was not just to produce more food but for the state to play an active role in easing booms and slumps, and to feed people better by stabilising prices for both producers and consumers. It did that and politicians were confident it could be done because they had witnessed years of state intervention helping national production double in wartime. It grew from producing a third of national food needs in 1939 to two thirds by 1945.¹²⁴ In April 1940 only a month before his resignation and his replacement as Prime Minister by Churchill in May, Prime Minister Neville Chamberlain had put Lord Woolton in charge of food.^{9,125} Woolton quickly found out and was horrified by how the UK could be cut off from its external food supplies. Intervention in the market was necessary and urgent.^{124,126}

For the rest of the war, what Sir William Beveridge (the senior civil servant in the crisis-created Ministry of Food back in WWI) summarised as ‘food control’¹²⁷ had been applied to food. Food control was the rigorous management of supply and demand by the state. From 1940 to well after the war, workers - many women - were called up to work on the land.¹²⁸ A national system of public cafés providing decent simple food was created.^{129,130} Rationing was applied both to control consumption and to ensure equity of access.^{131,132} Rigorous planning was applied to imports as it required (and sacrificed) shipping and necessitated naval protection to ensure sufficient merchant ships got through with the food.¹³³

This wartime intervention was a process of incremental, methodical, state-led food resilience building. It harnessed and shaped the market, not letting the market and commercial interests necessarily rule. While there was tight central control, the public was engaged in the process. A set of central communications about food in crises ensured people knew their rights and obligations.

From those times of scarcity and restriction, whoever won the post-war election would likely have done as the Labour government did from 1945, which was to apply the goals expressed in the 1947 Agriculture Act.¹³⁴ These were to increase food output; to prevent a repetition of the threat of food insecurity such as the country faced particularly urgently in 1939-40, then normalised in 1940-45; to support farming from falling victim to booms and slumps by applying subsidies; to rationalise markets; and to improve national diets to prevent ill-health and inequalities. Meat and all other food rationing only ended in May 1954.

When the Common Market (now the EU) was started by six Western European countries in the mid-1950s, it too set out to stabilize and guarantee the match of food supply and demand. The members set out to ensure the food was produced; to incentivise farming; to provide long-term stability for the land to yield; to control food prices so that food was not unaffordable.

Increasing home production was an emergency policy in World War II but it had been championed vociferously by leading scientists before, not just during and after, the conflict.¹³⁵⁻¹³⁸ They saw that market politics were distorting the potential for all people to be well fed. The threat of food blockade had been urgent, but war and the desire for a better postwar agrifood policy was also part of the wider social vision of the times. Central in this was a desire to improve children's diets.

In the war, the 1944 Education Act had mandated that school meals should provide half a child's nutritional needs. This was reduced to a third later, and then removed altogether by the 1980 Education Act (section 22).¹³⁹ Today again, the case for school food as providing decent diets for young people is being made because of evidence of poor child nutrition.¹⁴⁰⁻¹⁴² But why, critics of state action ask, are they not well fed by their parents?

In the early 1950s food (which in national statistics includes non-alcoholic drink) accounted for approximately a third of household expenditure, with a higher ratio in lower income households.¹⁴³ Today the average is 11.8%.¹⁴⁴ This reduction in how much of household disposable income was spent on food released disposable income to be spent on other goods – holidays, cars, clothes, houses, children, entertainment, the standard of living. So when food prices rise as they have done in 2020s, the flexibility available to households locked into fixed costs from rents or mortgages, travel to work costs, and other contracted services is reduced. The cost-of-living crisis quickly becomes not just a material strain – juggling costs – but a mental and social strain. This is not a good starting point on which to build resilience.

People on low incomes eat less, eat worse diets and spend proportionately more of their disposable incomes on food, yet still suffer more from diet-related ill-health (non-communicable diseases) than the affluent.¹⁴⁵ Diet plays a significant role in creating the UK's life expectancy gap. ONS data show that people from the most deprived areas have a lower life expectancy (nearly 10 years for males), earlier onset of ill-health (in people's early 50s compared to the early 70s) and live longer (21 versus 12 years) in ill-health than those in the least deprived areas.¹⁴⁶

Diet plays a crucial part in these social determinants of health.¹⁴⁷ Some people have more room to be resilient than others. Research by Barnado's shows that young people are aware of the need to have access to good diets for health.¹⁴⁸

The cost-of-living crisis that slowly emerged during the Great Recession (2008-11) was consolidated in the subsequent period of austerity and has accelerated from 2020. This has meant that increasingly large numbers of people cut back on food in order to balance their household outgoings.¹⁴⁹ Food remains a flexible item in domestic budgets, and one of few

that can be squeezed to enable those fixed outlays. The alternative is to go into debt. Although the highest income groups actually have the greatest debt, they can afford to and choose to take it on, mostly for housing. Poorer people may have less actual debt but low income households are more likely to be “over-indebted” ie with few financial options.¹⁵⁰

The consumer group *Which?* conducts a consumer insight tracker. In 2023 this estimated that 2.8 million UK households missed or defaulted on a loan, credit card, housing or household bill payment in the previous month (mid-October to mid-November).¹⁵¹ The number of households in this state of financial fragility doubled from 5.2% in April 2020 to 9.8% by mid November 2023. 57% of the *Which?* sample said they were cutting back on essentials such as food. Policy-makers were criticised for being slow to respond to the new food realities in the Covid-19 emergency. During the period of rising energy and food price inflation 2022-24, state support was provided to consumers to cope with rising energy costs but not for food. Food is and was assumed to be a private responsibility. But defining what are essentials is surely intrinsic to preparedness planning.

The success of the World War II rationing policy lay in its equitable basis. Whatever a person's wealth or status, they were placed within a common framework, by gender, work, age, whether pregnant or not, and so on. Access to nutrients was filtered by fairness. It addressed the whole of society.

If there were extensive shocks to UK society today, that fairness commitment would be needed again. This was recognized by both the EFRA and Environmental Audit Committees of the Houses of Parliament.^{4,152} The current food system does not feed all the people well and healthily. This is why the Government's heavy reliance on market mechanisms as the national food strategy is unacceptable. There will be too little civil food resilience if the country does not prepare for the event of market failure. It would be a choice, of course, but one with serious ramifications.

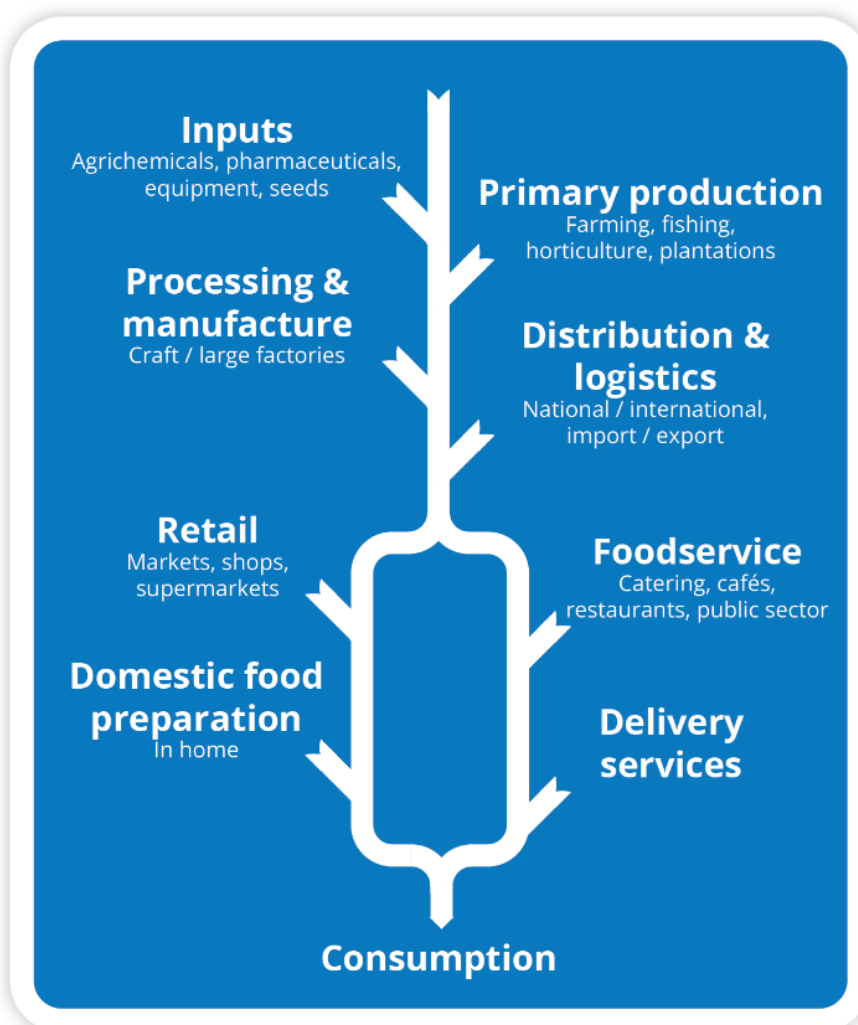
The UK food system: its sectors, dependencies and complexity

The term ‘food system’ is used here to indicate the dynamics by which food goes from primary production (and its inputs) to the UK's 67 million consumers, together with all the inputs and impacts. The term covers a maze of relationships, ingredients, value-adding processes, infrastructure and impacts. Figure 3.1 presents a conventional supply chain flow such as Defra has used for years in its Food Statistics Pocketbook publication (now only published online, when the flow charts have been dropped).

In fact, that simple supply flow omits or underplays the enormous range of resources on which the food system draws, the influences that shape what happens, and the governance and democratic processes that could and do affect the rationale. And the processes and flow have huge impacts which in turn affect and feed back to the material, biological and societal resources from which primary production derives what it does. In Figure 3.2, this complexity is depicted around the core supply flow of Figure 3.1.

This food systems perspective is important for resilience analysis because it highlights that there may be many places where risks might lie, and because the complexity itself is subject to some difficulty. If we see ‘food resilience’ as just a matter of whether consumers have enough, we miss what shapes their part in the systems.

Figure 3.1: Core supply flow within the Food System

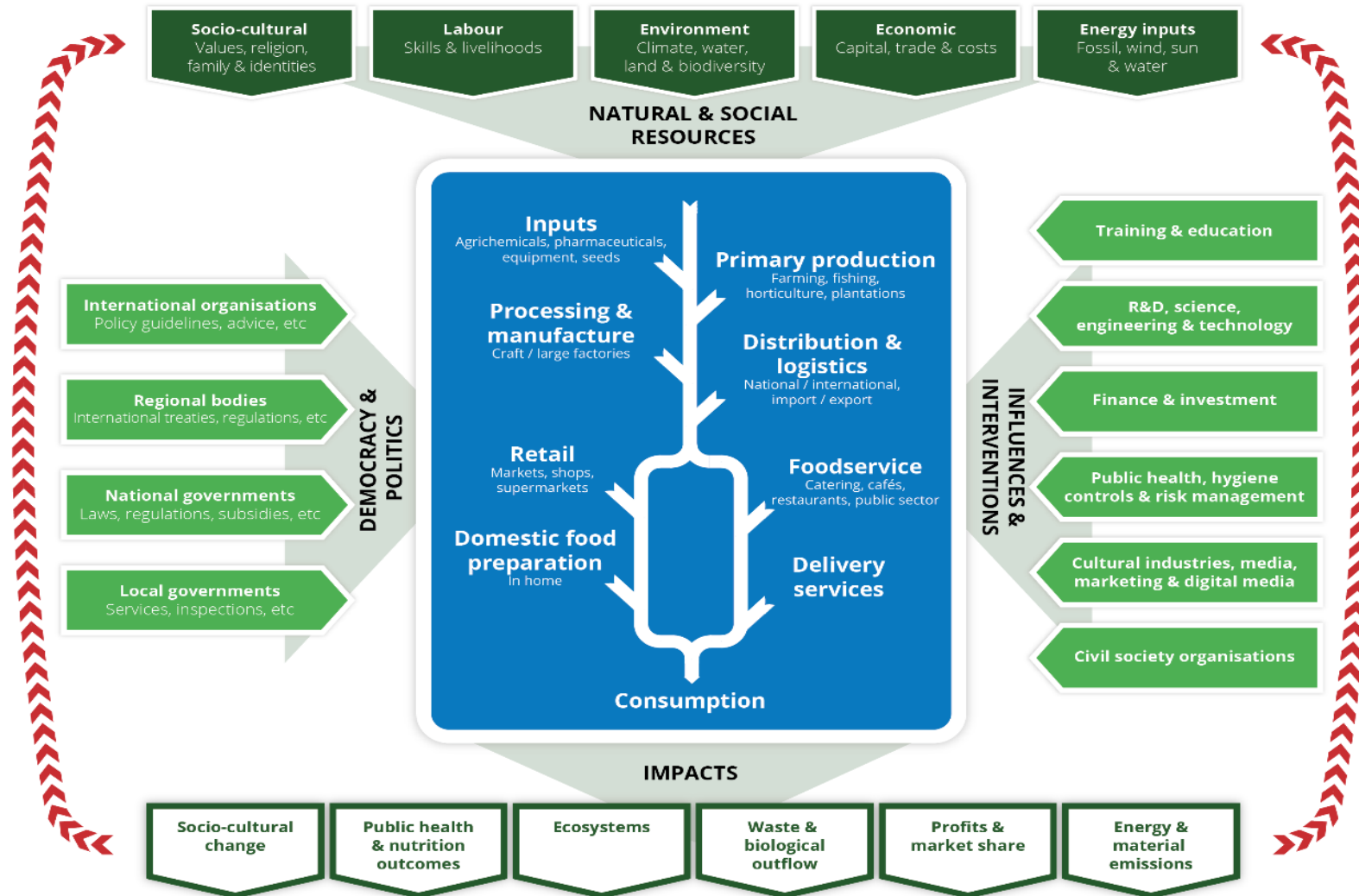


Source: T Lang / graphic: Gavin Wren

Figure 3.2 includes inputs to farming and fishing such as fertilisers, pharmaceuticals and equipment, and a myriad of ingredients consumers are not aware of for manufacturing and processing companies such as gases to keep food stable or chilled. All this is moved about by the logistics and transport sector that is so ubiquitous people barely notice the tens of thousands of trucks, vans and containers carrying food. And it is filtered through the ten enormous food retailing companies that dominate sales today, and also through tens of thousands of smaller enterprises. Beside food shops, about a third of food consumed in the UK food system is in the hospitality sector that includes cafés, restaurant chains, take-aways and hotels. Underpinning the entire system are ancillary systems for energy, water and waste, and the many state functions such as local authority waste, quality monitoring and public and environmental health services.ⁱ The entire system is subject to and kept moving by a panoply of cultural, financial, technical and scientific support. Banks fund it and traders do the deals - so much so that it can be hard to draw boundaries around the UK food system in the first place.

ⁱ see more in Lang T, *Feeding Britain*, Pelican, 2020

Figure 3.2: The Food System presented as a dynamic whole / Source: T Lang / graphic: Gavin Wren



Because this vast food system is so complex, any desire to inject resilience into the system is no easy matter. In interviews, we asked industry organisations large and small if they had positions on food resilience. While all were aware of the issue it did not necessarily feature as a top priority as a civil challenge, but it did commercially. One medium-sized but national body, for example, said its members:

“are uniquely placed to aid with the UK’s food resilience as [we] are producers as well as retailers, and often have short, local supply chains. [...] and we may create a plan around resilience, rather than helping members in a more reactive way.”

What has changed is the scale and content. Nowhere is this more so than the shift in where and how people eat. Consumers today, as they did in the 19th and 20th centuries, eat food both in and outside the home but the big change has been in how much food is now eaten and produced out of the home. Obesity analysts point out that a big trend has been to eat or ‘graze’ throughout waking hours. Café culture is old but it has moved from rare and élite to normal and ubiquitous. Food now also comes in myriad ready-made forms in multiple packaging types (plastic, metal, card, paper, ‘bio’) ranging from snack ‘non-food food’ to drinks. Whereas in World War II, nutritionists could think about how to ensure people were fed decent and regular meals, today set meals are more fluid.

One could argue that the complexity of modern supply chains and their interactions is not conveyed by the simplicity of the term ‘food system’. Management analysts now try to grasp the enormity of what has been built in recent decades.¹⁵³ Whereas they mostly in the past tried to understand and refine corporate activity - what makes or mars this or that company, success or failure – today they have to pay more attention to what they often call the ‘ecology’ - how a firm operates in context, and where its risks lie. The complexity is creating new risks. A 2022 paper from the International Monetary Fund, for example, estimated that disruptions in supply chains (all, not just food) caused 2% loss to global GDP in 2021, US\$1.9 trillion.¹⁵⁴ Micromanaging what happens in a firm or one supply chain does not capture the impact of the terrain in which it sits. These disruptions are known to “emerge and cascade across economies.”

The July 2024 CrowdStrike software malfunction for Microsoft Windows is an example of that. A mistake in a software upgrade made by CrowdStrike – the US firm with 8000 employees and \$3 bn turnover charged by Microsoft with protecting against such problems - caused extensive and cascading disruption worldwide to airlines, health bodies and consumers.¹⁵⁵ Screens went blank. Planes could not fly. Microsoft calculated that ‘only 1%’ of Windows-based operations were affected. But it sent a frisson through the interconnected world of software dependency.

Where does food fit into this? It is both more mundane – a matter of trucks moving stuff about - and part of the risk picture of disruption and complexity that could leave mass consumers at a loss.

Home production

In 2022 just over half (58%) of food consumed in the UK was UK-produced, according to government figures.¹⁵⁶ Nearly a quarter (23%) came from the EU despite the UK leaving the bloc and more barriers being put to that trade. Table 3.1 gives main sources by region and includes exports which also could be disrupted (affecting others). Whether sourced short- or

long-distance, home-grown or externally derived, what matters for resilience planning is where the UK state has some leverage but that stops at the borders since Brexit.

Table 3.1: Origin of food consumed within the UK, 2022

<i>Origin of destination</i>	<i>Percentage of total UK food consumption</i>
UK exports	-9%
UK	58%
EU	23%
Rest of Europe	3%
Africa	4%
Asia	4%
Australasia	1%
North America	3%
South America	4%

Source: Defra (2023) Figure 14.4¹⁵⁶

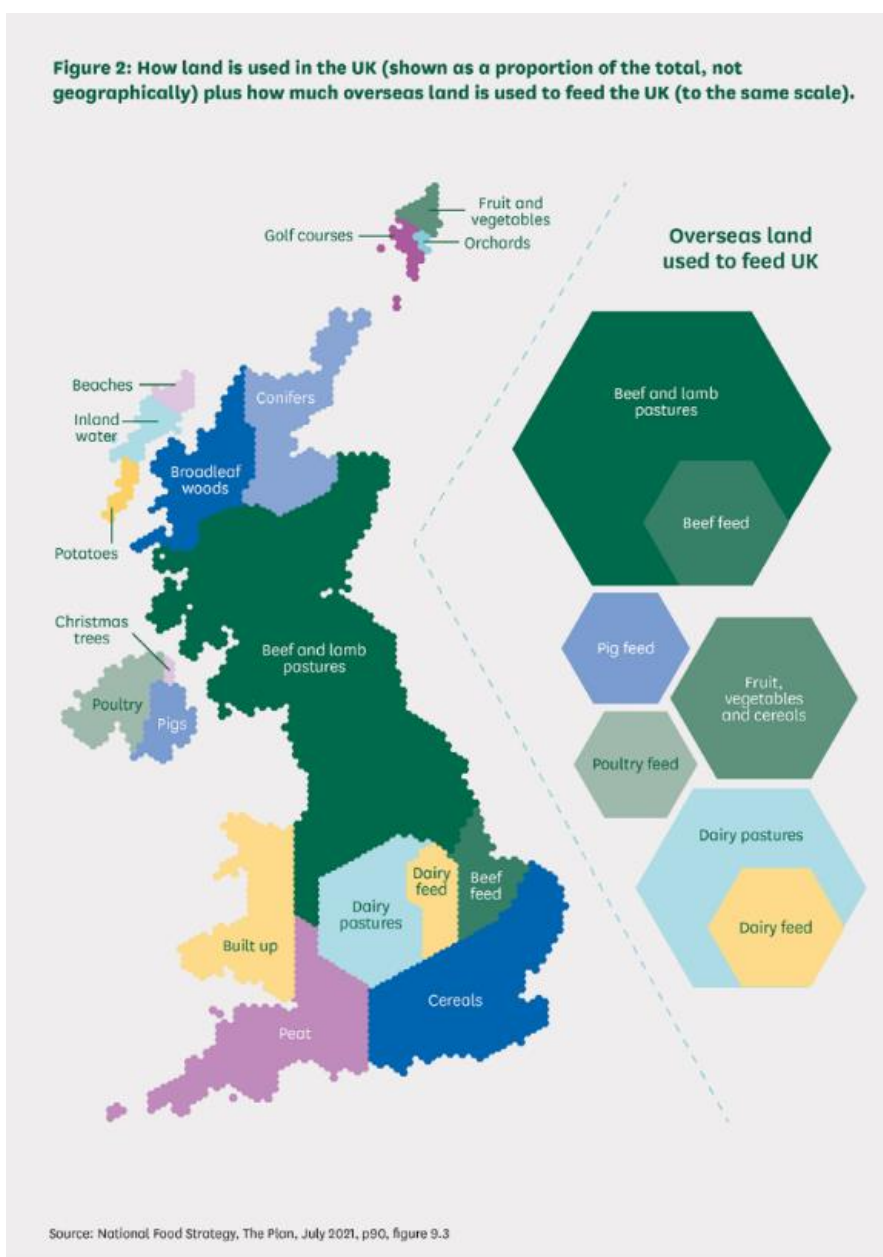
Besides the issue of where external food comes from, UK analysts expressed concerns about internal fragilities. The head of a major industry body interviewed for this report saw:

“[...] a mixed picture. There is real fragility in some sectors, and it’s declining overall. We are less resilient today than we were 40 years ago. We would be less able to cope with a shock now than then. Lots has changed - size of population, changes in food chains, decline in number of high street food shops and wholesaling that supported it. The old system had failings but was more diverse. I see a reducing number of suppliers in every tier. And at a pan European level, I see suppliers more nervous about being able or willing to supply the UK market, not least because it’s not a very profitable market to supply. We saw that in the summer with cucumbers and other protected crops. Why bother to supply the UK?”

There is a debate about whether the import figures do justice to the complexity of how to categorise the flows in the UK food system. Figure 3.3 reproduces a ‘map’ from the National Food Strategy on how UK land is used. The map is figurative. Wales, for example, is depicted as ‘built-up’, indicating how much of UK landmass is built on.

The amount of land used for horticulture is tiny. UK dependence on overseas land is depicted as the shapes on the right, outside the UK. Any UK food resilience planning would have to address those ‘hidden’ territories in crises.

Figure 3.3: A ‘map’ for how land is used to feed the UK from domestic and external sources



Note: the map does not show actual location but symbolises land use

Source: National Food Strategy 2021⁶

The current situation is a mix of a high import dependency and low home production. The 2023 Health Effects of Climate Change (HECC) report by the UK Health Security Agency noted:¹⁵⁷

“Nearly half of the UK’s food is imported from overseas, with greater importation rates of some food groups such as fruit and vegetables (78%). The UK reliance on imported food has increased, with more cereals, dairy, fruit, meat, starchy roots,

sugar and vegetables being imported in 2019 compared to 1986. Unless domestic production is increased, the UK's dependence on imported food is expected to continue to increase, particularly for some plant-based foods. In the event of limited supplies of healthy foods, there is a risk that saturated fat, sugars and salt could make up a greater proportion of diets, adversely impacting the proportion of the UK population meeting the government dietary recommendations."

Further, it added:

"[...] by 2050, 52% of legumes and 47% of fruit would be imported from climate-vulnerable countries. Supply of vegetables, fruit and legumes is projected to fall short of what would be needed to meet UK dietary recommendations."

Within the UK's food production there is regional concentration. Greater Lincolnshire, for instance, "accounts for" (i.e. processes) 70% of seafood consumed in the UK, grows and processes 30% of the nation's vegetables, and 18% of poultry. It had a total agricultural output of over £2 billion in 2019, with a seafood processing and trading cluster worth over £1.5 billion to the economy.¹⁵⁸ That particular areas have developed food specialisms could be a source of risk. If disease affects concentrated production centres, it can spread and be devastating. When the foot and mouth disease outbreak in 2001 put a halt to animal movements in some parts of the country, it wasn't just the farming sector that was affected. Tourism turned out to be much more financially valuable.¹⁵⁹ In a crisis, food sectors that are more decentralised or distributed may be less vulnerable to disruption.

One food analyst told us:

"It might not take much to create problems such as war. The UK is at risk given its food import dependence – however this is measured. And we do need to clarify what measures matter, incidentally. There are too many indicators being used that appear to conflict. But the UK is, by all indicators used, heavily reliant on food imports."

A very senior and experienced food industry person argued firmly that production should not be viewed as an issue of land use or farming and growing. It's about factories, too:

"I am not sure the UK's food factories are as resilient as they should be. The system is weak on the power outage threat, for instance. If major outage happens, the flow of food from a factory will be disrupted and have knock-on effects. The truth is that the food system is full of interdependent parts, the consequences of which often are not being fully analysed."

"What if there was a shock from an outside source just when the manager is trying to sort out replacing the factory's gas boiler system (to meet Net Zero). Please note that gas boilers are at the heart of most food processing factories. [...] No-one has taken account of the need to build in flexibilities for what could become mounting or impossible pressures. We have a rising problems of scale ahead of us in the food sector, I think."

Dependency on energy, minerals and CO₂

The modern food system has been built on oil and gas for over a century. They drive 'efficiencies', are turned into fertilisers, move food around the globe and up and down motorways within the UK and fuel the power stations that deliver electricity. Food prices were affected by the massive spikes in world fertiliser prices in 2008-09 and 2022-24. Defra notes they were 42% higher in late 2024 than in 2021.⁸³ Concern about power outages is high

among industry people we consulted. Central government is aware of this. Scenario exercises such as Mighty Oak in 2022 and 2023 have been conducted and hopefully improved planning will result. But whether these insights are fully applied into food systems planning is a moot point, as two issues now illustrate: critical materials and CO₂.

Critical materials and food

With the Ukraine invasion, food industry energy reliance has become more visible as a strategic risk. In truth, the risks from built-in dependencies was already clear. The entire edifice of modern food supply *and consumer / public interest* is underpinned by access to and deployment (if not recycling) of critical raw materials (CRMs) including 'rare earth elements' and minerals. In its first study of this critical reliance, the EU listed 41 critical elements. Europe let alone post-Brexit UK is almost entirely dependent on access to such materials. CRMs are defined as those with "high economic importance for the EU" (based on the value added of corresponding EU manufacturing sectors, corrected by a substitution index) and a "high supply risk" (based on supply concentration at global and EU levels weighted by a governance performance index, corrected by recycling and substitution parameters).

The first EU assessment (2011) identified 14 CRMs out of the 41 candidate raw materials. In 2014, 20 CRMs out of 54 candidates. In 2017, 27 CRMs were identified from 78 candidates. And by 2020, this had grown to 30 CRMs out of 83 candidates. It is thus likely that the UK is exposed in just the same way to the same risks of CRM disruption. The EU cites OECD forecasts that global materials demand will "more than double from 79 billion tonnes today to 167 billion tonnes in 2060."¹⁶⁰

Figure 3.4 presents the EU assessment of critical and non-critical materials. Critical are in red, non-critical in blue. It weighed risks to supply against economic importance. Risks to this dependency might be slow to turn into shock and much depends on whether the West learns to recycle more than it does presently.

The UK should note that the EU is quite clear that its 'sovereignty' (its word) depends on this. Table 3.2 provides data on where the EU's 51 CRMs are derived. How the UK's agri-food system depends on the EU's CRM is not known.

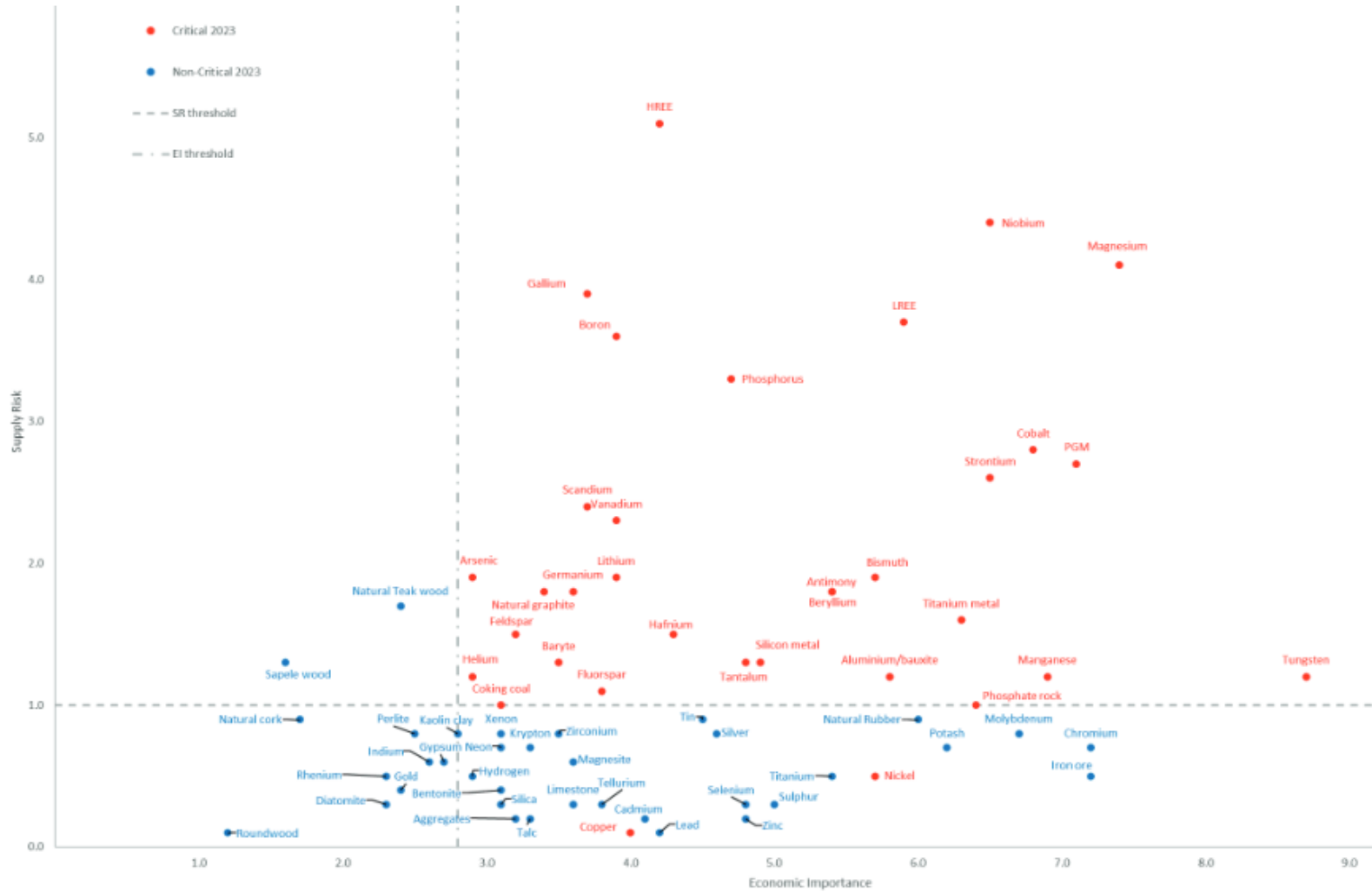
In the UK, meanwhile, BEIS (now merged into DBT) had created a Critical Minerals Expert Committee and a Critical Minerals Intelligence Centre. An initial assessment by the British Geological Survey listed the following as having "a high criticality for the UK": Antimony, Bismuth, Cobalt, Gallium, Graphite, Indium, Lithium, Magnesium, Niobium, Palladium, Platinum, Rare Earth Elements, Silicon, Tantalum, Tellurium, Tin, Tungsten and Vanadium.

In 2023 the Critical Minerals Expert Committee created and published a first 'watchlist'. This pointed to five potential concerns: Iridium, Manganese, Nickel, Phosphates and Ruthenium. Certainly phosphates, as we show below, matter considerably for farming.

The 2022 *Resilience for the Future* policy paper (updated in 2023) outlined the UK's Critical Minerals Strategy but made not one reference to food.¹⁶¹

Way forward: The UK Government should assess whether there is genuinely no risk to food from critical material risks to the UK food system or whether this has simply been omitted from the assessment of food as a critical national infrastructure.

Figure 3.4: The 2023 EU Assessment of Critical and non-Critical Material Resources



Source: European Commission 2023¹⁶⁰

Table 3.2: Major global supplier countries of CRMs – individual materials

Material	Stage *	Main global supplier	Share	Material	Stage *	Main global supplier	Share
1 aluminium	E	Australia	28%	27 magnesium	P	China	91%
2 antimony	E	China	56%	28 manganese	E	S. Africa	29%
3 arsenic	P	China	44%	29 natural graphite	E	China	67%
4 baryte	E	China	32%	30 neodymium	P	China	85%
5 beryllium	E	USA	67%	31 niobium	P	Brazil	92%
6 bismuth	P	China	70%	32 nickel	P	China	33%
7 boron	E	Türkiye	48%	33 palladium	P	Russia	40%
8 cerium	P	China	85%	34 phosphate rock	E	China	48%
9 cobalt	E	DRC	63%	35 phosphorus	P	China	79%
10 coking coal	E	China	53%	36 platinum	P	S. Africa	71%
11 copper	E	Chile	28%	37 praseodymium	P	China	85%
12 dysprosium	P	China	100%	38 rhodium	P	S. Africa	81%
13 erbium	P	China	100%	39 ruthenium	P	S. Africa	94%
14 europium	P	China	100%	40 samarium	P	China	85%
15 feldspar	E	Türkiye	32%	41 scandium	P	China	67%
16 fluorspar	E	China	56%	42 silicon metal	P	China	76%
17 gadolinium	P	China	100%	43 strontium	E	Iran	37%
18 gallium	P	China	94%	44 tantalum	E	DRC	35%
19 germanium	P	China	83%	45 terbium	P	China	100%
20 hafnium	P	France	49%	46 thulium	P	China	100%
21 helium	P	USA	56%	47 titanium metal	P	China	43%
22 holmium	P	China	100%	48 tungsten	P	China	86%
23 iridium	P	S. Africa	93%	49 vanadium	E	China	62%
24 lanthanum	P	China	85%	50 ytterbium	P	China	100%
25 lithium	P	China	56%	51 yttrium	P	China	100%
26 lutetium	P	China	100%				
Grouped materials				Stage	Main global supplier	Share	
HREEs				P	China	100%	
LREEs				P	China	85%	
PGMs ⁶ (iridium, platinum, rhodium, ruthenium)				P	South Africa	75%	
PGMs (palladium)				P	Russia	40%	
Legend							
Stage		E = Extraction stage P = Processing stage					
HREEs		Dysprosium, erbium, europium, gadolinium, holmium, lutetium, terbium, thulium, ytterbium, yttrium					
LREEs		Cerium, lanthanum, neodymium, praseodymium and samarium					
PGMs		Iridium, palladium, platinum, rhodium, ruthenium					

Source: European Commission 2023¹⁶⁰

Carbon dioxide reliance and vulnerability

Carbon dioxide (CO₂) is widely used throughout food industries and the UK is heavily import-dependent with alternatives described by Defra as “difficult”.⁸³ It is used to extend the life of perishable foods (in ‘modified atmospheric packaging’, being the ‘fizz’ in fizzy drinks); to stun animals for slaughter; to fumigate spices; and to develop alternatives to animal protein.¹ The UK imports about a quarter of its CO₂. UK production has been dominated by CF Fertilisers, a subsidiary of US-owned CF Industries. CF has had two main plants, one in Ince, Cheshire and the other at Billingham, Teeside. The CO₂ used in food is a byproduct of gas-based fertiliser production and was thus affected by energy price volatility following the 2022 Ukraine invasion and the subsequent sanctions on Russian gas. This pan-European

¹ e.g. Novo Nordisk Foundation (2023): <https://novonordiskfonden.dk/en/news/co2-as-a-sustainable-raw-material-in-our-future-food-production/>

(Russia-EU) reliance was efficient as long as gas prices were stable, and all the highly concentrated production facilities are on-stream.

Neither of those assumptions have been holding. Even before the second round of Russia-Ukraine hostilities, in June 2018, a shortage of carbonated drinks occurred and nine big UK poultry plants went short. This was explained as due to a Europe-wide CO₂ shortage.¹⁶² In September 2019, a big fire in Kent damaged power lines to France, leading CF Industries to halt production at its two plants due to “soaring prices”. By early 2022, temporary commercial deals were completed to keep plants open. In February a deal was struck with CF to continue production at Billingham. In July 2022, however, a plan for a private equity fund to buy CF’s Ince plant fell through.

In August, CF announced it was halting fertiliser production at Billingham that provided 42% of UK CO₂. The situation was widely assessed by food industry people as due to reliance on CF with its dominant market share, and a reluctance by ministers to address this reliance. The meat industry, a big user of CO₂, is not alone in seeing the future as requiring a more diversified bio-gas industry.¹⁶² Are consumers even aware of this?

Energy and minerals

When Russia invaded Ukraine for the second time in 2022, the gas market was immediately affected and UK farming reliance on artificially made fertilisers became clear. According to one interviewee, a senior industry person, it also exposed that:

“Ministers have little idea of what’s at stake in food. The fertiliser shortage really surprised them.”

In 2022, the UK agrochemical market (pesticides, fertilisers etc) had sales of more than £1.2bn. These have been key drivers of the intensive and monocropping modes of production developed over the last 70 years. A quarter of artificial fertiliser use is for cereals, about half of which goes for human use, while half is applied to grass to make it grow more abundantly for meat and dairy production. Across the EU, cereals represent about a quarter of what animals eat.

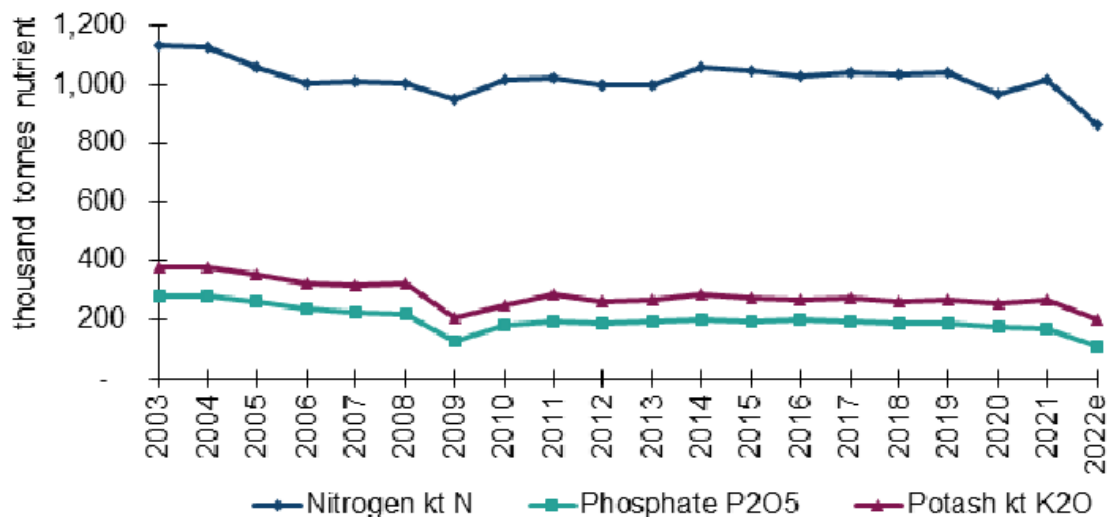
This reliance on fertilisers and agrichemicals has knock-on effects. One study, for example, estimated that herbicide use in the UK had been so routine that unwittingly it has created ‘resistance’ in the form of the undesirable weeds such as blackgrass contributing additional costs of farming of £400m.¹⁶³

Fertiliser dependency is particularly sensitive to disruption. Of the 1.4 m tonnes of man-made inorganic fertilisers used on UK farms, most is nitrogen (produced from imported gas) and the rest potash and phosphate (see Figure 3.5). These ingredients have been long-term drivers of UK agricultural productivity but use has slowed with criticisms of profligate use and residues getting into waterways.

This fertiliser run-off is a significant part of the UK’s problem of river health. The 2024 *State of Our Rivers* report underlined the poor overall status in 2022.¹⁶⁴ Measured against the EU Water Framework Directive, only 15% of stretches of all rivers sampled in England, 31% in Northern Ireland, 42% Ireland, 44% in Wales, 57% in Scotland few were judged to be in good ecological health. In 62% of cases, the main cause of poor river health in England was “activities attributed to agriculture and rural land management” such as pollution from fertiliser or livestock. 54% failed because of the water companies’ actions or inactions. The Rivers Trust, a confederation of 63 river trusts across GB and all Ireland, blamed weak

regulatory implementation, and noted the lasting effects of decades of toxic chemical pollution, not just sewerage. While it is possible to literally see sewerage in waterways, it is hard to see per- or poly-fluorinated alkyl substances (PFAS). PFAS are a category of 4,700 man-made chemicals used in many domestic products since the 1940s. They are common in non-stick frying pans, toiletries, paints, packaging, pesticides. They are now found in rivers, air, soil and in humans.¹⁶⁵

Figure 3.5: Quantities of major nutrients used, United Kingdom 2003 – 2022



Source: British Survey of Fertiliser Practice 2022 / Defra / AIC

The source of the NPK ‘big three’ fertiliser ingredients – nitrogen (N), phosphorus (P), and potassium (K) - could also be a strategic concern.¹⁶⁶ Using US Geological Survey data, the UN Conference on Trade and Development (UNCTAD) estimates that China is the world’s largest producer of phosphate fertiliser at 85 million tonnes (mt), followed by Morocco 38 mt, and the USA 22 mt (see Table 3.3).¹⁶⁷ According to another specialist source, Morocco has much the greatest reserves with 50 bn tonnes, China second 3.2 bn tonnes, and Egypt with 2.8 bn tonnes (but not in the UNCTAD table).¹⁶⁸

Electric car batteries rely upon phosphates. Of potash, Canada is the largest producer, but Russia and Belarus produce 40%.¹⁶⁹ The point here is to show that availability of inputs to food supply chains is not fixed. Farmers and growers using organic or biological methods are not reliant on artificial pesticides. They are currently a small minority of farmers but the shock to the nitrogen market following the Russian 2022 invasion should encourage more to reduce NPK reliance.

Table 3.3: Phosphate Rock Market, 2021

	Production	Share	Reserves	Share
China	85.000	38,6%	3.200.000	4,5%
Morocco	38.000	17,3%	50.000.000	70,4%
United States	22.000	10,0%	1.000.000	1,4%
Russia	14.000	6,4%	600.000	0,8%
Jordan	9.200	4,2%	1.000.000	1,4%
Saudi Arabia	8.500	3,9%	1.400.000	2,0%

Source: US Geological Survey / UNCTAD 2022¹⁶⁷

What is land for? Is food production included?

“They don’t make it any more”, said Mark Twain apocryphally, justifying advice to buy land. He was witty but erroneous. The Netherlands – from which the UK derives much horticultural produce – actually creates ‘new’ land by colonising sections of its shallow internal seas. And much agriculture has expanded into former wetlands and low-lying lands across the globe. Low-lying land is rich in sediments or decayed plant matter, so ideal for horticulture and field crops. Its top-soils are the sediments of thousands of years of decayed plant growth or accumulated erosion swept down rivers. The state of soil matters for long-term food security and resilience. Soil is actually an ecological hive hidden activities of a myriad of soil animals, minerals, fungi, processes and detritus. Other than the seas, soil provides the medium for what feeds humanity. Ensuring its fertility should be a central goal for any modern circular food economy, and certainly one seeking to improve its national resilience. But climate heating and sea rises suggest the need to plan tactical retreats from low-lying land. Swathes of Lincolnshire and Cambridgeshire are vulnerable.

The UK seems reluctant to address this enormous challenge. The National Planning Policy Framework should be a key statement (for England). While scientists see land as ‘multi-functional’, serving many interests at the same time, in politics it is the site of sometimes vehemently competing and opposed interests and purposes, each with dominant beneficiaries and consequent risks (see Table 3.4). With the Conservative Government committed simply to maintaining UK food production at “current levels”,²² the Labour Government would be unwise to duck the inexorable effects of climate and sea change. Current levels are unlikely to be maintained if climate change makes existing land unusable or unavailable. The Tyndall Centre estimates potential high rise of sea levels by 1.3-1.6 metres by 2100, but its most optimistic estimates are 30 cm lower than the previous IPCC best case estimate.¹⁷⁰

Table 3.4: What is land for? Competing interests over land

Potential land use	Output	Key beneficiaries	Risk considerations
Food	Horticulture; meat; grains; seeds	Consumers; value-adders	Weather change; floods / drought; soil erosion; labour; strength of other sources of food.
Sequestration	Carbon; water; nitrogen	Future generations; present land owners; utility companies	Uncosted markets; tensions between profit taking and use value
Housing	Homes	Building industry; financial markets; home-owners	Best growing land put under concrete
Transport	Roads; rail; supply flows	Logistics industry; consumers	Power source disruption
Fibre	Cotton; wool; linen	Clothing industry	Fashion change; cost of living squeeze
Wood	Wood; wildlife; biodiversity	Future generations	Will be affected by climate change; fire, floods etc
Water	Crops; water on tap	Humans and ecosystems	Volatility (drought / floods); storage
Energy	Wood / fibre for burning	Biofuel industry	Good land used to prop up energy wasteful lifestyles
Recreation	Sports	Participants; spectators; sponsors; investors	Fashion
Tourism	The view	Diversifying farmers	Cost of living squeeze; demand volatility
Investment	Capital growth	Land-owners	Collapse in property market; ecosystems risks
Resources	Gravel; aggregates; cement; lime; fertilisers	Mining and construction industries	Energy prices affect access

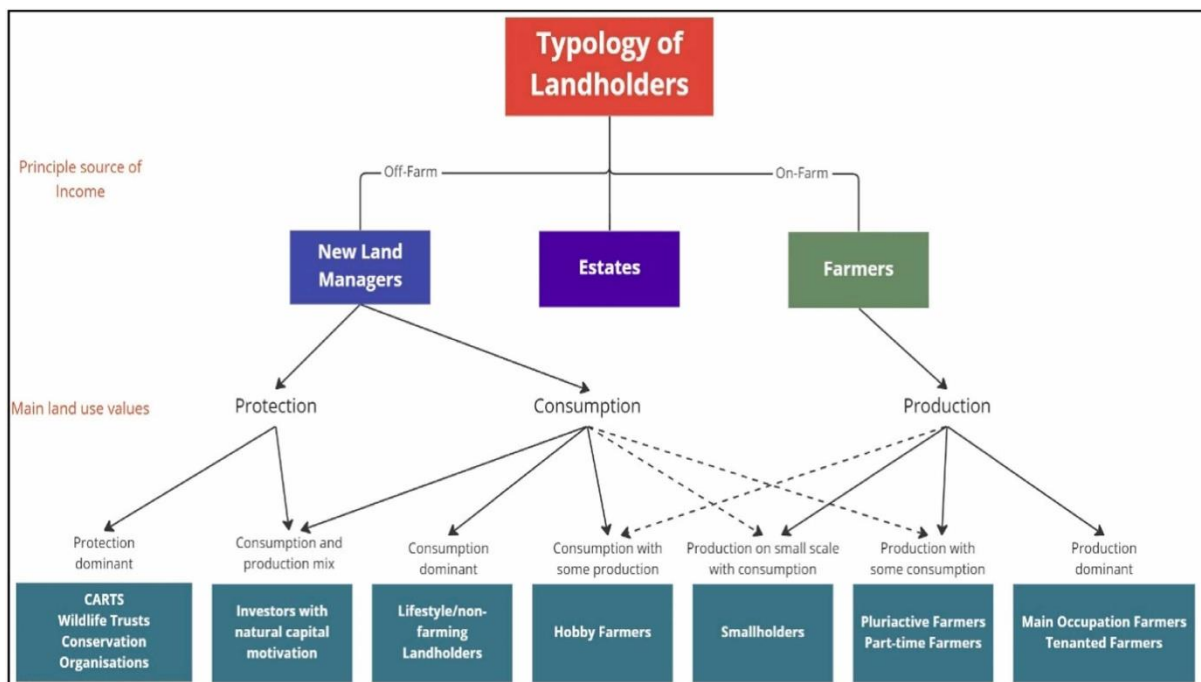
Source: authors

Space the size of Wales is built on in the UK. But the majority of UK land is not built on. Taking England (the most built on), transport and utilities account for 4.4% of all English land use, residential 1.3% and 'other development' 1.9%.¹⁷¹ Of the English regions, London is the most developed with 40.6% developed. The vast majority of all other regions are used for agriculture in some form. Across the country, as of April 2022, the top three land use groups were 'Agriculture' (63.1%), 'Forestry, open land and water' (20.1%), and 'Residential gardens' (4.9%). Only 6.8% of land within the Green Belt is of developed use. The challenge in the future is not necessarily shortage of land but tricky issues such as reserving best land for food growing, protecting it from being built on, and ensuring more diversity of food growing across the UK, not concentrating it in particular regions.

Where does this leave the public? The 2021 Census found one in eight British households has no garden, with black people four times as likely as whites to have no garden.¹⁷² Not surprisingly given land values, Londoners have the smallest gardens, and fewer than other regions have. But areas with fewest and smallest gardens are more likely to have access to a park.

There is a truism that (big) landowners determine land use. This is not the full picture. A study by Kam and Potter recently proposed a new typology of UK 'landholders', some whose principal source of income is from the land, and others for whom their main income is produced away from the land (see Figure 3.6). They identified seven types of landholders: (i) nature-protecting bodies such as the 46 Wildlife Trusts who own about 243,000 acres, and conservation bodies such as the National Trust that owns 620,000 acres, and others such as (ii) investors looking to offset carbon or biodiversity support, (iii) lifestyle farmers, (iv) hobby farmers, (v) smallholders, (vi) part-time farmers (who also work off-land for income), and (vii) farmers for whom farming is their main occupation whether owners or tenants.¹⁷³

Figure 3.6: A Typology of Landholders in the UK



Source: Kam & Potter 2024¹⁷³

Kam and Potter propose that three broad orientations vie for the land: to protect it (for nature), or to produce products for sale to outsiders, or for more self-oriented consumption. Somehow, if security and resilience are to be taken more seriously, the national interest in food production must be prioritised within this fragmentation. In past world wars, land interests have been brought under tight control. Our research suggests some uncertainty even among large UK landholders about what is wanted from them with regard to food.

From the perspective on food and land use, no consensus of interest should be assumed. On the contrary, it is wiser to assume land users have divided loyalties. Food, however, should not be lost in these competing concerns. Issues such as farmer succession or their aging (a third of farmers in 2019 were over 65 years old), tax liabilities, the value of land, shifts and uncertainties in subsidy schemes post Brexit, and more can be politically sensitive, as the Autumn Budget's proposals for inheritance tax have showed. Food resilience has to be injected into this mix.

Achieving food security and resilience coherence within government requires clarity because government too has split interests across not just farming but also town and country planning, transport, rural affairs (National Parks), and the politics of central to devolved government, and whether local organisations have any say on local land use. The case for food security and resilience needs champions in this political mix. There is a potentially key role here for Chief Scientists to help narrow the gap between evidence of known challenges and how food markets currently operate in relation to land and food.ⁱ

Articulating a new food resilience approach that feeds the public demands a mixture of short- and long-term approaches. An important entry point is land as infrastructure. Significant tracts of UK horticultural land are below sea level and, like the Netherlands, owe their existence as productive land to an old infrastructure of drains, dykes, ditches, canals, sluices, pumps and human skills - often a legacy to past immigrant Dutch skills.

Centuries ago massive drainage schemes caused much social conflict as traditional mediaeval Fen activities (fishing, reed baskets) were forced out by compulsory drainage schemes favouring new land owners and farming.^{174,175} Today, such lands face challenges from sea level rise. Even if the UK turned a blind eye to its own slow crisis, its reliance on Netherlands-derived imported foods will come into play. To move horticulture to higher ground would require long-term planning, a rethink of infrastructure and landholders' functions. But it should begin.

How much land does the UK have?

The UK has 17 million hectares (mha) of agricultural land; these make up 69% of all its land mass. Of this 17mha, a third (6 mha) is defined as 'croppable' or with potential to grow for economic purposes or to be farmed.

Taking recent data, of this croppable land, just over a half, 3.2 mha, is down to cereals. Of that 3.2 mha, 1.8 mha is for wheat and 1.1 mha for barley (2 m tonnes of the UK barley crop is used for whisky and beer). Oilseed rape (e.g. cooking oils and animal feed) accounts for 0.4 mha. Potatoes account for only 0.13 mha and horticulture (of considerable health significance) a mere 0.15 mha. Other arable crops such as maize, peas and beans, and sugar beet are planted on 0.72 mha.¹⁷⁶

With Brexit trade difficulties yet to stabilise, import-export markets are likely to fluctuate. Nervous about this, the previous UK government five times deferred the implementation of health controls for its food or plant imports and exports required under the Brexit deal.¹⁷⁷ Final full implementation was supposed to begin in 2024 but in October 2024 was again deferred. This is wise but belies the difficulties the new system of trade barriers (the 'Single Trade Window') have already caused.¹⁷⁸

The broad picture, noting the possibility of trade and political fluctuations, is that in recent years the UK has been 60% self-sufficient in sugar beet, 70% for potatoes and 80% for oilseeds. It is self-sufficient in oats and barley, and 90% self-sufficient for wheat. It is a net importer of dairy products and beef, importing high value products but exporting parts of animals it does not want to eat (feet, offal, brains, that often are exported chilled to China and the Far East).ⁱⁱ

ⁱ There are now 25 Chief Scientific Advisers across UK government: <https://www.gov.uk/government/groups/chief-scientific-advisers>

ⁱⁱ See Agriculture and Horticulture Development Board data: <https://ahdb.org.uk/trade-and-policy/export-opps/top-markets>

From a health perspective, the greatest concern is that the UK only produces just over half what the population consumes in vegetables and a mere 16% of fruit. And these levels of consumption fall far below health guidelines for fruit and vegetables.¹⁷⁹ The home of fish and chips is a net importer of fish and seafood.

A significant proportion of crops grown in the UK is fed to the large population of farmed animals. In 2022, the total number of cattle and calves was 9.6 million (9.6 m), that included 1.5 m beef animals and 1.8 million dairy cows. The sheep and lamb herd was 33 m animals, of which half (16 m) were the breeding ewes. There were 5.2 m pigs of which 343,000 were the breeding sows. 188 m poultry of which two thirds (126 m) were for the 'table' (consumption) and 12 m for breeding stock.

Most UK vegetables are grown in the rich deep soils such as in Lincolnshire and the Fens of East Anglia. Most cereals are grown in the east of England, while animal production tends to be in the wetter west and uplands of Britain. These norms do not mean only those areas are where those foods can be produced. Climate change means food production will have to be reconfigured not just changing where food is produced, but how - less soil disturbance, more crop rotation, more experimentation (such as moving horticulture to higher ground).

The Centre for Landscape Regeneration at the University of Cambridge notes that the Fens account for 25% of all the lowland peat in England and Wales, and half of all Grade 1 English farmland, and they produce 22% of England's crops and 35% of its vegetable production.ⁱ But this region is also most at risk of long-term flooding as defined by being a Flood Zone 3 (see Figure 3.7). These blue threads are early warnings of a food security risk.

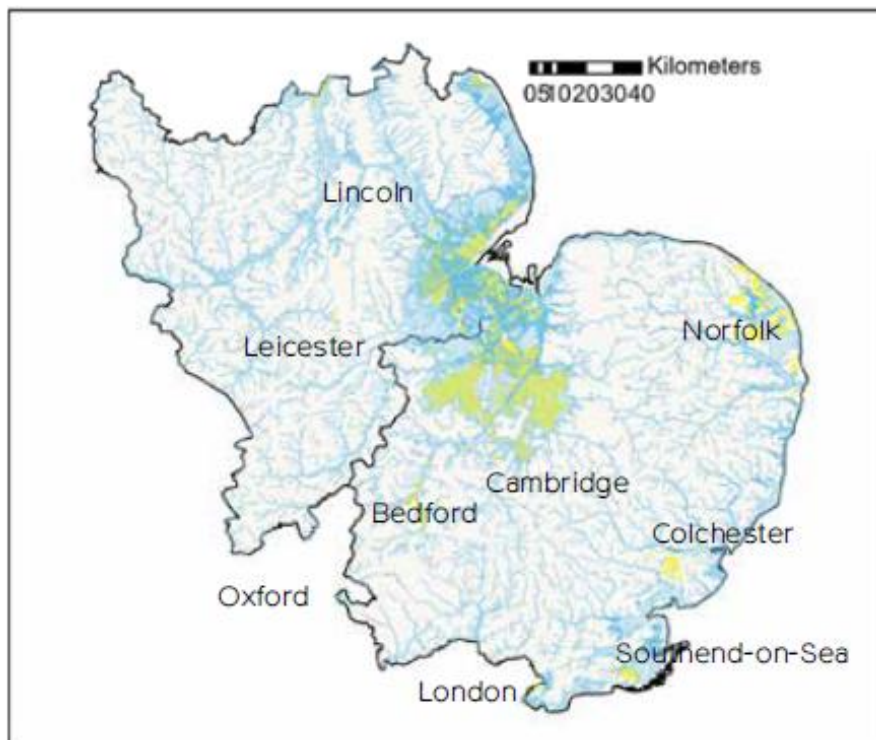
It would be a mistake to think of flooding as just a threat to current prime crop or low-lying land such as the Fens. As was shown in the 2024 floods in Spain's Valencia and other regions, massive rainfall in one area can transfer rapidly elsewhere. The UK is already experiencing an increasing incidence of floods nationally. 2023-24 was the wettest 18-month period since records began in 1834.

A paradox is now appearing. Despite farmers putting down an increased acreage to key crops such as barley, wheat and corn, more of that potential increase is being lost to climate induced flooding.¹⁸⁰ Long-term poor weather is both depressing for farmers and a practical disincentive to grow more if it makes expensive equipment unusable and unproductive. Why buy hugely expensive equipment to see it mired or destroyed?

Way forward: The UK Government should create a new Food Strategy with clear commitments to raise food production by sustainable means; to provide cross-cutting impetus for feeding the people; and to give a rationale for land use and reshape of the food system while building up national food security. This new Food Strategy must deliver diversity and a regionalised remit for all food sectors.

ⁱ <https://www.clr.conservation.cam.ac.uk/projects>

Figure 3.7: Flood Zone 3, East Midlands and East Region



Legend: yellow is Grade 1 land; blue is Flood Zone 3 risk

Source: CPRE 2022,¹⁸¹ from Environment Agency 2018 data

Are there limits to food-growing land?

This question lay at the heart of the Malthusian debate for over two centuries. At the end of the 18th century, Malthus was pessimistic about the capacity to produce more food but he was proven wrong. It could be done. Today we know this came at a cost to the environment and an existential risk to how natural systems operate on which food and humanity depend. But given those impacts are also now known, the challenge now is to adapt and change again, both in what is consumed and produced. As we have seen, land use must always be a central factor in how the UK addresses resilience. The land classification system itself deserves a review, not least because it addresses soil type.

A policy academic interviewee felt strongly that in the UK:

“fundamentally, we also don’t talk enough in the UK about the dependence of our food systems on soil structures. We take soils for granted when we should not. We need more focus on soil health. Related to this, we need to rethink the role of green belts round cities and other mechanisms of conservation: we are not protecting Grade 1 farmland, when we should.”

In the 1960s, the Ministry of Agriculture, Fisheries and Food instituted an agricultural land classification (ALC) system. The ALC grades land from Grade 1 top quality food-growing to Grade 5 of very poor quality, rough ground. Most land in England and Wales is Grade 3, good growing land, so that grade was subdivided in 1988 to give more nuanced categories. The five grade system is used by Natural England.¹⁸² The ALC took account of water, gradient (steepness of the land) and other utility factors. This should now be reviewed with

more attention to the potential for food diversification and regional spread. The ALC calculates 'hardiness' zones for types of food crops, assuming they are to be grown entirely outdoors. But small-scale growers show how early planting under cover makes some areas, previously deemed unfit, actually able to produce food. And the approach that assumes large fields and monocropping are the only form of efficiency is increasingly seen as only one view of the future.

The emergence of small agri-tech equipment (robotic weeders, drones etc) shows that micro-variation in land use is possible even within a technology-led approach to food production. The 'bigger is better' approach to food is being modified. Big straight line, mass scale cropping can be replaced by new forms of mixed, small-scale, sustainable farming and growing.^{183,184} Microclimates can be created by shelter belts of trees and agroforestry, for example.¹⁸⁵ All of which suggest that rigid classification of land use might need to be more flexible with food in mind. While it is a known folly to plough up thin grassland soils for cropping, different terrains can be more flexible; much depends on the soil not what the current land use is.

This theme is returned to in later chapters that discuss city and town planning for food and those cities building resilience by reconnecting with land around themselves (see Chapter 9). Across the UK, there are considerable variations in mean temperatures, rainfall, and broad food-growing capacity. But such matters need to be factored into civil resilience planning.

The US Department of Agriculture, for example, has a hardiness rating system for crop/seed varieties. In 2012 the Royal Horticultural Society (RHS) revised its hardiness rating to take better account of UK growing conditions.¹⁸⁶ The RHS 8-grade system goes from H1a under which plants require temperatures not to fall below 15°C (i.e. necessitating all-year round greenhouse conditions in the UK) to H7 - able to survive conditions down to -20°C. As gardeners and small-scale horticulturalists know, plants can be raised for domestic consumption and with (unpaid) labour across the UK and under conditions normal commercial growers would not consider viable. Crises, however, may make that normality unviable.

Way forward: The UK should develop a new *Resilience Agricultural Land Classification* to help policy-makers address the relevance of factors such as hardiness and future potential food growing, and to consider these as contributing to citizens' potential to grow food locally.

A later chapter addresses the social as well as supply role of gardens, allotments and SME operations for civil food resilience (see Chapter 8). These operate 'below the radar' of giant supermarkets, although the food service and independent food shops can. Resilience thinking suggests more diversity means prejudices against the inefficient should be paused. What is conventionally grown and what *could* be are separate things; one driven by economic norms, the other by possibility and need. France has already been developing "territorial" food systems ('systèmes alimentaires territoriaux') to encourage more diverse, small and local suppliers. It has a range of legal and advice measures to support short food supply chains (see Chapter 6).¹⁸⁷ Short and SME-friendly supply chains can be economic 'pathfinders' for where and how food production could be diversified and expanded to meet resilience objectives (see the city studies in Chapter 9). There are strategic advantages in diversifying production; dispersal targets can also reconnect populations with their food. The challenge always is scale.

Historically, towns and cities grew in places offering good access to potential or existing food provision whether due to sea, river or land access.^{188,189} For logistics and cost reasons, food production tended to be near urban settlements. There were long-distance travelling crops

such as spices in the past but these were prized and expensive, and long-distance food trade only applied to crops that could be stored. This all changed from the late 18th century as a UK network of roads, canals, and then railways was built. An energy transition shifted from animal-drawn transport to coal-based and then oil-based systems.¹⁹⁰ During these transitions, the UK had a set of food 'bio-regions'. London's food supply bio-region was north, west and south of the city; its food was grown on areas now under housing and concrete. For Manchester and Liverpool, their food bio-regions were the Lancashire moss and the Fylde. For the Midlands, it was the rich agricultural counties to the west, and so on. As the UK industrialised and urbanised, different feeding bio-regions emerged to service town and city markets. London being so large, its footprint went wider.

In 2021 a study for London's Mayor found 99% of London's food and beverages were imported from outside the city, with local production and farming accounting for less than 1% of the capital's food supply.¹⁹¹ And today, like all urban settlements, London measures its food not just by where it is from (or how far) but its energy use. London's food emissions are equal to 15,483 kilotonnes (kt) of CO₂eq each year, taking into account all lifecycle greenhouse gas emissions from food and beverages consumed by London residents and visitors.

These production assumptions have been dramatically changed by extensive networks of motorways, shipping and, to a lesser extent, airports. Continentalisation has fractured home production with cheaper imports, labour shortages and retailers wanting huge contracts, not a patchwork of small-scale suppliers.

Where could and should food be grown?

Where food is grown, and how, is set to change. But what matters is where resilience preparation for the public fits in. Resilience preparation is partly about thinking the unthinkable. Later chapters address the specifics of what the public can do: storage, skills, community actions, and more, but this may also involve them in different ways, too. For example, if horticulture is moved to higher ground or nearer to where people live, the public's proximity to where crops are grown might be important. And what is produced matters. Land that has historically been used for meat production might find different value. Large-scale land use change is already being addressed by the Committee on Climate Change and others concerned by methane and CO₂e emissions. Some UK farmers are partly engaged in this (e.g. via regenerative or nature friendly approaches), but many are also nervous and sometimes resistant. Not without reason. As has been shown in earlier chapters, attempts to create a clear overall framework for what could and should be grown where is missing.

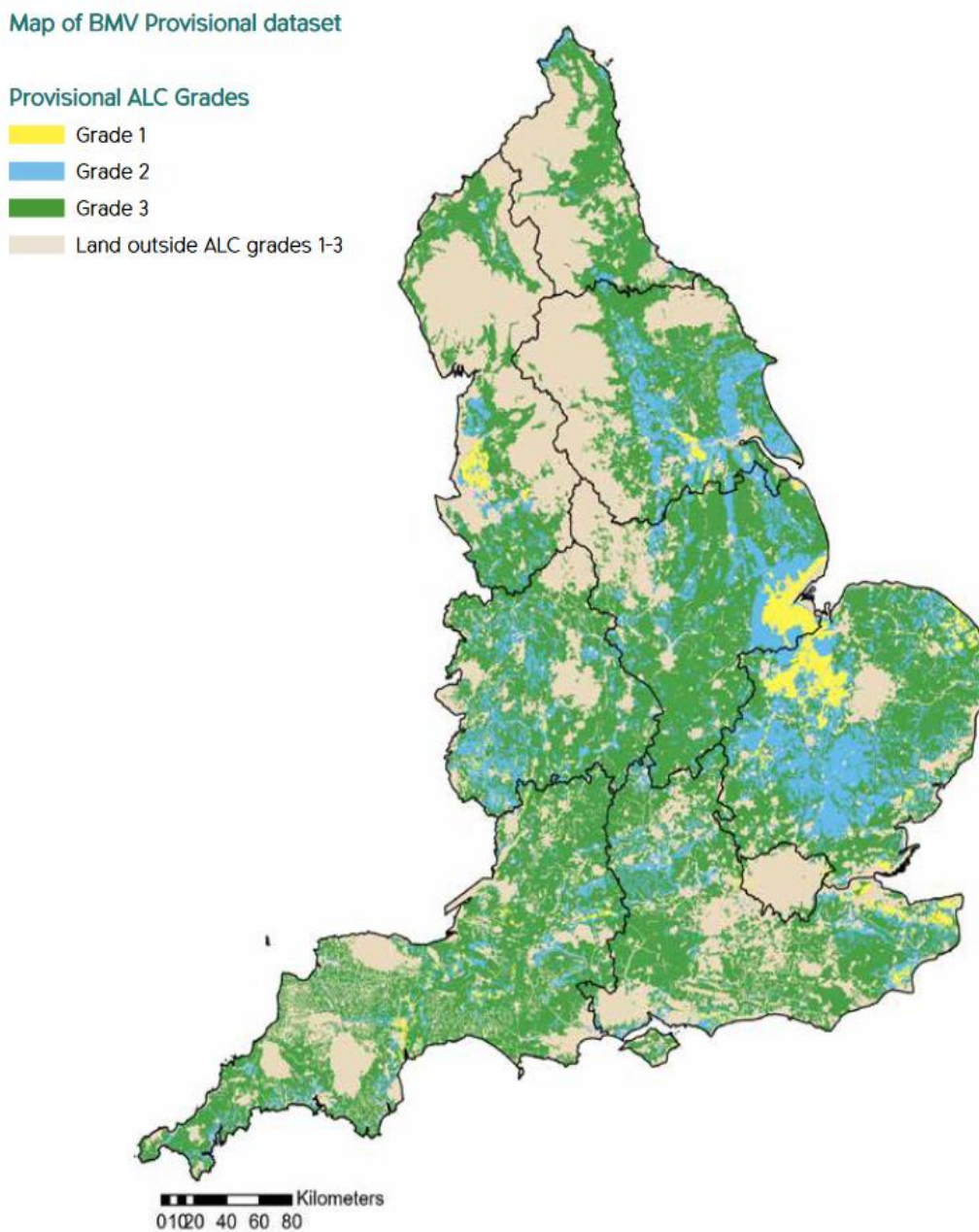
In 2022, the Government promised to create a horticulture strategy – one tangible promise after backing away from the 2021 National Food Strategy – but later Defra withdrew from the commitment with the Minister confirming it was 'scrapped'.¹⁹² That then triggered a withdrawal from the UK Fruit and Vegetable Alliance that had been a 'coalition of the willing', comprising the NFU, British Apples and Pears, the Landworkers' Alliance, Soil Association, Organic Farmers and Growers and others. The UK produces only a sixth of its fruit and just over half its vegetables (and both should be consumed more according to health guidelines), which is unfortunate, as horticulture is so efficient in land use. It uses less than 1% of the land but produces 20% of the farmgate production value - the value of a crop before it leaves the farm.¹⁹³

Could cities and urban dwellers do more to protect their food supplies? With the rapid urban growth of industrial cities, areas of historic food growing have been – and continue to be -

covered by roads, houses and ‘hard’ infrastructure. The UK’s system of green belts around town was one past policy response. This was intended partly to protect food growing and partly to prevent US-style urban sprawl; to delineate and protect the countryside and to prevent it being nibbled away for building or industry. Green Belts’ function was also conceived as ‘green lungs’ for polluted cities.

There is no shortage of good food growing land, according to the existing land classification system. Figure 3.8 depicts Grades 1, 2 and 3 good food growing land in England.

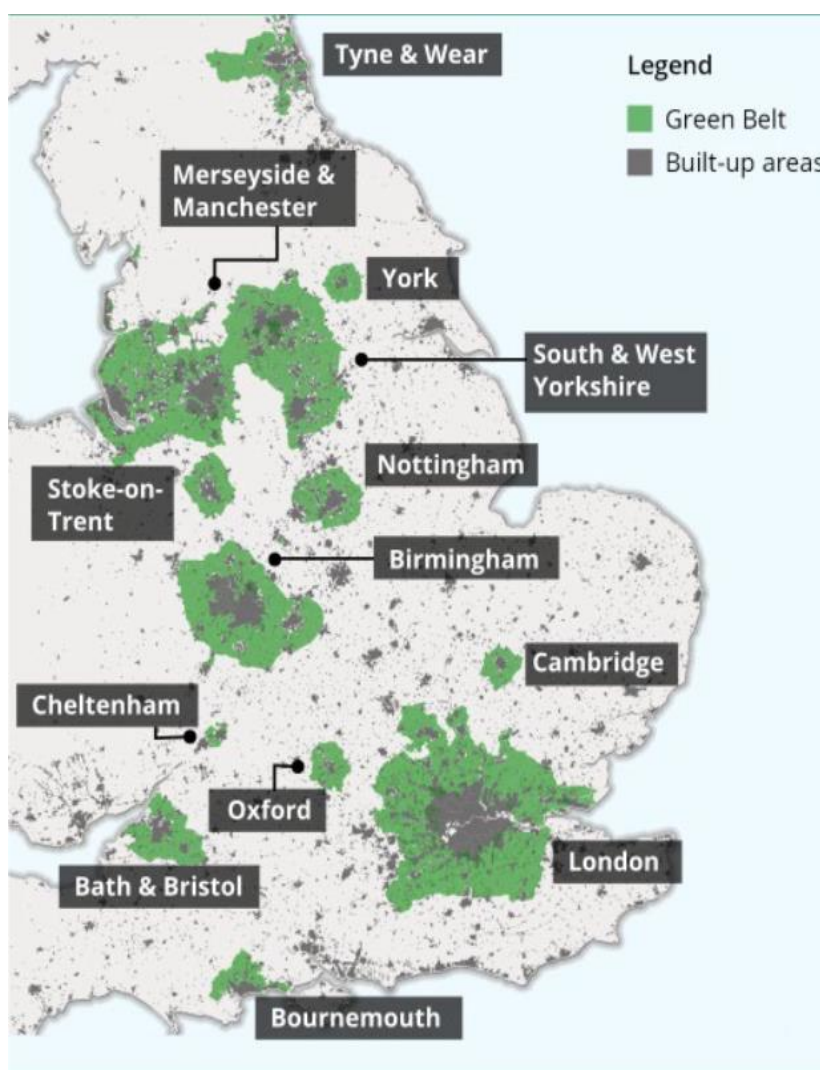
Figure 3.8: England’s Grades 1, 2 and 3 land: good food growing land



Source: Natural England / CPRE 2022;¹⁸¹

For resilience, proximity to the areas of mass population might be important. In 2022, England had 16,382 km² (or 6,324 square miles) of Green Belt, covering 12.6% of England's land area. These are around 15 major urban cores (see Figure 3.9). London is the largest, with 5,062km², Merseyside and Greater Manchester has 2,489km² and the combined South and West Yorkshire (Sheffield, Leeds and Bradford) has 2,270km². These are significant land areas and at present 66% used by agriculture.¹⁹⁴ In an ideal world, given proximity to urban areas, the best food use would be horticulture but that could be appropriately left to local knowledge. At present, food-growing capacity and resilience barely feature in the green belt planning debate the Labour government has opened. This is dominated by arguments about loosening planning restrictions for housing. It would be extremely unfortunate if planning restrictions were altered without considering civil food growing potential.

Figure 3.9: The major urban areas of England and their Green Belts



Source: House of Commons Library/DLUHC 2022¹⁹⁴

Way forward: HM Government and Parliament (e.g. through the EFRA, Environmental Audit and Health Committees) should give careful attention to the role of Green Belts as retained food resilience expansion zones.

Self-sufficiency: irrelevant or part of food security?

Often, food security is confused with self-sufficiency. They are not the same thing, although if a country produces more of its own food rather than less, its security in theory can improve, or at least it can track and control *how* the food gets to consumers. Human history shows that access to food from other sources – whether at national, regional or city level – is also critically important at times. Even highly productive lands can fail occasionally. Trade matters. It would be a major policy mistake to ignore trade while in pursuit of self-sufficiency at all costs (i.e. autarchy), or to dismiss it as ‘venal commerce’ compared to a supposedly more high-minded and economically fundamental agriculture. Trade and non-trade are both morally charged policy positions. They can be false dichotomies and muddled values in relation to civil food resilience.

A senior food industry person acknowledged the delicacy of this issue:

“The implications of producing more from the UK need to be thought through. Sourcing at present is still locked into marginal price differentials rather than security or resilience considerations.”

Nevertheless, whether a country or region produces the food it could is an important policy choice.¹⁹⁵ UK history shows too that it matters *why* and *when* a country chooses *not* to produce food that it could and instead to import food that could more equitably feed others. An experienced senior Whitehall person told us:

“There is an argument for having sufficient domestic production. The issues are: how to get to that state of readiness, what considerations it raises and whether, of course, government wants this.”

Much depends on how home production is managed. If it is dependent on massive energy or resource inputs, the vulnerability may actually increase, and food security be made more, not less, secure. But if, as with the UK, a country imports fruit and vegetables that it could grow sustainably and thereby cut the burden of its import bill, then food security, the balance of food trade finances and health objectives might be compromised.

In the mid-19th century, with the 1848 Repeal of the Corn Laws, the UK made a momentous decision gradually to shift to feeding itself mostly from outside the UK, its Empire or cheaper sources. The industrial interests triumphed over the landed class. Today, the UK relies for its food imports mostly on the EU but has put up new barriers to the smooth running of that trade. Few considered food security or sustainability or resilience in that 2016 referendum, or the subsequent settlement. The consequences now are that the UK must think about its food security whilst being unable to participate in decision-making on the source and modes of production or standards of a huge proportion of its food imports.

This modern momentous political decision now makes more urgent the need for a national food strategy, and a careful assessment of what could be grown here while meeting low carbon, and other objectives for sustainability, safety, health, employment and economic

viability. With current UK production running at just over 50%, what level of production is possible or desirable?

Besides where the food is physically sourced, food matters for cultural reasons such as identity and trust. Food quality is also important. How has it been produced? To what standards? This is why the Food Standards Agency and a (diminishing) labour force of inspectors – environmental health and trading standards officers – monitor food within the UK and at ports. The 2023 National Risk Register was correct to see food contamination as a significant risk. Trade deals set standards – weakening or raising them – but, as General Eisenhower is reputed to have said, “the uninspected quickly deteriorates”.

40 million tonnes of food is imported into the UK each year, a lot for the FSA to monitor. In fact, it only inspects about 1% of all imports, within which about 3% of samples become a concern. Leaving the EU made those reliant on the system of food inspection worried. The UK left the EU’s well-developed Rapid Alert System for Food and Feed (RASFF) and now has only a ‘third country status’ access, thus reducing the level of data and detail to which the UK has access.¹⁹⁶

According to the FSA’s *Our Food 2021* report, 30% of beef and veal consumed in the UK is imported, and half of pork, two thirds of poultry and over 85% of eggs.¹⁹⁶ The latter two markets have experienced considerable perturbation recently, with poultry producers going out of business due to feed costs. Two thirds of products not of animal origin (such as soya which is mostly fed to animals) come from Latin America or the Caribbean. The UK produces about four fifths of its cereals, half its sugar, half its fresh vegetables and just over a tenth of fresh fruit. A country which spread potato production around the world now only produces 60% of what it consumes.

In 2023, a small citizens’ jury inquiry hosted by the Food Ethics Council, a small but respected NGO, sensed the conditionality of the current situation. The jury was asked to consider whether food public procurement – a tiny percentage of the UK’s overall food consumption – should aspire to procure 80% of British produce. It concluded:¹⁹⁷

*“Our jury judged that a ‘80% from UK’ target for publicly procured food is a **FLAWED** idea if it is centred only on where the food is grown, reared or produced...However, a target to source more of **certain** foods that can readily produced in the UK could be promising, **IF** stipulations are also in place for **how** these foods are produced.”*
[emphases in the original]

The ifs and buts are appropriate. If the UK wanted to produce more, it could...but should it? Under what conditions would more home production be appropriate or contribute to civil food resilience? The answers to these questions are matters of values, circumstance and what priority is put on engineering sufficient diversity of supply to allow for shocks. This should not be allowed to drift for much longer. The conclusion of the Food, Farming and Countryside Commission’s ‘Conversation’ process showed considerable public appetite for change.¹⁹⁸

In the mid-2000s, nearly two decades ago, Defra’s economics team considered the possibilities of self-sufficiency and reminded policy-makers that the UK has not been self-sufficient to any significant level since the mid-18th century (see Table 3.5). The existence of an Empire where land and labour were cheap enabled the UK to switch to importing food from far away: grains from Canada, meat and dairy from Australia and New Zealand, fruit from South Africa, and so on. A powerful navy could protect supply lines. Neither of those are applicable today; two world wars also exposed the strategic risks of excessive reliance on imports of what could be grown here.

Table 3.5: Indicative UK self-sufficiency rates at different periods

<i>Period</i>	<i>Self-sufficiency %</i>
<i>Pre-1750</i>	Around 100% of temperate produce
<i>1750-1830s</i>	90-100% except for poor harvests
<i>1870s</i>	Around 60%
<i>1914</i>	Around 40%
<i>1930s</i>	30-40%
<i>1950s</i>	40-50%
<i>1980s</i>	60-70%
<i>2000s</i>	60%

Source: Defra 2006¹⁹⁹

Compared to other affluent economies, by value, the UK has one of the highest levels of reliance on imports of agricultural products. There are many ways of calculating self-sufficiency; most are either about the value of trade or about how much of a population is inadequately fed. The USA, for instance, produces 80% of its food (100% in some foods) yet still 10% of its population experience food insecurity. It is both the highest exporter and highest importer by value. If looking at total foodstuffs, the UK had the third highest level of reliance on imports in 2021, according to the OEC, a spin-out analysis unit from MIT.²⁰⁰ In a crisis or a shock, it is not only price value that will matter; nutrition and the role of food in general health and wellbeing become strategic matters. This is why horticulture and field crops (vegetables grown at field scale) are such important if mundane matters.²⁰¹ The UK is already suffering from a mismatch of supply, potential and health.²⁰²

The UK has not yet conducted the kind of inquiry needed to clarify what could sensibly be produced here. This would be a sector-by-sector, region by region analysis of what is currently grown, what could be, under which conditions, where and how. In 1946, in its first world food survey, the newly created FAO noted how in the recent war the UK had increased its production at home, measured in calories, by 70%.²⁰³ This was done in difficult circumstances but driven by a radical shift in policy focus: to improve the quality of diets for all. We need that again today. So far, the case for a rebuild of UK horticulture is being discussed mostly outside the walls of Government.¹⁹³ The House of Lords Horticulture Committee has been highly critical of the lack of official priorities.²⁰⁴

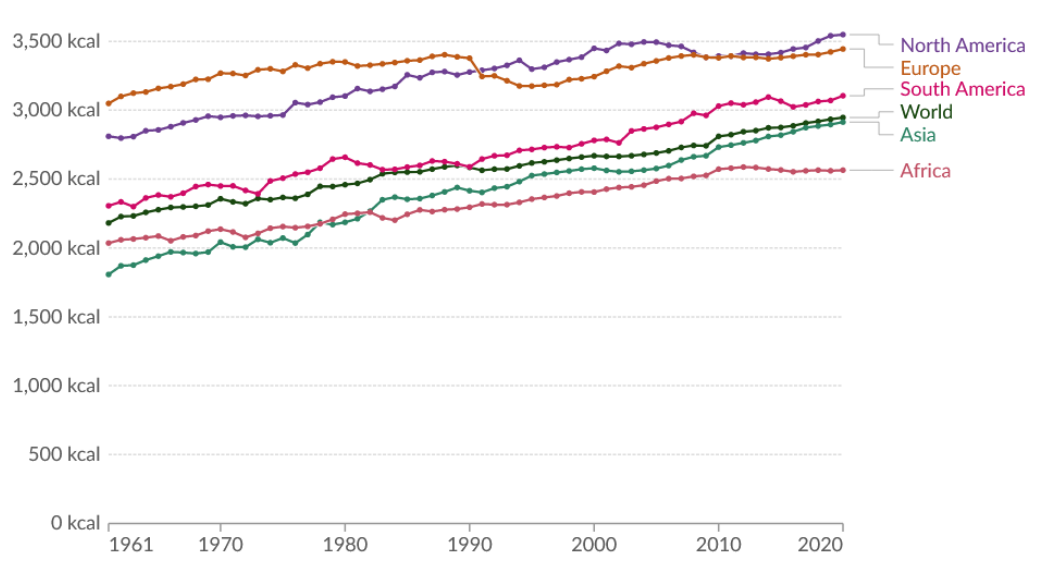
Behind the debate about whether food security (and thus potential food resilience) is best met by importing or growing more food lies a fundamental debate about the political economy of food. Critics of the 'buy food from anywhere' position stress the risks to security

from not having a significant proportion home-grown first. Market-oriented politics counter that ‘cheaper is better’. It becomes an argument about what is meant by efficiency. On one side is the argument that: “[i]n *most* countries, small and medium-sized farms tend to have *higher agricultural* crop yields *per hectare* than larger farms because they manage resources and use”.²⁰⁵ While on the other hand, others argue that small scale production probably cannot provide all the food that is needed ahead. This is partly a matter of the farmer, their skills, access to capital, the infrastructure and how individual enterprises fit into national networks.²⁰⁶

The relevance to food resilience here is not just supply but whether more distributed and decentralised suppliers provide more resilience when and if there are food shocks.

One large global study looked at different sizes of farms in all continents for production of 41 major crops, seven types of livestock, and 14 aquaculture and fish products. From overall production estimates, the researchers calculated the amount of vitamin A, vitamin B₁₂, folate, iron, zinc, calcium, calories, and protein that were produced.²⁰⁷ It found that globally, small and medium farms of less than 50 ha produced 51%–77% of nearly all commodities and nutrients they examined. This study suggests that, almost certainly, nutrition and food production benefit if a country retains a mix of different types and scales of food production and does not simply let the small producers slip out of existence. There might be widespread agreement on the case for horticulture, but meat and dairy production is more contentious. The science is fairly united on those products; less should be produced and consumed, and there should be a switch to more plant-based diets.¹¹⁹ Over the last 60 years, more food has been produced,²⁰⁸ and in fact technically there is over-supply, measured by calories (see Figure 3.10).²⁰⁹ Much is wasted globally, nationally and domestically, and the level of output growth seems to be levelling off.

Figure 3.10: Per capita kilocalorie supply from all foods per day, by global region, 1961 to 2020



Source: Our World in Data, 2024²⁰⁹

The positive narrative of ever-rising production is dented by this levelling off, and certainty that gains will be disrupted by climate change. The 20th century intensification model - higher inputs of fertilisers, capital, technology to produce higher outputs of food, and crop yields – is under real pressure and might even be coming to a close, altered by weather, soil utility, and water disruption of capacity and norms. Food resilience planning points to more diversity of diet and crops, less monocropping, less reliance on relatively few key commodities.

Plant dependency: narrowing or maintained genetics?

Plant geneticists have for some years expressed concerns that, over the last century of high production focussed agri-food, humanity has narrowed the genetic pool and number of plants from which it is fed. It is sometimes said even by the FAO that 12 plants and five animals ‘feed the world’.¹

Colin Khoury and colleagues have found no evidence for this ‘extreme’ level of dependency. But, in compiling a detailed picture of crop use and diversity, they both confirm the trend of concentration and show there is more diversity of actual food use than the pessimistic 12.²¹⁰

A review two years later by Khoury and colleagues for the International Treaty on Plant Genetic Resources for Food and Agriculture (ITPGR) initially identified reliance on 255 (not 12) plants. But the researchers concluded that there were actually 355, not least due to the importance of 42 forage crops (see Table 3.6). They concluded there were 284 different food crops in use worldwide.²¹¹ The review still concluded that the increasing homogeneity across these plants is a source of concern, stating:

“Diversity within these crops – both in terms of their varieties and the genetic and phenotypic variation within and among them – is widely considered to have declined in farmers’ fields over the past 100 years.”²¹¹

The ITPGR review looked in detail into each of what it judged the 8 most important food categories – cereals, oils, fruit, pulses, herbs & spices, roots & tubers, nuts, and vegetables. In each, a small number of plants dominated global output (see Figure 3.11). Cashews, walnuts and almonds accounted for nearly 60% of nut production. Vegetable output was dominated by tomatoes, onions, cabbage / brassica and cucumbers. Potatoes and cassava account for four fifths of tuber production. Chillies and peppers nearly 40% of herbs & spices. Soybeans nearly a third of pulses, with beans trailing far behind at under 5%. In fruit, bananas, mandarins, oranges, watermelons, apples and grapes are fairly matched but account for nearly 60%. For edible oil, maize dominates at over 50% with oil palm and soy accounting for much of the rest. Finally, for cereals, maize again accounts for nearly a third of consumption, with wheat and rice nearly 20% of production each.

Although the ‘12 plants feed the world’ meme can be questioned, the 2023 review report found that 3-5 dominated each of 7 main food plant categories, and 8 plant accounted for most of the other. Taking any that account for about 5% or more of each category, we could say, rather than 12 plants, it is possibly 36 plants that dominate the feeding of the world but within those there are many varieties available but almost certainly commercial production is concentrated on certain ones.

¹ eg: the Convention on Biodiversity in 2019: <https://www.cbd.int/doc/press/2019/pr-2019-05-22-idb-en.pdf>

Or the FAO: <https://openknowledge.fao.org/server/api/core/bitstreams/8c24764f-0ab1-4f95-8265-771f8433a0ea/content>

Table 3.6: Number of crops in each main crop-use category, worldwide

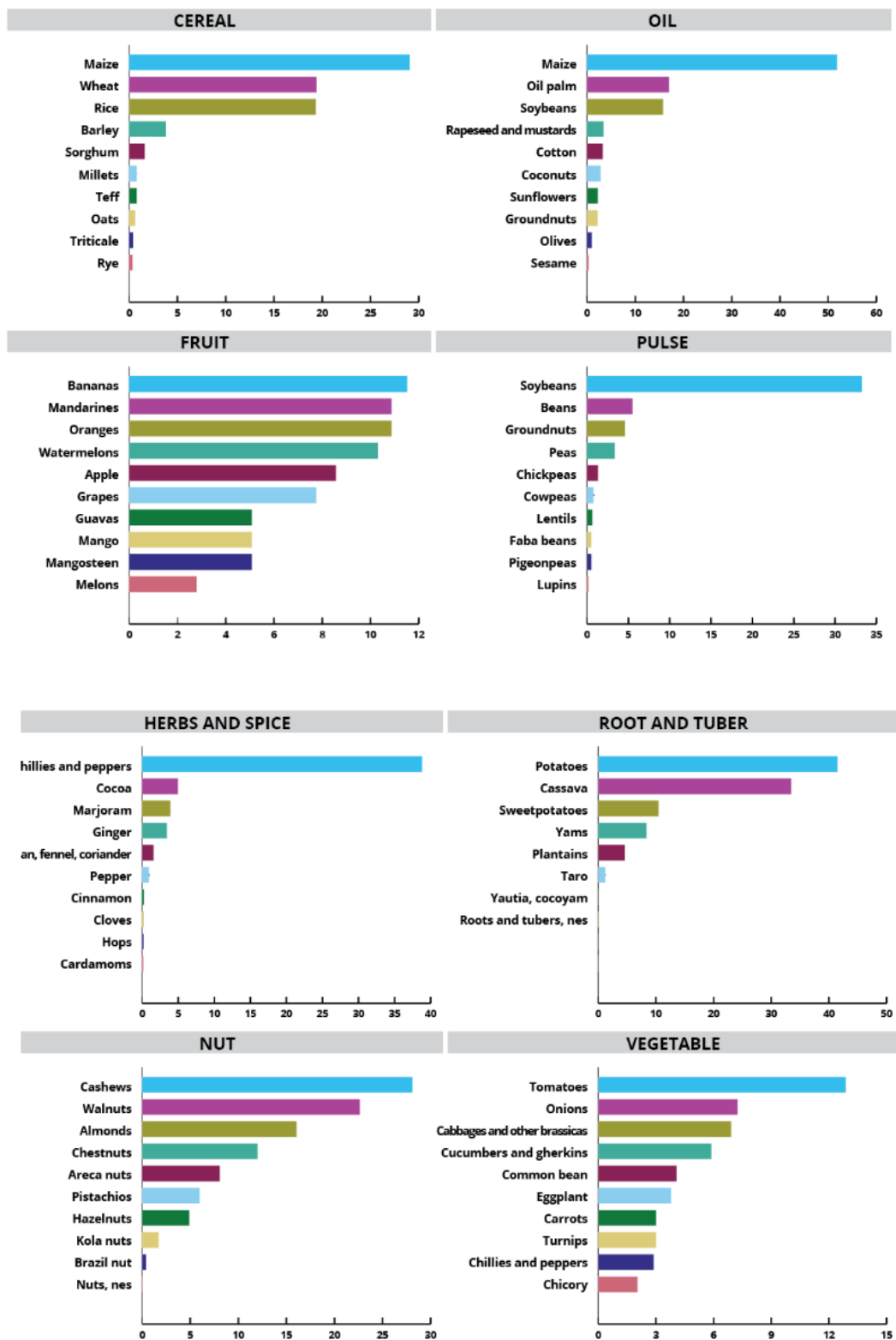
<i>Crop use (general)</i>	<i>Crop use (detailed)</i>	<i>Number of crops</i>
Fibre	<i>Fibre</i>	20
Food	<i>Cereal</i>	26
	Fruit	74
	Herb and spice	31
	Nut	14
	Oil	29
	Pulse	27
	Root and tuber	19
	Stimulant	4
	Sugar	3
	Vegetable	57
FOOD TOTAL		284
Forage	<i>Forage</i>	42
Industrial	<i>Industrial</i>	9
GRAND TOTAL		355

Source: Khoury et al / ITPGR 2023, A2.1²¹¹

One senior plant genetics specialist we consulted stated that the concomitant reduction in genetic diversity has been a long-standing concern, though both public and private sectors have devoted considerable resources to accumulating, maintaining and investigating genetic diversity in crop plants and their relatives.²¹²

“Some crops have been widely adopted because they are productive, relatively resilient in multiple geographies and amenable to genetic improvement and seed distribution, and to mechanized planting and harvesting. As a consequence, much of the human food supply does derive from a relatively few crops such as maize, soybeans, wheat, rice, potatoes, cassava, barley, sorghum, millets, beans and other pulses including peanuts, oil palm and sunflowers, with many additional more minor crops such as tomatoes, oats, rye and triticale, grapes, oranges, squashes and coconuts.”

Figure 3.11: Use of crops in global agricultural production as measured in terms of production quantity, by %



Source: Khoury et al ITPGR, 2023²¹¹

No figures for where the UK sits on this issue of genetic and plant dependency were available to the present report but food security ultimately rests on whether the UK has access to a range of plants that can be grown here, and the seeds and seed production sector on which all agriculture depends. There is also the ‘hidden’ seed reliance in the form of imports. The sale, diminution and privatisation of UK plant breeding research ‘stations’ happened forty years ago,^{213,214} but the results are now having a delayed impact for security.

This has left the UK reliant for cereals on varieties bred by multinational seed companies; not just Bayer and Syngenta but also KWS, RAGT and Limagrain. Fruit and vegetable breeding is dominated by companies such as Enza Zaden, Nunhems and Rijk Zwaan. Government would do well to revitalise UK seed production. Reliance on private investment is probably unrealistic given the long timelines between innovation and return on investment in the form of seed sales. Furthermore, it is difficult to break into established markets with access to high-performing genetic material.

Could, rather than should, the UK Government revitalise UK seed production? In resilience terms, the answer is probably yes.

In principle, the 2023 Genetic Technology (Precision Breeding) Act – that makes provision for the UK about the release and marketing of, and risk assessments relating to, precision bred plants and animals²¹⁵ - might stimulate innovation in the UK. But, one specialist consulted, judged that varieties that enter world markets are unlikely to be improved using precision breeding methods if they are not able to be approved in every jurisdiction into which they might enter.

The UK Animal and Plant Health Agency’s (APHA) latest July 2024 database lists 961 companies registered for seed industry activities in England and Wales, but this provides no details of which actually grow seeds or the range and biodiversity of what they sell.²¹⁶ In 2016 the UK Intellectual Property Office estimated only 11 “serious” (its word) plant breeding enterprises with a further 12 making some kind of contribution.²¹⁷ This employed only 400 people in 2016.

There are a number of small plant breeders, too, who have started up. And it is there that seed specialists such as Adam Alexander see advantages for long-term civil food resilience.^{218,219} The key issue here is scale – large seed commerce can crowd out diverse small sources. The retention of ‘heritage’ seeds that have been discarded or fallen out of favour might become important again with climate or other changes. Small innovators on local seeds and regionalised availability are important and may be significant in the future but the sector as a whole and how to diversify at scale warrants a review by Government.

The issue of seeds might seem far away politically from food resilience and disaster management. But the concern some scientists have expressed to us is that UK high-level policy-makers are seemingly unaware or unconcerned about the risks from not including seed development and sourcing as a civil not just commercial challenge for biodiversity enhancement and protection. This is a theme raised by interviewees cited later (see chapters 8 and 9).

Science, meanwhile, continues to offer scenarios for food production at global and regional levels.²²⁰⁻²²² They are generally sober. One recent study by Beltran-Peña and colleagues assessed the self-sufficiency of 165 countries under ‘sustainability’, ‘middle-of-the-road’, and ‘business-as-usual’ scenarios considering changes in diet, population, agricultural intensification, and climate. It found that most countries in Africa and the Middle East will continue to be heavily reliant on imports throughout the 21st century under all scenarios. Globally, it concluded:²⁰⁸

“[in] both the middle-of-the-road and business-as-usual trajectories, global food self-sufficiency is likely to decline despite increased food production through sustainable agricultural intensification since projected food demand exceeds potential production. Contrarily, under a sustainability scenario, we estimate that there will be enough food production to feed the global population. However, most countries in Africa and the Middle East will continue to be heavily reliant on imports throughout the 21st century under all scenarios. These results highlight future hotspots of crop production deficits, reliance on food imports, and vulnerability to food supply shocks.”

Some scientists are more concerned at how agri-food culture has narrowed global nutrition reliance onto four cereals that now dominate global food supply.²²³ Wheat, rice, maize, and barley, along with sugar, potatoes, and the general vegetables and fruits have become ubiquitous in the past 50 years. Plant geneticists see this not as an economic risk but as a reduction in varieties of key foods and an increase of vulnerability to disease. But prophecies of mass crop failures have not been fulfilled, and the FAO’s judgment is that so far global crop output remains fairly constant.²²⁴

Where does this leave the UK? Self-sufficiency is not necessarily the route to food security but in a changing world, there is a moral requirement not to waste food-growing potential lightly. (There is little excuse not to grow potatoes!) Nor should UK food security be taken for granted. Like every country, it must work hard to shift its food system and consumers into a sustainability mode of consumption. As a still wealthy country, it has major advantages, but with self-imposed barriers to trade to and from its nearest neighbours to the south and east, any hope of switching to import more from even further south and east (North, West and East Africa) could draw accusations of food imperialism when those regions will be under even more stress themselves.

Whether we like it or not, the UK will have to face the need to grow more than it presently does from its own resources. This will need leadership and public engagement. The pressure is already on. As the CPRE argued in 2022 “[m]aintaining agricultural capacity to deliver significant levels of domestic food production is critical”.¹⁸¹ Brownfield land unfit for food growing should be used for housing, not the Grades 1, 2 and 3a land. With flooding already posing resilience problems and nearly 60% of Grade 1 land being in the Environment Agency’s risky Flood Zone 3, land that could be used for food production being lost to concrete and housing would be a “precious asset [...] lost for good”.

Way forward: A national inquiry (of Royal Commission stature) should explore the potential for home food production food in the UK, taking account of different ‘disruptors’ such as threats to resource input, climate, land, labour, proximity to consumers, and access to labour. The findings of this inquiry should inform the National Planning Policy Framework.

Food workers

Consumers can be unaware of the scale of hidden labour embedded in food.²²⁵ They are becoming more aware of embedded carbon than labour. The food system is Britain’s biggest employer, even without the hidden labour in imported food. The lack of political engagement with the systemic nature of food hampers the situation. A senior industry person told us:

“When James Cleverly [then Home Secretary] made statements about immigrant labour, for example, he hadn’t checked in advance with the food industry’s need. That doesn’t help resilience building. There isn’t a Cabinet Sub-Committee for Food

to give the strategic overview. I really don't know why we haven't got one. It needs someone serious in Government to lead and give the imprimatur needed throughout the whole food system."

According to Defra's Agriculture in the UK annual report, there were 191,000 farm holdings in 2022 (down from 217,000 in 2017). Of these 75% were of over 100 ha. Large landholdings dominate output but there are numerically more small enterprises. But across the food system farmers and farm labour are only a tenth of the total food labour force of over 4 million jobs, a total that grew by 16% from 2000-2022. The UK food economy has expanded *post-farm, not on-farm*. Food retail and food service (catering) dwarf other food sectors (see Table 3.7 compiled for UKRI's food security research programme). The key sector to note is logistics - this is now vast.

Table 3.7 UK food system employment overview in 2020

Sector	Numbers of jobs
Agricultural inputs (e.g. fertilisers, agrichemicals)	56,000
Agriculture	447,000
Fishing	16,000
Manufacturing and processing	430,000
Packaging	83,000
Wholesaling	60,000
Retailing	1,171,000
Catering	1,831,000
TOTAL	4,094,000
Logistics (total UK sector, not just food)	2,540,000

Source: Hasnain, Ingram & Zurek 2020²²⁶

The impact of labour shortages in food has been much discussed since Brexit. The long-term rise in agri-food labour has actually been for catering, now the biggest food employer.⁸³ Industries' concern about the loss of access to European labour appears to have been warranted. There are shortages in horticulture, dairy, food manufacturing, butchery, hospitality, vets and HGV drivers. The Independent Review of Labour across the UK food supply chain, chaired by John Shropshire, executive chair of G's Fresh, a very large horticultural enterprise, made extensive recommendations.²²⁷ Mr Shropshire recognised the need for a systemic approach. Food labour processes across the system exposed under-investment. It needed to be made more attractive to people to want to work in food. Post-Brexit access to migrant labour will continue but needs to give workers and employers confidence by being set for five years not, as has too often happened, last-minute short-term arrangements. There needs to be more investment in attracting British people to work in these sectors, and to inviting young people in through good apprenticeship schemes. The review supported future automation to replace and alter labour processes, too. This 'aspirational realism' is, however, not yet here.

In December 2023, the international Business & Human Rights Resource Centre reported that over half of migrants in the UK who are at risk of labour abuse work in food supply chains. The big food retailers are concerned about this, the report acknowledges, but the BHRRC was clear that the gap between corporate policies and the reality points to the need for regular and incisive monitoring.²²⁸

Besides such ethical issues, if there is to be improved civil food resilience, there must also be rapid engagement with the wider public and better understanding of what stops people going into food work. It tends to be pay, the conditions, and for practical difficulties, such as housing in the case of land work.²²⁹ Instead of stability, food employment exhibits instability and employers had increased worries about profitability and viability. This is not a route to food security nationally.

Food work is not restricted to those in fields, factories or kitchens. It also includes inspectors and the professions who ensure food is fit to eat. UK meat inspection relied heavily on Spanish vets who, understandably, have returned home following Brexit. In 2023, the FSA reported results of a review of the difficulties in ensuring sufficient qualified environmental health officers (EHO) and trading standards (TSO) professionals.²³⁰ These have been crucial in the slow improvement of UK food safety and standards since the mid 19th century. Their shortage today implies that smaller and more local food businesses (SMEs) might be less able to deal safely with changes and shocks in the food system. Over recent decades, the inspection and monitoring architecture was built around the so-called 'home authority' principle whereby any safety or trading standards issue relating to large national companies is taken up by the EHOs or TSOs from wherever their headquarters are based. Large companies now employ in-house their own professionals to minimize problems. The FSA found, however, that not enough professionals are being trained to deal with existing, let alone anticipated, labour requirements.

Long-term attrition in local authority (LA) funding does not help this situation. LAs are going 'bust' to an extent that cannot easily be blamed on incompetence or financial mismanagement. The FSA stated that "[t]he numbers starting and completing relevant qualifications to deliver official food and feed controls is not enough to meet demand in LAs, both in terms of overall supply of potential officers and relevant skills gained through study." In January 2024, the County Councils Network announced that 44 Conservative MPs, one Labour and one Liberal Democrat from rural constituencies, had written to urge the Government to inject funds into county councils to prevent further loss of local services and the prospect of £4bn deficit over the next three years.²³¹

Logistics and Just-in-Time systems that keep food flowing

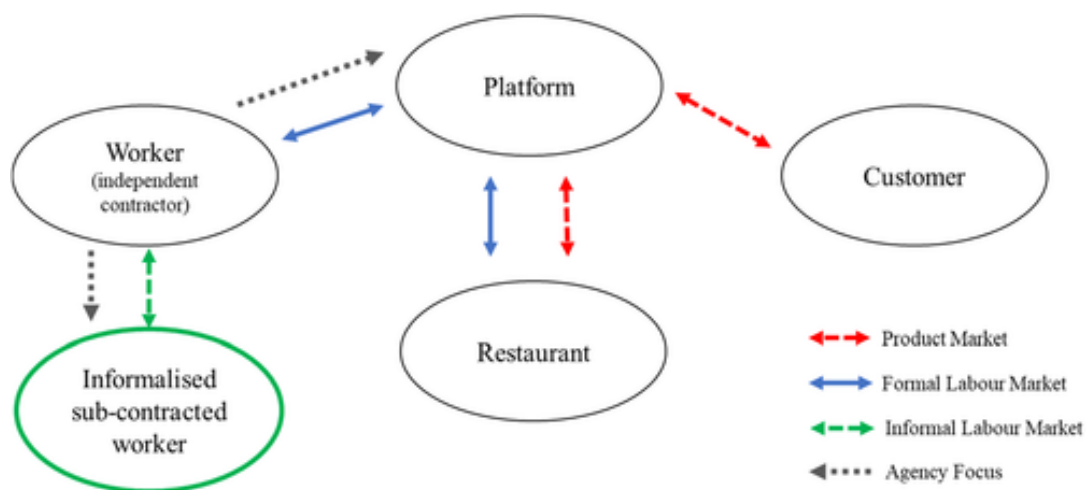
The UK has an estimated 2.5 million jobs in the entire logistics sector, not just food logistics, though that in itself is large. And it depends how one defines logistics. Is it just those who keep the food physically moving ultimately to the consumer – the people who run the railway, truck, van or bicycle - or does this include the infrastructure for that process, the information systems, software, the cabling, too? As we show later (see Chapters 4 & 5), the vulnerability of food logistics is partly due to its efficiency and complexity. But some of it is very visible; the streets are full of food traffic, whether lorries shifting it or consumers taking it home.

The last stage of logistics, the home delivery service, has attracted political attention as it is dominated by migrant workers, the gig economy and casualisation.²³² It is easy to forget this

subsector emerged in modern form in two decades. It is not actually new but a reworking of the form of home delivery that preceded supermarketisation. That was a past world where local food SMEs - grocers, bakers, butchers, fishmongers and more – would deliver.

Today's delivery sector relies on and was created through software and telecommunications (see Figure 3.12),²³³ with platform designers and software engineers now the hidden powers in the transaction with consumers. This internet of things has brought a mix of new/old jobs and technical dependencies. There is increasing nervousness about how at the global level, this is becoming part of hidden warfare already, most recently two apparently deliberate breaks of cabling between Germany and Finland, and Sweden and Lithuania in November 2024.²³⁴ Such events fuel concerns about new forms of 'hybrid warfare'.

Figure 3.12: An example of different labour in final stages of food systems



Source: Mendonça, Kougiannou and Clark (2023)²³³

The 2021 Defra *UK Food Security Report* acknowledged the vital role of the logistics industry and the Just-in-Time (JIT) revolution in how food (and much 'stuff') is moved through supply chains and around the world in a typically understated way:³²

"The UK food supply chain is dependent upon just-in-time logistics systems, which allow the transportation of all food within short timeframes and as close as possible to when it is needed."

A Local Resilience Forum told us how, even though they were aware of JIT being a risk for pharmaceuticals:

"We hadn't thought about the security of the food supply systems being based on Just-in-Time systems in the same way as we did about medicines. It didn't come up in the planning assumptions."

While food analysts have drawn attention to the power of retailers in the modern food economy – understandably leading to the Grocer Code Adjudicator systemⁱ – there has been too little food policy assessment of the role of logistics. Concern for resilience and where vulnerabilities lie will alter that. Unlike the food retail sector, where nine retail giants dominate the market, logistics is more distributed. There are large companies with giant food warehouses such as cold stores, and their redistribution hubs, but presentations made to our research team talked of an industry characterised by small suppliers; some are contracted to the larger companies. A consistent risk reported to us by industry insiders was the reliance on mostly fairly elderly truck drivers. One industry person posed the question pithily:

“Who would want the lifestyle they have trucking food long distances?”

The head of a leading logistics body expanded on this problem:

“One of the biggest things is how to find the personnel to do the warehousing, driving work for example. It’s getting harder to get people. We saw in Covid the resignation of drivers, and their average age is getting higher. This means we need to automate both within warehousing and between shops and warehouses.”

But he saw risks from Artificial Intelligence (AI) to the logistics ahead:

“AI will affect it all. [...] The infrastructure we have is becoming less appropriate for the future by the day. Our industry tends to do things as we always have but now change is being forced on us. We are in the world of Amazon and Ocado even though the majority of the trade is still on 1950s legacy infrastructure. Another issue within AI is about data. The ability to gather and manage data at unprecedented speed is becoming critical.”

Many agree that the scale and impact of the AI revolution could amount to the fourth industrial revolution. Some urge the need to join that revolution. The Tony Blair Institute report on AI, for instance, states: “across the corporate world leaders all face a choice: invest in AI capabilities or risk perishing.”²³⁵ Others are more cautious. It could expand potential risks to the already technically dependent food industries, particularly the role that logistics play in food flows. What may have been a boon can be turned into a weakness. To take another example, the ubiquity of reliance on refrigeration for freezing and the much more important cool chill transport systems can become a deep vulnerability if the operating systems are targeted. Temperature control is a key both for the long supply routes and to quality control and the offer of a-seasonal foods.²³⁶

It would be a mistake for security and resilience bodies to compartmentalise AI as either ‘good AI’ or ‘bad AI’. This binary approach, often called the ‘use-abuse’ approach to technical innovation, underestimates the significance of how innovation is framed. New technologies are shaped by the framing assumptions given early in development. The desire to use technology for control can carry more sway than shaping it for the public interest, and pro-industry think-tanks sometimes see innovation as a cure for all ills.²³⁷ Supporters are aware of the politics. The Tony Blair Institute, for instance, champions AI as the potential to help the public sector services and to speed up response times by replacing humans.

Already the sector is dominated by major international corporations, not the public sector. And AI is already being rolled out across food sectors from precision agriculture to maintenance functions. Food manufacturers, for example, see AI as helping resolve existing industry challenges of efficiency and speed, from mimicking nose and smell detection, to

ⁱ GCA: <https://www.gov.uk/government/organisations/groceries-code-adjudicator>

customer relations.²³⁸ While industry insiders tend to salute this widespread take-up in public, they also warn -in the words of one in private to this report - that:

“adopting AI in the food sector also raises significant issues. Concerns about privacy, bias, and trust must be considered to ensure AI's ethical and equitable usage. Regulatory frameworks and data protection safeguards must be put in place to protect consumer privacy and guarantee fairness in AI algorithms.”²³⁹

In reality, the AI horse has already bolted, and regulatory frameworks are being retrofitted.

In 2021, the logistics industry turned over £1 trillion, adding £163 bn of value to the UK economy. The industry estimates there are 227,000 logistics enterprises, directly employing 1.8 million people across England, Wales, Scotland, and Northern Ireland, with a further 890,000 people working in other businesses with a logistics role. This means 8.2% of the entire UK workforce is employed to move stuff, including food.²⁴⁰ Even though the sector is driven by JiT demands for constant, accurately timed movement, it also has warehouses - those vast hubs often off motorways. Food manufacturing has 4.6% and food retail 6.7% of total UK warehousing space. Between those hubs or factories, approximately one in five trucks on the road is moving food or returning empty. Department for Transport says 94 mt of food and tobacco are carried by heavy goods vehicles as imports and 45 mt as exports.²⁴¹

While food analysts have not given logistics much attention, management academics have, noting how it excludes more short-chain, regional alternatives.^{242,243} Why have many manufacturing plants, each with its own distribution system, if you can have a few giant plants? Concentration delivers efficiency and profitability. No wonder the retailer introduction of JiT logistics has long been heralded as a managerial triumph. But now it is now being asked to reduce its carbon footprint (new wagons, new energy sources), and address the problem of ‘backhauling’ (empty returning wagons) yet it remains locked into long-distance motorway-based distribution.

The industry told us they were able to adapt and respond to some shortages during Covid-19. But long-term resilience may require it to develop more in the direction of RAND and Barans’ ‘distributed’ model (see Chapter 2) and to experiment in different types of flexible but efficient supply chains.²⁴⁴ The implications of shifting from JiT to Just-in-Case are immense. The transport sector told us it worries that its role as infrastructure is not taken seriously enough by policy-makers. A major transport association, for example, said:

“Our main source of risks are to infrastructure. So far, issues such as cybersecurity that trouble others haven’t yet featured for our sector. [...] The way Defra views resilience does not include taking logistics and road freight seriously, yet 77% of freight is by road, so this is regrettable. [...] Policy-makers need to be realistic about this. Given half of food is imported, the road infrastructure matters.”

A study of existing small food hubs in the UK found them willing to expand for food emergencies in the future but currently lacking infrastructure to do so.²⁴⁵ Cities in Belgium are now starting on that direction (see Chapter 9). We return to whether the JiT revolution has created new vulnerability below (see Chapter 5).

The reality of UK food distribution is that it goes through relatively few distribution hubs, sometimes known in the industry as (Regional) Distribution Centres. Near motorways, one sees these giant sheds with multiple points for big lorries to drop off or collect food. Table 3.8 lists the main food retail companies, the number of outlets they have in different formats (where available) and the number of Distribution Centres (DCs). Online retailer Ocado has Customer Fulfilment Centres as, in effect, its DCs are hubs that distribute direct to its

consumers. Our estimate, based on the industry figures that we have been able to access, is that the UK is 'fed' from around 12,284 stores that are in turn 'fed' by just 131 DCs. These are the internal UK pinch points, both offering disruption and power.

The scale of these operations is immense. Vast and often automated systems reside in these enormous buildings. While retailers vary in how many DCs they have, over time, they have become ever larger. They are symbols of the power retailers have within food system dynamics. Companies vary in the reach each of their DCs. Tesco, that provides nearly a third of UK retail food operates via only 20 DCs, providing produce to 2,048 small and 808 large stores. Lidl, by contrast, operates 14 DCs for around 1000 stores giving it around 8% of the UK food retail market share.

Table 3.8: UK supermarket Stores and Distribution Centres

Food retailer	Number of stores	Distribution Centres
Tesco	2,048 small + 809 large stores in UK	20 in England & Scotland ⁱ
Asda	1200 stores including 500 convenience (Express) ⁱⁱ	15 in England; 20 in total ⁱⁱⁱ
Sainsbury + Argos	1,431 large stores + 834 convenience in UK	33 ^{iv}
Morrison	497 ^v	6 of its own; 2 outsourced ^{vi}
Aldi	1000+	11 ^{vii}
Lidl	970 (1100 by end 2025) ^{viii}	14 ^{ix}
Waitrose	329 stores ^x	3
Ocado	online only ^{xi}	7 'Customer Fulfilment Centres' ^{xii}
Co-op Food	c.4000 food shops ^{xiii}	13
TOTAL (approx.)	c.12,284	c.131

Note: totals should be taken as best estimates

Source: authors from company and other websites

ⁱ NX Group: Tesco NX Group: Tesco Distribution Centres: <https://thenxgroup.com/tesco-distribution-centres/> [accessed 22 Dec 2024]

ⁱⁱ TDR Capital:

<https://www.tdrcapital.com/portfolio/asda/#:~:text=The%20company%20operates%20over%201%2C200,500%20convenience%20sites.> [accessed 22 Dec 2024]

ⁱⁱⁱ Asda Company Facts: <https://corporate.asda.com/our-story/company-facts> [accessed 22 Dec 2024]

^{iv} Sainsbury: <https://www.about.sainsburys.co.uk/~media/Files/S/Sainsburys/documents/reports-and-presentations/2018/sainsburys-ar-2018-business-model.pdf> [accessed 22 Dec 2024]

^v Morrison: <https://www.morrison-corporate.com/about-us/company-history/#:~:text=We%20are%20proud%20to%20be,Various%20online%20home%20delivery%20channels.> [accessed 22 Dec 2024]

^{vi} Morrison warehousing: <https://www.morrison.jobs/our-teams/logistics-team/warehousing> [accessed 22 Dec 2024]

^{vii} Aldi - <https://internetretailing.net/aldi-create-1000-new-roles-across-11-uk-distribution-centres/> [accessed 22 Dec 2024]

^{viii} Lidl: <https://corporate.lidl.co.uk/> [accessed 22 Dec 2024]

^{ix} Lidl : <https://careers.lidl.co.uk/warehouses/our-warehouse-locations> [accessed 22 Dec 2024]

^x John Lewis Partnership: <https://www.johnlewispartnership.co.uk/about/who-we-are.html> [accessed 22 Dec 2024]

^{xi} Reuters (2024) <https://www.reuters.com/business/retail-consumer/britains-ocado-retail-pauses-new-sites-two-three-years-2024-01-16/>

^{xii} Ocado: Become a supplier to Ocado - <https://supplyocado.com/> [accessed 22 Dec 2024]

^{xiii} Coop: <https://www.thenews.coop/400-jobs-at-risk-as-central-england-shuts-distribution-centres/> [accessed 22 Dec 2024]

An overview of different food sectors: from inputs to cultural industries

To ask the entire UK food system to begin a supply resilience transition will necessitate engagement with tens of thousands of enterprises, many in organised lobbies, vying for policy attention and influence, and that is without the consumer end of civil food resilience; this is discussed later (see Part Three). The food system has many large and sector-leading food companies in the main conventional sectors (see Table 3.9). Some of these are more economically fluid than others. The home delivery sector, for example, is subject to many take-overs and mergers, with continental big players emerging behind the brands. This illustrates how power, and thus risk, may not be where the public thinks it is. The local delivery person may be local but is controlled by a software platform thousands of miles away.

Table 3.9 includes a column for cultural industries to reflect the importance of food marketing, messaging, and advertising. Most food system analysts do not do this, but the sector is important both for shaping existing messages about food (and its huge expenditure to affect what people buy), and for significance in crises. The cultural industries are big, powerful, well-used and funded by food industries. Their role is rightly contentious for distorting public health in normal time. Their role has mostly been unhelpful and costly for health and consumption in both human and economic terms.²⁴⁶⁻²⁴⁸ We should expect nothing less when food processors spend on food advertising about 30 times what government spends on healthy eating promotion?²⁴⁹ ‘Influencers’ come in many forms, ranging from big budget advertising giants to individual young influencers with millions of TikTok or Instagram followers. They might become risk accelerators if they encourage vulnerabilities in times of constraint, and they could also contribute to well-being if they supported what helps rather than undermines sustainable or post-shock living.

Much hangs on what is considered to be a real need (see Chapter 7), and on how committed is government to reshape the food economy. In wartime, resolve grows. Throughout World War II, for example, tea was imported but rationed. This was not because it was valuable nutritionally but because it took so much effort in war to bring it to the UK, and was judged to be so significant as a cross-class morale factor, a reassurance of normality, a comforting unifier.²⁵⁰ It had to be rationed not dropped because its value was known. But is there such unity of ‘need’ today?

Table 3.9: Key UK commercial food supply chain organisations

Agricultural inputs	Agriculture	Logistics	Manufacturing	Retail	Hospitality	Cultural industries
<p><i>Individual companies e.g.:</i> Agrichemicals: CF Industries; Omex; Yara UK; etc.</p> <p><i>Equipment e.g.:</i> Claas; JCB; John Deere; etc.</p> <p><i>Financing e.g.:</i> Barclays; HSBC Business Banking; Rabobank; etc.</p> <p><i>Trade associations and interest groups e.g.:</i> Agriculture and Horticulture Development Board; Agricultural Industries Confederation; CroPLife UK; etc.</p>	<p><i>Individual farmers</i></p> <p><i>Agriculture companies e.g.:</i> Frontier Agriculture; G's Fresh; etc.</p> <p><i>Trade organisations and interest groups e.g.:</i> Agricultural Industries Confederation; Country Land and Business Association; National Farmers' Union (NFU); NFU Cymru; NFU Scotland; Ulster Farmers' Union; etc.</p> <p><i>Sector specific bodies e.g.:</i> British Growers Association; British Poultry Council; Fresh Produce Consortium; etc.</p>	<p><i>Individual companies e.g.:</i> Bidfood; Culina Group; Fullers Fulfilment; Wincanton, etc.</p> <p><i>Trade associations and interest groups e.g.:</i> Cold Chain Federation; Logistics UK; Road Haulage Association; etc.</p>	<p><i>Individual companies e.g.:</i> Associated British Foods; Britvic, Cranswick; Hilton Food Group; Mondelēz; Nestlé; Nomad Foods; PepsiCo; Premier Foods; Tate & Lyle; etc.</p> <p><i>Trade associations and interest groups e.g.:</i> Agricultural Industries Confederation; British Frozen Food Federation; British Meat Processors Association; Federation of Bakers; Food and Drink Federation; Packaging Federation; Provision Trade Federation; etc.</p>	<p><i>Individual companies e.g.:</i> Aldi; Asda; Co-op; Iceland; Lidl; Marks & Spencer; Morrisons; Ocado; Sainsbury's; Tesco; Waitrose; etc.</p> <p><i>Trade associations and interest groups e.g.:</i> Association of Convenience Stores; British Retail Consortium; British Independent Retailers Association; Farm Retail Association; etc.</p>	<p><i>Individual pubs and restaurants</i></p> <p><i>Pub and restaurant chains e.g.:</i> Mitchells & Butlers; Greene King; The Restaurant Group; Whitbread; Young's; etc.</p> <p><i>Small, midsize and large caterers e.g.:</i> Aramark; Compass; ISS Group; Sodexo; etc.</p> <p><i>Delivery companies e.g.:</i> Deliveroo, Just Eat, Talabat; HomeFresh; Gusto; etc.</p> <p><i>Trade associations and interest groups e.g.:</i> Beer and Pub Association; Hospital Caterers Association; Nationwide Caterers Association; Public Sector Catering Alliance; UK Hospitality; etc.</p>	<p><i>Advertising and marketing giants e.g.:</i> Omnicom: BBDO, FleishmanHillard, TBWA, etc.</p> <p><i>Interpublic:</i> Golin, McCann, MullenLowe, KRC Research, Weber Shandwick, etc.</p> <p><i>Publicis:</i> KekstCNC, Leo Burnett, MSL, Saatchi & Saatchi, Salterbaxter, etc.</p> <p><i>WPP:</i> BCW, Hill & Knowlton, Ogilvy, Kantar, etc.</p> <p><i>Trade associations and interest groups e.g.:</i> Advertising Association; The Chartered Institute of Marketing; Company of Communicators, etc.</p>

Source: authors

Follow the money: what consumers spend and eat

Would tea have the same connotations and centrality today if there were a war? Possibly not. Britain is still import dependent for (black) tea. Past crisis catering has always offered victims tea rather than its modern rival coffee. Yet today coffee, soft drinks, a multiplicity of brands with high marketing budgets vie for that core cultural role. Physiologically, good, safe water is the baseline drink identified for resilience and crises by UN and WHO planners. It is also what is recommended by countries which do have civil food resilience advice and by disaster specialists.²⁵¹ In WWII the famous *American Soldier* study (an early, large-scale survey) found that in and after battle, US military personnel wanted armaments first, colas next. Where would the UK stand today? We don't know.

In the 2010s, it is known that the UK had the dubious distinction among 19 EU countries of consuming the highest proportion (51%) of its diet from ultra-processed foods (UPFs).²⁵² Its consumption of soft drinks is also prodigious but not the EU's highest at about 200 litres per person per year.²⁵³ - despite sugar content declining somewhat due to the Soft Drink Industry Levy.²⁵⁴ It is known as a risk factor for existing public health problems including obesity, type-2 diabetes, cardiovascular disease, poor mental health and various cancers.²⁵⁵

Using data on 197,000 UK people in the UK's Biobank, Chang and colleagues found consumption of UPFs was associated with higher incidence of some cancers.²⁵⁶ And it is known that the UK does not meet the current DHSC Eatwell Guide's nutrition advice. The UK as a whole has a low fruit and vegetable intake and a heavy reliance on pre-processed foods. The Food Foundation found that 26.9% of UK households would need to spend more than a quarter of their disposable income after housing costs to afford to eat as recommended by the Eatwell Guide. Over 14 million households were estimated to be unable to afford the Eatwell recommended diet.²⁵⁷

Despite these restrictions, UK consumers collectively if unequally spend a very large amount of money on food and drink. At 2022 constant prices, UK consumers spent £254 bn (£0.25 trillion) on food, drink and catering.¹⁴⁴ Table 3.10 provides figures at current (not constant) prices. Eating out and alcohol are considerable costs (for those who can afford to do so). The annual market for just food is approximately £150 bn. This figure has been rising dramatically with cost of living inflation in the last three or so years, and industry analysts widely expected that to rise even further over the short-term.²⁵⁸ Food price inflation hit 19% in late 2022, declining to c.10% by the end of 2023, whereas general price inflation had fallen to just under 5%. Middle East or East European conflicts or tariffs wars could alter this.

Table 3.10: Consumer spending, £ million at current prices, 2023

Category	£ million
Household final consumption expenditure on food and alcoholic drinks	298,285
Household food and non-alcoholic beverages	137,297
Food and drink eaten out	137,051
Alcoholic drinks only (off-licence)	23,937

Source: Defra *Agriculture in the UK*, chapter 14²⁵⁹

Consumer expenditure on food and alcoholic drink is enormous, rising from £248.5 bn in 2022 to £245.5 bn in 2023. Measured in constant prices, 2023 expenditure was 14% higher than in 2013.²⁵⁹ Gross value added (GVA) is a useful measure of where the money goes (see Table 3.11). Farming and primary production receive a tenth of total UK GVA, in contrast to the big three sectors: food manufacturing takes £35.1 bn GVA, retail £37.7 bn GVA and non-residential catering £43.4 bn GVA. Each of these three big sectors is a highly contested market but with different dynamics. The agri-food sectors' combined GVA rose by 15% in the last year.

Table 3.11: Where the money goes: Gross Value Added, by agri-food sector, £bn, 2022

Sector	GVA
Agriculture & Fishing	£13.9 bn
Food & Drink Manufacturing	£35.1 bn
Food & Drink Wholesaling	£16.6 bn
Food & Drink Retailing	£37.7 bn
Non-residential Catering	£43.4 bn
Total Agri-Food	£146.7 bn

Source: Defra 2023¹⁴⁴

Economic concentration and the squeeze on SMEs

In the 1980s and 90s, Tesco, today still the top retailer, drew away from the others, using its Toyota JIT management and the forensic consumer data from its loyalty Clubcard. Its market share has dropped somewhat and hovers just under 30%, with the entire market altered by the impact of the two German discounters, Aldi and Lidl, particularly since the years of austerity and the Great Recession (see Table 3.12). The discounters offer a narrower range of products than the hypermarket model where 30,000 or so products might be on sale. Currently, the top five UK retailers account for three quarters of all sales. Small shops and independents, even those branded under a well-known fascia, account for less than 4% of sales. This is the sector that led Adam Smith (and later Napoleon) to describe Britain as a national of small shopkeepers. No longer.

Mintel estimates the UK 'eating out' market as worth £78 bn in 2022 and expects this to grow to £90 bn by 2027.²⁶⁰ Others are more circumspect. The sector represents possibly the most remarkable change of all the changes of the last 70 years. A majority of British people now eat out in one form or other across the year, except when in lock-downs. To cater for different tastes and budgets, it is a highly segmented sector with vast differences between high end restaurant eating and fast food or takeaways. A wholly new sector within the sector emerged in the form of home delivery, based on software platform technology, according to some estimates now worth around £10 bn in annual sales. The labour force is now the UK food system's largest and often depicted as low wage but also has highly skilled employment. Covid-19 disrupted eating out and the sector is still affected by the cost-of-living squeeze.

Table 3.12: GB Grocery market share, by company, September-November 2024

Company / format	Market share %
Tesco	27.9
Sainsbury's	15.5
Asda	12.5
Aldi	10.4
Morrisons	8.6
Lidl	7.7
Co-op	5.7
Waitrose	4.6
Iceland	2.2
Ocado	1.8
Other Outlets	1.9
Symbols & Independent	1.4

Source: Kantar Worldpanel 2024 ²⁶¹

It was not alone in that effect. Covid-19 shook all food system actors. An interviewee from a national producer-retailer network told us that:

“farm shops and farmers’ markets provided quite robust local food chains during Covid. [...] We often have short supply chains and direct relations with local and national suppliers and were still able to get food when larger retailers struggled. Larger retailers had empty shelves, which our retailers did not. One reason was that we were willing to pay more for local food, as well as for imported food, as we are not as cost conscious as large retailers. Paying fair prices made our local food chains more resilient during this time.”

That statement was a reminder of how in crises, ‘normal’ cost-pruning might not apply and represented a view shared by others that improving resilience might necessitate a different ‘take’ on the issue of prices, availability and accessibility. Price consciousness and judgement about what could be afforded would be changed by crisis conditions. It is not inconceivable that this could recalibrate power within the food chain, with primary producers – currently the most squeezed – regaining some power and proximity to the public.

Currently, however, the entire UK food economy is very concentrated in many sectors; nor is it alone in this respect.²⁶²⁻²⁶⁴ Ten very large food retailers account for 95% of UK sales; five manufacturers have turnovers of over £30 bn; food service, a sector famous for small enterprise, has two main firms dominating contract catering; and fast food is synonymous with products from a few giant US-based corporations.²²⁶ The top four catering service companies have just under 40% of the market; and the top four home delivery companies take over 70% of the sector’s revenues.²⁶⁵

Even the heavy goods vehicles (HGV) that deliver food and account for one in five trucked miles on UK roads are in a concentrated market, with DAF Trucks heading the industry’s ‘big

7' with 31.2%, Volvo 14.5%, Scania 13.9%, Mercedes-Benz 11.8%, Iveco 8.3%, MAN 8.2% and Renault 6.4% market share.²⁶⁶

Across Europe, market concentration varies in retail and food service. But in food manufacturing, although small and medium sized enterprises (SMEs) are 99.2% of all the sector's enterprises, the large companies who make up just 0.8% of the total have 60.6% of the processed food sales.²⁶⁷

A number of our interviewees referred to the potential of the UK's highly concentrated food system to experience disruption at scale. The 2024 UK Food Security Report confirmed this.⁸³ And Michael Winter and colleague's recent overview of how the UK food system weathered the Covid-19 crisis, provides a measured account and concludes much as this report does that there are systemic vulnerabilities both despite and because of the conventional efficiencies.²⁶⁸ When four of the ten big retailers account for three quarters of retail food, if one or two of these mega firms was hit in some way, or their tight system of Distribution Centres was disrupted (see Table 3.8 in Chapter 3), the impact on the public would be considerable.

One academic said:

“There is too much concentration of power among companies, some policy actors, large landowners, etc. Too much depends on relatively few actors. [...] This lack of diversity in the food system is manifest in the actual food and in crops – bananas, for example are only propagated through cuttings meaning that they are clones and lack genetic diversity – but also in decision-making, procurement, ways of distributing foods. These are all red flags.”

A Whitehall insider agreed:

“We need to start building a system that doesn't need to depend on a massive food retailer like Tesco. It probably needs to be more bioregional. It probably requires people's food to change, to be more seasonal, more preparedness to link to the land. This doesn't need the state to take control but could be more decentralised.”

If a country does not grow the majority of its food, war and disruption from external sources become a security threat. Civil society is perhaps excessively dependent on these few powerful food interests. A government and consuming public would be prudent to ensure sufficient 'alternatives', should the dominant actors fail. There was little such planning in Covid-19, as later chapter suggest. Sensible emergency food planning would not have closed down the food service sector as happened in Covid-19. Food service has, in effect, a different supply chain system to that of the big retailers. Instead of being closed down, it should and could have been involved.

The farm sector consistently complains of its prices being squeezed by powerful retailers, and that this drives out producers. This is particularly so in horticulture.²⁶⁹ The Grocery Code Adjudicator office was set up in 2013 to address the farm price squeeze problem. Interviewees for this report also stressed the real problem of millions of consumers in food poverty. Few analysts see the answer of that as squeezing primary producers even more. One industry interviewee told us:

“farmers need to be paid a fair price for their food by retailers. This would inevitably mean that the price of food would need to increase. This is not an easy sell to a consumer who has become used to low food prices, particularly during a cost-of-

living crisis where food prices have been increasing anyway. We are in a very difficult situation in terms of improving food resilience as a result.”

Analysts currently see little likelihood of baseline food prices dropping. Price inflation has dropped after two years but prices are now a quarter more expensive than they were two years ago. It is likely that the era of so-called ‘cheap food’ is over.

Chapter 4: UK policies on food resilience and security

This chapter presents an overview of the development of UK policy on food generally and on resilience and shock preparation in particular. It juxtaposes our concern for civil food matters with the wider policy context. To that end, it presents key moments, decisions, legislation and institutions that make up the current and relevant policy architecture. It confirms the picture that food is not taken seriously enough as a potential source of risks. There is a gap here. While experts and food industry analysts now agree that there are significant threats to the food system, there is little official urgency about what to do for the public. Meanwhile pressures and risks mount.

Later chapters consider what might be done to redress this policy deficit. The two governmental initiatives to address the void of UK food policy (in 2007-10 and 2020-22) fell for different reasons. This chapter, however, shifts the focus to the specifics of food resilience policy. Any assumption that the 'public interest' in food resilience follows automatically from whatever approach to food supply is being taken should not be made. The assumption is now in doubt, so government should be under pressure to act but is so far slow and reluctant to do so.

The UK food policy: a short account of its long problem with food security

All societies have their own food histories and food system legacies, none more idiosyncratic than the UK's, particularly its discourse about whether and how to feed itself. This has been politically divisive and remains so today, with competing forces either suggesting food can simply be left to market forces, or varying in how extensively they argue for firmer guidance. This central policy challenge – a choice that only emerged in the 18th century - illuminates much default thinking in UK politics even today.

From the mid 18th century, across the 19th and into the early 20th century, food supply witnessed a remarkable change, shaped by industrialisation (which pulled rural workers into factories), the growth of its Empire (which offered wealth and other sources of food), naval power (which could protect supply lines) and transition to an industrial economy (in which food was judged by price and availability).

On the one hand, this transition enabled some to argue that Britain did not need to take agriculture and home production seriously. Rapid urbanisation had created a vast urban working class, often paid wages insufficient for decent diets, certainly not for good life expectancy and leading to the bitter arguments for nigh 30 years over whether to support home food production or seek cheaper food from abroad. And, on the other hand, the case for retaining a vibrant food and farming sector was not helped by being mostly based among the narrow class interests of land-owners. It could be dismissed as special pleading. Today, with no Empire, a diminished navy, transformed cultural expectations and new ill-health profiles exacerbated by how we eat, the default position that has dominated UK politics for nigh two centuries is in need of overhaul. The default is to leave food to market forces and buy it from anywhere. This default deserves explanation. It is again displayed in contemporary UK agri-food politics.

These politics go back at least to the Corn Laws, a system of tariffs on food imports begun in the late 18th century to protect landed interests and consolidated at the end of the

Napoleonic Wars in 1815. The Corn Laws became the symbol of deep divisions between social classes, and splits among the landed, industrial and financial power élites, as well as the mass of the population and its growing middle class. In 1795 there had been food riots, and price difficulties following poor harvests began to harden the politics of industrialists against landed capital, and between the newly emerging industrial working class and their employers.

The price and unaffordability of food became a rallying cry among workers against low wages, and also spawned the original free trade movement in the 1830s and early 1840s, symbolised by the Anti-Corn Law League. Food politics contributed to deep divisions that emerged within and between the nascent formal organised parties in Westminster. These political conflicts culminated in the 1846 Repeal of the Corn Laws, legislation that ruptured the Tory Party for decades afterwards.^{270,271} The Repeal removed the tariffs protecting land-owners, and ushered in a slow but significant decline of UK agriculture and the UK was opened up to mostly imperial-sourced food trade.

With the German-British food blockades at the outbreak of World War I, suddenly the weak state of UK farming and security became visible. By 1916 it was sufficiently serious for the War Cabinet to set up an entire new Ministry of Food (MoF) to address the insecurity.¹²⁷ Rationing was quickly imposed and the new MoF began manage the practicalities of keeping the country fed while pacifying the powerful urban food manufacturing companies who wanted cheap food to contain wages.¹²⁷

The wartime food régime – which Sir William Beveridge its senior civil servant in his magisterial history called ‘food control’ - was quickly dismantled in 1919.¹²⁷ It had been resented by food commerce.

In 1936 Beveridge returned to agri-food policy to write a report warning that food controls might be necessary again. He was outmanoeuvred, in effect ignored,²⁷² only for a MoF to be resurrected in 1940 in dire political conditions. So shocked was Lord Woolton when he took responsibility as Minister of Food in April 1940 that he illegally and secretly purchased the entire Canadian wheat crop, fearful that if the Nazi command knew how vulnerable the UK was to a potential blockade, it would have strangled British food overseas food supplies more quickly.⁹

Instead, the UK had breathing space to begin creating a second and more interventionist Ministry of Food, centred on feeding the people. Rationing was the key to controlling consumption, and to enable planning for supply that could meet health needs. There was an intense effort to increase home production.^{126,273} Labour (mostly women) was conscripted to work in a land army. Land use was directed from the centre and monitored by local agriculture committees. This successfully doubled production in six years, and hunger was prevented by imported food in transatlantic convoys that were costly for national debt, for instance through ‘Lend-Lease’ international transactions and debt, and hugely costly in loss of sailors’ lives and in naval and merchant navy resources deployed to protect food importation.

At the end of World War II (WWII), there was cross-party consensus to rebuild UK food production on a permanent footing. The post WWI decline should not be repeated. The result was the 1947 Agriculture Act which created financial price support and was designed to maintain a high level of home production, aided by a system of marketing boards.²⁷⁴ The goal was not autarky but a much higher level of self-sufficiency.

The UK had been forced into rapid strengthening of food security under crisis conditions, not once but three times. The third occasion had preceded the two World Wars. The Boer War, a

decade before the European conflagrations, knocked UK pride when its armed forces were stretched by Boer (farmer) resistance to the British takeover of South Africa. The poor health state of British troops was cited as a factor. The 1904 report of the Royal Commission on Physical Deterioration argued that the poor condition of the working classes exposed by the illiteracy and ill-health of army recruits signalled a decline in UK 'breeding stock' not helped by poor diets.^{275,276} Rightly today this is seen as bad science mixed with racism and élitism.

Another Royal Commission had already reported in 1903 on the problem of Food Supplies in Time of War.^{275,276} This explored existing food supply failings and risks, and the philosophical failure to consider the possibility of stretched logistics and the impact on national morale. Although recommending the importance of keeping the country fed, its worries were sidelined by continuing support for the post-Repeal of the Corn Laws adherence to the advantages of free trade. Ideology trumped security.

In this respect, the post WWII policy reconfiguration was significant. The country should not be left so food exposed again. Today, that lesson and policy shift are resurfacing but the conditions are different. The 1947 Agriculture Act embedded the case for farm support and consolidated some attention to the importance of primary production. 25 years later the UK joined the European Common Market (now the European Union). This changed how farming was financially supported but not that there should be no farm support.^{277,278} Production slowly climbed from two thirds supply of indigenous foods (those that the UK can climatically grow) to nearly 95% by the early 1980s.²⁵⁹

The period of political consensus about the role of agri-food systems in generating health, decent living standards and supporting the rural economy was fairly short-lived. By the 1980s, political arguments about whether the state should be involved had restarted,^{279,280} and evolved into whether excessive, indiscriminate farm support penalised consumers by adding unnecessary costs,^{279,281} distorting international markets,²⁸² contributing to public ill-health,²⁸³ and damaging the environment by allowing farmers to apply agrichemicals to the detriment of water, food and biodiversity.²⁸⁴ This was a period where EU food stores were criticised from Left and Right equally for different reasons, the Left broadly for the externalised impacts, the Right for the statist intervention in the first place.

These arguments were effective in pressurising for CAP reforms, reducing oversupply and introducing new environmental subsidies but not yet to reining in agri-food system's toll on UK ill-health or long-term biodiversity loss. The critics failed to recognise that power had meanwhile shifted from the land to off-land food powerbrokers. Then in 2016 Britain left the EU just as it was being forced to recognise the new policy complexity necessary to realign production, consumption and those externalities (health, environment, market justice), a process to which UK forces had contributed significantly, ironically.¹⁶ The mismatch and the case for realignment was and remains fiercely fought over still within the EU and in more constrained post-EU circumstances in the UK.

In the UK, however, as the rest of this chapter shows, there is again some denial about the severity of threats to the food system. But we have 'form' in ignoring food warning signals and also in treating food security and resilience superficially. On May 14, 2024, Prime Minister Rishi Sunak hosted a Farm to Fork Summit at No 10 Downing Street. This could be and was presented as a significant recognition of the issues. A nine-point Food Security Index was produced²⁸⁵ (See Table 4.1). The basis for the choice of indicators was puzzling, however. That there is plentiful food at the global level does not mean UK consumers are food secure or that it is here now and will be in the future. As later chapters show, the Government's own figures suggest otherwise. Food security is often a matter of distribution and purchasing power.

Table 4.1: UK Conservative Government's Food Security Index, May 2024

Indicator	Topic	Defra assessment
1.	Global food supply for human consumption	Broadly stable
2.	Share of global cereals and soyabeans internationally traded	Broadly stable
3.	Production-supply ratio	Broadly stable
4.	Agricultural total factor productivity	Some reduction in risks
5.	Agricultural land use	Broadly stable
6.	Energy and fertiliser prices	Some reduction in risks in 2023
7.	Business investment	Broadly stable
8.	Biosecurity risk	Broadly stable
9.	Consumer confidence in food supply chain actors	Broadly stable

Source: Defra Food Security Index, May 2024²⁸⁵

What was missing were key issues such as an understanding of the collapse in confidence to grow food with impact of weather on today's conditions, and the worrying drop in biodiversity on which food production depends, or the difficulties with food labour, or the cost of food, or the impact of diet on public health. A security analyst considering the Index would note, for instance, that energy and fertiliser prices have come down since the shock of the 2022 Russian invasion of Ukraine, but the risk of them rising and their volatility is by no means reassuring.

But at least there was an Index and, if retained, it should be revised. And the Index's production did, however, suggest a sensitivity about food security and perhaps within the governing Party a recognition that home production warranted more attention. Compared to the complacency of the 2022 *Government Food Strategy*, the Prime Minister's 2024 statement signalled the issue rising up the policy agenda. The weaponisation of food has not gone unnoticed but it remains to be seen how much and at what pace production could change.²⁸⁶

Timeline of key UK food security and resilience policies, institutions and events

This provides snapshots of key moments in UK policy development since World War II on food security and resilience matters. It offers an overview of the ebbs and flows in central state thinking and responsibilities. It highlights institutions, laws and moments of change. The timeline also introduces some of the institutional architecture that informs the discussion of civil food resilience throughout this report. Using dates to indicate when and sometimes why policies, institutions and events matter even to this day, this section indicates that the UK has a track record on food matters and offers an overview of where key responsibilities exist.

1947. Agriculture Act. This was a foundation moment in post WWII food reconstruction.²⁷⁴ Its intention was to stabilise and increase UK primary production.²⁷⁴ It had the express intention of improving national food security by introducing stability for farmers and to deliver lower food prices.

1948. Civil Defence Corps (CDC) created, building on WWII experience and the Civil Defence Department created earlier in 1935 (which had created 12 Civil Emergency Regions in 1938).²⁸⁷ The CDC trained up to 1% of the population, mostly volunteers with some military and 'blue light', according to a US Defense Department review.^{287,288} The CDC was closed down in 1968.

1960/61, 1967 and 1969. The UK applied three times to join the Common Market being forged by six neighbouring Western European nations. France, Germany, Italy, Belgium, Netherlands and Luxembourg signed the Treaty of Rome in 1957 that created the European Economic Community. This committed them to free movement of goods, people and services across their borders, and built on previous shared policies on iron, steel and coal. Agriculture was introduced into the EEC the next year in the 1958 Strega Treaty. The UK application succeeded after President Charles De Gaulle stood down as President of France. He had opposed UK membership for fear it would always side with the USA at key moments.

1973. The UK formally became a member of the European Economic Community, steered by Conservative Prime Minister Ted Heath. The 1947 Agriculture Act's farm subsidy system of deficit payments had to change to align with the Common Agricultural Policy under which deficiencies (gaps) between actual market prices and promises to farmers would be made good by the state. The Common Agricultural Policy (CAP) guaranteed farm prices, had tariffs at borders and bought up surplus food stocks creating vast stockpiles that then tended to be dumped on world markets, distorting them.

1975. To address dissent in his party, the new Labour Prime Minister Harold Wilson held a referendum on whether to remain in the EEC. The UK voted 67% : 33% to confirm EEC membership.²⁸⁹ Arguments grew over following years about the vast CAP budget, with consumer organisations arguing it made food unnecessarily expensive and environmentalists decrying the results of farm intensification such as pollution and residues in both water and food.

1992. An expanded internal European Single Market came into existence, piloted by the 1985 Single Market Act. This had been strongly supported by the UK Prime Minister, Margaret Thatcher. The Single Market was intended to cut through slow regulatory reform and delays to food standards unification, and to allow the benefits of increased internal market food flow. This regulatory consolidation increased food trade flows inside the EU.

1992. The latest of significant reforms of the CAP was implemented. Known as the MacSharry reform this was a response to UK-led criticism of how CAP worked. Subsidies begin to be shifted away from price support and food storage to paying farmers for land ownership.²⁹⁰ New payments for 'agri-environment' began as a second pillar under CAP.

1994. A new General Agreement on Tariffs and Trade (GATT) was signed and included agriculture and food for the first time. The GATT process had started in 1947 when 23 countries signed the agreement to reduce tariffs and trade distortions in a number of commodities but not farm produce. Attempts to include agriculture and food in the first GATT (held in London) had been resisted by the USA but half a century later, when a five-year process ('round') of negotiations concluded in 1994, the EU and USA were among nearly a hundred countries agreeing to reduce trade distortions across a considerable section of their economies.

2000. Within the UK, Scottish and Wales devolution began to take shape. Although given different powers and resources, Scotland and Wales began processes of developing their own agriculture and some food policies.

2001. Defra was created. This replaced the post-war Ministry of Agriculture, Fisheries and Food (MAFF), criticised for its narrow farm focus. The new Department was formed by merging MAFF with parts of the Department of Environment, Transport and Regions and a small section of the Home Office. The intention was to create a more holistic approach to food and rural matters.

2001. The Civil Contingencies Secretariat (CCS) was created in the Cabinet Office, responsible for emergency planning and to prepare the UK for resilience after disruption. The CCS took emergency planning from the Home Office where it had been since 1971 when the Home Office, in turn, had replaced the Civil Defence Department created back in 1935. The CCS operated the Civil Contingencies Committee known as Cabinet Office Briefing Room (COBR), the room in which the committee for any crisis meets. If there is a COBR meeting, it's a sign something significant is happening.

2004. A new *Civil Contingencies Act* (CCA) recognised the possibility of disruption to the infrastructure of everyday life.^{23,291} The CCA created Local Resilience Forums (38 in England; 4 in Wales). Scotland has its own system of resilience partnerships and a national centre for resilience.²⁹² The CCA is the legal basis for much resilience action, such as the 2023 'Exercise Mighty Oak', an annual review of Emergency Preparedness, Resilience and Response (EPRR) statutory requirements. There are many such exercises.²⁹³ In 2022 'Programme Yarrow' reviewed the possible effects of a power outage in the national (electricity) grid for the NHS and 'Exercise Mercury' validated Food Standards Agency procedures for food defence. These can include preparing public alert statements. The CCA also became the rationale for a system of Regional Civil Contingencies Committees co-terminus with government regional offices and Regional Operations Centre, to act as conduits between central and regional government. (The English Regions were abolished in 2011 under the Localism Act.)

2007. A Centre for the Protection of Critical National Infrastructure (CNI) was created.²⁹⁴ CNIs are national assets deemed "essential for the functioning of society" and to be regularly monitored and maintained. Food is one of the original 13 (now 14) CNIs: Chemicals, Civil Nuclear, Communications, Defence, Emergency Services, Energy, Finance, Food, Government, Health, Space, Transport and Water. In 2024, Data Centres were added as a new CNI.

2007-08. There was a global oil and commodity price crisis when crude oil price rose to over \$100 per barrel, generating the Great Recession. World food prices rocketed (exposing food production's dependency on fossil fuels) and have remained volatile and high ever since. The Prime Minister initiated a Cabinet Office Strategy Unit *Food Matters* review,¹³ and Defra began to develop multiple indicators for UK food security. A Council of Food Policy Advisors was created by the Defra Secretary of State, and a Cabinet sub-committee and civil servant intra-UK liaison on food policy were initiated. The policy process culminated in 2010 with *Food 2030*, an integrated food systems policy, signed by the Prime Minister, setting multiple goals from production to consumption and health for food security and resilience.^{14,15} The entire package was closed down in 2010 with a change of Government.

2008. The *Climate Change Act* passed and set binding targets to reduce CO₂e / greenhouse gas (GHG) emissions.²⁹⁵ A statutory Committee on Climate Change was created which advises and monitors on UK performance in meeting the targets. It begins to make what

became regular and increasingly urgent calls for dietary as well as land use and agricultural change to lower UK national GHG emissions.^{296,297}

2008. The Cabinet Office initiated a *Communities Prepared* programme “to explore ways to support communities in becoming resilient to the range of probable emergencies”.⁷⁶ Its audience covered communities, business, potential volunteers, in short a broad constituency across society. Updated in 2011 and 2016, by 2018 there was another update (see under 2018).

2009. Cabinet Office issued guidance on *Logistics Operations for Emergency Supplies* to be purchased at national, regional or LRF level in crises.²⁹⁸ A response to floods in 2007, this listed supplies that authorities could purchase including: Medical supplies, wheelchairs, satellite phones, *food*, nappies, cooking equipment, blankets, buckets, flood barriers, high capacity water pumps. It recommended advice be sought from experts on logistics management; that Regional Offices should facilitate logistic support arrangements; and that “stockpiling of supplies should be a last resort”.

2010. The newly elected Coalition Government shelved *Food 2030* and related strategies and closes the Royal Commission on Environmental Protection (then the oldest such statutory advisory body in the Western world) and Sustainable Development Commission. Defra began to work on drafts for proposed new Agricultural and Environment Bills to replace *Food 2030* but in fact there were no new policies for a decade until well after Brexit.ⁱ

2010. A new *National Risk Register for Civil Emergencies* (now the *National Risk Register*) was produced, whose purpose was to provide “advice for people and businesses to better prepare for civil emergencies”. Section 4 (pp45-53) gives advice to citizens on protecting “yourself, your family and community for emergencies”.²⁹⁹ This direct advice and focus on citizens on water, electricity, IT, telecommunications, emergencies etc has not (so far) been repeated in later editions, and did not include any food advice.²⁹⁹

2015. The *2015 National Security Risk Assessment* designated food as in Tier 3 of severity of threats (low risk). Tier 1 includes terrorism, cyber-attacks, public health, etc. Tier 2 includes chemical, biological weapons etc. Food is within Tier 3’s heading of ‘resource insecurity’ impacts.^{300,301}

2016. Brexit referendum. The UK voted 52% : 48% to leave the EU. Uncertainties about the impact on food security began almost immediately, although agri-food hardly featured in the campaign.³⁰²

2016. *National Cyber Security Agency* formed.³⁰³ This incorporated the Centre for Protection of National Infrastructure whose focus is to reduce vulnerability to extreme threats.³⁰⁴

2017. The *National Infrastructure Commission* was created as an independent agency (nominally attached to HM Treasury).³⁰⁵ Food was not included in its responsibility or assessments.ⁱⁱ

2018. A toolkit for the *Communities Emergency Plan* was published with only one but portentous mention of food (p 8):⁷⁷

“In an emergency, your community will require supplies, such as food and water, which may be difficult to obtain. The Community Emergency Group should consider talking with local businesses and suppliers who might be willing to provide these.”

ⁱ seen by the lead author

ⁱⁱ We have not been able to find out the reason for this omission in the NIC remit.

2018. Defra produced a White Paper *Health and Harmony: the future for food, farming and the environment in a Green Brexit*. This set out the Government's vision of land use for ecosystems and climate.¹⁹ Food did not feature in this assessment despite being in its subtitle, an omission that sparked comment. Michael Gove, Defra Secretary, asked restaurateur entrepreneur Henry Dimbleby to review national food strategy (for England).

2020. The post-Brexit *Agriculture Act* was passed,²⁰ replacing EU agricultural policy. Although the CAP was founded to deliver food security, food was largely absent from this new Act. Its focus was mostly on ecosystem enhancement, and the future purpose of any subsidies (which were to reduce from EU levels). This foundation legislation for post Brexit English agriculture introduced schemes such as Environmental Land Management and the Sustainable Farming Initiative to reduce negative impacts and deliver 'public goods'.³⁰⁶ Food was not accepted to be a public good.

2020. The Covid-19 pandemic spread in January, leading to lockdowns from March, and huge expenditure on furlough schemes. Defra created a *Food Resilience Industry Forum (FRIF)* to tackle the crisis for food, closing it a year later as no longer necessary. Already aware of poor diets and health in low income households, Henry Dimbleby produced an emergency first report to Defra on food poverty, urging government support.²¹ Accelerating food bank use plus campaigning by footballer Marcus Rashford and the Food Foundation, a civil society organisation, highlighted unmet need and that charities could not cope with demand. An emergency *Household Support Fund* was created in 2021-23 and given £1bn a year, used by local authorities partly for food vouchers and school meals.

2020. Cabinet Office issued an update of its general advice to Local Resilience Forums.³⁰⁷ This did not include food advice. A special House of Lords Committee on Food, Poverty Health and the Environment, chaired by Lord (John) Krebs, "found barriers at all levels of the food system that make it harder for people, particularly those living in poverty, to access a healthy and sustainable diet."¹ *Hungry for change: fixing the failures in food* recommended an overhaul of food policy to deliver more coherence. The UK food system was estimated to cause the NHS £6.1 bn costs from ill-health due to poor diets and £27 billion to the wider economy.

2021. *Preparing for Extreme Risks: Building a Resilient Society*, chaired by Lord (James) Arbuthnot report warned of the need to tighten up resilience planning. The pandemic, it said: "has shown that communities can step up and help ensure national safety. The Government must see our people as an essential building block of any response and as active participants in creating resilience. They must provide them with the support and information to help them prepare for the risks they face."²

2021. The *UK Food Security Report* was published, the first of what was promised to be a triennial publication, agreed by Government under the Agriculture Act 2020 at the insistence of the House of Lords.³² The Report stated the UK is 54% self-sufficient and faces long-term stresses such as climate change. The second report was published in December 2024.

2021. The Government's *Global Britain in a Competitive Age* (known as the *Integrated Review*) report outlined post-EU strategic framework thinking.³⁰⁸ This was intended as a 10 year forward look at the international contribution of the UK integrating foreign, defence, security and development policies into one strategy. Food barely featured, and only externally as a concern. Two years later a *Refresh* updated the 2021 document.

2021. Henry Dimbleby's final report on *National Food Strategy: the Plan* was launched but almost immediately sidelined.⁶ It made extensive recommendations for tackling externalised costs, specifically to tackle the 'junk food cycle' to save burdens to the NHS, to reduce diet-related inequality, and create a long-term shift in food culture. It foresaw threats to food

security from “widespread harvest failure caused by climate change” but did not set targets for UK production.

2022. Russia invaded Ukraine in February. Conflict between two major grain exporting countries meant Ukraine exports through the Black Sea were blockaded, causing considerable destabilisation of grain trade to 50+ importing countries, and to world food commodity prices. Food price inflation accelerated.

2022. Scotland’s *Good Food Nation (Scotland) Act* set out a new vision for agri-food in Scotland to achieve healthy diets for all under plans agreed across ministries and local authorities. This became the framework legislation under which civil society, industry and government see Scotland becoming more food resilient.

2022. UK Government published a short (33 page) *Government Food Strategy*,²² responding in part to the already marginalised National Food Strategy. This acknowledged the importance of the food sector and its impact on health and employment in every part of the UK but saw no need for the UK to alter production levels and sought to increase food exports.

2022. *UK Government Resilience Framework* was published,²⁴ proposing resilience be based on three “fundamental principles”: a “shared understanding of risks”, a need to “focus on protection and prevention”, and recognition that “resilience requires a whole of society approach”.

2022. Department for Business publishes a (very brief) *Guidance on Supply Chain Resilience Framework* mooted the need to consider more ‘stockpiling’ and ‘onshoring’ (producing more in the UK) but little emerges from that for food.³⁰⁹

2023. The *Integrated Review Refresh 2023*,³¹⁰ just two years on from the *Global Britain in a Competitive Age*, (the Integrated Review), recognised the new multi-polar world and rising tensions, symbolised by Russia’s invasion of Ukraine (a food export powerhouse) and tensions between China and the West (e.g. over trade and Taiwan).³¹¹ Unlike its predecessor, wrapped in the ‘old’ language of competitive globalised capitalism, the Refresh was more sober about conflicts, hence the sub-title ‘responding to a more contested and volatile world’. Food was mentioned fleetingly on three pages (pp 2, 27, 47). It recognised that food is being ‘weaponised’ⁱ or is troubling (e.g. conflict-based famine in Yemen). *De facto* it confirmed the 2022 *Government Food Strategy* as delivering UK food security; others did not. Food was seen as a foreign affairs or development problem, not a problem for the UK. Thus, the Yemen should be encouraged to reduce the price of food imports to aid food security, not the UK.

2023. Cabinet Office, National Cyber Security Agency and National Protective Security Agency published a 5-step process for reviewing CNIs to ‘enhance the CNI Knowledge Base’.³¹² As one of the CNIs, this can be expected for food.

2023. An extensively updated *National Risk Register* increased the number of risks facing the UK to 89.³⁹ The 89 only included one specifically on food: the possibility of Food Supply Contamination (affecting public confidence). Food featured also as implicated under the possibility of a pandemic; infectious disease; a major outbreak of an animal or plant disease; chemical, cyber and other attacks; and spread of antimicrobial resistance. A nuclear attack or accident were cited as potentially affecting food.

ⁱ Foreword from the Prime Minister (pg 2)

2023 (December). A long-awaited *National Planning Policy Framework* (NPPF) gave little attention to food, other than Footnote 62 on page 52 that read:³¹³

“Where significant development of agricultural land is demonstrated to be necessary, areas of poorer quality land should be preferred to those of a higher quality. The availability of agricultural land used for food production should be considered, alongside the other policies in this Framework, when deciding what sites are most appropriate for development.”

2024 (January). A new Critical Imports Council was created and its 23 members first met on April 17 with its focus on “medicines and smartphone chips”. Membership was all business bar one academic, with no noticeable food representation.^{88,314,315}

2024 (April). *Defending Britain*, another update of national defence strategy committed the UK to an increase in defence spending to 2.5% of GDP by 2030, £75 bn more over 2024-31 than budget previously.³¹⁶ It envisaged a closer relationship between military and civil Research and Development (R&D). It recognised the need to work:

“with critical sectors to ensure planning for catastrophic scenarios are in place and resilient and will build on this to bring together and exercise a comprehensive National Defence and Resilience Plan (NDRP) for our security, preparedness and resilience as a nation. This will be based on the latest threat assessment and will bring together civil and military planning.”

2024 (May). Prime Minister Sunak and Defra hosted a one day No 10 Downing Street Farm and Food Summit, and launched a *Food Security Index*.²⁸⁵ A week later, on the day a General Election was called, the Deputy Prime Minister recommended the public store 3 days’ food, keep batteries and torches and prepare better.³⁷ Formal guidance followed in the Emergency Planning College’s *Prepare* website.³⁸ The speech signalled concern about civil interests but was less clear about the process by which the advice was given such as its nutritional basis or its practicality for different demographics.

2024 (July). The Hallet Report produced a sober account of how well prepared the UK was for a pandemic. Baroness Heather Hallett, chair of the Inquiry, concluded that preparedness was “flawed”, and recommended a “radical simplification of the civil emergency preparedness and resilience systems” and “a new approach to risk assessment that provides for a better and more comprehensive evaluation of a wider range of actual risks.”³¹⁷

2024 (December). The second triennial *UK Food Security Report* confirmed high import dependency of UK food system and provided more detailed data on risks facing UK food. The Environment Agency published a new estimate using Met Office modelling estimating that 1 in 4 homes will face flooding by 2050.³¹⁸ Besides being a reminder that advice simply to store food warrants ‘flood-proofing’, this confirmed concerns about the vulnerability of food-growing.

2025. A *National Defence and Resilience Plan* is expected to provide details for the promises made in the 2024 *Defending Britain* policy statement. *Defending Britain* specified the need to stockpile armaments but not food.³¹⁶ The new Plan is to be informed by the *Strategic Defence Review* led by Lord (George) Robertson.³¹⁹

The wide food and security divide

The Timeline of the various policies, actors and commitments has shown the scale of policy connections and initiatives shaping food security and resilience. It is not that there are no

policies; it is just that food seems to either not to feature or to be mentioned rather than addressed squarely. We have also noted a deep Food and Security divide. Despite opportunities for liaison and cross-over, food policy issues tend to be divorced from mainstream resilience and defence thinking.

And from the other side of the food–security divide, current thinking about food has banished the early warnings noted in the late 2000s that culminated in the more far-sighted *Food 2030* policy. The 2022 NFS did not cover national food security at all but did address the low resilience and squeeze on food that people on low incomes experience.

The possibility of threats to food system functions seems not to be recognised since 2010 despite growing alarm and warnings from scientists and specialists, and more recently the food industry itself.³²⁰ Remits exclude food. And despite food being classed as a CNI, it has received little serious attention.

A retail analyst interviewee agreed and gave a sober assessment shared by others in the industry:

“We definitely need more refined risk assessment. The UK is no longer in the EU Rapid Alert System for Food and Feed (RASFF)ⁱ now we are out of the EU. The UK has less control over its supply chains than it used to. Our vets cannot talk to their vets. There are third party audits but there’s a gap opening up about knowledge across supply chains.”

“Food is not being taken seriously enough at present, yet food company CEOs are now really aware of it as a significant problem. There’s not enough confidence that government is taking food resilience and supply seriously. We need a Food Department stronger than Defra. We certainly should have a Cabinet Minister for Food who leads on food security and resilience and who addresses the trade risks ahead.”

As the Timeline above noted, in 2020 as Covid-19’s impact grew, an emergency Food Resilience Industry Forum was created by Defra only to be closed down a year later as no longer needed. An insider from that process told us:

“Reputedly, there was a bit of a melt-down on BBC Question Time when people started asking about food supplies. There was a need to have some people who know the system and to help create a structure. That’s why the Food Resilience Industry Forum (FRIF)ⁱⁱ was set up with support. The principles were of collaboration and of getting people into it who could make a difference. It was a good crisis management structure and basically applied the McKinsey crisis management playbook.ⁱⁱⁱ”

Within resilience planning there are clues as to why food systems risks are not receiving due attention. Consumers, the public, are simply recipients of what supply can deliver. In the 2018 toolkit (see Timeline), any community preparing a plan for emergencies is characterised as dependent on business. This belies and denies experience, which is that communities can organise and can contribute to their resilience as well as negotiating with business. One is a passive relationship; the other is active.

ⁱ https://food.ec.europa.eu/safety/rasff_en

ⁱⁱ <https://questions-statements.parliament.uk/written-questions/detail/2022-03-09/137340>

ⁱⁱⁱ <https://www.mckinsey.com/capabilities/risk-and-resilience/how-we-help-clients>

Farm lobbying makes the point. In 2024, farm activists made the England and Wales Governments take more notice of the politics of food security^{321,322} – but not in any deep strategic understanding if the 2024 Food Security Index is anything to go by. ‘All is stable’ remains the view from Whitehall.²⁸⁵

Institutional architecture: the multi-level structure of state food institutions

The levers available to government, industry and society have changed over time and are in some flux at present. With the UK joining, then leaving the EU, yet still being heavily EU food reliant, the assumption appears to be that normal business and trade will provide security. To be fair to the civil servants who produced the first Food Security Report in 2021, they had to present official statistics and not ask ‘what if?’ questions which are for ministers and policy-makers.

So which institutions of state might take food security and resilience more seriously? A study by Kelly Parsons for the Food Research Collaboration showed that at least 16 state ministries or departments contribute to food policy-making in England (see Figure 4.1).³²³ These in effect are what makes up the National Government input on the left side of the Food Systems map in the previous Chapter (see Figure 3.2).

These departments of state are what must help coordinate - and be coordinated - in any civil food resilience programme. Interviewees across the sectors suggested to us that a new institution is required to do this, a Council of Food or equivalent, to provide coherent advice and input, and to give continuity across administrations and changes of government.

To make matters more complicated, it is essential for such coordination also to be extended ‘down’ to local authorities and agencies of government, and ‘across’ to the devolved governments in Wales, Scotland and Northern Ireland. Recognition of this need is why the last Labour Government created an independent council of food policy advisors and a Cabinet system of coordination.

Table 4.2 provides a more comprehensive multi-level list of state bodies, their food resilience responsibilities and roles. The reason for casting the initial net wide is to ensure that all features of food are addressed for resilience. It would be a mistake if a decision-maker in Whitehall reduced this *a priori*, saying for example, this is a matter for Defra or MoD alone, the bigger picture and inputs necessary to achieve resilience would be weakened from the start. Later chapters amplify why a ‘whole of society’ approach applies to food and should be reflected in cross departmental and sector engagement.

Figure 4.1: National Government responsibilities for Food in England



Source: Parsons 2020³²³

Table 4.2: Multi level state bodies: their food resilience responsibilities and roles

<i>Governance level</i>	<i>Body</i>	<i>Food resilience role / responsibility</i>
Central Government	Cabinet / Cabinet Office	Overall government direction
	Department for Environment, Food & Rural Affairs	Overall food system (with a strong emphasis on agriculture/land)
	Department of Health & Social Care	Food role in health care
	Foreign, Commonwealth & Development Office	Food trade / international relations
	Ministry of Defence	Armed forces protection of food supply line
	Ministry of Housing, Communities and Local Government	Local authority services; land use planning; community services
	Department of Work & Pensions	Income levels
	Home Office	Personal and border protection; migration controls (relevant to food labour force); human rights
	Department for Business and Trade	Food trade deals; food industry and employment; food flows
	Department for Transport	Freight; movement of food by different modes (road, rail, water)
Central Government Agencies (+ equivalents in devolved nations)	Food Standards Agency	Food quality and standards monitoring
	Rural Payments Agency	Financial support for primary producers
	UK Health Security Agency	Ensuring health of population
	National Cyber Security Agency	Protection and resilience planning for cyber attack
	Natural England	Environmental and nature protection & enhancement
	Border Force	Border policy force

Devolved nations	Scottish Government	civil contingencies, agriculture, environment, health, social care, and infrastructure
	Wales Government	civil contingencies, agriculture, environment, health, social care, and infrastructure
	Northern Ireland	civil contingencies, agriculture, environment, health, social care, and infrastructure
Regional / local Government	10 Metro Mayors (England) & combined authorities (e.g. Cornwall)	Strategic planning; a growing number of Metro Mayors have food strategies close to or within their domain
	Local authorities	Responsible for aspects of environment, trading standards, welfare services, social services, food safety inspection
Local service delivery	Local Resilience Forums	Multi-agency local partnerships of 'first responders' but with no food role at present
	'Blue light' services	Emergency role as ambulance, fire, police (also ancillary services e.g. coastguard, highway traffic control, lifeboat/RNLI, mountain rescue)
	Food Banks	Food provision, and emergency food welfare
	Numerous other recognised community oriented bodies and charities (NB: some of these vary across the UK) e.g. Red Cross, St John's Ambulance, Neighbourhood Watch, Citizens Advice Bureau, National Council for Voluntary Organisations, Community Councils, Royal Voluntary Service, etc.	Acknowledged as either already or potentially contributing to emergency resilience services or community warning functions, even if currently not necessarily engaged on food shocks

Source: authors

A perennial challenge for government is how to knit all the strands and levels of governance into a coherent whole. One specialist with both academic and Whitehall experience pointed to the difficulties:

“[...] policies are not joined up. There is very limited working together by Government departments as there is often not a mechanism to do so. What resilience thinking there is is largely focussed on Defra when other Departments are also necessary for security.

“[...] If Defra is to be the central Government food resilience Ministry, it needs improved understanding of how civil society works with regard to food. The assumption is that people can always provide themselves with food. Yet look how there was real concern among shoppers at the shortages that emerged. People were anxious and not ready for the level of shock that can and did happen.

“Within government, the understanding of how the food system actually works is thin. Although people get sent off to work in industry, somehow this doesn’t get rooted in. People in Defra don’t know who and what matters.”

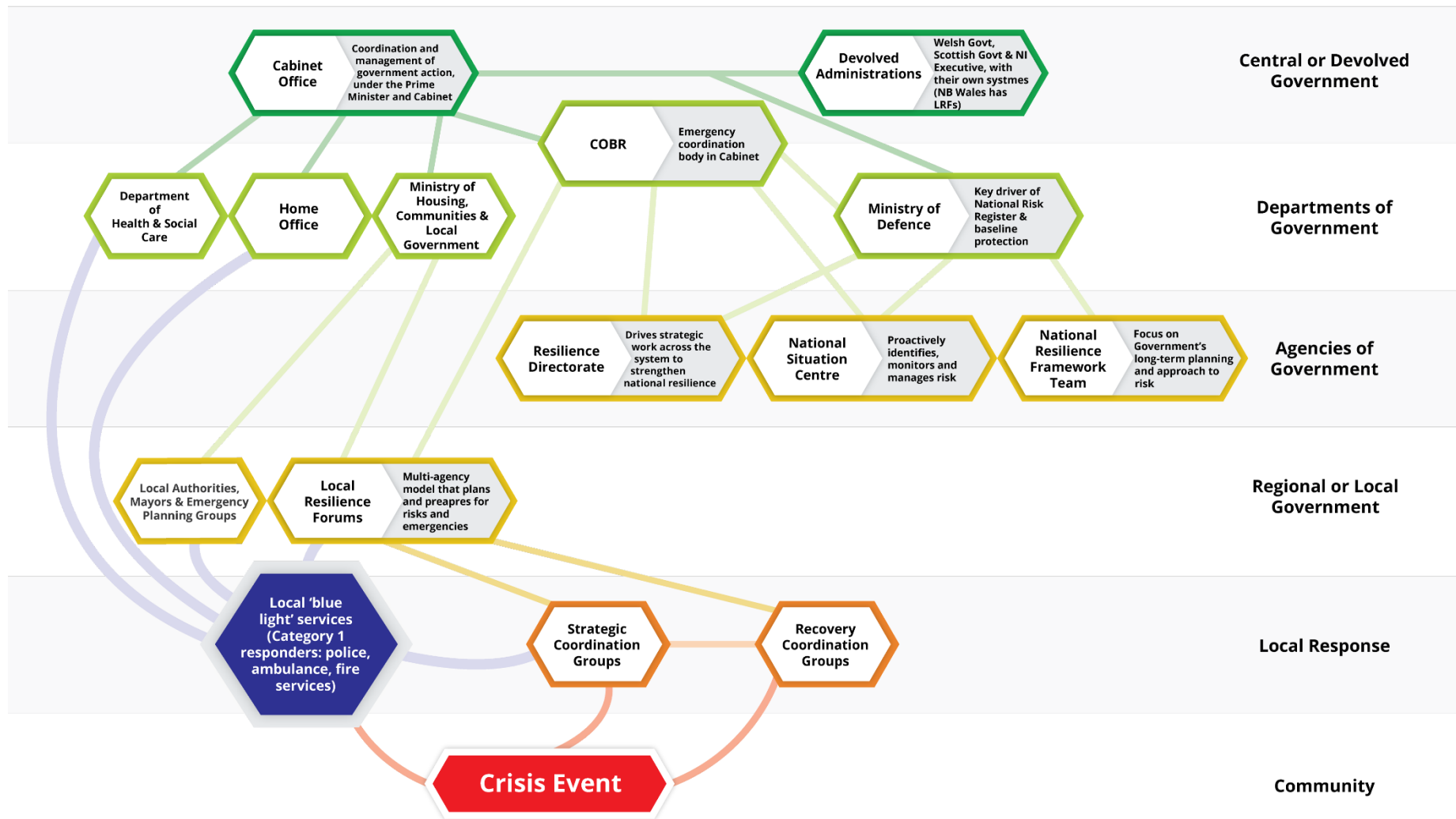
A senior civil servant said to us:

“One must be clear, too, that co-ordination is much more effective when the Cabinet Office does it, and when it involves a joined-up view at ministerial level about strategic objectives and relevant priorities.”

The local level is particularly challenging administratively, because central government has not given it consistent powers and roles. Cornwall, for example, is ‘almost’ a Mayoral body except it was not given the right to a Mayor,³²⁴ yet two new regions were recently allowed to have Mayors (East Midlands and North Yorkshire). Improved civil food resilience would benefit from simpler, more coherent and equitably devolved multi-level powers,³²⁵ when in practice there are overlaps and cross-overs. It would also help if there were less ‘churn’ in ministers and in chopping and changing of departments of government.

The organogram in Figure 4.2 shows central, local and devolved institutions’ food resilience responsibilities that would apply at present, and represents the different levels of governance from local to national. Within these various institutions are committees, working parties and so on, all of which contribute to government process. These can fluctuate with changes of government or circumstance, but some do not.

Figure 4.2: Organogram of current central food resilience governance



Source: authors / graphic: G Wren

Emergency Powers

Government has Emergency Powers to act in times of national crisis. For over a century, these powers are there to enable speedy responses in extraordinary times.^{326,327}

Emergency Powers Acts (EPA) have been rushed through Parliament in war and peace in 1920 (used in 1926 in the General Strike), 1939, 1940, 1964 and most recently the Coronavirus Act 2020. Sections 62-65 of the latter Act, for example, gave HM Government powers to gather information even if a company was reluctant to impart it.³²⁸ Emergency Powers are ‘reserved’ i.e. held in abeyance for quick access. A former senior state law officer explained to this report that they are there even if not activated – there to be used when and if...

The passing of the 1920 Emergency Powers Act (EPA) suggests that even though business at the time wanted the state to withdraw from its WWI involvement in food matters, as Beveridge reported in his 1928 history of WWI food control,¹²⁷ wiser heads knew food crises might still occur ahead. Food was specifically named in Section 1(1) of the 1920 Act.³²⁹ This gave Governments of the day the power to declare a state of emergency:

*"If at any time it appears to His Majesty that any action has been taken or is immediately threatened by any persons or body of persons of such a nature and on so extensive a scale as to be calculated, by interfering with the supply and distribution of **food**, water, fuel, or light, or with the means of locomotion, to deprive the community, or any substantial portion of the community, of the essentials of life, His Majesty may, by proclamation (hereinafter referred to as a proclamation of emergency), declare that a state of emergency exists."* [our emphasis]

That phrase “the essentials of life” was even then, well before the later UN Declaration of Human Rights, recognising food as a population-wide necessity not a choice. After WWII, a revised Emergency Powers Act in 1964 consolidated a 1939 Defence Act that enabled the use of armed forces for:

"temporary employment in agricultural work or in other work, being urgent work of national importance".

A senior Whitehall insider told us:

"In a crisis, one of the usual things to do is to derogate from what is usually the case in 'peacetime'. We could be better prepared for rules to change at short notice. But we now know that the way food law has been designed on packaging and labelling, for instance, assumed these are essential in all circumstances. That needs thinking through better. We might need a more nuanced approach to all this. We also cannot assume shocks go straight from normality to mega-shock, like an on-off switch."

Defra and emergency food actions

More granular and specific emergency roles relevant to food do exist. Defra's **Food Chain Emergency Liaison Group (FCELG)** is one. Defra described FCELG in the 2021 *UK Food Security Report* as “Defra's long-established food industry sector working group for resilience and security issues.”³² In a written evidence to a Select Committee, Defra described the FCELG as:

“the industry sector working group with membership drawn from food chain sectors, mainly from trade bodies, and relevant government departments, including Devolved Administrations and agencies. The group usually meets quarterly to identify and mitigate potential risks to food supply and interdependent sectors.”ⁱ

While FCELG is apparently long-lasting, in the same written evidence,³³⁰ Defra also referred to a short-lived **Food Supply Chain Resilience Forum (FSCRF)**. This was:

“a daily call with over 80 senior representatives from across the food supply chain, and its remit is the end-to-end supply chain for food in the UK during the COVID-19 pandemic. It is an effective forum for communicating to industry the huge amounts of work underway in Defra to support all sectors in the food supply chain, quickly raising industry concerns and encouraging industry to collaborate to solve issues independently of government.”ⁱⁱ

Another committee, again industry, was important to Defra in Covid-19. We are uncertain if its ‘shelf-life’ was limited to the duration of Covid-19. This committee, the **F4+3**, was a meeting of the seven largest food and drink trade associations and industry bodies, covering the whole food chain (except consumption). **F4** refers to the FDF, the BRC, the NFU and UK Hospitality; the **+3** were the Association of Convenience Stores; the Federation of Wholesale Distributors; and the Institute of Grocery Distribution.

In contrast to this heavyweight involvement – perhaps understandable but nevertheless exclusive (and discussed by Parsons and Barling’s study of Covid-19 food response)³³¹ – public resilience over food matters and after-shock support at the public level is usually seen as to be delivered through locally-based ‘blue light’ services such as police, ambulance and fire services. This mix of long-lasting and short-life bodies suggests a state capacity for - and preparedness to create - various channels and communication links in or for emergencies. These appear to have next to no engagement with the public.

An exception, cited by Defra in its 20-page submission to the EFRA select committee Covid-19 inquiry, was the **Food Vulnerability Stakeholder Group (FVSG)**. The FVSG was established:³³²

“in direct response to Covid-19 and runs weekly. It is attended by some 100 individuals with representation from across Whitehall, Local Authorities, numerous Charities, and groups that represent disabled people. Through this forum, Defra can disseminate information, gain insight in real time, stress test policy concepts and share best practise. It provides a platform for further bilateral conversations and enables delivery at pace. It was instrumental in the development of further measures provide access to the non-shielded vulnerable which is currently in trial.” (para 14.6)

Instead of all the public whatever their circumstances being seen as worthy of a civil support and perspective – as does Sweden in its recent 2024 Food Preparedness Report and subsequent new Food Security legislation¹¹⁵ – the UK emergency governance system seems still locked into food exceptionalism. Everyone will be on their own except this or that group. The Swedish Government by contrast takes a genuinely ‘whole of society’ approach.

ⁱ Defra written evidence (23 Oct 2023): <https://committees.parliament.uk/writtenevidence/2420/html/> [accessed January 21 2024]

ⁱⁱ Defra written evidence (23 Oct 2023): <https://committees.parliament.uk/writtenevidence/2420/html/> [accessed January 21 2024]

Core government bodies and functions of risk, resilience, defence and control

A number of bodies, laws and documents can be seen as a core for any pretence at or shift towards a genuine and national civil food resilience.

The key body is the **Cabinet Office**, through which the entire state machinery of elected Ministers and the civil servants in Ministries is coordinated. It hosts crisis mechanisms such as Cabinet Office Briefing Room (**COBR**) that coordinates any Government response to acute emergencies on a day-to-day basis. COBR is not a conventional standing body but a skeleton system that kicks in with crises bringing in whoever is relevant to that crisis. Since 2022 COBR has been one of two parts of Cabinet central to resilience; the other being the newly formed **Resilience Directorate** (see below).

Although there is a long tradition of **State Emergency Powers** (discussed above), today the key legislation is the **Civil Contingencies Act (CCA) 2004** and its network of policy actors.^{23,291,333} This is the system that replaced the wartime system of civil defence. The CCA 2004 was created in response to a series of challenges to the *status quo*, including worries about the possible impact of computer bugs at the millennium, floods, and fuel and milk protests. It was designed to reboot the preparation for emergencies and disruptions.

The more recent **Agriculture Act 2020**, however, makes barely any meaningful commitment to facing the potential of shocks to food security, other than mandating Defra to produce the triennial Food Security Report, a commitment reluctantly agreed to. There is no UK-wide Food Act or joint food framework agreement, or any breadth of legislation or policy commitments equivalent to the EU Farm to Fork Strategy that emerged in the EU after the UK 'Brexit'. Scotland, however, does have its **Good Food Nation Act**,³³⁴ Wales deliberated on one but deferred it but benefits from the 2015 Future Generations Act that demands government consider the interests of future generations in what it does, thus including food and agriculture.³³⁵⁻³³⁷ And Northern Ireland's approach to shocks is subsumed by its position under the UK-EU **Windsor Framework** that means it is an idiosyncratic part-in, part-out of both the EU and UK with regard to food regulations.³³⁸

In 2022, the **Resilience Directorate** (RD) in the Cabinet Office replaced the Civil Contingencies Secretariat (CCS) which from 2001 had been the civil service body servicing the Home Secretary, located in the Cabinet Office while also reporting to security and intelligence. Following experience in Covid-19, the CCS functions were divided into the Resilience Directorate and the **COBR Unit** whose lead role in governmental response to crisis, domestic and international, malicious and non-malicious continued. The RD was set up partly to look longer-term. As we understand it, separation of the two functions was done largely to ensure a long-term focus was retained, even in the face of pressing emergencies, which previously had the effect of subsuming all available resources.

The RD continues to run the **Resilience Capabilities Programme** (RCP) set up by the CCS in 2013 (most recently updated in 2018) and oversees infrastructure resilience with the Ministry of Housing Communities and Local Government (MHCLG, formerly DLUHC).³³⁹ The RCP description provides the most full information on government policy about public engagement,¹ and includes an important section 'Why warn the public?' which suggests:

"a well-informed public is better able to respond to an emergency and to minimise the impact of the emergency on the community. By informing the public as best they can,

¹ Cabinet Office (2018) Resilience Capabilities Programme: <https://www.gov.uk/guidance/preparation-and-planning-for-emergencies-the-capabilities-programme> [accessed 16 May 2024]

all organisations will build their trust. Part of this is also avoiding alarming the public unnecessarily.”

Specific resilience planning for sectors is presumed to come via CNIs, the LRFs and bodies such as the **Emergency Planning College (EPC)** – now part of the Resilience Academy - that has provided training and consultancy on preparing for emergencies.³⁴⁰ The EPC is based in Yorkshire since 2001 at what was the former Civil Defence College created in the 1930s partly to prepare civil defence for air warfare. It was given a new identity and a more outward-facing scope in 2014 to provide:

“advisory services, academic qualification and accreditation, exercise delivery and plan validation, embedding our people into your organisation, providing 'critical friend' support, outsourcing services and partnering.”

The EPC is to undergo another transformation as the new UK Resilience Academy in Spring 2025. In May 2024 it produced and published advice to citizens to hold 3 days' food.³⁸ The EPC is in effect privatised and managed by outsourcing company, **Serco**. Its focus is on resilience training and support to enhance:

*“[b]usiness continuity, organisational resilience, crowd and event safety, crisis communications, risk, planning and preparedness, emergency response and recovery and cyber resilience”.*ⁱ

Cabinet Office advice on informing the public in crises is given in the '**Ten Step Cycle**' for communication dating from 2018.³⁴¹

The CCA in 2004 created a system of **Local Resilience Forums (LRFs)** – 38 in England, 4 in Wales. These 'sub-national' regional bodies were made responsible for post-shock resilience. They are almost entirely 'blue light' services – ambulance, police, fire and emergency – linked to sub-national lines of authority such as the NHS and local authorities (see the survey in Chapter 10). Immediate disaster response can also involve first aiders such as the Red Cross, St John Ambulance and others. LRFs are to produce Community Risk Registers assessing risks to each area.

Community Risk Registers (CRRs) are documents that should provide the local focus on “serious risks that could result in an emergency, defined as [...] an event or situation which threatens serious damage to human welfare in a place in the United Kingdom.” Every LRF should hold a CRR that assesses how likely risks are to happen. In theory CRRs are a local multi-agency product but in practice, perhaps understandably unless encouraged otherwise, they take the lead from the National Risk Register and National Security Risk Assessment (see below).

LRFs received advice on their functions in 2011 (amended in 2013).^{342,343} Remarkably they had little or no extra funding under the CCA for their tasks until in 2022 LRFs were awarded a new tranche of £22m spread over 3 years.²⁴ This is not large given the enormous responsibility for what the public receives as civil defence support. LRFs came into operation fairly quickly after the CCA two decades ago. Public involvement has been slower to emerge, but London, for example, created a Resilience partnership back in 2002 even before the CCA. This has now grown to involve 170+ organisations.³⁴⁴

ⁱ The EPC confirmed to us that there is no current work in food resilience; it referred us to Defra

Circling all these functions and bodies today is the **UK Government Resilience Framework 2022 (UKGRF)**. This is the lead framework through which any policy or actions on the civil resilience and food security aspects of any crisis or shock events would be addressed.

Underpinning the UKGRF is the classified (not public) **National Security Risk Assessment (NSRA)**, and the public-facing **National Risk Register (NRR)**. The NSRA is a more secret and defence-oriented document. In 2019 the Royal Academy of Engineering (RAE) was asked to review national capabilities for risks facing the UK,³⁴⁵ and in the following year to review the 2019 NRR methods.³⁴⁵ The inside- / outside- facing risk analysis processes were confirmed.

Risk analysis is now a big industry, considerably shaped by commercial bodies operationalising the need to protect their own interests and reputations. Through this, the term **Food Defence** has re-surfaced from pre WW II history, updating the need to protect food supply and infrastructure *in extremis*.^{346,347} But UK state bodies appear to see this as a commercial focus, in that **Defra, the FSA and British Standards Institute** provide resilience and defence advice for food companies but not yet as detailed for the public. That commercial food defence advice is given in the form of a Publicly Available Specification (PAS) in **PAS 96**.³⁴⁸ A PAS is a 'fast-track standardisation' document produced by the British Standards Institute.

Risk Analysis is partly based on scenario planning designed to look at scenarios bearing descriptive labels such as 'realistic' or 'grim', etc. This approach traces its origins to oil giant Shell's methods plus war games and game theory. Risk analysis includes 'what if?' analysis and methods such as the **Ministry of Defence's** 'Red Teaming' methods which pitch an 'outside' team against the 'home' team's norms and assumptions, all designed to subject existing systems to rigorous probing. First published in 2010, the 2021 MoD Red Team Manual is now in its third edition.³⁴⁹

These are all sophisticated approaches designed to test existing norms, overcome cognitive bias, and strengthen preparation and planning. They are mostly, as we have seen, supply rather than consumption and public focused.

Behind this supply-facing policy process, the UK state has a more developed approach to infrastructure. The **Critical National Infrastructure (CNI)** system ranges across the entire economy. In 2018, 13 sectors were subject to CNI reviews.³⁵⁰ A CNI is defined as:

'Those critical elements of infrastructure (namely assets, facilities, systems, networks or processes and the essential workers that operate and facilitate them), the loss or compromise of which could result in:

- a) *Major detrimental impact on the availability, integrity or delivery of essential services - including those services whose integrity, if compromised, could result in significant loss of life or casualties - taking into account significant economic or social impacts; and/or*
- b) *Significant impact on national security, national defence, or the functioning of the state.'*

Food is one of the original 13 (now 14) CNIs that are: Chemicals, Civil Nuclear, Communications, Defence, Emergency Services, Energy, Finance, **Food**, Government, Health, Space, Transport, and Water.³⁵¹ Data centres were added in 2024. The USA, by contrast, in its 2015 CNI review and plan identified 16 sectors with 10 regional reporting hubs.³⁵² Like the UK's CNI, the US CNI report focuses on industry supply issues rather than consumption, although the complexity of the US food system from supply to consumption

was more fully recognised, ranging from weather (change), contamination, disease and cyber security.

The most recent published UK report on food as a CNI dates from 2018. This did recognise major threats from “malicious cyber activity, acts of terrorism, and other criminal activity, as well as technical failures”.³⁵⁰ But interviewees for this report seemed uncertain as to whether this has been adequately fully followed through, certainly not to the public, though it is a reasonable assumption the warning was based on sound advice from the National Cyber Security Agency.

Set up in 2017, the **National Infrastructure Commission** (NIC) is an executive arm of HM Treasury,³⁵¹ and rightly has a public profile and orientation. It takes a long-term perspective on “all sectors of economic infrastructure, defined as: energy, transport, water and wastewater (drainage and sewerage), waste, flood risk management and digital communications”. But for some reason it does not cover food.

The **National Protective Security Agency** is the UK Government’s National Technical Authority for Physical and Personnel Protective Security working “with partners in government, police, industry and academia to reduce the vulnerability of the national infrastructure”.^{351,353} The NPSA’s job is to build “resilience to national security threats” and face a range of national security threats from terrorism, espionage and state threats to national infrastructure.³⁵³ Relatively new, the NPSA absorbed and expanded the work begun by the former Centre for the Protection of National Infrastructure from 2007. Both were created as part of MI5, the domestic counter intelligence and security agency. Today the NPSA has a dual function partly for CNI and partly as the UK’s National Technical Authority for “physical and personnel protective security, maintaining our expertise in counter terrorism as well as state threats.” Its mission is: '[b]uilding resilience to national security threats'.³⁵³ It has an outreach function through research and training to “develop content and guidance that is more accessible to those with little or no security experience, alongside our advice for security professionals and technical experts.”ⁱ

At the local level and to the public, possibly the most significant bodies are the **Local Resilience Forums (LRFs)** set up under the CCA 2004. These are where the local, regional and central levels of the state facilities for resilience meet the public in crises. England and Wales both have LRFs. Scotland and Northern Ireland have resilience partnerships.

The modern system of **local authorities** (LAs) emerged as a level of UK governance from the 19th century and the longer historical process of transition from mediaeval and rural sub-national structures, often aligned to church boundaries such as via the parish or diocese, or based on land ownership. From the 1830s, powers were gradually given to new local bodies (arguably starting with the 1835 Municipal Corporations Act) and also functions such as poverty ‘relief’ (under the infamous Poor Law), but in a more progressive way for public health (1848 Public Health Act), energy (1882 Electric Lighting Act), schooling (1870 Education Act) and food (1875 Food Adulteration Act) and various Scottish and other equivalents. The latter gave local authorities powers to monitor and ensure food safety and is why they have trading and environmental health responsibilities today, even though commercially giant food companies dominate supply and now have their own standards machinery.

Today, place-based functions matter for resilience, not least since they are widespread and include **local services** such as: Public Health, Community nursing, Police, Councils of

ⁱ NPSA explainer, YouTube, March 2023: <https://www.npsa.gov.uk/about-npsa>

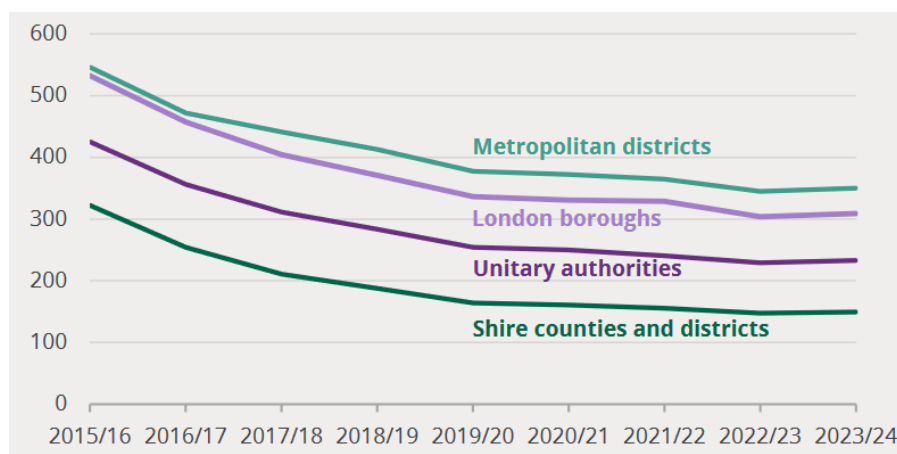
Voluntary Service, Social Services, Libraries, Education, Community councils, Neighbourhood Watch, and Waste. All these have been constrained by expenditure crises. Local authorities are not looking for new food resilience roles unless funds are attached. LRFs are fast becoming the mechanism of Government choice for delivering local resilience (albeit without commensurate funding and infrastructure), but LA existing functions and duties include precisely those that matter for food resilience.

The idea for LRFs was conceived when, under a previous Labour government, a system of regional government offices for England was created. The LRFs were conceived to fit within that, so were left somewhat stranded when regional bodies were abolished from 2011 and replaced by a system of **Mayors** with varying powers. Ironically, the LRFs had been created under the CCA in 2004 to address challenges and side-step this kind of party politicking and governance change. Security and resilience require stability and consistency. In 2013 a document spelled out LRFs' role, clarifying differences in Scotland and N Ireland.³⁴³ LRFs were reconsidered by the Cabinet Office in its **2022 Post-Implementation Review of the CCA**.³⁵⁴ They have been extensively reviewed for the National Preparedness Commission by Bruce Mann, a former head of the Civil Contingencies Secretariat,⁴⁰ and by the Cabinet Office in its 2022 Post-Implementation Review of the CCA.³⁵⁴

A fundamental problem for resilience preparation at the local level is that LAs are financially stretched, short of personnel and funds after years of restriction. Compared to some other countries, UK local authorities have restrictions on their right to raise local taxes. Central government decides what they can have. In all parts of the UK, for many years, LAs have experienced a slow reduction in these central government grants. Despite raising sums through local (council) taxes, they have had overall cuts in the central government grant,³⁵⁵ with the most deprived areas faring poorly.

Government announcements in late 2022 indicated a slight reversal would happen in England.³⁵⁶ In addition, the burden of cuts has not fallen evenly, with cities bearing a greater burden than others, and with other geographical divides (rich/poor areas).³⁵⁷ There was a 18% fall in the day-to-day spending by local government in cities between 2009/10 and 2017/18, compared to a 9% fall elsewhere; and Northern Cities were hit hardest.³⁵⁸ The 'settlement funding' - funds central government decides to give LAs - began a promised slow post-Covid-19 increase from 2020/21 but remains precarious.³⁵⁷ Figure 4.3 shows the drop in funding per person for England 2015/16 to 2022/23.

Figure 4.3: Local Authority funding, £ per person, real terms (2022/23 prices)



Source: House of Commons Library / DLUHC data³⁵⁷

Why do food risks and resilience infrastructure receive apparently restricted attention?

The review above shows no lack of institutional or legislative frameworks that apply or could apply to food but, despite being one of 14 CNIs, food appears to receive scant attention. True, there are Community Risk Registers that provide local assessments of risks. These are important but while some mention food, they barely see it as a high priority. In that they follow the NRR's central drift.

The official definition of critical national infrastructure suggests food deserves a higher priority. It is worth giving in full. CNIs are:

*'Those critical elements of infrastructure (namely assets, facilities, systems, networks or processes and the essential workers that operate and facilitate them), the loss or compromise of which could result in: (a) Major detrimental impact on the availability, integrity or delivery of essential services - including those services whose integrity, if compromised, could result in significant loss of life or casualties - taking into account significant economic or social impacts; and/or (b) Significant impact on national security, national defence, or the functioning of the state.'*³⁵¹

Food fits all of this. So why is there so little attention?

The first answer is a reminder that *there is an assumption that as long as supply is sufficient, consumption will be too. This is no longer the case. Nor was it ever.*

A second answer is that *a gap has opened up between central and local governance on food matters.*³²⁵ Our interviews (see Chapter 10) suggest that LRFs across England and Wales are becoming conscious of the need for engagement and roles in food. Local authorities are already over-stretched, and engaged but held back by funding and the deep-seated UK tradition of centralisation.³⁵⁹

A third answer could be that relevant Departments and bodies are *too accepting of risks and threats to food security or see them as 'chronic' and 'normal' rather than 'acute' and pressing.* In this sense, the challenge is that the relevant bodies are not being held to account.

A fourth answer is that *food consumers, the public, are assumed to be responsible for their own food* and can safely be left to the attentions of the food industry as happened in Covid-19.³³¹ The default policy position is that food is a private responsibility; the state's role is only to step in momentarily to ensure the system bounced back and then to withdraw and await business-as-usual. If in a crisis no-one starves, the system has worked well.

Our interviewees, especially from industry, offered more nuanced and doubtful opinions. Some argued that the food system is more fragile than government accepts and that government is not taking this seriously enough. A very senior and experienced food industry leader told us:

"Really every food company ought to have multiple fall-back plans for a variety of shocks. Even in very successful companies, where planning is done to a 'tee', things can go wrong. People need to be prepared for that eventuality. There are lots of risk

registers in businesses. They all see the possibility of a pandemic and might have a plan for 'flu but that was thought about as what happens if no-one can come to work. They hadn't thought about entire supply chains faltering due to a pandemic. To prepare for big scale crises, there ought to be more exercises to think this through. We need to have people preparing for a 'war footing'. There ought to be a civil reserve list for the food sector, people who understand what can be the case and whose generic experience becomes important. Government's first responsibility is to ensure the people are fed."

While proud of bouncing back from Covid-19, industry knows it only just worked and that future big challenges might not work so well. So what if the food situation worsens? Should there be a role for what might be called Civil Food Defence? This would be a much firmer and acceptance across government, industry and society that shocks can happen and are ever more likely to happen, and at scale. This next section explores that possibility.

Three types of Food Defence: civil, corporate and state

There is a national budget line for civil defence listed in HM Treasury's expenditure accounts under Defence. This is in accordance with the UN Classification Of the Functions Of Government (COFOG) – a UN-defined system for functional analysis of government spending.³⁶⁰ Table 4.3 gives the expenditure on civil defence from 2017-18 to 2021-22 given in the annual Public Expenditure Statistical Analyses (PESA), with civil defence in bold.ⁱ HMT informed us that although presented under Defence in these PESA national accounts, the civil defence sums are in fact entirely spent by Local Authorities, "mainly in England but also in Wales and Scotland" and within LA budgets under 'Emergency Planning'.ⁱⁱ The sums spent are "mainly staff and running costs". And the apparent drop in the most recent year is always due to a delay in financial returns by LAs.

This shows how small the expenditure on civil defence is. For example, taking the 2021-21 outturn figures (i.e. verified final), **UK civil defence received in 2021-22 the equivalent of 0.0026% of total defence expenditure**. This is not to downplay defence expenditure. The £55 bn defence expenditure is often cited as huge at 2% of GDP, and likely to rise to 2.5% (with many urging it goes higher). It should not be forgotten that from the end of WWII it did not fall below 5% until the early 1980s. To put current defence spending of 2% in proportion, UK consumers spend three times as much on buying food than on current defence spending.

Government can, of course, allocate finance for emergencies if it chooses. HMT does not have reserves for civil emergencies as such - only the general reserve available if departments need additional funding, as was shown in the Spring 2024 budget (Tables 2.1 and 2.2).³⁶¹ This can be used for civil emergencies such as flooding. In 2015-16, £148 m was given for example by the former Department for Communities and Local Government to support LAs for 'severe weather recovery'.³⁶²

ⁱ The authors are grateful to HM Treasury for help in clarifying the financial picture given here.

ⁱⁱ see RO6 under: [Local authority revenue expenditure and financing England: 2021 to 2022 individual local authority data - outturn - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/statistics/local-authority-revenue-expenditure-and-financing-england-2021-to-2022-individual-local-authority-data-outturn)

Table 4.3: Civil Defence within Defence expenditure, 2017-18 to 2022-23, in £ million

	Type	2017-18 outturn	2018-19 outturn	2019-20 outturn	2020-21 outturn	2021-22 outturn	2022-23 outturn
2.1	Military defence	36,409	37,980	40,257	42,432	45,751	50,358
2.2	Civil defence	42	41	54	143	125	65
2.3	Foreign military aid	801	696	476	478	509	2,618
2.4	R&D Defence	1,249	1,339	1,233	1,318	2,061	2,2253
2.5	Defence n.e.c.	168	182	226	211	221	215
	TOTAL DEFENCE	38,670	40,238	42,246	44,582	48,608	55,507

* n.e.c. means 'not elsewhere classified'

Note: data for 2017-18 is from HM Treasury's Public Expenditure Statistical Analyses 2022 (p81) and from 2019-20 to 2022-23 is from the Public Expenditure Statistical Analyses 2023 report (pg 77)

Source: HM Treasury PESA Table 5.2 Public sector expenditure on services by sub-function^{363,364}

Turning from the financial figures, it is important to note that HM Government's defence strategy reviews, the 2021 *Integrated Review* and 2023 *Refresh*, accepted that modern defence requires a broader perspective than simply *materiel* (equipment etc)ⁱ or military numbers.^{308,310,311} A 2024 House of Lords' International Relations and Defence Committee report, reviewing defence capacity in view of the Ukraine conflict experience, was sober about the state of UK armed forces and capacity to defend the country.³⁶⁵ A full review by Lord George Robertson, former NATO secretary general, is to be published in 2025. Others are more categorical saying there is currently no capacity for "conflict of any scale".³⁶⁶ This is beyond the remit of present report. Our concern is: what if the UK food system is seriously disrupted? What would be the impact of public access to food, if this or that sector was damaged? There are many 'what ifs'.

The famous Roman adage *si vis pacem, para bellum* ('if you want peace, prepare for war') was sometimes cited in discussions and interviews for this report.ⁱⁱ The adage is often used to imply an ancient understanding that preparedness and capacity to attack is the best form of defence. We leave that debate to others, but it does not, however, entirely fit the world of food. Some basic food defence issues are relevant, such as the capacity to defend food supply lines (one thinks of the role WWII Atlantic convoys ensuring sorely needed imported food got to the UK through hostile seas), protection from cyber-attack (one thinks of rising

ⁱ 'materiel' is the term used for supplies, equipment and weapons in military supply chain management

ⁱⁱ The common quote is actually a condensation of '*Igitur qui desiderat pacem, praeparet bellum*' ('therefore let him who desires peace prepare for war') in Publius Flavius Vegetius Renatus' *De Re Militari*. As the *Guide to Latin in international Law* (2009, OUP) notes, it is used to justify "arms escalation as a means of deterrence in opposition to theories equating disarmament with greater prospects for peace".

malware), or having sufficient stores and skills (one thinks of the importance of stockpiling food for emergency use). The National Cyber Security Agency is already active on cyber defence, and that kind of protection was part of the rationale for the PAS 96 cited earlier.

The notion of food defence we are exploring here goes wider and deeper into the public realm than just what the military is or is not able to defend. The House of Lords' defence committee report cited just above noted that defence ultimately has to "resonate with citizens, emphasising the importance of national security in daily lives,..." Interviewees for this report raised the complexity of what is entailed in protecting the people who grow, make, transport, cook and distribute food, and also what happens to waste. If sewerage systems break down, their malfunction turns them from being health infrastructure and into ill-health vectors. Thus 'food defence' becomes as one with sound public health. It is about prevention, alertness, assessing risks realistically, acting before crises, and more.

Recent events in Ukraine since 2002 and Gaza since 2023 are reminders that food infrastructure can be attacked and that blockading a population's access to food can be a swift weapon of war. Hence our pointing to the reality of modern food 'weaponisation' in earlier chapters. Environmentalists would also argue that profligate use of agrichemicals to suppress weeds and insects has been a type of 'war' on nature that now undermines the potential for nature to provide the infrastructure on which life itself depends. The collapse of insect life spells difficulty for plant pollination. Food can be and has been weaponised in more than the military sense. These are both philosophical and immediate considerations for resilience.

Against that backdrop, the UK has no public position on civil food defence. But other countries do (see Chapter 6). Defra and Government have contributed to the notion and practice of **corporate food defence** by advising companies to protect themselves against attack and advising them as to how. This approach to food defence was already in the public sphere in 2017.⁷⁹

Three different meanings for food defence should be acknowledged.³⁴⁷

One sees food defence as a systemic function, a whole of society approach that necessitates civil engagement. This proposes that a more sustainable food system is, by definition, one with more flexibility, diversity and thus resilience capacity. This includes the kind of public engagement that the House of Lords Committee indicated. The public need to 'get it'. Whether the UK has such features is discussed throughout later chapters (e.g. Chapters 5, 7 and 8).

The second sees food defence as not necessary yet but as a possibility that conventional armed forces may be required to apply top-down 'command and control' defence of supply chains – this to protect against overt hard food weaponisation in the future such as in deliberate attacks on food infrastructure (ports etc) and systematic disruption of the people's access to food. This version of food defence is not even on the radar of the British government yet.

The third meaning indicates commercial self-protection. This use has gained traction as an appeal to corporate interests to prevent themselves being damaged and attacked whether by hostile competitors or criminals or aggressive foreign states wanting to disrupt their efficiencies. The term has been used by the risk industry, noting the rise of ransomware and the cost of failed corporate cyber security.

In an agri-food economy dominated by large companies, it is the third corporate version that is most common and is how the US government uses it.³⁶⁷ Food defence becomes a matter

of corporate risk reduction.^{346, 347, 368} The solutions become business solutions of insurance, private sector risk management and the use of consultants rather than the consuming public.

All three meanings ought to be kept in policy play. And while the defence interests and policy-makers are actively debating the state and shape of current armed forces, there is next to no debate among policy-makers about society and civil food defence, even though it may be a first line of defence.

For the state, food defence certainly ought to include detailed attention to how to protect food supplies for the whole of society.^{137,347} In informal discussions held for the present report, people with military experience were only too aware of the UK armed forces' long history of concern about how to feed their personnel: soldiers and sailors need to be well and appropriately fed. Historically many armies simply foraged (robbed) or bought food from the locality as they went, but gradually the case for specialist catering units and military-organised supply chains emerged. During long spells at sea, navies had trouble with diseases such as scurvy, a vitamin C deficiency famously later resolved nutritionally.³⁶⁹

Whereas armies could raid local supplies, seafarers suffered from poor storage and decayed food; hence the navy's incentive to develop technologies to preserve food better; one being the dry biscuit. Pressure cooking and margarines owe existence to the Napoleonic wars. And reasonable UK mass army catering was improved by former Ritz chef Alexis Soyer in Crimea. Canning of food developed by Appert was another.³⁷⁰ In the 20th century, the invention of retort pouches and hazards analysis critical control point (HACCP) risk reduction strategies are a peaceful legacy of NASA and the US space race not wanting astronauts to succumb to diarrhoea when trapped in rockets or space stations.³⁷¹

The UK partook in all these technical strands of food defence, and particularly honed its imperial reach to do what no other culture has tried. It created a supply chain mostly dependent on foreign, imperial sources, relying on the capacity of its powerful navy to defend those long supply routes. But that strategy, as we have seen, came under strain in WW1 and again in WWII. (Meanwhile Herbert Backe's *Hunger Plan* for Nazi Germany hoped to annex Ukraine and turn it into a post-victory Nazi Germany breadbasket.³⁷²) The UK had to deploy huge naval resources to protect shipping from submarine attack. After WWII, another theme running across food defence came to the fore, articulated by Beveridge who learned from his experience as senior official in the WWI Ministry of Food that ensuring all are fed is a form of social defence.¹²⁷ Ensuring the people's food is protected and regular builds and maintains public morale and the social cohesion essential in conflict. His plans for national insurance were in part to prevent hunger and want, and the recurrence of ill-health and unemployment in the 1930s, but also to stave off dissent.¹¹¹

'Total Defence' and 'Total Food Defence' relevance for Civil Food Resilience

How might this notion of what we might call **public** or **civil food defence** be appropriate for the present report? Sweden, whose approach to civil food resilience is summarised later (see Chapter 6), has developed a notion of 'Total Defence'.³⁷³ By this it means involvement of the whole of society in its defence. The term implies a differentiation between military and civil defence but recognises that public may be required to act when and if war threatens.

The International Humanitarian Law of Armed Conflict states that civilian objects must not be attacked unless they have become military objectives.^{374,375} In theory food should be beyond military attack. As we have seen, this is not the case. It is being weaponised. Cutting off water and food supplies is not military but civilian warfare. In 2018, four years before the

second invasion of Ukraine, Russia as a member of the UN Security Council (whose permanent members are Russia, USA, UK, China and France) passed Resolution 2417. In four detailed pages, this specifically spelled out the duty of the state not to unleash food as a weapon.³⁷⁶ On page 3 of Resolution 2417, the Security Council recalled:

[...] the link between armed conflict and violence and conflict-induced food insecurity and the threat of famine, and calls on all parties to armed conflict to comply with their obligations under international humanitarian law regarding respecting and protecting civilians and taking constant care to spare civilian objects, including objects necessary for food production and distribution such as farms, markets, water systems, mills, food processing and storage sites, and hubs and means for food transportation, and refraining from attacking, destroying, removing or rendering useless objects that are indispensable to the survival of the civilian population, such as foodstuffs, crops, livestock, agricultural assets, drinking water installations and supplies, and irrigation works, and respecting and protecting humanitarian personnel and consignments used for humanitarian relief operations.”

What has happened since illustrates how the three meanings of food defence outlined earlier can in fact fuse. That possibility is why Sweden’s total defence encourages civilians to engage in resistance if attacked. Attacks are anticipated in many forms, in keeping with the indicative threats outlined in this report, ranging from cyber-attacks to false information undermining democracy, infrastructure sabotage, and actual acts of war. Sweden sees military and civil defence as back-to-back; both are a defence of values. **Food is included in what must receive total defence.**ⁱ

The RAND Corporation, ever quick to note new possibilities, has noted the relevance of total defence for civil protection.³⁷⁷ Even if a government has determined on a conventional top-down, military command and control approach to disaster and resilience, the engagement of social and domestic levels of society bring in what is in effect total defence. Resilience, RAND states:

“ [...] depends on the entire civil community being ready and prepared to mobilise in collaboration with its armed forces but utilising economic, digital, and psychological means, just as much as military, to defend against contemporary threats.”

RAND Europe has suggested that the UK’s vibrant voluntary sector gives it a good basis for a societal approach to resilience:³⁷⁸

Recent experience has also shown that the UK’s volunteer spirit is alive and well: take volunteering during the COVID pandemic as one example. [...] Rather than focusing on where the UK doesn’t measure up, there are three steps that could help focus minds in the short term: clearly defining societal resilience across UK government and society, promoting public discussions within government and with broader society to engage stakeholders, and working to create consensus around the importance of dedicating resources (be that financial, personnel, equipment, time, etc.) towards this effort.”

The National Preparedness Commission has previously emphasised the importance of this community basis for resilience. It was a key conclusion of its Alliance Manchester Business School study of resilience and democracy in Covid-19.³⁷⁹

ⁱ Sweden’s Total Defence: <https://www.swedenabroad.se/pt/embaixada/netherlands-the-hague/current/news/total-defence/>

The notion of food as part of total defence is not new. In 1951, Robin Turton MP (Thirsk & Malton), an ex-army officer, asked about the country's Emergency Food Reserves, urging that they include stores of dried fruit.³⁸⁰ The population should be assured it can be adequately fed. The wartime political generation knew fruit mattered. In 1963 William van Straubenzee MP (Wokingham) raised food in a Commons debate about civil defence:

“It surely must be right to have trained persons at a time of possible panic as centres for law and order, administration and essential services like water and food.”

Seventeen years later, Robert Banks MP, in another debate about civil defence, returned to the connection, citing membership of the EEC (now EU) as a chance to stockpile.³⁸¹

*“Civil defence is part of a country's **total defence**... The public will be advised on what rudimentary steps to take for their own protection in their own homes and what stocks of food and materials to lay in for a two-week period... A policy to encourage people to keep higher levels of foodstocks in the home would reduce the needs and costs of national foodstocks. Could not some of the surplus EEC foodstocks, for instance, be brought here to offset our national stocks?”* [emphasis added]

Mr Banks wanted two weeks' storage. Over fifty years later, the EPC advised only three days! Chapter 6 gives country examples proposing more. But a key lesson of this exploration of food defence is that today's centralised systems carry the risk of big impacts if they go wrong and if consumers are left with fewer alternatives. Resilience theory suggests decentralised and distributed (i.e. dispersed) systems offer more resilience simply because they ensure more options.⁵⁸ When the UK phased out its system of Civil Defence in 1968, the legacy of thinking about food defence went too. It is time for its return and refinement.

Food resilience and defence for anticipated future shocks

We have already noted that UK food security is heavily reliant on others in the EU for its food supply. EU defence thus has implications for UK *food* defence. The EU, in effect a post WWII peace project, has begun to re-set its defence approach in response to the shock of the 2022 Russian invasion of Ukraine. Its 2023 *Strategic Compass for Security and Defence*, acknowledges the need for it to have better bilateral partnerships with others such as the UK, not least due to the bitter “return of war in Europe”. The Strategic Compass was based on the first ever comprehensive EU threat analysis, published in 2020. While the Strategic Compass was primarily concerned with the creation of more co-ordinated military and reactive capacities, its Threat Analysis had specified that even mighty food secure Europe could no longer assume matters. It noted that “[w]ater and food availability as well as climate change have a growing impact on security”.³⁸² A contested multipolar geopolitics is emerging that is:

*“more volatile, complex and fragmented than ever due to multi-layered threats. Local and regional instability dynamics that feed on dysfunctional governance and contestation in our wider neighbourhood and beyond, sometimes nourished by inequalities, religious and ethnic tensions, are increasingly entangled with non-conventional and transnational threats and geopolitical power rivalry. This erodes the capacity of the multilateral system to prevent and mitigate risks and crises.”*³⁸³

Although not spelled out, the threats the EU envisaged – cyber, invasion, destabilisation, volatility – are in line with those anticipated by experts for the agri-food system. Part of the rationale for the creation of the Common Market in the 1950s was the memory of food shortage and disruptions in the 1930s and '40s, as well as food shortages in WWII. It is why agri-food was one of the four interventions promised by the founding Treaty of Rome.^{384,385}

70 years later, some humility and reassessment are in order. Food defence and resilience go hand in hand. And it is why this report is concerned about a 'resilience gap' - the gap between, on the one hand, what is known to be happening to Europe and the UK and, on the other hand, the speed and appropriateness of the response. Within this **Food Resilience Gap** there are multiple gaps not one.

To fill these gaps requires extensive institutional co-ordination. As one of the academics with state experience interviewed for this report, put it:

“For sure, this would require HM Treasury, and also the MoD to take food security more seriously. For instance, the global strategic threats team at MoD would become really key in forming that public interest. Defra too would have to play an important role, particularly around land use, the environment and its understanding of food and farming. The DHSC would be critically important with regard to nutrition, too. The Ministries ought to be involved but I don't yet see their active engagement in food resilience preparation yet. Could the DHSC, our national illness service, actually become a wellness and resilience service?”

Chapter 5: Consumer vulnerability: a mix of new and old

The 2022 UK Government Resilience Framework mooted the possibility of putting Resilience Standards onto a statutory footing, with bodies such as the British Red Cross (often included in LRF functions) supporting this. The Red Cross' argument is that making resilience standards a statutory requirement would ensure LRFs have “detailed understanding of risk exposure and particular vulnerabilities within the local area as set out in the standards”.³⁸⁶

A number of interviewees, as well as bodies we consulted, reminded us **there is at present no statutory requirement for people to be fed in a crisis**. As a country that signed the 1948 UN Declaration of Human Rights, it can be argued that the UK is bound by the international duty to ensure all are fed. And certainly, to continue the discussion of food defence at the end of the previous chapter, as a signatory to UN Security Council Resolution 2417, the UK should not weaponise food itself.

The reality is that there are no binding UK laws specifying duties on either central or local government (and it is hard to envisage whom else could be made responsible) to ensure people are fed other than the long-term legislation such as for food safety and commercial trading that covers food. The UK's mid-19th century food safety legislation for example commits government and commerce to ensure food is “of the nature, quality and substance demanded”.¹¹⁰ The public are supposed to determine what happens.

In short, there is a distinction between, on the one hand, duties on the state to ensure food available should be fit to eat and, on the other hand, an as yet uncertain duty that there are responsibilities to ensure all the people have food.

This chapter in part comments upon that legal distinction – indeed current gap - by exploring the vulnerabilities that exist at present in UK society. Food vulnerabilities and societal vulnerabilities often overlap.

Food vulnerabilities were raised by interviewees and have been the subject of many scientific reports on economic, health, environmental, societal, consumer and state vulnerabilities. To assess civil food resilience, these vulnerabilities must be considered carefully. Three caveats should be noted.

Firstly, it is too simplistic to think about risks as single threats when what might matter more is how they cascade and interact. It may be hard to disentangle vulnerabilities from each other. There may be clusters. This warrants further research.

Secondly, at the societal level, the situation is already clouded by the NRR apparently judging that food risks are not sufficient in scale and range to raise state concerns. There is a danger of complacency about whether there are vulnerabilities. The most obvious rationale is that food resilience is a personal not societal responsibility.

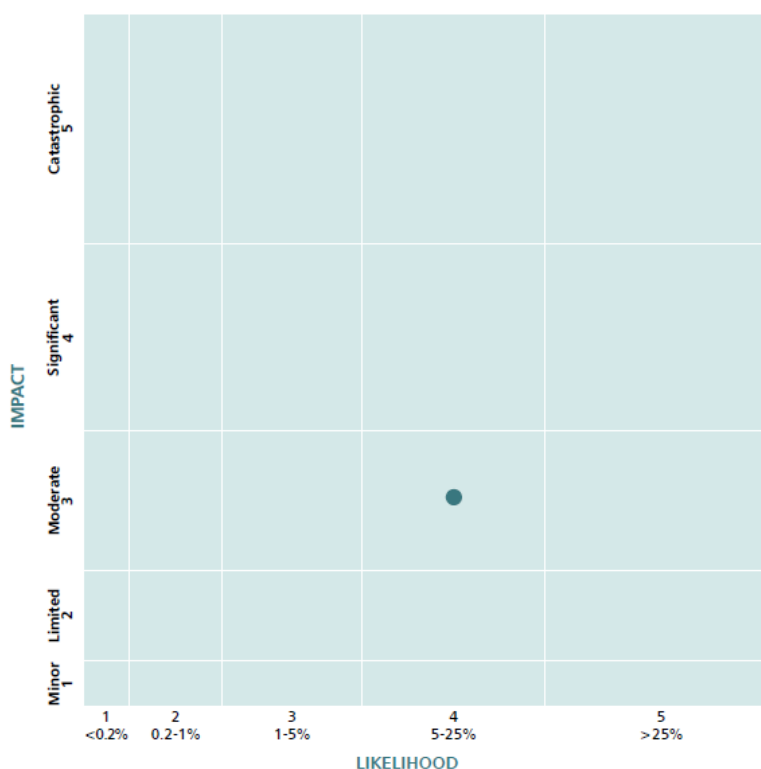
Thirdly, if Government wants to enhance civil food resilience, *how* food risks are experienced by the public must be a key consideration. This ‘lived experience’ is itself shaped by income, gender, culture etc., matters on which society is already divided. Untangling the role of food in such divisions can play a part in clarifying civil food resilience.

Vulnerabilities across the economy, health, environment, society and consumer lives

This report has already proposed that there ought to be a proper food-focussed security and resilience assessment conducted for resilience planning purposes. While the NRR 2023 outlines 89 risks to UK society, only one risk - food supply contamination – makes into that list (as no 40). Food is referred to in the NRR report but as one of a number of “essential services”, something which can be affected by other risks rather than it being a risk in and of itself. It is referenced, for example, within the risk of antimicrobial resistance (AMR), without recognising that most of that risk is caused by the food system – over- and mis-use by farming using antimicrobials as additives in animal feed. The other being medical use.³⁸⁷ Food is also referred in the NRR as impacted by chemical, biological, radiological and nuclear attack, or by floods from a dam collapse (p124).

The risk of food supply contamination is rated as a level 4 or ‘15-25%, likelihood’ (1 being slight, 5 being maximum likelihood) and rated level 3 (moderate) for impact (see Figure 5.1).

Figure 5.1: Food Supply Contamination risk likelihood and impact



Source: NRR 2023 Chapter 4, pp127-8

Food can be both a source of risks to society and the casualty of risks. Table 5.1 indicates potential food system shocks. They are categorised under headings of environment, resource shortage, direct aggression / attack, economic disruption, and shocks within society, politics and public health (see Table 5.1). These all could have cross-effects and

could cascade and amplify. How these shocks might be manifest is presented in the second column.

Table 5.1: Some potential sources of food system shock

Category	Manifestation
<i>Environment</i>	<ul style="list-style-type: none"> ○ long-term from climate heating, ecosystems breakdown ○ immediate from drought, floods or fire ○ loss of pollinators
<i>Resource shortage</i>	<ul style="list-style-type: none"> ○ Oil crisis; phosphate supply hit by war; gas shortages cuts fertilizer output ○ labour; capital; equipment ○ Food ingredients or particular commodity ○ water shortage
<i>Direct aggression</i>	<ul style="list-style-type: none"> ○ Logistics disruption via software, satellite, shipping, road, rail, air; ○ Food is 'weaponised' by blockade, attack on RDCs ○ Ransomware, malware → a factory or multi-sectors ○ attack on mass consumer product ○ <i>in extremis</i>, invasion, infrastructure destruction → war
<i>Economic disruption</i>	<ul style="list-style-type: none"> ○ exacerbated poverty / inequality ○ wage + price spiral ○ Trade intervention or friction → JIT breakdown ○ labour crisis (eg shortage leading to governance failure) ○ maldistribution of food (transport disruption)
<i>Societal</i>	<ul style="list-style-type: none"> ○ Social divisions, inequality and food poverty → weakened social cohesion ○ Stockpiling → riot, looting ○ Regional disparity of access to food (perceived or real) ○ fraud foods and black markets ○ cost of living pressures
<i>Political</i>	<ul style="list-style-type: none"> ○ Loss of trust ...rumours ...deliberate falsehoods (internet) ○ Weak / incompetent government ○ weak / inadequate local services ○ breakdown in EU-UK political relations ○ failing border control food inspections
<i>Health</i>	<ul style="list-style-type: none"> ○ Pandemic → Workforce loss and insufficient labour ○ Poor general health of public → unskilled, 'unentitled' sections of society ○ zoonoses spreads from animals to humans ○ overwhelmed / inadequately prepared healthcare services

Source: authors

How might these shocks affect the public? Table 5.2 suggests potential effects on consumers. We do not say these *will* happen but that they *could* happen, and thus become new dynamics that test civil food resilience. The threat conditions are grouped under a limited number of categories: weaponisation, economic, political, health, environmental, and social. The Table illustrates how different types of threats, and the form they take could have effects on the conditions under which the public normally exists. Extreme aggression on food systems – of the level Russian unleashed on Mariupol in 2022 or blockade of food supplies – could affect both food intake and morale, and spawn social unrest.³¹

Table 5.2: Threat events and conditions that could affect *civil* food resilience

Threat event	Threat condition	Potential effect on consumers	
Military weaponisation	extreme aggression e.g. blockade; destruction of food infrastructure	reduced food capacity; public morale hit; looting;	
	attacks on software and satellites	online ordering reduced or unavailable; food logistics compromised	
	electricity disabled / energy outage	normal distribution, information and web-dependency collapse	
	international trade chokepoints attacked	international trade flow disruption; shortage of long-distance foods	
	key food personnel attacked	skills are lost on which entire factories or sectors depend	
Economic	food price rise (steady or rapid)	pressures on more households; worse diet-related ill-health for people on squeezed incomes; wider social discontent and inequalities; shoplifting, pilfering; black markets	
	'normal' breakdown in food logistics	reduced food supply; competition for supplies; desperation to find alternative ingredients	
	commercial malware and ransomware attack or AI fake information	disruption; no food or wrong foods in the wrong place; panic buying	
	widening UK food trade financial gap	macro-economic pressures on amount of income consumers have for food	
	oil / gas price inflation and volatility	major disruption to gas / energy used for fertilisers or CO ₂ ; food prices squeeze on income;	
	high food sector concentration	government complacently assumes a 'leave it to Tesco et al' approach is sufficient risk reduction and management in crisis	
	ingredient shortage for mass produced foods	shortages; brand disruption; infant food shortages	
	labour shortage	causes more specific food shortages; empty shelves	
	Political	lack of public trust in authority (low trust in politicians)	public mistrusts 'official' messages
		sporadic shortages induce consumer cynicism and black markets	weakened social cohesion
response to crisis is slow or judged as poor		public anger (vide Valencia floods 2024)	
Health	pandemic	reduced availability of food industry and domestic labour	
	zoonoses (disease jumps from farm animals to humans)	mental as well as medical stress	
	accelerated public health and societal inequalities	people are already in a vulnerable status before any additional 'shock' occurs at which point extreme public response can occur et food riots	
	infant food shortage	drop in infant nutrition and parental morale	
Environmental	major flooding events	food growing capacity is affected even at domestic or community level; food price rises	
	biodiversity crash e.g. pollinator decline	crop yields affected	
	pollution outbreak e.g. chemical, biotechnology, nuclear	contamination of food causes panic	
Social	food waste and misuse	resilience preparation gap is exposed; blame campaigns	
	low level of public skills to manage food without 'normal' technology	low resilience capacity for food under low or no cooking conditions	
	disinformation and fake news exposes limited public knowledge	disruptive behaviour when normality breaks	

Source: authors

Types of experience of food vulnerability and threat

As has been noted, advice on food resilience and food defence in the public domain views risks almost entirely through the lens of supply chains and business. But what about the public? How are threats and risks *experienced* by consumers?

Drawing on food systems and public health analysis of disaster response,^{388,389} we propose a preliminary Typology of Civil Vulnerability (see Table 5.3). This draws on the literature as well as our interviews and exchanges with people of relevant expertise. It presents different characteristics of vulnerability and how those characteristics may be manifest in civil society. The Table scans 'wider' than most technically-focussed risk assessments which identify the source of risks rather than the vulnerability they tap into and / or induce. The Table also recognises international evidence of how social determinants - for example of health - shape outcomes in and after crisis or shock.¹⁷⁰ As Professor David Alexander has noted:

*"...threats and hazards trigger impacts, but vulnerability defines them."*³⁹⁰

Who defines those vulnerabilities in turn becomes a highly sensitive matter for resilience.

Table 5.3: A Typology of Civil Food Vulnerability: how shocks are manifest

Characteristic	Range of civil manifestation	
	Short-term	Long-term
Intensity	Acute 'severe and sudden' shock eg. rapid spread of a disease; power outage	Chronic 'long developed' eg. a population that has been unhealthy for a long time
Scale	Micro: a household or one food product is affected	Macro: a whole city or region is affected
Duration	a rapid unexpected invasion; immediate food shortage	Long-term unhealthy population; prolonged food blockade
Exposure	A major water pollution environmental incident means dramatic water shortage	Persistent food price inflation creates food unaffordability and alters diets
Sensitivity	immediate physiological effect e.g. poisoning	Slow or long-term physiological effect
Capacity	Material resource dependency affects output	Long-term morale and drop in social cohesion
Impact	Immediate 'hit' to key food	infrastructure damage ultimately affects food
Socio-economic determinant	Poor quality food / diet consumed by people on low incomes can mean higher vulnerability	High income reduces vulnerability and thus enhances resilience
Expectation and preparedness	Low / no anticipation of likelihood of shock discombobulates when it happens	High degree of anticipation gives some room for preparation for shock response
Maldistribution	Food exists but is not readily available (it is in the wrong place, wrong price, etc)	Systematic maldistribution of food as 'normal' socio-economic inequalities determine access
Resource waste	Food is wasted before the public gets it	Food is wasted at or after the point of consumption

Source: Authors

Interviewees throughout this study stressed how people on low incomes and in areas of (relative) deprivation even in a rich economy such as the UK are already more vulnerable to food shock and thus in weaker positions to be able to bounce back.

Vulnerabilities *before* shocks and in ‘normal’ times shape the scope for civil food resilience. If the Government Resilience Framework’s ‘prevention and protection’ principle is to be taken seriously, politicians must understand the significance of pre-existing conditions and how they may affect life and society *post shock*.

Resilience cannot be a bolt-on feature. And consumption patterns are part of the picture. One interviewee said:

“If shocks and disruptions come to the food system, which they will and are, one thing we can do to prepare is to foster more open-mindedness about diet among the public. We must build that possibility. Many are working on this at present.”

Another government advisor recognised the possibility of major shocks but had more faith in the capacity of industry flexibility to adapt:

“Supply chain shocks are happening already in the food system. These are not at emergency level here in the UK but are for Egypt or Lebanon or Syria. There is enough food for the UK but other countries are already suffering food chain difficulties. An ex-head of a big food retailer [with whom I’ve talked] thought that retailers’ Regional Distribution Centres [RDCs] are actually vulnerable to terrorism, but this would have to be a concerted effort i.e. to hit multiple RDCs / depots to have this effect. We’ve learned from Covid and Ukraine how flexible the food system can be. And there is currently a war between two huge global grain exporting countries to which the system has adapted remarkably. There, too, a big shock such as harvest failure due to climate change could be a different matter.”

The Role of Community Risk Registers

Community Risk Registers (CRRs) are the nearest current UK resilience support gets to the public. Producing the CRR is where each LRF takes note of the data and risk advice from the publicly available NRR and the classified NSRA. In effect, each CRR translates these risks to their locality. The CRR, in the words of one such report:

“uses the likelihood and impact to determine whether to include it in the Community Risk Register and continues to regularly monitor the risks. This is to check whether they are still relevant and that there are no newly emerging issues to consider.”³⁹¹

CRRs are not produced in a standard format. Some are a single document, available in pdf format. Others are web-based and allow more searching. For our present focus on the public, the value of CRRs is that they are based on the risks assessed by the classified NSRA not just the publicly available NRR. They are the result of exploring how this might create an emergency that requires response from the blue light services.

What, then, is an emergency or the risk of one? According to the same CRR cited above and this citing the NSRA, emergencies are defined as those events that threaten “human

welfare” and/or “serious damage to the environment” of a place in the United Kingdom. The NSRA is understood to use assessment criteria thus:³⁹¹

- **Human Welfare:** including fatalities directly attributable to the incident, casualties resulting from the incident (including illness, injury and psychological impacts), and evacuation and shelter requirements.
- **Behavioural:** The two subcategories or elements that are assessed are Public Outrage and Public Perception.
 - Public Outrage: aims to capture the sense of public outrage after an event has occurred.
 - Public Perception: assesses the sense of personal vulnerability / fear resulting from indirect or direct exposure to an event.
- **Economic:** Measure of total net cost to the economy, including both direct and indirect costs and losses as well as other costs such as lost tourism and reduced working hours.
- **Essential Services:** Disruption to normal patterns of the daily lives of the public. The twelve sub-categories or elements that are assessed are: Transport, Fuel, Gas and Electricity, Food, Water, Health, Social Care, Finance, Communications, Emergency Services (Ambulance, Police, Fire and Rescue and Access to 999 services), Criminal Justice, and Education.
- **Environmental:** impact on the environment including pollution, rubble, and debris.

These certainly come closer to being an appropriate people-centred approach to vulnerability proposed here in that they take a much more rounded - almost ecological - approach to impacts. This multi-criteria approach is appropriate for food. In reality, CRRs cannot offer much to local citizens other than advice to be alert, to report cyber-attacks, plus some practical advice.

We looked at Scotland’s ‘Preparing Scotland’ scheme which in 2021 produced guidance for its three Regional Resilience Partnerships (RRPs) - North, East and West of Scotland RRP – and what was in their CRRs. The main Guidance document did point to food at three points but gave no specifics.³⁹² The RRP CRRs mentioned food only in a low key way, one four times, one seven, and one eight. The advice was very general rather than specific and individualised rather than community oriented. For example:

“Outages may come with forewarning. If this is the case consider how you can be prepared e.g. fill the bath with water for general use and use bottled or boiled water for drinking, food preparation and cleaning teeth.”

or, another advising, should there be another pandemic, to:

“Keep healthy – living a healthy lifestyle significantly increases your body’s immune system and ability to cope with the illnesses. [...] Ensure you have someone who would be able to collect your medication, food and other important supplies for you – this will allow you to remain at home, potentially reducing further spread of the pandemic.”

In England, CRRs tend to be longer and more detailed. One LRF, Derbyshire, had CRRs for each of 10 parts of its region, which suggested it might be engaged in a more locally fine-tuned sense of ‘community’, but in fact it simply took the NRR assessments and gave them to each of its 10 areas.¹ Thus anyone in Derbyshire hoping to understand specifics for their area would be alerted to what the NRR said. High risks and high impacts are listed as:

¹ Derbyshire Prepared 10 areas: <https://www.derbyshireprepared.org.uk/risks-derbyshire/community-risk-register/>

failure of the electricity grid, fluvial flooding, and an influenza pandemic. People with knowledge of Derbyshire topography or minutiae of town and rural planning might think the risks would vary according to place.

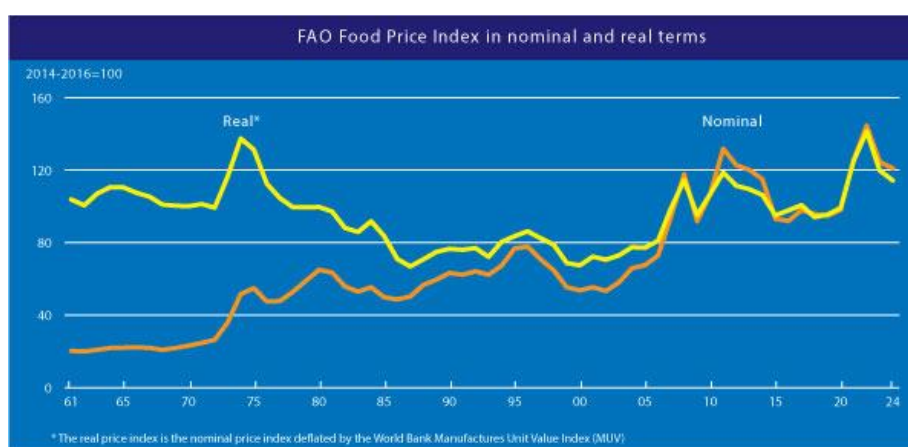
Production of CRRs takes time and resources from already stretched organisations. In our view, CRRs could and should be something that engages with the public, genuinely taps into where it sees risks, and explores with organisations knowledgeable about the locality and particular sectors and interests. There is a real danger that unless more locally-focussed processes are built into CRRs, they could be seen as token, despite the effort put into them by LRFs and RPPs.

Way forward: LRFs and RPPs should be given more help to produce genuinely community-based risk registers. There is little point in producing notionally area-oriented CRRs if in reality they simply repeat the nationally derived NRR's assessment. Community resilience would be significantly enriched if conducted through 'bottom-up' engagement that considered the 'top-down' advice through the community lens.

Old and new food risks affect civil, not just business or state, interests

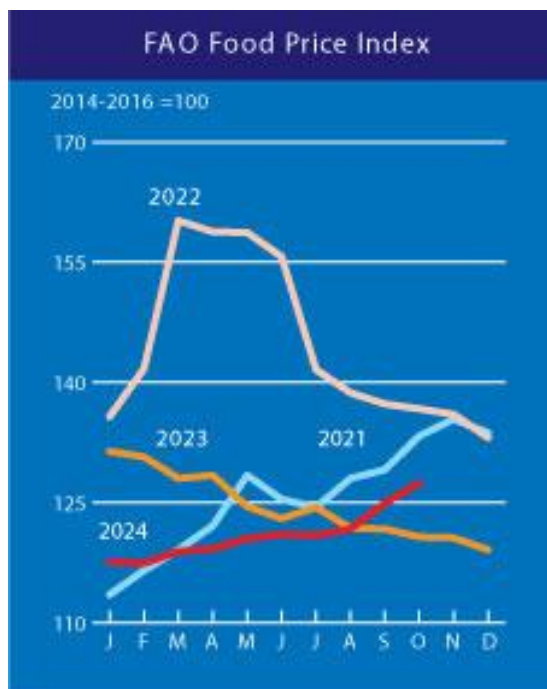
The rest of this chapter considers different types of risks and their implications for consumers. Simplistically, risks to food are risks to stability. But the food system, even in the UK, is not stable. It is both more precarious and potentially at-risk than recent assumptions, arising from national and international conditions of economic stability, allowed for. Farmers and growers talk of the need for long horizons to be able to do what they do. Civil food resilience needs the same. It has to be built over time. Recent decades when food was plentiful, reliable and when there was some level of stability in world markets have been replaced by times of more uncertainty, price volatility and heightened awareness that geopolitics could again erupt. World markets, to take just one condition, have been volatile since the oil and commodity price shock of 2007-08 (see Figure 5.2) and even across a few years, constancy is not visible (see Figure 5.3).³⁹³

Figure 5.2: FAO world food price index, 1961-2024



Source: FAO 2024³⁹³

Figure 5.3: FAO Commodity Price Index for October 2023-October 2024



Source: FAO 2024³⁹³

With such volatility at the global level setting the context, it is not surprising that one industry insider interviewee proposed a long view:

“Almost no country in the developed world has a resilient independent food system. Britain is no exception to that but is no better or worse than the average. Today’s diet and consumer expectations mean we all have international food dependencies. We have been building consumers who are used to this for 200 years! Today, there are also new vulnerabilities notably from climate change. The relevance of such dependencies is coming up more often now but back in 1986 following the Chernobyl nuclear reactor disaster, lamb trade was seriously curtailed for a long time.”

Extreme threats: the modernisation of food wars, terrorism and weaponisation

The extreme manifestation of shock to food systems and consumers is war or extensive geophysical shocks such as from a tsunami or hurricane (not considered likely in the UK but if happening elsewhere might have effects here). The history of food over the last millennium provides cases of food shock at scale. The measurement is often reduced simply to the number of deaths but the legacy is more than that. Survivors’ social outlook and cultural equanimity is affected and may take a long time to subside as Jordan’s study of the Great Famine in Northern Europe in 1315-22 showed.³⁹⁴

More recent examples of deliberate food weaponisation at scale include: under the British, the Great Irish Famine of 1845-52,³⁹⁵⁻³⁹⁷ and the Bengal Famine of 1943,^{398,399} under the Soviet Union, the 1930s Stalinist enforced collectivisation of farming and destruction of the

kulaks (peasants) and the particular induced famine in Ukraine (the Holodomor) in 1932-33;⁴⁰⁰ in China, the 1958-62 Great Famine under Mao with estimates of up to 45 million deaths;⁴⁰¹ and in Nazi Germany, Herbert Backe's 1940 Hunger Plan devised for Germany to annex Ukraine's rich grain lands and to starve the Ukrainians out and replace the population with Germans who would provide long-term food security for the Third Reich.^{372,402}

These serve as the horror stories, reminders of the case for prevention and protection, the rationale for building resilience 'Just-in-Case'. They are reminders too that people in charge of distribution are the gatekeepers to population survival and why democratic accountability and diversity are not just 'sensible' food strategies but essential.

In 2002, the WHO published a report on food terrorism,⁴⁰³ concerned that food can be contaminated either deliberately to cause fear and disruption, or accidentally through unintended spillage for instance, or due to poor environmental health standards such as lax hygiene in food preparation. The WHO recognised the immediacy of food, by which it meant the necessity of "*all food and [...]water used in the preparation of food, as well as bottled water.*" It defined **food terrorism** as:

"[...]an act or threat of deliberate contamination of food for human consumption with chemical, biological or radionuclear agents for the purpose of causing injury or death to civilian populations and/or disrupting social, economic or political stability."

Deliberate contamination was rare in the 20th century but did happen. After the 9/11 attacks on the USA in 2001, sensitivity rose. In 2004, the Rand Corporation briefed about potential dangers of terrorism and deliberate attack for the US agriculture sector.⁴⁰⁴ Its recommendations focussed entirely on what US federal agencies could do. By 2007, the Food and Drug Administration (FDA) had begun to include food defence in its Food Protection Plan. Within a decade the US federal bodies had tightened 'food defense' to its satisfaction.

We now see 'Food Defense'ⁱ used as the collective term by the FDA, the U.S. Department of Agriculture (USDA), the U.S. Department of Homeland Security (DHS), and others to describe "activities associated with protecting the nation's food supply from deliberate acts of contamination". For this the US departments began to apply a military methodology first developed in the 1940s, the 7-point 'CARVER + Shock' methodology for assessing risks. CARVER + Shock is the military special operations forces acronym (see first letter of each of the 7 points) to ensure this is a cross-sector assessment of risks and vulnerabilities. The tool rates seven factors that affect the desirability of a target:⁴⁰⁵

1. **Criticality**—public health or economic impact
2. **Accessibility**—physical access to target
3. **Recuperability**—ability of the system to recover from an attack
4. **Vulnerability**—ease of accomplishing the attack
5. **Effect**—amount of actual direct loss from the attack
6. **Recognizability**—ease of identifying target
7. **Shock**—combined measure of physical, health, psychological, and economic effects

In his 2007 Nuffield Scholarship report, H S Parker, a British academic, noted how the USA had moved fast into the possibility of agro-terrorism, and how little the UK was considering this, compared to the USA.⁴⁰⁶ (EU membership may have induced a false sense of security, perhaps.) He too noted how the venerable age of the CARVER+ Shock approach might

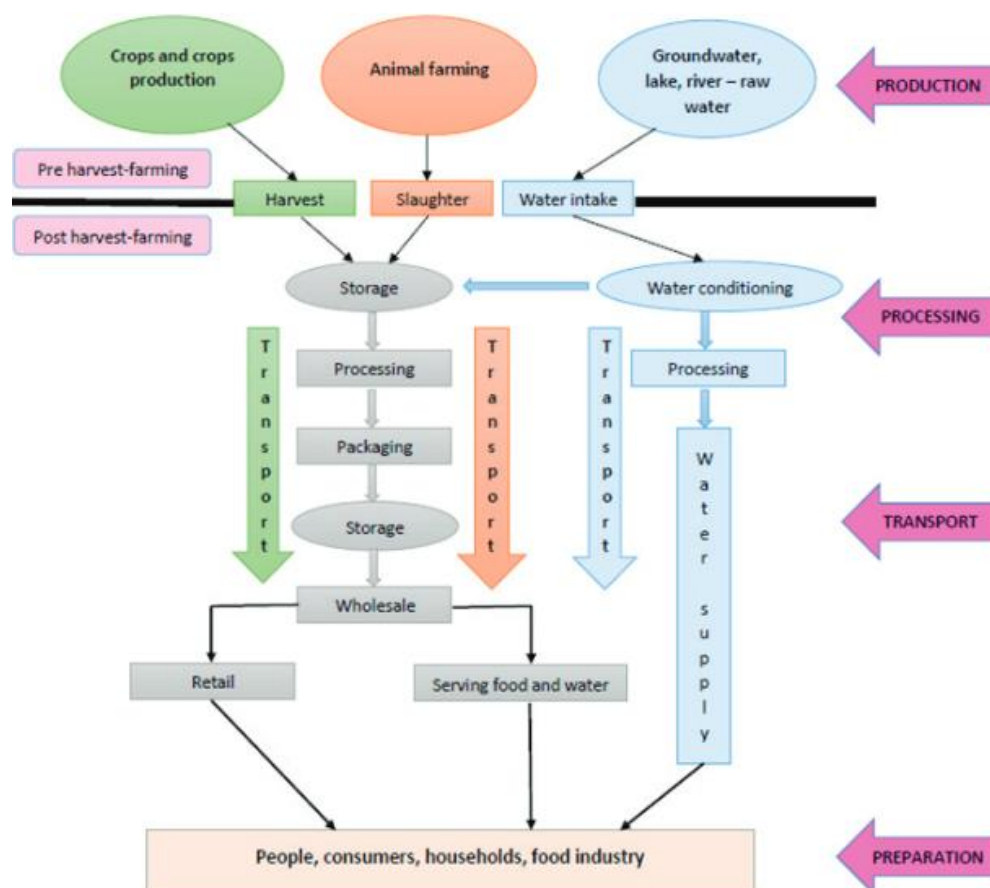
ⁱ other than for the USA, we use UK spelling as 'defence'.

mean it was inappropriately being applied to new or changed circumstances, and how its focus on agriculture understated the more systemic risks of more integrated food systems off the land. Parker was right that food is not just a matter of agriculture, and also that to focus the state response solely on ‘first responders’ – the blue light services – was probably inadequate even for an agricultural target.

Vulnerabilities are spread throughout the food system

Here again, the concentration on continuity of supply seems to dominate. Even at the international discussion of what to do about such threats, hosted by WHO and FAO in Marrakech in 2002, the discussion was on how to stop ‘sabotage of food supplies’. WHO did suggest that a more systemic approach required thought on not just primary production but right through to home preparation, however. Two decades on, most academics would agree. A 2019 study by Juric and colleagues of deliberate contamination attacks across nearly six decades (1950-2008) identified vulnerabilities throughout the food system not just in agriculture (see Figure 5.4). No one point was deemed beyond vulnerability.

Figure 5.4: Vulnerabilities are found throughout the Food System

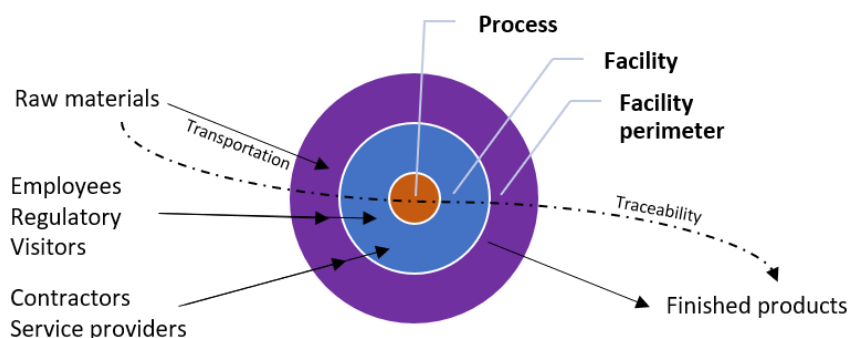


Source: Jurica, Vrdoljak and Brčić Karačonji, 2019

A division of labour has emerged for food defence work in which ‘perpetrator prevention’ is mostly seen as the responsibility for intelligence or military services, and ‘immediate prevention’ in the factory is the responsibility of the company.^{407,408} Jurica *et al*’s warning that no part of the food system is immune from vulnerability is correct, but this is food defence of supply, not the same thing as civil food resilience or societal resilience, i.e. actions by the public to prevent it being vulnerable to the company risks. A critical look at another approach, this time from the Institute of Food Science and Technology (IFST), a UK professional body, giving advice in 2021 to management about food factory vulnerability to attack (see Figure 5.5). Here the system’s ‘boundaries’ are at factory level, and the advice on how to manage a food threat is with a 5-step operational process: ⁴⁰⁷

- Step 1 - Food defence assessment
- Step 2 - Develop a food defence plan
- Step 3 - Implement the food defence plan
- Step 4 - Test the plan
- Step 5 - Manage the plan

Figure 5.5: A production-oriented Food Defence Assessment



Source: IFST 2021⁴⁰⁷

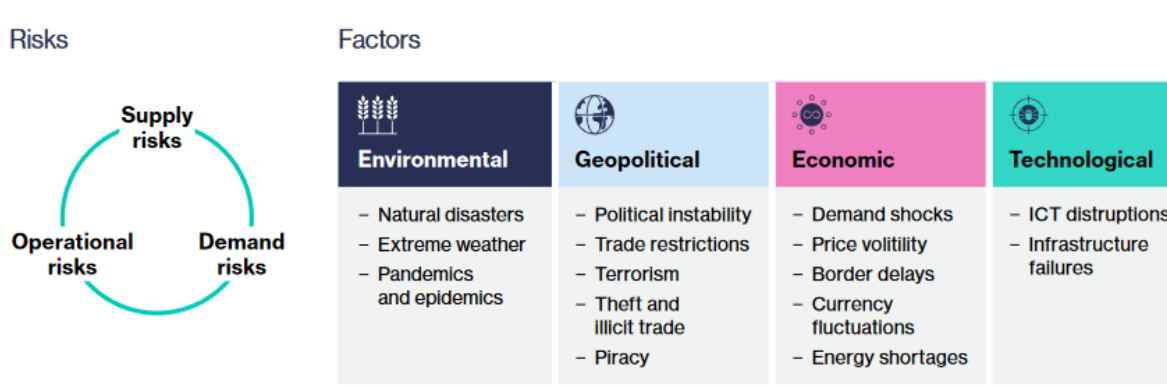
In fact, threats are rarely neat or orderly. Since the early 2000s, a major opportunity for disruption is the vulnerability of the Internet of Things. Much of the world’s food systems depend on a nexus of computers, data management, satellites, and software-dependent supply chains. In the West, particularly so. Hence the importance of cyber security. The public is part of this reframing of risks. How people live has contributed to the emergence of online shopping, browsing, ordering and payment. Citizens are both active data miners and being mined. Some academics see this as a new form of surveillance culture giving new formidable power to the data companies and the state,⁴⁰⁹ while others see the risks as containable and a new leap in efficiency. Big Data’s advantages might be extolled by informatic academics, users and companies but, to put it starkly, if the mobile networks went down, who would feel confident about their food supply? And how would society communicate internally?

Neither the 2021 House of Lords Committee on Preparing for Extreme Risks chaired by Lord Arbuthnot – which argued for the ‘whole of society approach’ – nor the 2022 *UK Government Resilience Framework* – which accepted that as one of its three principles - appear to have

considered food weaponisation.^{2,410} But the finance industries have. The insurance and re-insurance sectors are particularly alive to having to pay out on failed risk assessments.

A 2022 Lloyd's and Willis Towers Watson *Farm to Fork* report, for example, identified three types of risk to food: operational, supply and demand (see Figure 5.6).⁴¹¹ At last demand' – i.e. the public – is being recognised as significant! Their report identified seven drivers of risks (economic, demand, labour, technology, transport, geopolitical/political, and climate/sustainability) and applied these to 'at risk' food sectors across the food system (livestock, agriculture/growing, manufacturing, processors, foodservice, wholesale & distribution). It took a systems approach.

Figure 5.6: The Lloyd's & WTW summary of Farm to Fork food risks



Source: Lloyd's & Willis, Towers, Watson, 2022⁴¹¹

Interviewing people within those sectors, the Lloyd's & Willis Towers Watson report painted a sober but systemic picture of food risks across sectors, identified as 'to' or 'from' the following:⁴¹¹

Epidemics, Pandemics, Climate change, Biodiversity loss, Cost inflation, Raw materials and inputs, Currency fluctuation, Financial penalties, Fines, Political risks (war, expropriation, Brexit), Movement restrictions, Product contamination and recall, integrity and traceability; Reputation risk; Shortage of a key raw material or input, Loss of a key customer or supplier (property damage, solvency or reputational issue), Breakdown or unavailability of key equipment, and consequent business interruption, and last but not least failure of utilities (e.g. electricity).

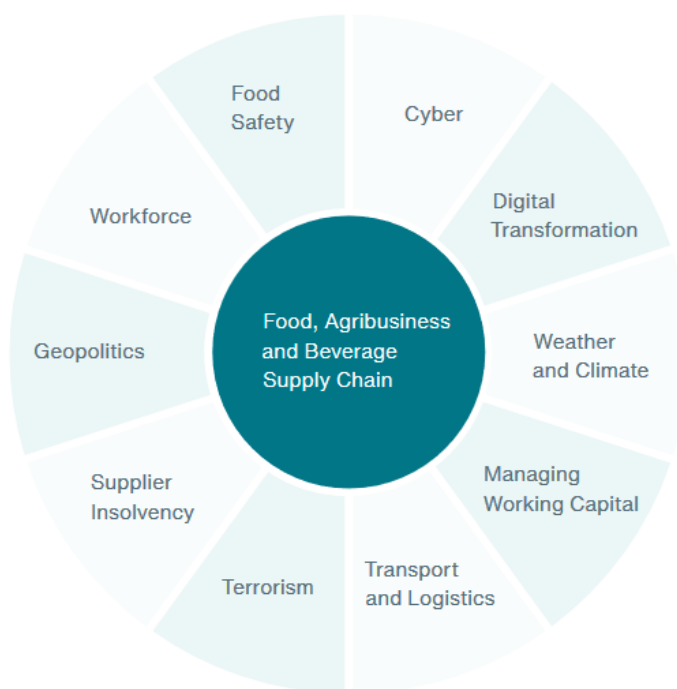
It found, in short, risks from complexity and what is known as the 'cascade' effect.⁴¹² This is where one effect has a 'knock-on' to others that, at worse, can lead to mega crisis or, at best, accelerates and amplifies single effects. A norovirus outbreak could affect a major food factory for instance.¹ As one might expect from an insurance industry frame of analysis, Lloyd's is mindful of pressures on the reinsurance sector, the underpinning of the underpinning. The list above cannot be accused of complacency. It might be criticised for

¹ see the UK NRR on food contamination: <https://access-national-risk-register.service.cabinetoffice.gov.uk/risk-scenario/food-supply-contamination>

special pleading (wanting to prevent future costs) but here surely the public and insurance interest are aligned.

Aon, the international risk management consultancy, published a report in 2023 on how to build resilience into agri-food businesses.⁴¹³ Like the Lloyd's WTW study, its focus was on supply but its main concern was on the probability of interactions between the threats (see Figure 5.7). Those interactions would affect the public.

Figure 5.7: Aon's illustration of risks to addressed when building resilience



Source: Aon plc 2023⁴¹³

Aon indicated four types of risk, each with critical considerations:

- *supply chain risks*: transport and logistics, working capital (e.g. supplier insolvency and credit difficulties), energy problems (need for back-ups) and changing terror threats.
- *climate change*: maintenance of product quality, climate intensification, water threats, yield fluctuations.
- *digital transitions*: cyber risks and the arrival of artificial intelligence (AI) and the Internet of Things (IoT)'s interconnectivity.
- *workforce and food safety threats*: disruption of a committed, happy and well trained workforce is foundational for food safety risk reduction via malicious or accidental tampering.

The picture our own interviews and desk research found was not one of imminent food system Armageddon but of quiet (and in some cases rising) pressures. As one senior executive told us:

“I’d say that the commercial side of the UK food system is moderately to quite resilient. That said, in 2021 the co-existence of a number of difficulties such as Covid, labour shortages, post-Brexit adjustment, container shortage, long-term sickness etc, did generate some difficulties. There were food shortages. And that situation has not really improved much ever since.”

In spring 2024, the IGD, a respected food industry research group (formerly the Institute of Grocery Distribution), produced a report identifying ten sources of significant pressure on the UK food sector (see Table 5.4).³²⁰ These, it has been pointed out, are all supply chain pressures but also have significant impacts on UK consumers.

Table 5.4: IGD’s 10 long-term risks to the UK food system, 2024

	Threat	Why this is a concern for food
1.	Climate change	will worsen; likely “20% increase in food prices globally by 2050”
2.	Agricultural challenges	Land use change; “significant exposure to shortages at a category level”
3.	Disease (of livestock and plants)	“becoming embedded”; “vulnerability to disease has increased since EU exit [...] UK has lost access to the EU’s monitoring systems”
4.	Water	Stress will increase in UK and EU; “UK water quality is poor.”
5.	Biodiversity loss	Deforestation and loss of pollinators pose “significant longer-term consequences for food production”
6.	Labour and skills	“UK’s ageing population will worsen labour shortages in the years ahead”; need to help “build a talent pipeline, investing in automation, and increasing pay”
7.	Economics of the food system	stalling profits leading to low investment; long-term viability of business model that relies on “intense competition” to keep “food and drink prices affordable for consumers is under threat”
8.	Geopolitics	“growing geopolitical instability, increasing the likelihood of flashpoints”; “Global trading routes for critical items are concentrated along specific trading corridors, driving risk into the system and creating potential for states to leverage their power”
9.	Cyber-security	Technical dependency “increases cyber security risk. Food businesses have already been the target of cyber-attacks, and it is unlikely this threat will abate in a more unstable world”
10	Opaque supply chain	“globalised and complex network of interdependent supply chains [...] can often lead to obscurity, hampering progress, undermining assurance and masking issues within the supply chain”

Source: IGD 2024³²⁰

These also have potential political leverage points ahead such as how to improve and renegotiate EU-UK food trade mechanisms when the new government says it will not consider any of the real mechanisms for doing so; how seriously the UK takes dietary change to reduce environmentally negative impacts when UK politicians have long been reluctant to shape cultural change; how to shift consumer expectations of 'cheap' food when large sections of the public have been experiencing harsh times in a cost of living crisis; and how to improve warning and preparedness for food shocks when this requires investment, a change of Whitehall culture and a different approach to 'communications' and messaging.

For some years, business schools and organisation analysts have offered acronyms trying to capture the uncertainties of modern contexts that these various business analysts propose to be happening for food. Few are offered only for food, although TUNA is offered to indicate a world characterised as Turbulent, Uncertain, Novel, Ambiguous. VUCA proposes Volatile, Uncertain, Complex, and Ambiguous. BANI is another, describing a world that is brittle, anxious, nonlinear and incomprehensible. They all suggest a lack of stability, consistency and orderliness, implying difficulty in retaining BAU – business-as-usual – which by default seems to triumph.

Import dependency and the food trade gap

In an October 2023 poll, 84% of the British public judged production targets (to increase output) as even more important for farming than its role in protecting the environment and facing climate change which were backed by 79% of the public sample.⁴¹⁴ In this respect the public is ahead of the politicians who have for some time been reluctant to prioritise home production even though it has declined since the early 1980s. Post-Brexit the food trade gap is once more rising up the agenda. The food trade gap is the term used to amalgamate imports and exports into one figure. In theory they could but in reality they never balance. The UK has a huge negative food and drink trade gap. It has widened by 11% from a deficit of £30.0 billion in 2005 to £33.2 billion in 2022 in real terms.¹⁷⁶ It would be even larger without the export of £8 bn's worth of whisky per year.

That the UK does not feed itself - nothing like - is surely a risk in and of itself – economically, nutritionally, and strategically. The more a country relies on imports, the more its political control weakens. In an idealised world where food travelled seamlessly and without leverage over anyone else, food trade gaps might not matter. In a world faced with bitter examples of food weaponisation, the scale of food import dependency is a risk.

Until and unless the new Labour Government reverses the 2022 Government Food Strategy,²² the default Defra and ministerial line remains that this does not matter, and that since imports come from a variety of sources, the risk is spread. This is misleading. The imports are overwhelmingly within the EU and via a few points of entry. More importantly, those points of entry have now themselves become 'chokepoints' both ways.

In the three years from January 2021, agri-food imports from the EU fell by a 3-year average of 8.71% (£4.34bn) per year with exports to the EU decreasing by 16.34% (£2.82bn) per year compared to the previous 3-year pre-Brexit period, according to a University of Sussex analysis.⁴¹⁵

The 2022 UK Government Food Strategy may have failed to grasp food security post-Brexit as a heightened infrastructural risk but it certainly cannot be blind to the economic shock from such trade loss.⁴¹⁶

In April 2024, new 'Common User Charge Rates' were introduced. These are bills that importers and exporters pay to be rubber-stamped through the EU-UK border whether the food is tested or not.⁴¹⁷ Food importers report they now pay significant sums for the paperwork and /or the actual consignment to be checked; this translates into many multiples of 'small' fees of £29 for a lorry-load. Many agri-food sectors are alarmed at this.⁴¹⁸ One report cited a Polish meat transport company having to pay an extra €1,750 (£1,500) on top of existing costs of €3,000, a 60% rise, for each lorry to come to Britain.⁴¹⁹ Either British consumers (and retailers) will pay this addition or the trade will reduce.

How the borders are managed represent a shift of risks, though we should point out that frictionless borders carry their own risks, as was shown in the fraudulent meat scandal of 2012.⁴²⁰

The Food and Drink Federation side-steps this tricky food politics by calling for "appropriate production/supply ratios", noting rightly that these vary between products. "A robust ratio can be defined as one in which reliable external supply helps reduce the risk of high reliance on undiversified domestic supply."⁴²¹ But who is to say what is robust?

The UK horticultural trade exports £1 bn worth of produce but £10 bn of fruit and vegetables are imported. This received political attention towards the end of the Labour government, but the resulting 'Roadmap' was ignored with the change of government in 2010. 14 years later, and in response to intense lobbying (and poor local election results in rural areas in which it would normally expect solid support) the government held a Farm to Fork Summit in May 2024. At this Prime Minister Sunak launched a new Food Security Index with warm words about supporting farming and horticulture but still with no targets.^{285,422} It promised attention to horticulture and recognised a sector important for health was at risk of decline.

The UK is unable to grow bananas, Britain's favourite fruit. They are sourced almost entirely from central America or the Caribbean. One wonders at the social media reaction today if, as in 1940, a latter day Lord Woolton (Minister of Food) was to impose a total ban on bananas or if the maritime trade or ripening process was hit.ⁱ In fact, such is the domination and monocultural cultivation of bananas, that disease could strike the ubiquitous Cavendish banana on which global trade depends.⁴²³ Many other varieties exist, some with better nutritional profiles.^{424,425} But trade is fixed on the standardised Cavendish rather than the biodiverse or more sustainable or disease resistant varieties; they remain unfamiliar.

The Decline of Stocks: if business sees the risk, should government?

In February and March 2023, the UK experienced a very public shortage of salad tomatoes from Spain and Morocco. Unseasonal cold weather was blamed. It showed the reliance on external sources and how consumers had come to expect others to produce all-year round fresh produce. It also illustrated how dependence on such sources could be affected by them being affected by climate change. It was a reminder that the complex web of Just-in-Time (JIT) supply chains is not immune to disruption.

A senior retail trade analyst told us:

ⁱ In WWII, the cultural yearning for bananas continued, not least in the airing of songs such Harry Roy's 'When can I have a banana again?' and the US song 'Yes We Have No Bananas'.

“The just-in-time system doesn’t cope well with immediate shocks like Storm Ciarán’s impact on south west England and then we get stories of consumer stockpiling.^{i ii} There may be no real shortage of food across the entire food chain but a large spike in consumer demand, driven by concerns around availability from weather or other shocks such as fuel shortages mean sudden supply at the scale being sought might not be possible. Let’s remember the supermarkets have been working hard to cut their waste, so there is little tolerance in the system if there’s massive increase in demand.”

Almost all the UK food system works through JiT, based on a vast network of satellites, computerisation, information technology, multiple modes of transport, management control systems and Big Data on consumer behaviour. It is the lifeblood of modern food systems, linking the parts of the system, and seen in business circles as one of the wonders of modern business. Its ubiquity is why interviewees and other commentators now argue that the technical brilliance of JiT is also its vulnerability. Disruption of JiT threatens the last half century’s investment in food systems; its reliability is at stake.

When there were supply delays in Covid-19 and after the 2022 Ukraine invasion, supporters were confident that these were hiccups and not signalling a need for fundamental redesign.⁴²⁶ Others argued that ‘buffers’ might be needed to provide leeway, or slack to allow for such difficult periods. ‘Just-in-Case’ might be required. By no means is everyone in business convinced of JiT invincibility.

In its 2023 report on business risks based on a survey of 2000+ business people, Marsh McLennan found supply chain risks and disruption to be the third highest concern.⁴²⁷ This was for all business not just food.

But what would a Just-in-Case food logistics be? In the past, this meant keeping stocks. Switzerland still has one sufficient to feed the population for 3 months and is increasing it to a year (see Chapter 6). As one interviewee reminded us, the UK used to hold stocks too. There were:

“a number of formal contingency plans directly related to the events of WWII, including plans to ensure the continuity of basic food supplies as part of its so-called War Book. These included the holding of physical stockpiles of flour, fats, sugar and other essentials in dedicated and secure Government-owned and -run storage depots where supplies were rotated and kept in good condition. This system was a direct legacy of the shortages and rationing experienced as a result of U-boat attacks on merchant shipping and other wartime disruptions to normal production and designed to ensure a basic minimum for individual households to be able to produce meals with whatever else might be available. The model was rudimentary.

“This in turn evolved into broader Cold War planning for nuclear strikes etc. There was provision for alternative seats of government. The command-and-control structures had to be decentralised, taken out of major places that might be hit. But this was all very costly and was progressively wound down as perceived risks diminished. The [food] stockpiles were sold off in the late 1970s/early 1980s when the big retailers were emerging. The view then was that the normal food retail system

ⁱ e.g. <https://www.bbc.co.uk/news/world-europe-guernsey-67304767> or <https://www.itv.com/news/channel/2023-10-31/storm-ciarn-supermarket-shelves-left-empty-despite-panic-buying-warnings>

ⁱⁱ <https://www.itv.com/news/channel/2023-10-31/storm-ciarn-supermarket-shelves-left-empty-despite-panic-buying-warnings>

would have sufficient stocks of its own, widely dispersed across the country. It wouldn't be a problem as per early 20th century.”

But those retailer stocks did not happen. With the JiT revolution in logistics, those who control food supply chains – traders and contractors mostly working for retail giants that have the huge capital resources to invest in JiT technology and planning - have been able to source foods from every part of the globe at unprecedented scale and speed. And the transportation revolution enabled this due to revolutions in telecommunications, engineering and software. A new infrastructure across land and sea depends on the ubiquitous steel container, now in global standardised sizes.

Borrowing initially from Toyota and Japanese car management, first Tesco then other large retailers used their role as intermediaries between primary producers, manufacturers and consumers to phase out back-of-store warehousing and replace it with meticulously detailed and computerised logistics. There is now little storage of food. Storage is old-fashioned. It is mostly quite old. And the logistics industry is fully aware of this.

One senior logistics industry expert told us:

“The way that we have retailed in the last 30-40 years has been defended by Governments but is now at risk more than was envisaged. If you look round the UK map of cold storage, up to 2018, it was what emerged under EU membership. The EU [in the past] paid people to store food surpluses. This was the big government intervention to protect the interests of consumers. It also meant if there was a crisis, there was a store. No-one now would argue for that. I am not sure if a new model is actually emerging with the public in mind as, say the CAP envisaged it. The storage properties are 30-40 years old and a bit run-down. Some property companies are considering doing a big modernisation. The problem they have, however, is the old buildings have no or little debt. There's no incentive to go into debt to build afresh.”

A Just-in-Case logistics system would have to address the case for new and decentralised storage. Meanwhile the business reality is to maintain constant and fast flows of food. And unless it changes, Defra's position is that there is sufficient diversity of trade sources to guarantee resilience post shock. Although the UK has many ports, most are tiny and the vast majority of import-export food trade comes through a few and leaves as quickly as it can.³⁴⁷ Cold or cool storage in transit is used for ambient supplies, while heavy commodities (grain) is subject to different strictures.

But the case for rethinking the highly centralised system of food flows was apparent to many. Without going wholly localist – which has its own risks – there is agreement that rebuilding more regional and localised ‘distributed’ logistics makes sense. One LRF told us how in Covid-19:

“We kind of had to become logistic hubs. We weren't able to take the big brain approach. All of the period of Covid, we were reacting, but we are lucky because we did a daily blog about key decisions and developments. We're now able to read that back and it reminds us how reactive we had to be. That's definitely not an area I want to be in again. We didn't talk to the supermarkets and other food actors in the Covid crisis because we didn't have time. We knew of the Food Banks. We were reacting and doing things on the basis of what we'd prepared for.”

Many interviewees implicitly or explicitly pointed to how and why JiT logistics need to be cross-wired into Just-in-Case logistics. This requires more attention to building diversity, more home production (but not autarchy) and more integrated planning in the public interest.

Civil society and consumers are heavily dependent on the *status quo* when the *status quo* has been locked into a particular model of efficiency that has reduced stocks. An experienced Whitehall insider put the cautionary case very simply to us:

“We need more diverse and localised food supplies to be there Just-in-Case.”

Realistically, there are limits to what civil society can do about such overriding realities, but Part Three takes up that challenge, and we return to stockpile politics in Chapter 8.

Way forward: Government should convene a meeting of JiT expert bodies to produce options for a ‘Just-in-Case’ Plan B for logistics, and to take note of what was learned in Covid-19 and what might lie ahead.

None of our interviewees favoured autarchy – aiming for a totally self-sufficient food economy. They agreed that trade is essential to ease the ebbs and flows. The issue is how much trade, how far, how diverse.

To compensate for vagaries of weather, or to try to produce tropical fruits or soya here would be stupid ecologically and financially. Building resilience means getting back to first principles. Why is this needed? What is the gain? Most imported soya, for example, is used for animal food and as a ‘cheap’ food ingredient. An estimated 80% of all soya imported into the UK is fed to livestock.⁴²⁸ Consumers might not miss soya but many would quickly miss coffee if its availability were hit. Its sustainability may be questioned,^{429,430} but its role in public morale is probably not. Grain, however, is much more significant for nutrition. And already the grain markets dependencies are to the fore since the Russian 2022 invasion of Ukraine threw the market for 28% of global wheat and 15% of maize (corn) on which 1.4 bn people depended into doubt.⁴³¹ Food security, food resilience and self-sufficiency require careful thought. Conditions may change but options need to be kept open for a Just-in-Case food economy.

Systemic waste and maldistribution: will it take a crisis to achieve reduction?

If there was a food crisis or major disruption, the role of waste would come immediately to the fore. Food waste has been a source of much debate and blame-gaming.^{432,433} For nearly two decades the scale of wasted food at global and UK national level has been impressed on public discourse by scientists.⁴³⁴⁻⁴³⁶ Estimates vary but generally they suggest at least a quarter of food produced is wasted. The 2024 UN Food Waste Index Report calculated that “19% of food available to consumers being wasted, at the retail, food service and household levels”. This is in addition to the estimated “13% of the world’s food that is lost in the supply chain from post-harvest up to and excluding retail”.⁴³⁷

In low-income economies, the waste tends to be mostly at or near production due to poor storage, lack of resources or transport and inadequate infrastructure. But people on low incomes, once they have food, tend not to waste it. It is too precious and represents a high proportion of their squeezed household incomes.

In affluent economies, the picture is different. Using the World Bank classification of high-income economies, UNEP estimated that retail wastes 13 kg per person per year, food service wastes 21 kg per person per year, and households (consumers) waste an enormous 81 kg per person per year.⁴³⁷

Waste thus poses a major challenge to civil food resilience. In crises, it would be unthinkable to waste edible food. It might take a crisis to unpick the normalisation of waste. Equally, a crisis would be better addressed if people were not wasteful in the first place.

Waste is also factored into the supply chain by powerful intermediary sectors (traders and retailers) pushing responsibility for waste either onto primary producers (by grading out misshapes or other ‘undesirables’) or downstream onto consumers.⁴³² Although long recognised, affluent economies have failed to dent the problem or not sufficiently. A distinction must be made between food loss, waste and surplus.⁴³⁸

All types and locations of wasted food become resilience issues in scarcity and crisis. Throughout WWI and II, national campaigns in Britain urged reduction in food waste. Although it can be easy to ‘blame the victim’, modern food waste analyses accept that structural forces keep waste high.⁴³² There is a tendency to over-production. Food is in the ‘wrong’ places. Machinery goes wrong. Markets cannot value waste sufficiently to prevent it. Price structures disincentivise old-style frugality. And affluent societies quietly and gradually forget to maintain preparation for scarcity. When there is plenty, who cares? Old habits are undermined.

As economic austerity returned in the Great Recession (2008-11), civil efforts to deviate surplus or about-to-be dumped food and make it available to pockets of unmet need re-emerged. The social enterprise Fareshare had been created by the food industry trying to put its own house in order in the hard-pressed 1990s. In the 2010s it and other food waste enterprises (often social) expanded. Local food charities and food banks emerged. Following the 2001 Foot and Mouth Disease outbreak, mass collection of waste food for pig swill was banned, which meant repurposing for meat production could not happen. Redistribution to humans seemed easier as well as more morally imperative then. It contributed to some fall in UK food waste by 2018,⁴³⁹ yet food waste remains stubbornly high. The fact that much modern food is now packaged in plastic would make redistribution a costly and tricky industry today.

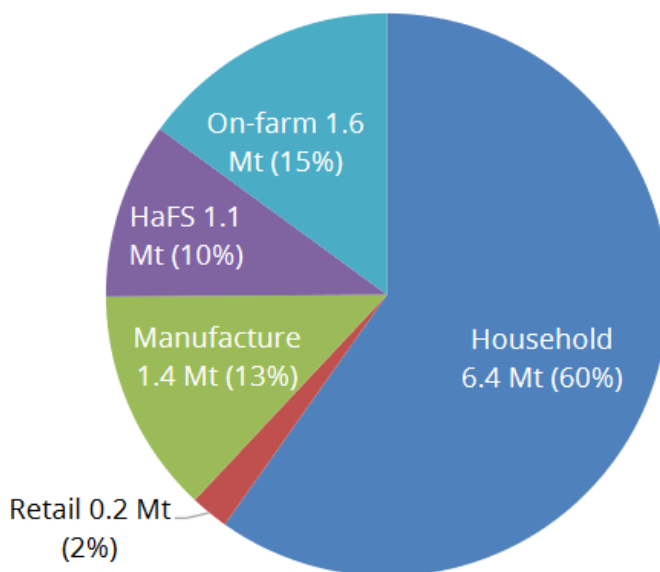
The 2023 estimate is that 60% of UK food waste occurs in the domestic sphere. The UK fits the UNEP overview cited above. 42 million tonnes (mt) of food are purchased for consumption in the UK, most for the home, of which 10.7 mt are wasted, approximately a third (see Figure 5.8).

Waste specialists disagree how much food is wasted on-farm but agree on what happens post-farm.⁴⁴⁰ While overall wastage in primary production stands at about 7% of what is produced, according to the waste body WRAP, levels of waste in production varies. When clustered into product types, WRAP estimates horticultural crops account for 54% of UK waste, cereals 30%, livestock 8% and milk 8%.⁴⁴¹ If the inedible parts of food waste are excluded, the domestic percentage of waste rises to 73% (4.3 Mt).

A small-scale but successful wholesaler interviewed for this report expressed frustrations commonly held across the food system, that UK food waste strategies are patchy, uncoordinated and often side-stepped.

“Because there is no clear national waste strategy, [my City] Council is able to create its own system and the system it has is completely broken. The City is put into an invidious position, being asked to run like a business but also have societal duties. My point is that if there was a duty to build resilience, cutting and making best use of food waste would surely be a quick thing to address.”

Figure 5.8: Food waste in the UK, by sector, of total of 10.7 Mt

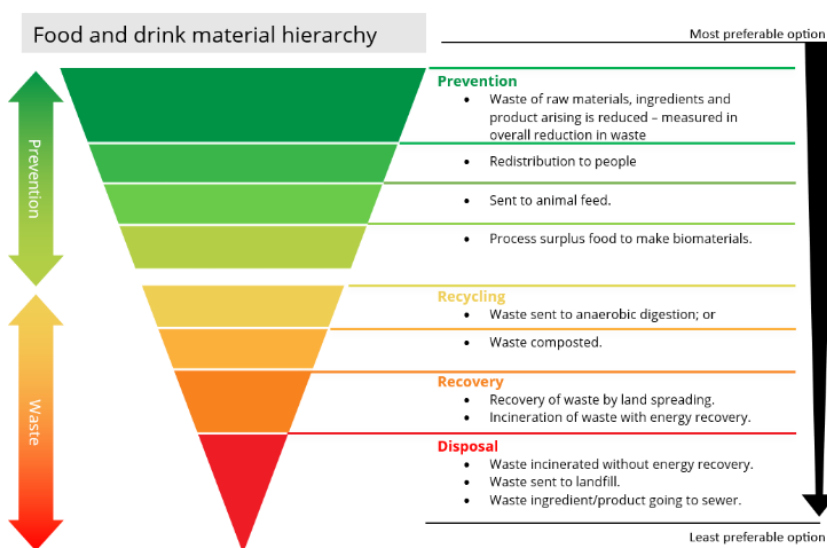


Source: WRAP 2023⁴⁴⁰

Implications for Civil Food Resilience

Many questions arise for civil food resilience. Might food currently wasted be usable in and after shock in the future? Are consumers over-purchasing or purchasing what subsequently they did not like or want? The ideal for how to manage different forms and stages of food waste has been graphically represented by WRAP (see Figure 5.9), while the current reality is given in the following one (see Figure 5.10). WRAP now accepts that a fairly high proportion of waste is inevitable and cannot easily be prevented. This is a systemic failure.

Figure 5.9 The ideal approach to waste management



Source: WRAP 2023⁴⁴⁰

Figure 5.10: The reality of current UK waste management

	Household	HaFS	Retail	Manufacturing	Farm	Total
Prevention						
Redistribution to people	nk	0.0066 Mt	0.04 Mt	0.042 Mt	0.0043 Mt	> 0.093 Mt
Animal feed	0.084 Mt	nk	0.027 Mt	0.64 Mt	2 Mt	> 2.7 Mt
Biomaterials	nk	nk	nk	nk	nk	nk
TOTAL SURPLUS	> 0.084 Mt	> 0.0066 Mt	> 0.067 Mt	> 0.68 Mt	> 2 Mt⁸	> 2.8 Mt
Waste						
Recycling (AD/composting)	1.1 Mt ^{1,2}	0.18 Mt ⁴	0.23 Mt ⁵	0.41 Mt ⁶	nk	> 1.9 Mt
Recovery (landspreading, thermal)	3.5 Mt ²	0.59 Mt ⁴	0.007 Mt ⁵	0.97 Mt ⁶	nk	> 5.1 Mt
Disposal (sewer, landfill)	1.6 Mt ^{2,3}	0.27 Mt ⁴	nk	0.0016 Mt ⁶	nk	> 1.9 Mt
TOTAL WASTE	6.4 Mt	1.1 Mt	> 0.23 Mt	1.4 Mt	1.6 Mt⁸	> 10.7 Mt
In addition:						
Rendering of animal by-products				2.2Mt ⁷	nk	2.2Mt
Other food by-products				0.6Mt ⁷		0.6Mt

NB HaFS is hospitality & food service; nk = not known; Mt = million tonnes

Source: WRAP 2023⁴⁴⁰

That the UK wastes food on this prodigious scale suggests it is neither prepared for shock nor even thinking about tighter domestic management, or that interventions to change behaviour must all under-perform, although they tend to. In nature, the notion of waste does not exist; everything is recycled into soil. Human systems for composting at scale and ways to utilise food currently wasted remains an immediate route to requiring less food. Meat, dairy and plastic pose particular problems, yet the case for planning for zero and for minimal waste remains important, and is likely to become urgent in future food crises.⁴⁴² Attempts to reduce food waste in WWI and II worked and public consciousness improved. Homilies to finish what is on the plate and to 'waste not, want not' rolled down the years. Waste would again be an urgent priority if any serious shocks hit. It is a chronic problem that could at any moment become acute. The high-profile WRAP campaigns of the 2000s were reduced when WRAP was turned into a consultancy. The public interest demands a return to public information funded by government *as a resilience strategy*.

Ways forward: Food waste specialists should be convened to produce crisis-ready guidelines for food waste prevention, identify what powers might be needed, and what foods could be safely stockpiled by the public, and what cultural shift should begin to be implemented. This should be accompanied by a massive public campaign to introduce better household management habits before a food crisis hits.

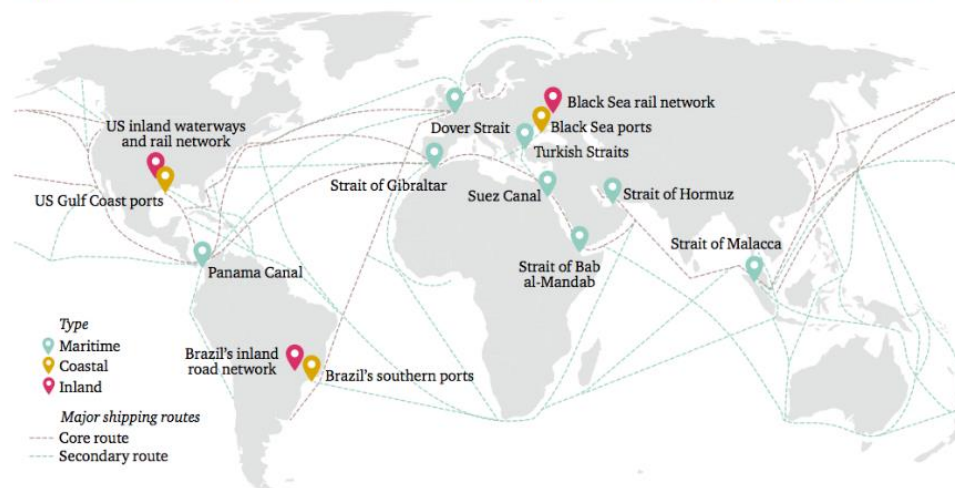
Economic vulnerabilities: chokepoints, crime, concentration and loss of reach

Chokepoints are pinch points, often at sea, through which major trade flows are funnelled, and thus strategically more vulnerable than if dispersed. These chokepoints are often unavoidable therefore carry heightened strategic risks with clear implications for defence policies. The UK is not the military power it was. Chatham House identified 14 food trade

chokepoints in an important 2017 report (see Figure 5.11).³³ One, the Dover Strait, is the UK's doorstep.

Figure 5.11: Maritime, coastal and inland chokepoints and major shipping routes

Figure 1: Maritime, coastal and inland chokepoints and major shipping routes



Source: Shipping routes adapted from Rodrigue, J.-P., Comtois, C. and Slack, B. (2017), *The Geography of Transport Systems*, New York: Routledge, <https://people.hofstra.edu/geotrans/>.

Source: Bailey and Wellesley, Chatham House 2017³³

Two chokepoints made the news in the 2020s - the Suez Canal and Red Sea approaches from the Gulf of Aden (Yemen). In 2021 the *Ever Given* (of the Evergreen line), a container ship 400 metres long, 59 metres wide and displacing 200,000 tonnes, got stuck across the Suez Canal, blown across the canal by strong winds. This sealed the Canal, causing backlogs both ways.ⁱ 12% of all global trade, including food, goes through Suez, the link between the Red Sea and Asian markets and the Mediterranean and Europe. The Red Sea became a war zone in 2023 when Houthi (Yemeni rebels) attacked shipping. With the Houthis targeting missiles on ships through Suez, shipping lines had to switch trade to go round Southern Africa, adding costs and time.

Also in 2023 the Panama Canal, another chokepoint, had to reduce shipping flows between the Atlantic and Pacific Oceans because the canal's header lakes were running short of water due to climate change. The 100-year-old canal had been built assuming there would never be a shortage of water, but that is precisely what was happening. Each ship's transit requires 52 million gallons of water to raise and lower it from one ocean to the other, but in 2023 the rainy season yielded 41% less water.⁴⁴³ The effects were immediate: an auction to pay more to use the canal, emergency actions to save water, and an economic hit to the Panamanian economy, plus delays to carefully planned logistics. It has also fuelled frantic discussion about alternatives and fixes, all hugely costly. Meanwhile traders have to weigh up whether to reroute, pull out or suffer.

ⁱ <https://www.bbc.co.uk/news/world-middle-east-56505413>

Given such events, the response of the UK Department for Business and Trade (DBT) to create a new Critical Imports Council in January 2024 as part of a new strategy on ‘Critical imports and supply chains’ was not before time.⁸⁷ The new Council is to consider the 14 CNIs, of which food is one, although so far there are few signs of food being addressed. In the same week as that announcement, the Secretary of State for Defence made a speech at Lancaster House arguing that the world is becoming more dangerous and that the UK ought to be on a ‘pre-war’ footing.⁴⁴⁴

Part of the earlier Chatham House thinking was that chokepoints, if disrupted, can cascade onto other risks, or become accelerator points. Although the *Ever Given* was stuck for just 6 days, it ended up being impounded for three months by Egypt until its owners paid a hefty financial compensation deal.ⁱ For Bailey and Wellesley, the Chatham House researchers, the lesson of import dependence is not necessarily the possibility of direct exposure but:

“*indirect* chokepoint risk – the interconnectedness of international markets means that a supply stoppage in a major crop-growing region could, for example, affect food prices in a given country even if that country is not importing from the producer in question.”ⁱⁱ

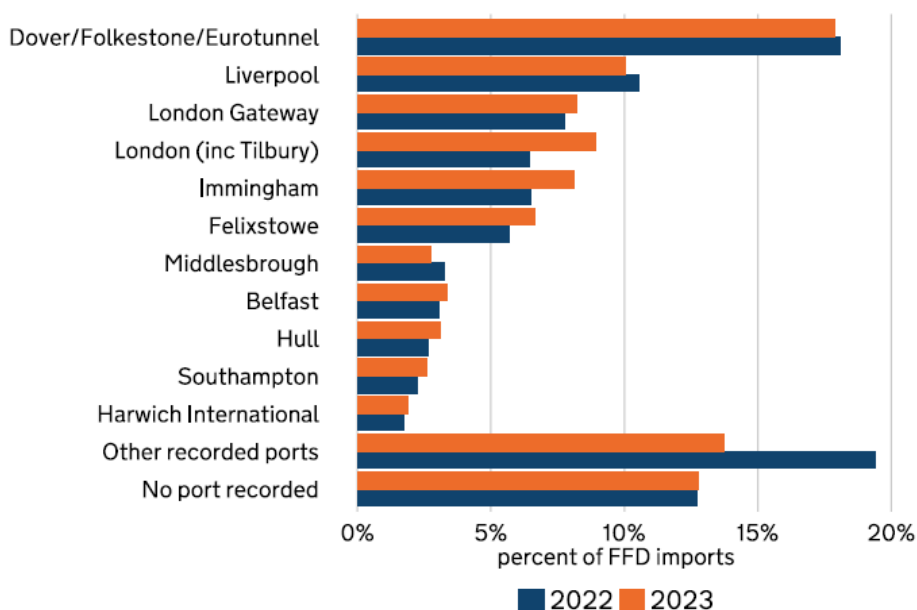
Another of their 14 chokepoints, the Black Sea, came into the spotlight when Russia invaded Ukraine. World food prices and supplies to an estimated 55 countries were affected. Chatham House was right to have called for a new G20 a taskforce on climate-compatible infrastructure. Applying the same analysis, the UK ought to be reviewing not just the Strait of Dover but also the Channel Tunnel and the other major ports through which food flows. If the UK wanted to reduce reliance, Chatham House concluded, alternative shipping routes would have to be developed to ease pressures on current chokepoints, “but each depends on the development of huge infrastructure projects with significant environmental and social risks”.⁴⁴⁵

Faced with realities and sound analyses such as these, it is reassuring that the Government’s 2022 *National Strategy for Maritime Security* (NSMS) acknowledged the problem of both chokepoints and ‘strategic sea ways’. The food implications drawn, however, appear to be thin, other than in the most general terms.⁴⁴⁶ The word ‘food’ is mentioned six times, twice of which are in titles. Although one heading is ‘food security’, how food security is affected is not addressed in the 112-page report.

The 2024 UK Food Security Report does, however, provide up to date information on port throughput and on global chokepoints, using the Chatham House tool. 18% of total UK food, feed and drink imports come through the (Dover) Short Straits, for example. JiT systems are totally reliant on the roll-on, roll-off (RoRo) transport infrastructure for food. Figure 5.12 gives the percentage of UK food, feed and drink imports that come through the main ports of entry for 2022 and 2023. The ‘No port recorded’ includes the shadowy world of freezones (freeports). There is heavy reliance on the top six ports, with the Short Straits (Dover/Folkstone/Eurotunnel) dominating.

ⁱ <https://www.bbc.co.uk/news/world-middle-east-57746424>

ⁱⁱ see the NRR 2023 on this kind of port blockage: <https://access-national-risk-register.service.cabinetoffice.gov.uk/risk-scenario/incident-grounding-sinking-of-a-vessel-blocking-a-major-port>

Figure 5.12: Percentage of food, feed & drink imports to the UK, by port, 2022 & 2023

Source: UK Food Security Report 2024 Fig 3.2.2a, HMRC figures⁸³

The UK Food Security Report wryly admits that “[t]here is an evidence gap on implications of these chokepoints for UK food supply” (p257).⁸³ To be fair, the report writers (civil servants) are only charged to provide the facts, not to explore the political or policy implications. But it is those political and policy decisions that matter for food security.

The NSMS defines chokepoints as “narrow channels along widely used global sea routes; some are so narrow that restrictions are placed on the size of the vessel that can navigate through them”, restricted sea ways are “essential trade routes” where “[c]ongested channels and operational restriction can reduce the speed or manoeuvrability of vessels transiting, making them vulnerable to attack from pirates, terrorists, state threats, or OCGs.”⁴⁴⁶ OCGs are organised criminal groups.

Internal chokepoints

A chokepoint is not limited to being outside the UK. Confusions over managing post-Brexit border trade have highlighted how Dover and the South East ports are food chokepoints. Further inland, so is the M25 circular around Greater London. Conventional fleet transport or driver time analyses (monitored by traffic control analysts) suggest other potential chokepoints such as Edinburgh, Birmingham, Brighton and Manchester. Transit times across those conurbations can be slow at the best of times. The implications of road closures due to floods or bridge closures are recognised by the National Infrastructure Commission, although it does not cover food matters (its latest Second Assessment of National Infrastructure only mentions food waste for recycling).⁴⁴⁷ This gap should be rectified.

A major transport body interviewed for this report spelled out the significance of this gap in national planning:

“We need transport to be a serious part of national infrastructure. Most haulage businesses are small businesses. 80% are SMEs. The average fleet size of the Road Haulage Association membership is 6 trucks. The average profit margin is only 2%.

Everyone is familiar with Eddie Stobart or Wincanton or Amazon, but those large businesses are all reliant on close integration with smaller operations. There are risks if the SMEs are permanently squeezed.

“From a policy perspective, we need more monitoring of congestion times in the roads network. Most freight spends time on the main trunk routes. National Highways is actually a company owned and monitored by the Department for Transport, so ought to be held to account for upgrading and enabling freight to move. The National Infrastructure Commission is more forward looking but does not currently provide accountability for logistics as infrastructure but perhaps could and should.”

Wet winters and flooding are likely to increase food chokepoints. UK flood protection is already stretched, not helped by resource restraints. A study of Environment Agency (EA) data by Unearthed (an investigations unit of Greenpeace) in 2023 found that of England’s 64,000 “high consequence” flood defences in 2022, 4,200 were rated by the EA as either Condition 4, meaning poor, or 5, meaning very poor.⁴⁴⁸ This is a large number but a small proportion. Just over half (57%) were rated ‘fair’ and a third ‘good’. More troubling was that only 3% of all England’s high consequence defences were deemed Condition 1 ‘very good’ in 2022. The data did not indicate whether food growing potential is implicated. This should be required of future flood risk assessment and resilience planning. The current public focus understandably tends to be on housing and people, but food growing capacity should be part of the picture.

The Rotterdam-Antwerp effect (strait of Dover)

Probably more important for the UK is the lack of political and statistical clarity about how precisely food imports (and exports) might be affected by the ‘Rotterdam-Antwerp effect’. This is a term used in the trade acknowledging how much traffic from outside the EU is routed via those huge ports. While trade economists and national statisticians worry about what the real source of trade is,ⁱ what matters for resilience planning is the key role of Rotterdam. By acting as a transfer and rerouting point Rotterdam is, in effect, a critical control and vulnerability point for the UK.

The 2020 Brexit agreement has meant that from 2024 food imports are inspected on entering the UK. To some political and industry consternation, the Government decided to route all food entries to a huge new Border Control Point (for inspections) at Sevington, Kent, 22 miles from the ports.⁴⁴⁹ The fresh produce industry was deeply unhappy about potential delays, and the port health authority was not happy as it would allow potential contaminated meat, in particular, into the country rather than being held at the border.ⁱⁱ

A transport industry expert told us:

“looking at international trucking connections, there’s a huge over-reliance on the port of Dover. This is risky. It’s stretched already. About a quarter of [all] imports come through Dover. [...] We need planning, traffic management taken seriously, and to look after the drivers who move the food. The co-ordination and planning needed aren’t being well run from the national level.”

UK port haulage statistics differentiate between short sea (mostly Europe) and deep sea freight but do not offer data specifically on agri-food products so only a broad picture can be drawn. Agricultural dry products such as grain have slightly declined over the last decade.

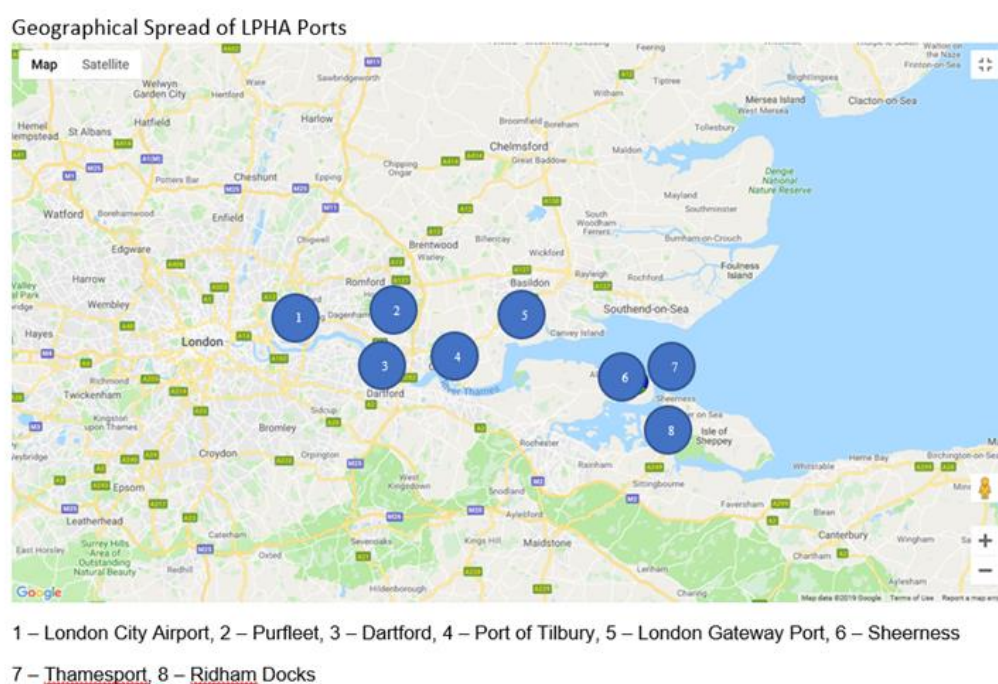
ⁱ see for instance: <https://www.escoe.ac.uk/projects/the-rotterdam-antwerp-effect-in-the-context-of-uk-trade-statistics/>

ⁱⁱ on port health concerns, see: <https://www.bbc.co.uk/news/uk-england-kent-68154170>

Most freight is in liquid form. An equal amount of freight comes into the UK on lorries via roll-on, roll-off (Ro-Ro) ferries or on containers (Lo-Lo).

The UK has many ports of varying size. They can be and are disrupted by weather or accidents. Most food imports come via the Dover, Folkestone and Eurotunnel area, the so-called Short Strait.⁸³ This accounts for 62% of fruit and vegetable imports from the EU, 43% of meats, and 41% of dairy.³² The Port of London is the UK's biggest port for general freight, followed by Grimsby and Immingham on the East coast. The Port of London is actually a constellation of eight Ports all now owned by different owners (see Figure 5.13), with some EU food and feed trade coming through Purfleet from Rotterdam and Zeebrugge, and foods from outside the EU coming via DP World's vast and expanding London Gateway.

Figure 5.13: The geographical spread of London Port Health Authority ports



Source: City of London Port Health Authority

Defra's 2021 UKFSR had downplayed risks to such trade arguing that "[o]nly simultaneous disruption to several ports would be serious enough to have a material effect on UK food supply", as though such a circumstance could not happen. We are not alone in judging that the 2024 UK Food Security Report takes a more cautious tone in asserting stability of supply than the first report in 2021. Events are crowding in. The food sector is less confident.

In theory, logistics could switch to other ports (Harwich, Felixstowe or further north or southwest) but the scale of what comes through the main ports suggests that "[f]inding extra capacity could present significant challenges given the volumes involved." Dover alone has 5 times more trailers coming through it than Harwich, Portsmouth, Immingham, Hull and Killingholme combined. An estimate given for this report is that 60-70% of all UK imported food comes through the ports in an arc from Grimsby to Southampton.

Economic threats from cyber insecurity, ransomware and technology

This is an issue that has rocketed up the agri-food agenda, raising a mix of public and private sector actions, crime and potential food system impacts. The entire Government cyber security programme received £1.9 bn over the five years of 2017-22. This rose to £2.6 bn over three years for 2022-25.⁴⁵⁰ Within this overall programme, the UK National Cyber Security Centre (NCSC) was set up partly to address an expanding source of threats. Its budget has been expanded, enabling it to report success in both prevention and counter action.

Unlike other defence agencies, the NCSC offers advice direct to the public as well as operating within the technical and military to enhance infrastructure protection, but the Houses of Commons and Lords' Joint Committee on the National Security Strategy (JCNSS) was concerned that, with three quarters of all requests to the NCSC coming from local authorities, there is a grave lack of support for local government.⁴⁵⁰ In the 2021 spending review period, the then Department for Levelling Up Housing and Communities (now renamed MHCLG) allocated a mere £85.8m to local authorities for this work.⁴⁵⁰

Food is and should remain a significant sector for cyber security care. Government figures on cyber-crime are general, not food-specific. 2022 data suggest that 32% of businesses and 24% of charities say they had a breach or attack in the last 12 months with a third of those reporting an actual crime (i.e. legal infringement). Incidence and attention to the need for protection rises the larger the business.⁴⁵¹ In a broader analysis of computer misuse and fraud, ONS data suggest that levels of fraud and computer misuse have risen but fluctuate; they were higher in Covid-19 lockdown for obvious reasons.⁴⁵²

In 2022, the US Federal Bureau of Investigation (FBI) found that food and agriculture was the fifth highest sector affected by ransomware,ⁱ receiving a third of the attacks manufacturing received and less than half that the US government experienced.⁴⁵³ The British Standards Institution reporting these data wryly commented: “[i]n simple terms, the technology advancing the digital supply is moving faster than the cybersecurity function.” If so, this spells bad news for consumers.

The British Standards Institution (BSI) confessed in a blog it was surprised when a poll showed that “a massive 78% of respondents in the food sector did not believe their organization was prepared for a cyberattack.” Instead productivity, efficiency and profits were the top priorities.

Aon's 2023 Operational Resilience report for Food and Agriculture Businesses (cited earlier) summarised a number of surveys of criminal disruption such as cyber or ransomware:⁴¹³

- 44% of production companies (including food and agricultural businesses) rank supply chain disruptions as their top risk.
- 34% feel they do not have cyber risk within their supply chain managed appropriately.
- Over 62% of victims of ransomware attacks in 2022 paid the ransom. Of these, less than half had their data partially recovered.
- Ransomware is expected to cost victims over US\$265 billion annually by 2031.
- 63% currently have a standalone cyber insurance policy, which means that this is now the fifth highest sector in terms of insurance uptake.

ⁱ In this report, the English spelling for ransomware is used, not the US with its 'e'.

These are extra costs that business is likely to externalise onto consumers and continue to expand the already burgeoning cyber security 'industry'. A number of industry reviews (e.g. Wipro and Palo Alto) agree that mostly ransomware is being used to extort money while holding up normal operations.^{454 455} Most cyber security firms are not necessarily focused on particular threats to the food system but the effects of financial extortion and 'hits' on software technology wherever it operates, which is almost everywhere. Palo Alto, for example, estimated that in general (not just food), manufacturing was the most targeted sector in 2022, with retail/wholesale in third position and transportation / logistics in tenth. The most affected nation by far, they estimate, was the USA, with ten times the 'leaks' of the next cluster which was European (led by the UK), then Germany.

Cyber security is but one form of threat in which technology reliance is the issue. A policy course is steered between seeing new technologies as opportunities for new business, capital expansion and demand creation on the one hand, while technical investment can quickly create dependency and risks and thus become societal threats. Cyber insecurity can be due to large labour forces working for a state or can be the work of small but dedicated interventionists. There is much politicking and many a conspiracy theory. But the cool analysis is that the internet and advances in computer technology have opened up an entirely new terrain for technical disruption. It is not just critics who see this now.^{409,456} The same dilemmas are emerging in relation to Artificial Intelligence (AI) with proponents seeing it as offering new opportunities for creativity, while others expect 'fake' everything.

One strand of concern, going back to the 19th century, is that new technologies receive mass scale investment and adoption if they reform and reduce labour. Frey and Osborne's much cited 2013 Oxford Martin School prognosis expected a wide range of computerised interventions in the labour process to create potential for 47% of jobs to be at risk.⁴⁵⁷ Food sectors were among these. Automation of food factories, front desk reception work, even inspections, would significantly reduce jobs.

In 2019 the ONS estimated jobs might be affected with "routine and repetitive tasks [being] carried out more quickly and efficiently by an algorithm written by a human, or a machine designed for one specific function."⁴⁵⁸ It estimated that the following UK jobs will be affected by AI in some way:

- 66% of agricultural machinery drivers
- 65% of food drink and tobacco process operators
- 60% of fishmongers and poultry dressers
- 57% of cooks
- 34% of agricultural workers

As AI rolls out, analysts are able to be both more accurate and provide the range of worst-case to best-case estimates. IPPR, a think tank, concluded that 8 million jobs in the UK are 'in play'.⁴⁵⁹ It was clear that policy and practicalities will determine whether jobs go or are refined and improved by application of AI. But what remains is that the spread of algorithm-controlled work makes functions more subject to technical faults and disruption.

The counter to such sober estimates of the future is that, over the last decade in the UK, there is a shortage not a surplus of jobs, and this has been intensified by Brexit. The International Monetary Fund entered the AI policy terrain in January 2024, arguing that AI had the potential to restructure entire economies and would do so in advanced economies first.⁴⁶⁰ AI covers a wide range of technologies. The UK, one of the IMF team's foci, showed a likelihood of professional not just lower income jobs as likely to be affected. What is emerging is the likelihood that a constellation of technical change will affect food industries

simply because it is the largest employer in the UK. Whether Big Data, or reliance on imported microchips, satellite-based logistics, the food sectors are lashed to computerisation.

Food industries are already aware that, with cost-of-living pressures, there are incentives for 'old fashioned' crime to disrupt food supplies. According to the BSI, in 2023, food and drink were the mostly commonly stolen goods in global supply chains, accounting for a third of all goods, up from a quarter in 2022. In the UK food and drink accounted for 24% of goods stolen in 2023, up from 13% the year before and more than apparel (19%) and alcohol (10%). Both warehouses and stationary trucks are targeted. Reasons include the fact that because the goods are low value items, consignments are often not 'tracked' or containing anti-theft devices. In 2023, a sixth of thefts occurred in car parks.⁴⁶¹ According to the FBI, the UK is the third most 'hit' country for internet crime, after the USA and Canada.⁴⁶² The British Retail Consortium and its members have raised alarm at rising (and too often violent) crime associated with food thefts in the UK.ⁱ General theft (not just food) from retailers was up 27% in big cities in 2023.ⁱⁱ

Health risks: zoonoses, poor public health, low investment in prevention

A food-related risk that does feature in the NRR is the likelihood and impact of more zoonoses.⁴⁶³ Zoonoses are diseases which spread from animals to humans; they can evolve to be major killers. WHO estimates that there are 200 known types of zoonoses.⁴⁶⁴ Some begin as zoonoses and mutate to human-only strains, as happened with HIV. Others recur among animals, jumping to humans, as is the case with *ebola* and *salmonellosis*. That zoonoses can become pandemics was recognized by the 2023 NRR as the most likely and impactful risk to the UK.

This situation is not helped by the over- and mis-use of antimicrobials in the agri-food sector. Antimicrobial resistance (AMR) and the effectiveness of available drugs have increased.⁴⁶⁵ Policy-makers have been slow to respond,⁴⁶⁶ despite this state of affairs being feared and discussed from the early days of modern antibiotics. It was even anticipated at the birth of the antibiotic revolution by Sir Alexander Fleming in his 1945 Nobel Prize acceptance speech.⁴⁶⁷

Another food-related risk to resilience is the mass consumption of poor diets. Half a century ago, the then Committee on Medical Aspects of Food Policy (COMA) first reported to the UK Government on diet and cardiovascular disease, warning about the impact of poor diet.⁴⁶⁸⁻⁴⁷⁰ The early trickle of such reports has turned into a flood yet the national diet has worsened.

As the Food Foundation stated in its 2022 Broken Plate report, "[e]xcess weight costs the UK approximately £74 billion every year in direct NHS costs, lost workforce productivity and reduced life expectancy. It is one of the main factors in the 20-year gap in healthy life expectancy between the richest and poorest members of society."⁴⁷¹ The National Food Strategy prepared by Henry Dimbleby estimated that obesity is costing the UK economy £74bn in lost productivity. And the combined effects of having a high body mass index (BMI) - a measure of overweight and obesity - and of eating a poor diet are greater than the effects on life expectancy of smoking tobacco in the UK.⁴⁷²

ⁱ BBC News: <https://www.bbc.co.uk/news/business-65764513>

ⁱⁱ British Retail Consortium statement: <https://brc.org.uk/news/corporate-affairs/retail-theft-up-27-across-ten-of-the-largest-uk-cities/>

The Academy of Medical Sciences (an umbrella group of all medical Royal Colleges) in a major 2024 report on child health said over a fifth of children aged five are overweight or obese. A quarter aged five are affected by tooth decay (an indicator of diet).⁴⁷³ The cost of not acting to prevent such ill-health in childhood, and to help parents do so, had been calculated by the London School of Economics with the Royal Foundation Centre for Early Childhood in 2021 (on 2018 costs) to cost the society £16.13 bn each year, and that was probably an underestimate.⁴⁷⁴ The NHS Confederation estimates that the annual cost to the NHS of modern bad diets is £19.6 bn.⁴⁷⁵

Others consider such figures to be under-estimates. Most recently, in a study for the Food, Farming and Countryside Commission, Professor Tim Jackson calculated that the total food-related cost of chronic disease in the UK is £268 billion. This far larger sum was derived by combining healthcare (£67.5bn), social care (£14.3bn), welfare (£10.1bn), productivity (£116.4bn) and human cost (£60bn) of chronic disease attributable to the current food ecosystem.²⁴⁷

Besides the financial costs of food failings, there is the human cost. The NHS opens its obesity website stating simply: “in the UK it's estimated that around 1 in every 4 adults and around 1 in every 5 children aged 10 to 11 are living with obesity.”⁴⁷⁶ The NHS no longer needs to justify concerns but remains unable to stop the flood of unnecessary products and their attractions. It is why the term ‘ultra-processed foods’ (UPF) has recently entered public consciousness.

The UPF term is in fact older and part of a classification of foods generated twenty years ago by scientists in the developing world.^{477,478} They could see the arrival and effects of increased consumption of ready-made foods, and created the NOVA classification scheme to distinguish between health-appropriate and damaging types of processing, a point now recognised within both science and officialdom.^{479,480} It recognised what other studies had also grasped, namely that processing is often an excuse for putting in unnecessary ingredients, and making food from mass commodities while using additives, some old such as salt and sugar, some new from the chemical laboratory and factory.^{481,482}

What, this cohort of scientists wondered, is the population effect of this shift in what and how people eat? Is the food the same or changed? Does it matter? Does it improve health? Gradually the answers emerged fairly clearly as a ‘no’.^{483,484} It is better to process food simply than to produce mass food in unnecessarily processed methods and with some of these new ingredients. Arguments and debates continue about this, and over whether the NOVA classification is concrete enough. But the drift of evidence supports the core proposal that the shift from basic processing to ultra-processing carries population health risks. A recent large study, for example, that drew on the UK Biobank data found that cancer incidence and the risk of cancer rose directly the higher the consumption of UPFs.²⁵⁶

Is this situation, however bad, unstoppable? The UK began its nutrition transition – an earlier term to signify the shift from simple but often inadequate diets to highly processed ones – a century ago. With income improvement came better and broader diets, but then in the late 20th century also more processed foods. Back in WWI and II the national emergencies in food supply actually created opportunities for dietary improvement for huge numbers of people. The massive effort by the wartime Ministry of Food (MoF) to promote sensible and nutritionally sound cooking and eating worked despite wartime circumstances and rationing.⁴⁸⁵ Mass experience showed that people could eat differently and reduce reliance on imports in restricted conditions and would accept these because they were explained. Later, we explore whether the UK public is being engaged with sufficiently about coming shocks (see Chapter 7).

In the last 40 years, as processed foods became relatively cheaper and more plentiful, the UK population physically moved their bodies less and ate more. The change was part of economic change; people living further away from work, sedentary lifestyles, rising living standards, normalisation of 'treat eating' and 'feast-day' meals, the transformation of what was purchased and processed. Today, the initial post-war gains in health and life expectancy have stalled in the UK and diet-related diseases are fissured by socio-economic gradients. Lower income households almost always eat worse and cut back most. There has been a squeeze in living standards during and since the Great Recession (2008-11).

Evidence of a cost-of-living crisis has spread from households on very low incomes to those previously much more affluent. Professor Donald Hirsch of Loughborough University, a specialist on income and living standards, has calculated that a couple on benefits with two children must spend nearly 50% more of their income on food and energy than they did in 2012, when the figure was 46%. In 2023, the cost of food and energy needed for a single person was 22% *more* than their benefit income provided. Spending any money on other essentials like clothes, transport and toiletries would require foregoing even more of an individual's food and energy needs.⁴⁸⁶

We do not know how the current population would react to future food shocks. The state of ill-health and poor diet would certainly hamper efforts. Today, if there was major food disruption, the state of food skills and facilities would again matter. There may be hours of cooking programmes on TV and social media, but this is entertainment, not mass skills transfer. More people may have equipped kitchens than in the 1930s but it is not known how these would service households in different kinds of crises. We do know that governmental reliance on making appeals to individual behaviour change and to take personal responsibility are not working. People's capacity to bounce back is already seriously impeded. Social divisions limit any 'whole of society' or national approach to food resilience. This situation has worsened despite many warnings.^{487,488}

The direct health costs from poor diet are likely to grow. Even in apparently good economic times when life expectancy grew, the health divide was characterised by years of poor health and considerable costs for care.^{487,488} This situation suggests that the notion of ever-improving public health (and diets) can reverse or at least create new profound difficulties. The Food Foundation in 2022 reported that "[h]ealthy nutritious food is nearly three times more expensive than obesogenic unhealthy products, with more healthy foods costing an average of £8.51 for 1,000 calories compared to just £3.25 for 1,000 calories of less healthy foods. Between 2021 and 2022 healthier foods became even more expensive, increasing in price by an average of 5.1% compared with 2.5% for the least healthy foods."⁴⁷¹ This squeeze has been normalised.

Despite this costed and enormous drain on national life, in 2023-24, the public health budget – the prevention service now mostly devolved to local authorities – was cut in real terms by 10% over the previous decade.⁴⁸⁹ Using official data, the Health Foundation calculates that on a per person real-terms basis, the grant has been cut by 28% since 2015/16, and that the 2024-25 public health budget *allocates* only £137 m for adult obesity and £101 m for obesity of children.⁴⁹⁰ These are pathetically small sums given the large bill diet-related ill-health passes to the NHS.

To put it in resilience capacity terms, if we want the population to be fit before a crisis, we are not succeeding. A good level of fitness is essential if a population is to bounce back after shock. What does this need? Tim Jackson has called for a new policy framework to transform the UK food system. It must firstly embed the right to healthy food in policy; secondly, regulate the food environment to prevent harm; and thirdly, redirect finance across

the food system. This new framework must enshrine the right to healthy food in law; tax the 'bad' while resourcing the 'good'; and regulate big food companies.²⁴⁷

During the process of conducting research for this report, many ideas have been proposed from interviewees, national bodies and civil society. The final chapter (see Chapter 11) coalesces suggestions that follow directly from our focus here. But it is clear that civil food resilience is hindered unless there is a coherent and integrated transition.

Environmental risks: eco-infrastructure must be relinked to food security

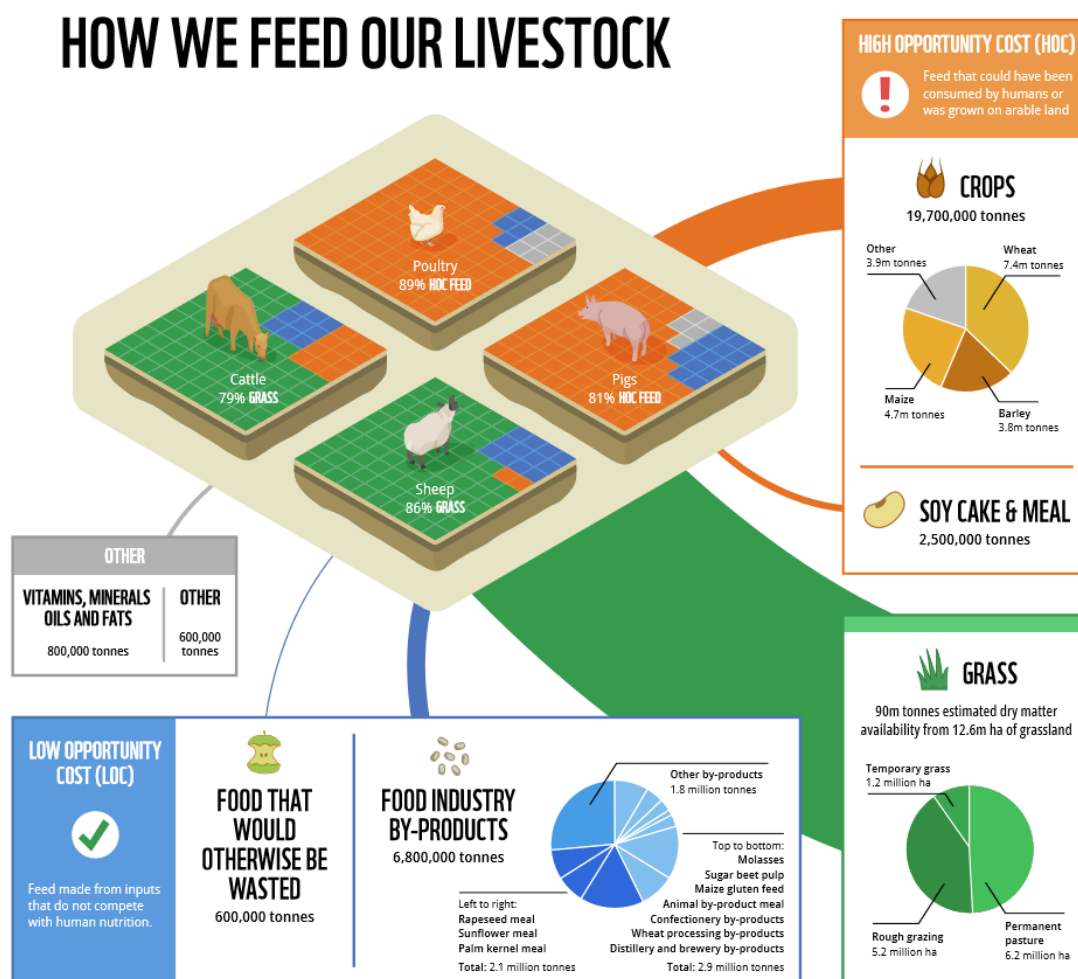
Food is a major driver of ecosystems stress manifest in biodiversity,⁴⁹¹ water,⁴⁹² climate,³⁴⁷ soil,⁴⁹³ and resource waste.⁴⁴² This is clear even from specific sector resilience studies. Zurek and colleagues, for example, have shown the risks to the already fragile UK fruit and vegetable sector from water stress.⁶⁵ Most UK fresh fruit and vegetable production occurs in the driest parts of the country. Large amounts of water are used in both production (e.g. greenhouses/polytunnels) and in processing after harvest.

A fifth of all holdings are in water catchments defined as being "over-abstracted". Their study concluded that unless there was an overall shared purpose and interpretation of food resilience and security, actors could do what made sense to them without contributing to overall goal achievement. Two million hectares (40% of total arable land) grow cereal crops to feed animals, rather than direct for humans.⁴⁹⁴ The feed industry takes half of the annual wheat harvest. That land could produce food for direct human consumption and reduce unnecessary meat production. WWF has argued that stark choices face the world in how animals are fed (see Figure 5.14). They can be fed using food specially grown for them ('high opportunity cost' feed) or by utilising land and waste that otherwise could not feed humans or service nature ('low opportunity cost' systems).

Soy cake and meal for livestock are imported for the feed industry that was produced on 850,000 'hidden' hectares mostly in Latin America. Globally, feed represents 75% of the climate impact of poultry production and 60% for pork, despite both those meats often being designated as low carbon. The UK has ample grass potential that should be the prime source of animal feed. There could be a switch to low opportunity cost feed, using by-products and waste. This would be a livestock revolution, and return farm animals to their more appropriate ecological and agricultural roles. It would also change consumer expectations; costs and availability would be affected.

Yet again, we are reminded that food security and resilience require policy clarity about what land is for.⁴⁹⁵ Environmental organisations are more open about this than are policy-makers. It is delicate politically even to consider the need for a remix of national, large-scale spatial thinking as well as regional and local focus.⁴⁹⁶ The UK does not have a good track record of managing this. Meanwhile globally, pressure on land and food mounts. The UK would be wise not to assume its livestock or food industries can continue to draw food from where they have. In 2015 - 2019, according to the UN Convention to Combat Desertification (UNCCD), at least 100 million hectares of healthy, productive land were lost *each year*.⁴⁹⁷ The biggest land loss was in Latin America and the Caribbean, but losses were also significant in the northern Mediterranean and Eastern/Central Europe. Land degradation can be reversed under some circumstances, but gets harder with climate heating.

Figure 5.14: The UK feed and livestock system



Source: WWF 2020⁴⁹⁴

A Land Use Framework for England was recommended by a House of Lords committee in December 2022,⁴⁹⁸ to which the Government responded in April 2023,⁴⁹⁹ with the Environmental Audit Committee reiterating frustration that nothing was yet published in late March 2024.⁵⁰⁰ Food did not feature other than to point to the next edition of the triennial UK Food Security Report (UKFSR) published in December 2024. Because the UKFSR has to draw on official data, there are no future projections.

In May 2023 the Department of Science Innovation and Technology (DSIT) together with the Geospatial Commission acknowledged that land has competing demands - energy, housing, biodiversity, food, water, transport - and accepted that there will be 'trade-offs'. On food, it confirmed that the then government took a market approach to how these trade-offs and land use will work. In effect, this closed off any new thinking about food security. It said:

"The government's commitment to broadly maintain current food production levels, while also releasing agricultural land for other uses, will require efficient use of our most productive agricultural land. Better use of data can help to identify the most

*productive agricultural land, opportunities for multifunctional benefits and less productive land which could be freed up to meet other needs.*⁵⁰¹

Meanwhile 'existential' climate change threats to civil food resilience are here.

The costs of climate change for civil food resilience

The Intergovernmental Panel on Climate Change (IPCC) states the world is already in a climate emergency. Millions of consumers recognise the effects if not the dynamics. A 2023 report by the Energy and Climate Intelligence Unit (ECIU) argued the cost of energy inputs and extreme weather explained for most of the UK's rise in food prices in 2022.⁵⁰² Energy and climate increased UK household food costs by £605, with climate costing 60% of this rise. The ECIU estimates that since the end of 2021, nearly £17 bn has been added to UK food bills by climate and energy costs.

Rises in temperature has already been shown to be beginning to exert an upward effect on food prices. A study of 27,000 observations of monthly consumer price indices worldwide found that across 12 months food price movements were directly related to whether temperatures rose.⁵⁰³ This was true for both low and high income countries. 2022's extreme weather was estimated to raise food prices in Europe by between a half and one percent. These are small impacts so far but will grow considerably as the earth warms, the study warned. The issue was summarised, indeed amplified, by the UN Department of Economic and Social Affairs in a 2024 briefing.⁵⁰⁴ The climate-food price connection poses a major challenge to central banks and to macroeconomic policy, it argued.

The UK Health Security Agency's first of what is due to be a regular report on the Health Effects of Climate Change (HECC) was stark about food, health and climate.¹⁵⁷ If the UK continues on current land use, climate and agri-food trends, "by 2050, 52% of legumes and 47% of fruit would be imported from climate-vulnerable countries [...and...] [s]upply of vegetables, fruit and legumes is projected to fall short of what would be needed to meet UK dietary recommendations."¹⁵⁷ It assumed countries will want to export to the UK. But wisely the HECC broadly recommends that food production should centre on health needs and that climate change pressures are likely to add to the case for significant dietary shift in the same direction. Health and environment can gain from being seen together through food.

A 2021 paper led by the UK Meteorological Office (Met Office) states that "climate change-driven changes in extreme weather events are one of the highest-risk future shocks to the UK food system, underlining the importance of preparedness across the food chain".⁵⁰⁵ Worryingly, it also suggested that, while there is less information about post-farm impacts than for land-based factors, there is enough to be concerned about: (i) increased variability in supply, (ii) impacts on workforces, (iii) disruption to transport, (iv) high impacts on storage, and (v) changes in consumer demand. The paper paints a picture of likely impacts on supply chain management throughout. A subsequent paper again led by the Met Office looking only at the impact of the 2022 UK heatwave on poultry and wheat production amplifies and confirms the seriousness of what lies ahead.⁵⁰⁶

In the climate literature, considerable attention is given to the land and its output but there is less given to what might change people's consumption or social reactions, reflecting the sensitivity of the message that the science offers. It points mostly to the need for significant change in how and what people eat, in what people in rich societies will be able to do, and in how the food system of a country such as the UK works. This is a daunting prospect.³¹ While

politicians are key, we would be ill-advised simply to say the change is only up to them. The societal dynamics are critical too.

One analyst interviewed for the present study who is familiar at global and national levels with both health and climate policy debates said:

“In the COP28 climate negotiations (November 2023), food and agriculture have at last been acknowledged as key factors for climate.ⁱ Getting that recognition into the COP process has been slow and governments are still not acknowledging that diets have to start changing now not far ahead. By delaying or deferring this change, governments are making it more likely that dietary change will be forced on us in crisis.”

“[...] I want Government to have the courage to stand up and say eat less but better. How can we get to the situation where that backing for dietary change might be possible? We definitely need more work on how to create a business model built around producing a better quality, low impact, health-giving diet from a more sustainable food system.

“I want the food system actors, including consumers, to fall in line with the new world vision, and to accept demand has to change to be within one planet living.”

The optimism is laudable but the track record of UK government has been a reluctance to use even ‘soft’ policy levers to help consumer change. According to the Nuffield Ladder – a grading of policy intervention measures⁵⁰⁷ – labelling is among the weakest of interventions. Yet there is no carbon label for food, or even a national consumer information scheme on the various impacts food choice has on water or biodiversity that could help shape behaviour. Proposals to create such ‘omni-labels’ have been made but as yet there is limited application.⁵⁰⁸ Nor does the UK provide benchmarks for either the public or industry through official sustainable dietary guidelines. There is only the nutrient-focussed Eatwell Plate.¹⁷⁹

In 2016, the then Public Health England added (in tiny font-size) some carbon-based advice to cut back on meat on the Eatwell Plate. This was welcomed by some as a first step in the right direction but there has been no significant shift in advice since. What are the prospects for resilience-driven change, if there is policy timidity even to enter this terrain? This is why climatologists have put such effort into calculating the cost of not pre-empting climate heating. The recent report from the UK Institute and Faculty of Actuaries, for instance, calculates that the global economy (not just food economy) could face a 50% loss in GDP between 2070 and 2090, unless there is immediate action to prevent upward climate heating.⁵⁰⁹

Way forward: The DHSC and relevant scientific advisory bodies such as SACN should generate a new set of Sustainable Dietary Guidelines linking human and ecosystems health factors to replace the current Eatwell Plate guidelines. This should be used throughout the food system to help guide many features including land use, food supply planning, public and private sector contracts, and contribute to public engagement within civil food resilience.

This reluctance to act – even via labelling - is troubling given that it is nearly half a century since climate scientists from 50 nations met in 1979 to discuss the global picture at the First World Climate Conference held in Geneva. They agreed that alarming trends for climate change made it urgently necessary to act even then.

ⁱ <https://www.cop28.com/en/food-and-agriculture>

40 years from the first meeting, a reconvened meeting concluded again that greenhouse gas (GHG) emissions were still rapidly rising.⁵¹⁰ They urged changes in food consumption as one of six priorities to ameliorate emissions. So much so that, in 2023, an eminent group of scientists, including a former UK Chief Scientist, put matters starkly.⁵¹¹

“Life on planet Earth is under siege. We are now in an uncharted territory. For several decades, scientists have consistently warned of a future marked by extreme climatic conditions because of escalating global temperatures caused by ongoing human activities that release harmful greenhouse gasses into the atmosphere. Unfortunately, time is up. We are seeing the manifestation of those predictions as an alarming and unprecedented succession of climate records are broken, causing profoundly distressing scenes of suffering to unfold. We are entering an unfamiliar domain regarding our climate crisis, a situation no one has ever witnessed firsthand in the history of humanity.”

The *Climate Change Act 2008* (CCA 2008) created binding reductions in GHGs that were intended to initiate such change. Extremes of heat, rain, and weather generally affect the ‘efficiency’ and output of key crops such as cereals on which humanity depends.^{512,513} The call to reduce the production and consumption of meat and dairy for their significant contribution to GHG emissions has been made for years.⁵¹⁴

The Committee on Climate Change (CCC), set up under the CCA, has been a powerful source of data and advice. In 2017 for example, it identified **6 risks in food**: flooding; higher average and seasonal temperatures; water shortages, especially affecting growing food; natural environment; food price instability caused by risks to trade and the insecurity of imports; and increased exposure to new and emerging disease risks to humans, plants and animals. The **Top 3 risks to UK** as a whole were flooding; temperature affecting domestic food production; and the threats to imported food supplies caused by trade disruptions, as other nations struggle with their own climate change problems.

Despite this strong steer, the Environmental Audit Committee in 2019 criticised the government for ignoring the CCC’s 2017 risk assessment. In June 2023 the CCC was still firm that, despite aspirations, the necessary shifts were not happening.²⁹⁷ There was a lack of urgency. Commitments were not being delivered. There was need for more action on demand.

Climatologists are generally sober about the dire consequences of climate change for both humans and the ecosystem but some consulted for this report urged the necessity of building resilience now. One soil scientist told us:

“The UK ought to be more resilient than the politics currently allow it to be. We have a very diverse landscape and soils. I am more optimistic about the land than some are. There is erosion of soil, true, but the UK is in a better position than others in Europe.”

This person saw the politics of food as the major challenge for resilience:

“The political choice not to produce food is going without debate, yet is being overt.”

Social inequality: the Achilles' heel for civil food resilience

An interviewee from a large civil society body spoke for many telling this report when asked about those most at risk from food shocks:

“The most vulnerable to food shocks are always people on lowest incomes. No surprise there. Farmers themselves can be vulnerable too. And we are mindful of how vulnerability takes different forms. People coming to food banks might be mortgage holders. This is a weird situation. We also find, perhaps surprisingly, that food banks are themselves under strain, not able to get enough food to meet needs and having to buy food to try to meet growing need.”

DWP figures show UK households below average incomes with child poverty rates oscillating over the last quarter century between 35 and 45%, if they have three or more children, and around 25% if they have one or two children.⁵¹⁵ A review of the 40% lowest income households found that, in May 2022, before food price inflation started its rapid rise, already 7 million households had cut back on essentials – heating and eating - with 1 million taking out loans to cover essentials, and 4.6 million in arrears to at least one bill, with debts averaging £1,600.⁵¹⁶

According to the Building Societies Association and the Financial Conduct Authority, drawing on Bank of England data, while the average savings held by UK households is £17,365, a third of the population (34%) has low (less than £1,000) or no savings in an account. 13% of people have no savings at all. 65% of people believe they wouldn't be able to last three months without borrowing money. The Money and Pensions Service (MaPS), an arms-length body of the DWP, has not surprisingly found that people who live in the most deprived areas across the UK have lower levels of financial wellbeing. This applies even after controlling for factors such as household income.⁵¹⁷ In these circumstances, advice to stockpile a reasonable amount of food for difficulties is likely to fall on deaf ears.

Of the 9 million school pupils in England, eligibility for free school meals rose from 20.8% of all pupils in 2021 to 22.5% in 2022, around 1.9 million children.⁵¹⁸

And those who are below the radar in need, notably the homeless, should not be forgotten in preparation for resilience. In England, for the period July to September 2022, 75,860 households were initially assessed as homeless or threatened with homelessness and owed a statutory homelessness duty, up 4.4% on the previous year.⁵¹⁹

Even within inequalities, some are more recognised than others. The 2021 Chief Medical Officer's report for England reported that coastal communities have a higher disease burden for both mental and physical health conditions, have lower life expectancy, worse expectation of living a healthy life or to be free from disability.⁵²⁰

A 2020 analysis found that coastal towns for example are more likely to have higher levels of deprivation than non-coastal equivalents. Between 2009 and 2018, 50% of coastal towns had a decline in employment compared with 37% of non-coastal towns. And 32% of smaller seaside towns experienced a population decline in 2009-18 compared with only 16% of small non-coastal towns.⁵²¹

Fair Food Futures, a study and project funded by the National Institute for Health and Care Research, and a collaboration between academics and local government in York, Bradford and London, has noted that marginalised communities have had to become more reliant on community food organisations of many sorts: food banks, pantries, community cafés and co-

ops. Interviewing 36 organisations in Bradford and Tower Hamlets, the project concluded this is due to the fraying of welfare systems and the squeeze on cost of living.⁵²² Whether this ‘defensive’ rationale for community food action can be harnessed to improve civil food resilience is discussed in the next Part of this report (see Chapter 8). It is a political challenge also raised by a study just published of how the people were fed in the Covid crisis.²⁶⁸

While recognising the sobering nature of these social determinants of how the UK lives, it should be remembered that there is no actual shortage of food globally. There is market failure, misallocation and mal-distribution. The world has enough food in theory at present, though there is debate about pressures ahead. Even with a population rise to 10 billion by 2050, it has been shown that it would be possible to feed the world healthily without destroying ecosystems, but only if there was a radical reorientation of diets.¹¹⁹ Tempering this optimism is the evidence summarised in this chapter that the age of food plenty has come at a cost, and the drivers (fertilisers, mobility, wealth) are heavily dependent on the fossil fuel economy. We need to map a low carbon economy; that is well known. Less well known is how people can adapt to what that might entail.

As one experienced food system analyst said:

“We need to have a proper public discussion about scenarios and change options ahead. That discussion is not happening at present. We need Plans B and C to be worked up and debated.”

To conclude, many of the experts consulted were concerned about the possibilities, indeed likelihood of risks cascading and spiralling. It is important that any civil food resilience strategy recognises the importance of joined-up analysis. The same analyst said:

“There could be a sudden worsening of geopolitics and the UK could find it cannot import the foods it’s been used to. Stability of world politics could tip over. Migration, security politics all could change. For example, a flashpoint could be El Niño leading to civil conflict or state failure in a swathe of countries (from Venezuela, via DRC to Pakistan), driving increased migration and coinciding with, say, China moving into Taiwan. Crisis can lead into crisis. Ecosystems troubles meet geopolitics meet security, all rising up the agenda at the same time. Some countries are actively putting mechanisms in place to look after their [food] interests in such contexts. But their actions then put strain on those countries which rely on world food trade.”

Part Three of the report now turns to what can be done to enhance civil food resilience, beginning by looking at what some other countries do.

PART THREE

IMPROVING CIVIL FOOD RESILIENCE

Chapter 6: Learning from abroad

Introduction

The previous Part Two of this report has indicated that: the UK is heavily reliant on other countries for food; has particularities in its food policies not least since Brexit; and has not taken food security particularly seriously as an area for priority political attention. Yet the UK also has a fast-developing approach to resilience in general. In that, too, food appears to slip between the cracks across government. There has also been no particular concern for civil food resilience – the role of the public in potential shocks and risks to food systems. This is the food resilience policy gap. This next Part Three of the report explores these gaps in more detail, with the purpose of indicating what could be done to narrow the gaps and enhance the public's food resilience.

We begin by considering what the UK could learn, if anything, from how other countries approach food resilience. We looked at 10 countries, starting through government offices and going wider. The key lesson from this exercise is that other countries appear to be further down the road of food resilience preparation than the UK. Some are a long way ahead. There is much that can be learned and that could inform an accelerated food resilience strategy in general and civil food resilience in particular. Unlike the UK, others seem to embrace the value of engaging with their public on potential risks and preparations.

We approached all ten countries initially through their embassies in London and other formal avenues. A number of countries we approached did not reply, so we only report on those who did and for which we had multiple sources. In a number of cases, countries passed us on to other embassy staff and ministries, as well as to interviews with relevant people. We also used online data and contacted civil society and academia where possible. This mix of 'channels' gave sufficient solidity for us to draw lessons for the UK. We present the picture of food resilience strategies here not as a final assessment of each country but as information suggesting the potential for more detailed work by both government and civil society organisations.

The lessons we suggest for the UK could begin quickly. We do not see this process just as a catch-up, although the UK is almost certainly lagging behind others in taking civil food resilience seriously. We see this as an incentive to think broadly about what society could profitably do.

Step One: Learn from others

A key finding was that no countries have an approach to civil food resilience in isolation. The 'civil' tends to be approached as part of a general strategy on resilience and on food systems resilience within that. In that sense, the proposals we make fit what others already do. The UK may currently lack both civil food resilience and food resilience strategies but it does have a framework into which those could fit.

While the UK has a strong tradition of civil society organisation and vibrant civil CSO movements, others do not necessarily have these. We found, nevertheless, that a country can have a civil society approach to food resilience with or without there being a strong independent civil society tradition. France and Italy appear to give little or no centralised advice to their citizens, for example, while all the others we investigated do give such advice. This is a central government action, not devolved, so has some imprimatur or public authority behind it. Switzerland is an interesting variant on this, in that some Swiss cantons (regions) do give supplementary advice.

That citizen advice for food disaster preparation comes from the central state is significant but it can also carry risks if the state is not trusted. Advice therefore should ideally come from a ministry or agency that has impeccable credentials. This is something which might be problematic in the UK. According to the ONS in 2022, half (49%) of the UK population said they did not trust the national government, while one-third (35%) said they did. This is a lower level of trust than the average across the OECD countries which is 41%.¹

It is therefore important for the UK to consider what standalone body could be trusted. An obvious candidate is the Food Standards Agency set up in 1999 to be just such a body. The FSA monitors itself and reports it is trusted by over three quarters (77%) of the public.⁵²³ It should be noted, however, that the FSA no longer covers the whole UK. The former Central Office of Information (COI), set up in 1946 to take on the role of the wartime Ministry of Information, was abolished at the end of 2011. Some marketing, research and communications functions were contracted out but the 'narrative' and communication were more firmly managed from No 10, and between and in Ministerial offices and powerful government press offices.⁵²⁴

The approach to food resilience taken by countries we looked at seems always to be part of a wider resilience strategy but whether this is quite what the UK formally aspires to as a "whole of society approach" warrants further investigation. That said, there appears to be no fixed pattern to exactly how countries address food system resilience. The lead government body may be responsible for defence, counter terrorism, disaster protection or food and agriculture itself. Most see the need for action at different levels. In this respect, they see food resilience in general and civil food resilience in particular as a complex challenge. There is no single lever to pull that delivers civil food resilience. It requires multiple levers, multiple types of actions, from multiple bodies. Food almost always requires the involvement of several ministries even if only one ministry is in overall charge or in the coordination role.

Most countries (bar Italy, France, and Netherlands) seemed to view food resilience through the lens of disaster management preparation; their plans are based on an assumption that dire events can happen. In that sense their immediate policy focus and framing was on and from disaster planning. But interviews suggested that a longer-term perspective is emerging and being discussed. Officials and analysts realise, for instance, that food supply could become a big issue and that resilience preparation now makes sense. This contrasts with

the UK which appears to have civil food resilience classified as in a 'not needed now' category.

Ten Countries

Summaries of what we learned from each country are presented alphabetically. We thank all those who contributed to this. We present more detail on some countries than others but for all, we wanted to find out whether there was an approach to civil food resilience or something approximating that, and to estimate how much attention was given. As the report was being finalised, we revisited original sources, noting that in some there has been considerable development. We suspect from discussions with sources in those countries that political events have been the motivation. The final section of this chapter identifies take-away lessons for the UK and makes recommendations.

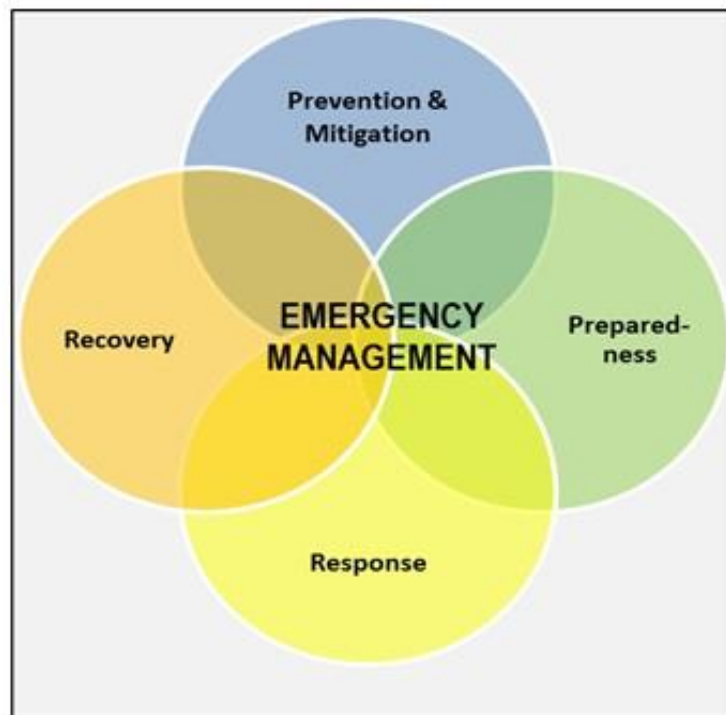
Canada

According to Agriculture and Agri-Food Canada (AAFC), the federal ministry, Canada's federal government undertakes a range of activities to support Canadian food resilience. Food is particularly important for Canada which is a major exporter. The following strategies were given as most relevant.

In partnership with provincial and territorial governments, in 2016 the Government of Canada created the Emergency Management Framework for Agriculture in Canada.⁵²⁵ This was developed as a foundation for improving Canada's approach to emergency management for agriculture alone, not the food system. The Framework was first implemented in 2016 in the wake of vigilance against animal and plant diseases. Since that time, the COVID-19 pandemic, various natural disasters, civil disobedience, and global supply chain disruptions have highlighted gaps in emergency planning in the agriculture and agri-food sector. In response, the Framework is currently under review to develop a broader national emergency preparedness and response plan that considers a crisis affecting the entire food system, and includes supply chain stakeholders beyond primary production and processing, in consideration of Canadians' food security. It takes a four-stage approach for food emergency management before, during and after an 'event': Prevention & Mitigation → Preparedness → Response → Recovery (see Figure 6.1).

The National Strategy for Critical Infrastructure is led by the federal Department of Public Safety and Emergency Preparedness to foster the development of partnerships among federal, provincial, and territorial governments and critical infrastructure sectors. It advances an all-hazards risk management approach and sets out measures to improve information sharing and protection. The National Cross-Sectoral Forum which covers 10 sectors including food has a membership drawn from industry and government but not civil society, but does include local as well as federal government (see Figure 6.2).⁵²⁶

Figure 6.1: Four features of Canadian approach to emergency management



Source: Government of Canada 2016⁵²⁵

Figure 6.2: Canada's National Cross-sector Forum



Source: Public Safety Canada 2022

As a federal partner in the National Strategy for Critical Infrastructure, AAFC is the lead department for the food sector, which includes farm input and service supplier industries, primary agriculture, food and beverage processing, wholesale and retail food industries, and food service. The goal is to strengthen the resilience and collective capacity of government and industry to prevent, mitigate, prepare for, respond to, and recover from disruptions affecting Canada's food sector.

There are also legal frameworks in place, provided by the federal Emergencies Act and provincial equivalents, with only some mentioning food and agriculture specifically. A comprehensive review of the different positions, requirements and action for food emergencies taken by the different provinces and territorial area in Canadian governance has been compiled by Professor Rod Macrae and colleagues at York University.⁵²⁷ Table 6.1 provides their overview of these legal frameworks, by province and area, with their comments from a food justice perspective. But the researchers concluded that food "is a minimal preoccupation of emergency planning and no provinces have a robust approach to food systems in emergency planning", and that this reflected advisory systems in the different regions that "are primarily made up of the dominant food system actors" and that attention was mostly on food safety as a potential problem, omitting other potential vulnerabilities.

Municipalities in Canada are often required by territories and provinces to have emergency plans in place, although food provision in an emergency is not often a component of these plans. More recently, an emergency food plan was created in the Thunder Bay municipality, co-developed by the Thunder Bay and Area Food Strategy and civil society, providing a roadmap for a coordinated response in an emergency.⁵²⁸

In 2019, after a consultation process that began in 2017, Canada produced a national Food Policy.⁵²⁹ Its stated aim was for all people in Canada to have access to a sufficient amount of safe, nutritious, and culturally diverse food, and the aspiration that Canada's food system is resilient and innovative, sustains the environment and supports the economy. Two of the Food Policy's priority outcomes relate to resilience: first, to improve community capacity and resilience to food-related challenges, and second, to improve the state of the Canadian environment through the use of practices along the food value chain that reduce environmental impact and that improve climate resilience.

Reviewing how the 2019 Food Policy and earlier food emergency measures had worked in Covid-19, the Auditor General of Canada concluded in 2021 that the country had:

*"not developed a national emergency preparedness and response plan that considered a crisis affecting the entire food system and Canadians' food security. This is despite the government having identified food as a critical infrastructure sector since 2009."*⁵³⁰

Canadian citizens are offered advice for emergencies in a 'Get Prepared' website.⁵³¹ This gives 3 steps every household should take: (1) know the risks, (2) make a plan, and (3) create an emergency kit. It gives links for resources, assumes the civil focus is domestic ('your family') but also the neighbourhood (recommending a 'neighbourhood buddy' role) and points to familiar officials such as Police, Ambulance services, Red Cross and Samaritans for further support. The tone is reassuring, suggesting for example that 'your plan' will take about 20 minutes to create. The food advice is given on the main website in only one line: "Food that won't spoil, such as canned food, energy bars and dried foods (replace food and water once a year)".

Table 6.1: Food and agriculture in Canada's Emergencies Legislation

Jurisdiction: provinces & territories	Act and regulations	Specifics on Food /Agriculture?	Comments
Canada	Emergencies Act, no specific regulations	No mention, but can regulate the distribution and availability of essential goods, services, and resources	Peacetime version of War Measures Act, which was used for food system interventions in WWII
British Columbia	Emergency Program Act	Under Section 10, Minister can "procure, fix prices for or ration food"; No agriculture	Under Regulations, Minister Social Services provides food for private and congregate dining; Food not mentioned as requirement under Local Authority EM Reg.
Alberta	Emergency Management Act	Under Section 19, Minister can "procure or fix prices or make an order to procure or fix prices for food"; No agriculture	No mention in regulations
Saskatchewan	Emergency Planning Act	Under Section 18, the Minister can "procure or fix prices for food"; No agriculture	No specified regulations
Manitoba	Emergency Measures Act	No mentions, except fixing prices for necessary goods, services and resources; No agriculture	No mentions
Ontario	Emergency Management and Civil Protection Act	Food named as a necessary good in Act; Minister can use, procure, fix prices and distribute necessary goods (Section 7.02); No agriculture	No mention in regulations
Quebec	Civil Protection Act	Municipalities must provide food for evacuees and confined persons (section 93); No agriculture	Also stated in regulation on Warning and Mobilization procedures
New Brunswick	Emergency Measures Act	Emergency Measures Organization can procure food (section 7); Minister can procure food and fix prices (section 12); No agriculture	Under Regulation 84-7, Social Development provides food or meals to those without

Prince Edward Island	Emergency Measures Act	Emergency Measures Organization and Minister can procure food (sections 6 and 11); No agriculture	No specified regulations
Newfoundland and Labrador	Emergency Services Act	No one can charge higher prices for food (section 23); No agriculture	No specified regulations
Nova Scotia	Emergency Management Act	Procure food (section 8); no one can charge higher prices (section 16); No agriculture	Regulations reference contaminated food
Yukon	Civil Emergency Measures Act	Government can act to acquire and distribute food (section 9(1)); no agriculture	No specified regulations
Northwest Territories	Emergency Management Act	Minister through EMO may procure food (section 6(3)); no agriculture	No specified regulations
Nunavut	Emergency Measures Act	Minister can procure and distribute food (section 13); No agriculture	No specified regulations

Source: Macrae *et al* (2024) ⁵²⁷

In the year since we first looked at Canadian resilience thinking, the advice has been expanded. In December 2024, under FAQs (frequently asked questions), more detailed suggestions have been given in the Get Prepared website for non-perishable foods suited to an emergency kit:⁵³¹

“canned food such as fruits, vegetables, meats, fish, chicken, stews, puddings (canned or ready to eat); milk and juice, in boxes or cans; beans and lentils; dried sausages; dried fruit and vegetables; mixed nuts and seeds; granola bars; crackers; cookies; cereal; peanut butter; nut spreads, etc; dehydrated humus and other dips (rehydrate with water). Citizens are further advised to “choose foods that will meet your daily nutritional needs and that you and others in your household will like. Always check expiration dates, and if in doubt, restock it. Replace all food once a year.”

France

In 2020 France created a specific post-covid recovery programme - ‘*France Relance*’.ⁱ This was the kind of post-Covid policy and funding that many OECD governments created, mostly charting routes to what they hoped would be business-as-usual. *France Relance* mentions agri-food, of course. However, France was already taking food resilience seriously. Besides the post-Covid-19 planning, and perhaps more important as its effects were already unfolding, has been the civil resilience building effects of France’s 2014 law on The future of agriculture, food and forestry – the Law No 2014-1170.⁵³²

Over the last decade, this 2014 law has spawned hundreds of local/regional interest groups and projects across France to build civil food resilience at the local or sub-national level.ⁱⁱ The 2014 law set out how France’s agri-food and forestry could engage with coming stresses and change. It gave a green light to existing and new civil society movements concerned about the purpose of land and food.⁵³³ The 2014 law has in effect legitimised and energised civil interest in building more diversified urban-rural links, and closer urban-rural connections. These territorial food projects have launched across France, with the aim of re-localising agriculture and food in local areas by supporting local farmers, short supply chains and local products in canteens.

Large co-ordinations such as *Terres en Villes* (created earlier in 2000) have flourished in this context, helping refocus France’s existing agri-food movements including farmers, consumers and environmentally oriented citizens on the peri-urban and rural-urban connections through agri-food.ⁱⁱⁱ And projects such as *Les Greniers d’Abondance* have since 2018 been promoting skills and tools with which communities can assess their civil food (in)security and build resilience.^{iv}

Positive effects of this law on resilience were proven during Covid-19. One interviewee told us:

ⁱ Ministère de l’Europe et des Affaires étrangères. France Relance Recovery Plan: building the France of 2030:

<https://www.diplomatie.gouv.fr/en/french-foreign-policy/economic-diplomacy-foreign-trade/promoting-france-s-attractiveness/france-relance-recovery-plan-building-the-france-of-2030/> Paris: Ministère de l’Europe et des Affaires étrangères, 2020.

ⁱⁱ see how, for instance, one town (Ville de Malleme de Provence) summarised the law and its implications:

<http://www.malleme.com/en/agriculture/law-for-the-future-of-farming-84> [accessed 3 January 2024]

ⁱⁱⁱ see the Terres en Villes coordination: <https://terresenvilles.org/> [accessed September 2023]

^{iv} Les Greniers d’Abondance, see: <https://resiliencealimentaire.org> and <https://resiliencealimentaire.org/page-telechargement-guide/> [accessed 3 January 2024]

“[d]uring the Covid crisis, the Agricultural Ministry observed that the areas most resilient to the problems of [...] food insecurity were those with local food projects in their territory.”

Noting this, the Agricultural Ministry included in its ‘France Relance’ Plan the need to meet the increased demand for local produce, seeing this as helping shift agriculture towards resilience. According to interviewees, local food projects have risen from 197 to 400 since the Plan. New state funding streams helped revitalise food urban-rural connections via the *Réseau National des Projets Alimentaires Territoriaux* (National Network of Territorial Food Projects (RNPAT)).¹ The creation of these territorial food projects (PATs) was specifically legislated for under Article 39 of the 2014 Law.

While this flowering of agri-food resilience projects has grown under the 2014 Law, a more recent 2023 law created the National Strategy for Food, Nutrition and Climate (SNANC).⁵³⁴ This Law set out guidelines for a sustainable food policy, defined as that emitting less greenhouse gas, addressing human health and nutrition, protecting biodiversity, promoting the resilience of agricultural systems and local food systems, and guaranteeing food sovereignty. It is not uncommon in France for food resilience to be couched as a matter of democratic interest.⁵³⁵

France’s progress illustrates that EU membership appears to be no barrier to addressing agri-food resilience. It also suggests the value of providing a legal basis for resilience building. France has a long tradition of ruralism and concern about agriculture and rurality, but resilience thinking and social innovation clearly goes wider than rurality and is supported at different levels of government from national to local. In 2022 France also renamed its Ministry of Agriculture, Agri-food and Forestry as the Ministry of Agriculture and Food Sovereignty.

Like France, the UK has a vibrant local and regional civil society active on agri-food matters. But in France this civil process is importantly underpinned and given confidence by legally-based frameworks. They legitimate what civil society can do and provide an umbrella under which coordination becomes a norm, adding a sense of purpose to what is meant by resilience.

Germany

In Germany, two ministries provide official recommendations for citizens in relation to food and drink for disaster preparedness: the Federal Ministry of Food and Agriculture (BMEL) and the Federal Office of Civil Protection and Disaster Assistance (BBK), a specialist authority within the Federal Ministry of Interior (BMI). The BBK website provides information for citizens on “Personal Preparedness” for a disaster more generally; this includes advice on stockpiling food and drink, what to have in your house, keeping informed and an emergency pack.⁵³⁶ For this report we looked at both the German and English websites, the latter still in development.

The website also links to the most recent edition (2018) of a report prepared by the BBK for citizens (in this format published since 2013) on how to prepare for an emergency: ‘Guide for

¹ RNPAT (Réseau national des Projets Alimentaires Territoriaux. <https://rnpat.fr/le-reseau/presentation/> and RNPAT. Presentation de L’Observatoire National des PATs: <https://rnpat.fr/projets-alimentaires-territoriaux-pat/> [both accessed September 2023]

Emergency Preparedness and Correct Action in Emergency Situations'.ⁱ The report urges citizens to have a 10-day stockpile in place and gives precise measurements of what to stockpile. It advises to put together an “emergency pack” (what some call a ‘grab bag’) which should include food and drink for two days. When first published in 2016, the advice received considerable public scepticism,⁵³⁷ but it has been retained. The BMEL created a web portal for citizens specifically related to food supplies in times of crises (“Food Preparedness”),ⁱⁱ including information for instance on how individually to prepare an appropriate 10-day stockpile.

Figure 6.3 presents what the German Federal Government thinks is ‘stockable’ for one person for 10 days, based on a daily need of 2200 kcal. It gives nutritional information, weights, and basic categories of food. Such detail conveys a sound scientific basis that we believe would help engender public trust. The table categorises firstly by food groups and the amount needed for 10 days:

- grain products, bread, potatoes (3,3 kg);
- vegetables, mushrooms (4 kg);
- fruit (2.5 kg);
- drinks (20 l);
- milk, milk products (2.5 kg);
- eggs, meat, cold meats, fish (1.2 kg); and
- fats, oils (330 g).

It then gives examples of food items (e.g. pasta, can of green beans, fresh apples) fitting these categories, as well as how much would be needed (in grams or litres) and how many calories each food item would provide. This table is downloadable for citizens. The “Food Preparedness” web portal also gives the option to recalculate this table depending on the number of people in a household and for how many days they want to stock food (up to 28 days). The website also offers a vegetarian version (see Fig 6.4).ⁱⁱⁱ

In 2019, an academic study assessed risk perception and emergency food preparedness among citizens in Germany, with the aim of helping improve preparedness-education efforts by the government. The researchers conducted an online survey of 1,976 people, and concluded that results suggested four different ‘preparedness types’ among citizens:⁵³⁷

- the self-confident all-rounders (31%)
- the unsure non-prepared (27%),
- the unconcerned optimists (24%) and
- the risk-oriented independents (18%).

Across all types, storing behaviour was mainly driven by factors of convenience.

The German state has a law on “Ensuring the basic supply of food in a supply crisis and measures to prepare for a supply crisis” which became effective in April 2017 and provides the necessary instruments to secure food for citizens in a food supply crisis.^{iv} It allows the responsible authority (BMEL) sovereign management of food and related products and to apply rules on production, sourcing and distribution of foods. The German state has a state

ⁱ BBK: Guide for Emergency Preparedness and Correct Action in Emergency Situations (https://www.bbk.bund.de/SharedDocs/Downloads/EN/Mediathek/Publikationen/ratgeber-englisch-disasters-alarm.pdf?__blob=publicationFile&v=8)

ⁱⁱ Bundesministerium für Ernährung und Landwirtschaft (BMEL): <https://www.ernaehrungsvorsorge.de/> [accessed 10 January 2024]


ⁱⁱⁱ BMEL <https://www.ernaehrungsvorsorge.de/private-vorsorge/notvorrat/vorratstabelle-vegetarisch>

^{iv} Bundesministerium für Ernährung und Landwirtschaft: <https://www.ernaehrungsvorsorge.de/staatliche-vorsorge/rechtsgrundlagen> [accessed 10 January 2024]

food reserve in place, which includes a civil emergency reserve of rice and pulses (peas and lentils), as well as condensed milk and a government grain reserve of wheat, rye, oats.¹

Figure 6.3: German Government table of stockable foods for one person 10 days, 2,200kcal per day

Table of provisions



Basic food provisions for one person for 10 days with an average daily energy intake of 2,200 kilocalories (kcal)*

Food groups		Food			Energy content ² [kcal]		
Product	Quantities	Examples	Quantities	Unit	Remarks	Total quantity	
Cereal products, bread, potatoes	3.3 kg	Wholemeal bread, packaged	710	g		213	
		Rusk	180	g		385	
		Crisp bread	710	g		349	
		Pasta, uncooked	280	g		357	
		Rice, uncooked	180	g		355	
		Oat, cereal flakes	540	g		373	
		Potatoes, uncooked	710	g		76	
Vegetables, mushrooms	4.0 kg				peeled	540	
		Green beans, tinned ³	570	g	Drained net weight	21	
		Peas/carrots, tinned	640	g	Drained net weight	55	
		Red cabbage, tinned	500	g	Drained net weight	60	
		Sauerkraut, tinned	500	g	Drained net weight	21	
		Asparagus, tinned	290	g	Drained net weight	18	
		Sweetcorn, tinned	290	g	Drained net weight	81	
		Mushrooms, tinned	290	g	Drained net weight	36	
		Gherkins, tinned	290	g	Drained net weight	11	
		Beetroot, tinned	290	g	Drained net weight	36	
		Onions, fresh	360	g	Drained net weight	30	
Fruit	2.5 kg	Cherries, tinned	400	g	Drained net weight	87	
		Pears, tinned	180	g	Drained net weight	69	
		Apricots, tinned	180	g	Drained net weight	70	
		Mandarins, tinned	250	g	Drained net weight	86	
		Pineapple, tinned	250	g	Drained net weight	69	
		Raisins	140	g		314	
		Hazelnut kernels	100	g		664	
		Prunes	250	g		252	
		Fresh fruit, e.g.	710	g			
		Apple, raw				Example of fresh fruit	65
		Pear, raw				Example of fresh fruit	58
		Banana, raw				Example of fresh fruit	93
		Orange, raw				Example of fresh fruit	47
		Drinks	20 l	Mineral water ⁴	20	l	
Lemon juice	0.14			l		38	
Coffee (powder), instant coffee ⁵	180			g			
Black tea, dry ⁶	90			g			
Milk, dairy products	2.5 kg	UHT milk, 3.5 % fat	2	l		66	
		Hard cheese	500	g		378	
Eggs, meat, sausage and fish	1.2 kg	Tuna, tinned without oil	165	g	Drained net weight	100	
		Sardines in oil, tinned	50	g	Drained net weight	221	
		Herring fillet in sauce, tinned	50	g	Drained net weight	204	
		Corned beef, tinned	160	g		141	
		Veal liver sausage, tinned	160	g		345	
		Cured sausage (e.g. salami)	160	g		371	
		Bockwurst sausage, tinned	160	g	Drained net weight	271	
Eggs (weight class M)	5	Eggs	Weight of each egg without its shell approx. 53 g	137	363		
Fats, oil	330 g	Spreadable fat, e.g.	180	g			
		Butter			Example of spreadable fat	741	
		Margarine			Example of spreadable fat	709	
		Cooking oil (e.g. rapeseed oil)	0.15	l		884	

Information based on: German Nutrition Society, Austrian Nutrition Society, Swiss Society for Nutrition Research (ed.): *Lebensmittel für die Notversorgung, Umstockung, Ersatzkost* (2013)

*Values are generic recommendations that must be adapted to the individual dietary requirements where appropriate.

¹Energy content: Information from the reduced food day (in 3 versions), see also online (reduced) (2013) - > https://www.ernaehrungsvorsorge.de/

²Other values can be used as an alternative to those and given, e.g. cholesterol, sodium, sugar.
³In addition to the average impregnated tubule or sachet or 1.5 litres per person per day, the quantities of water required to cook the specified quantities of pasta, potatoes and rice, according to a litre per person per day, are taken into consideration in the suggested stock or reserve value.
⁴For persons aged 65 and over, an increased intake of > 2 litres per person per day is recommended. Children aged 1-12 and younger need to drink an average of 1 litre per person per day. The information is based on recommendations of the German Nutrition Society and the Swiss Nutrition Society.
⁵Medium strength coffee, medium and strong.
⁶Common daily quantity for consumption is 0.05 - 0.1 l, 0.05 - 0.1 l, 0.05 - 0.1 l, 0.05 - 0.1 l.

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Source: German Bundesministerium für Ernährung und Landwirtschaft

¹ Bundesministerium für Ernährung und Landwirtschaft: <https://www.ernaehrungsvorsorge.de/staatliche-vorsorge/lagerhaltung> [accessed 10 January 2024]

Figure 6.4: Equivalent Table of what should be stored for 10 days for Vegetarians

Vegetarian table of provisions

Basic food provisions for an ovo-lacto-vegetarian diet one person for 10 days¹ with an average daily energy intake of 2,200 kilocalories (kcal)

Food groups		Food			Energy content ² [kcal]			
Product	Quantities	Examples	Quantities	Unit	Remarks	100 g	Total quantity	
Cereal products, bread, potatoes	3.3 kg	Wholemeal bread, packaged	710	g		213	1,512	
		Rusk	180	g		385	693	
		Crisp bread	710	g		349	2,478	
		Pasta, uncooked	280	g		357	1,000	
		Rice, uncooked	180	g		355	639	
		Oat, cereal flakes	540	g		373	2,014	
		Potatoes, uncooked	710	g		peeled	76	540
Vegetables, mushrooms	4.0 kg	Green beans, tinned ³	570	g	Drained net weight	21	120	
		Peas/carrots, tinned	640	g	Drained net weight	55	352	
		Red cabbage, tinned	500	g	Drained net weight	60	300	
		Sauerkraut, tinned	500	g	Drained net weight	21	105	
		Asparagus, tinned	290	g	Drained net weight	18	52	
		Sweetcorn, tinned	290	g	Drained net weight	81	235	
		Mushrooms, tinned	290	g	Drained net weight	36	104	
		Gherkins, tinned	290	g	Drained net weight	11	32	
		Beetroot, tinned	290	g	Drained net weight	36	104	
		Onions, fresh	360	g	Drained net weight	30	108	
		Fruit	2.5 kg	Cherries, tinned	400	g	Drained net weight	87
Pears, tinned	180			g	Drained net weight	69	124	
Apricots, tinned	180			g	Drained net weight	70	126	
Mandarins, tinned	250			g	Drained net weight	86	215	
Pineapple, tinned	250			g	Drained net weight	69	173	
Raisins	140			g		314	440	
Hazelnut kernels	100			g		664	664	
Prunes	250			g		252	630	
Fresh fruit, e.g.	710			g				
Apple, raw						Example of fresh fruit	65	462
Pear, raw						Example of fresh fruit	58	412
Banana, raw						Example of fresh fruit	93	660
Orange, raw						Example of fresh fruit	47	334
Drinks	20 l	Mineral water ⁴	20	l		0	0	
		Lemon juice	0.14	l		38	53	
		Coffee (powder), instant coffee ⁵	180	g				
		Black tea, dry ⁶	90	g				
Milk, dairy products	2.5 kg	UHT milk, 3.5 % fat	2	l		66	1,32	
		Hard cheese	500	g		378	1,89	
Eggs, substitute products for meat, sausage and fish	1.3 kg	Tofu	200	g		167	334	
		Vegetarian rissoles	150	g		230	345	
		Vegetarian sausage	230	g		222	511	
		Vegetarian spicy sandwich spread	250	g		228	570	
		Vegetarian salami	200	g		257	514	
Eggs (weight class M)	5	Eggs		Weight of each egg without its shell approx. 53 g	137	363		
Fats, oil	330 g	Spreadable fat, e.g.	180	g				
		Butter				Example of spreadable fat	741	1,334
		Margarine				Example of spreadable fat	709	1,276
		Cooking oil (e.g. rapeseed oil)	0.15	l			884	1,326

Information based on: German Nutrition Society, Austrian Nutrition Society, Swiss Society for Nutrition Research (ed.); *Lebensmittelverzeichnis für die vegetarische Ernährung*, Umschau Verlag, Frankfurt am Main (1983)

¹ show are general recommendations that need to be adapted to the individual dietary requirements where appropriate.

² energy content: based on the reference food list (1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13) (14) (15) (16) (17) (18) (19) (20) (21) (22) (23) (24) (25) (26) (27) (28) (29) (30) (31) (32) (33) (34) (35) (36) (37) (38) (39) (40) (41) (42) (43) (44) (45) (46) (47) (48) (49) (50) (51) (52) (53) (54) (55) (56) (57) (58) (59) (60) (61) (62) (63) (64) (65) (66) (67) (68) (69) (70) (71) (72) (73) (74) (75) (76) (77) (78) (79) (80) (81) (82) (83) (84) (85) (86) (87) (88) (89) (90) (91) (92) (93) (94) (95) (96) (97) (98) (99) (100) (101) (102) (103) (104) (105) (106) (107) (108) (109) (110) (111) (112) (113) (114) (115) (116) (117) (118) (119) (120) (121) (122) (123) (124) (125) (126) (127) (128) (129) (130) (131) (132) (133) (134) (135) (136) (137) (138) (139) (140) (141) (142) (143) (144) (145) (146) (147) (148) (149) (150) (151) (152) (153) (154) (155) (156) (157) (158) (159) (160) (161) (162) (163) (164) (165) (166) (167) (168) (169) (170) (171) (172) (173) (174) (175) (176) 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Source: German Ministry for Food and Agriculture¹

¹ Emergency stock advice: Bundesministerium für Ernährung und Landwirtschaft: <https://www.ernaehrungsvorsorge.de/private-vorsorge/notvorrat> [accessed 10 January 2024]

The civil emergency reserve serves the purpose of securing at least a daily meal for citizens mainly in high-density areas during crisis situations. Depending on the amount of people and meals a day, the reserve can last between a few days and a few weeks.ⁱ The government reserve is meant to secure flour and bread supply in times of crisis. The Federal Office for Agriculture and Food (BLE), a subordinate agency of the BMEL, is responsible for the procurement, management and inspection of these crisis reserves. The food reserves will be provided if individual Bundesländer request additional aid during disaster situations.

The German Federal Ministry of Interior and Community, like other countries, recognises food as one of eleven critical infrastructure sectors. In July 2023 the Ministry published a new draft ‘umbrella act’ for critical infrastructure protection. The legislation aimed to regulate the “physical protection of critical infrastructure throughout Germany and across all sectors in a uniform way”. Uniformity was presented as a key to enhancement of resilience.ⁱⁱ

Since January 2024, the German government has a National Food and Nutrition Strategy “Good Food for Germany”, developed by the BMEL in consultation with representatives from science, the food industry, environmental conservation, consumer protection, the federal states, municipalities, and civil society.ⁱⁱⁱ Although an earlier concept paper had supported the goal of improving food system resilience through, for instance, regional supply chains and circular economies, the 2024 Good Food for Germany strategy does not specify anything on emergency food preparedness as such.

Some local food strategies such as for Freiburg and Munich do refer to concepts such as resilience, shock, crisis, vulnerability, weaknesses, and further refer to the need for a resilient food system that can withstand crisis.

Italy

Currently, there appears to be no overall (civil) food resilience strategy for Italy. Famed for its cuisine and food, Italy too has suffered from cost-of-living pressures and its food banks were stretched in Covid-19. A government interviewee, however, informed us that there are national projects learning lessons for resilience from the pandemic, taking note of the National Recovery and Resilience Plan from Next Generation EU funds. The *OnFoods* programme was created by the government to bring together 26 existing organisations – business, universities, agencies - into one ‘foundation’ or large programme to centralise and promote research and thinking for food systems change.^{iv}

An interviewee told us that, although this was all positive and signalled change,

“my perception is that we are hiding the problems at present. The problem of external shocks and possible chain reaction on the food system is more understood by academics and scientists than by policy makers and politicians. Maybe policy makers don’t have the awareness or are simply hiding it or not acknowledging it. But interest and pressure to address this is growing.”

ⁱ Bundesministerium für Ernährung und Landwirtschaft: <https://www.ernaehrungsvorsorge.de/staatliche-vorsorge/haeufig-gestellte-fragen-faq> [accessed 10 January 2024]

ⁱⁱ Federal Ministry of the Interior and Community (2023): (<https://www.bmi.bund.de/SharedDocs/kurzmeldungen/EN/2023/07/gekritis.html>)

ⁱⁱⁱ Federal Ministry of Food and Agriculture, Food and Nutrition Strategy: <https://www.bmel.de/EN/topics/food-and-nutrition/food-nutrition-strategy.html> [accessed 21 November 2024]

^{iv} OnFoods Foundation: <https://www.onfoods.it/> [accessed 03 January, 2024]

With its system of devolved and regional government, most thinking about food resilience appears to stem from local and regional levels. There is often still an assumption that Italy has few food problems, yet it was the historically rich City of Milan that organised the 2015 Milan Urban Food Policy Pact (MUFPP), a global alliance of cities committed to urban food policy action. Launched at the 2015 Food Expo, the MUFPP committed signatory cities to improve urban food security.ⁱ

Today there are more than 200 cities signed up, with the Mayor of that time judging this process was the greatest legacy of the Expo. But in Italy overall, there is still no legal requirement for regions or cities to have a civil food resilience strategy in place. Cities meet regionally across the world and in global meetings, and the MUFPP is now coordinated under the C40 climate change local government alliance, itself nesting under ICLEI, the international body of local government for which resilience is one of its five foci.ⁱⁱ

In a sense, the Milan initiative symbolises the strength and weakness of Italy's approach to food resilience. Italy's 20 regions have the right to create their own food strategies. Many have started regional partnership roundtables for resilience. Some municipalities such as Turin and Rome have been debating whether to insert a 'right to food' into their municipal constitution. Emulating other cities around the world, in April 2021 Rome created a Food Council to guide its new food policy with a technical office (secretariat).⁵³⁸ It is part of the relatively new *Italian Network of Local Food Policies set up to facilitate exchange and learning at the sub-national level*. The government interviewee was not aware of any direct advice for citizens or public campaigns around civil food resilience but in general those considering food resilience are "already engaged with thinking about new directions".

Latvia

Latvia, a small state that is conscious of the possibility of being invaded if Russia's aggression accelerates,^{539,540} is clear about the need to adopt a whole of society approach to food resilience strategy; this necessitates involvement of different sectors. It is not viewed as a choice. The government of Latvia began thinking about its resilience strategy after the 2014 Russian invasion and annexation of Crimea. Given its proximity and history, it is no surprise that Latvia has, in the words of a key government official:

"a well-developed notion of the importance of security of supply and essential services. We understand that our security can be threatened. We are not neurotic about this; it's just the reality."

The process of resilience planning began in 2015 and was formalised in 2019 as a comprehensive national defence system. It is still an ongoing process. It also takes close notice of NATO resilience committee thinking which includes an emphasis on civil communications, for instance.ⁱⁱⁱ The NATO Resilience Committee includes a Food and Agriculture Planning Group.

In Latvia, the Ministry of Defence is the lead ministry in the resilience strategy and operates as a social defence or 'total defence' and resilience co-ordinator. As part of its resilience strategy, the Latvian government sees societal resilience as the continuation of essential services, which include for instance food, banking and energy. Understanding the connection

ⁱ <https://www.milanurbanfoodpolicypact.org/> [accessed 03 January 2024]

ⁱⁱ ICLEI is the international alliance of 2,500 local governments working for sustainability: <https://iclei.org/> [accessed 2 January 2024]

ⁱⁱⁱ NATO Resilience Committee: https://www.nato.int/cps/en/natohq/topics_50093.htm [accessed 3 January 2024]

between these essential services, such as which bodies are involved and how, as well as how they are mutually dependent, has been part of the last years of Latvia's work on resilience.

“Each ministry in Latvia now has tasks on what it should prepare. The Ministry of Defence leads and co-ordinates this process, drawing on input from other ministries.ⁱ The Ministry of Agriculture, for instance, is responsible for food production. Food retail comes under Ministry of Economics.”

There is a system of critical national infrastructure.ⁱⁱ The Latvian government engages business, as well as different levels of government in its resilience strategy. The Ministry of Agriculture monitors and knows which are the largest and most important sources of food in the country and, through this, is able to identify so-called K-companies. These are private companies who operate as usual in normal times but are bound by contract to supply goods and services in times of crises. These may include farmers, who with other K-companies form a network of essential services in times of crises. Further, to maintain food distribution in a crisis through existing shops, the government has engaged retailers in scenario workshops and “war games”. Our interviewee stated:

“at present, we find that business does not need encouragement to be involved. They understand it's important for their own internal crisis planning.”

During a crisis, the government has legal power to control food exports and companies. It also engages retailers in scenario workshops and “war games” for crisis preparedness. Cities, towns and localities are required to be prepared for 36 different risks which have been identified by the Ministry of Interior. Local authorities do not have any specific responsibilities in relation to food other than needing to maintain essential services; local retailers would need to be coordinated by the local authority.

As part of building its resilience strategy after the Russian invasion of Crimea in 2014, the Latvian government decided that it needed to involve society in defence. A government interviewee told this report:

“The goal was to improve civil contingency and to engage citizens in preparation for at least the first three days, as this is when there would be initial chaos when the state is having to take stock of what has happened and where the country's essential services have been hit. This 72 hours are when priorities would have to be set. We wanted Latvian people to be able to survive by their own efforts or with help from neighbours in this early stage. Food is central to this preparation.”

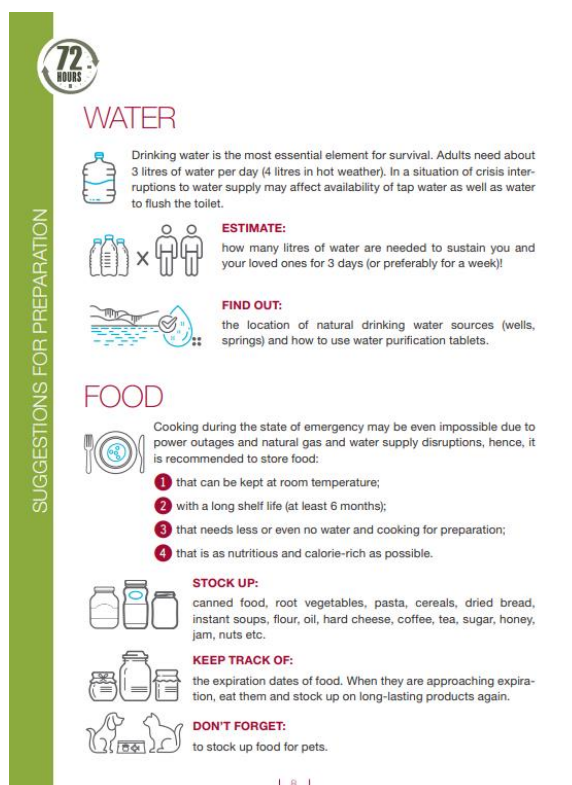
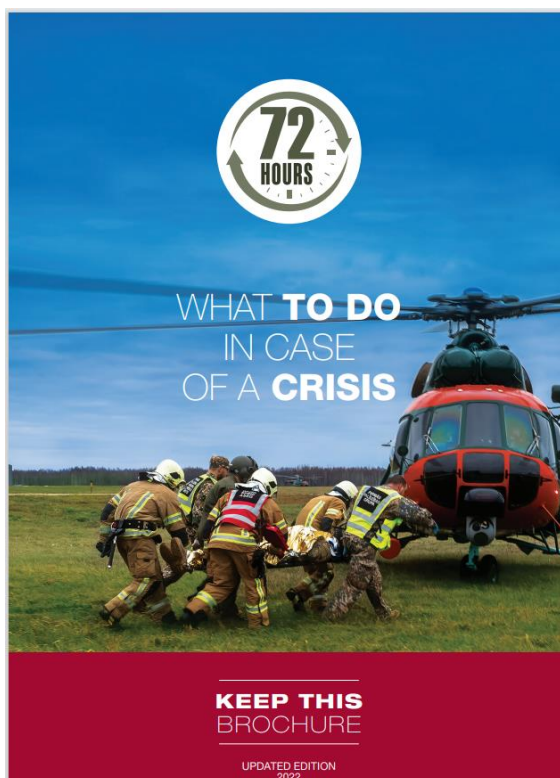
This strategy led to a booklet for citizens ‘What do to in a case of a crisis’ which provides detailed information on how to prepare and react in a crisis (see Figure 6.5 for front page and water and food page in booklet), including having a stock of food and water prepared to last for 72 hours as part of an emergency kit.ⁱⁱⁱ The government has also developed card games on crisis preparation for the public, which have been disseminated in schools, businesses and across society. The booklet and cards are available on a website run by the Ministry of Defence. It is produced in four languages including Russian and English. Detailed advice to citizens is given in a 70-minute video.^{iv}

ⁱ <https://likumi.lv/ta/en/en/id/306040> [accessed 2 January 2024]

ⁱⁱ [Kritiskās infrastruktūras, tajā skaitā Eiropas kritiskās infrastruktūras, apzināšanas, drošības pasākumu un darbības nepārtrauktības plānošanas un īstenošanas kārtība \(likumi.lv\)](https://www.sargs.lv/lv/tema/72stundas/)

ⁱⁱⁱ [https://www.sargs.lv/lv/tema/72stundas-](https://www.sargs.lv/lv/tema/72stundas/) [accessed November 2023]

^{iv} <https://www.sargs.lv/lv/sabiedriba/2022-05-20/video-72-stundas-ko-lik-arkartas-gadijumu-soma> [accessed November 2023]

Figure 6.5: Front & inside page of *What to do in case of a crisis*, Latvian Government

Source: Government of Latviaⁱ

ⁱ advice for citizens in time crisis, Latvia Government's 72 *stundas* website: <https://www.sargs.lv/lv> [accessed November 23 2024]

Lithuania

Like Latvia and for not unconnected reasons, the Lithuanian government has a security strategy laid down in law soon after the break-up of the former Soviet Union. Lithuania declared independence in 1989 and quickly applied to join Nato and the EU, both completed in 2004. Since joining the EU, the percentage of people working in agriculture has declined from 19% of all jobs in 2000 to 5% in 2022. Its crop yields for cereals and vegetables, however, have increased.ⁱ As it became more prosperous, the number of people unable to eat a healthy diet decreased to 9% by 2022. A 2018-20 EU-funded project had earlier identified at-risk sections of the population requiring more support to feed themselves, based on an alliance of food banks, the Red Cross and municipalities.⁵⁴¹

The response we received to our inquiry to the government about Lithuania's food preparedness planning stated:

"[one] measure of food resilience policy in the country is maintaining and strengthening a dedicated food reserve. The reserve of agricultural and food products is a part of the state reserve, which is formed according to the requirements of the Republic of Lithuania state reserve act. The National Crisis Management Center of the Chancellery of the Government of the Republic of Lithuania is the coordinator of the state reserve. Once the Lithuanian government approves and confirms the product list of State Reserve for Agricultural and Food products (it can be annually revised), the Ministry of Agriculture becomes responsible for securing and handling. The Republic of Lithuania, as many other EU countries, use the general EU policy baselines to increase food security, resilience and preparedness for the crises of food sector."

Article 4 of the above mentioned 2000 State Reserve Law gives powers to the government to hold stores such as for civil defence, medical, agricultural, food and communications purposes.⁵⁴² The Act enables the state to purchase resources (Article 9), store them (Article 10), renew them by selling them off (Article 11), and to write them off (Article 12).

The government also advises citizens on preparedness for threats, shocks and their aftermath. It requests Lithuanians to ensure they have (a) sufficient food available (b) an emergency kit and (c) a family/household plan of what to do in an emergency. Like Latvia, this is given as a *72 Stundas* (72 hour) perspective in the event of evacuation, when it may be assumed that government and ordinary structures might be in some disarray.

As part of being prepared for emergencies, the *72 hours* website advises citizens to have a prepared food and water stock to last for in case of evacuation and perhaps for at least for two weeks at home. "In the event of an imminent or actual emergency, *food and water stocks may be limited* and their supply may be disturbed." [government emphasis]

The following food products should be stored at home in a dry and dark place: canned meat; canned vegetables (leguminous vegetables may be recommended); other canned goods (condensed milk, fruits etc.); groats (grain); oil; sugar; spices; salt; honey; tea. The government also advises against storing canned fish products, but no reason is given.

It recommends that one person be responsible for managing the household's store. This person is to follow practical advice on how to manage the stocks in the crisis: prioritise

ⁱ Food Systems dashboard data: <https://www.foodsystemsdashboard.org/countries/ltu> [accessed November 25 2024]

storing “ordinary foods” (presumably over treat foods); keep the store clean; rotate the stocks; use any foods in the store approaching ‘use-by’ dates to ensure the store is not full of beyond consume-by dates.

Households are advised to have a tin-opener; remove labels; open the can before heating canned goods (presumably to heat it on a camp stove or equivalent?); and follow instructions on the label.

Drinking water should be stored at the rate of 12 litres of water for one person per 72 hours. Stored water should be poured into small capacity bottles as this “may help to keep water clean for a longer time.”

This information has been communicated and branded as “72” through different channels, including radio, television, social networks, internet, as well as regional and national media.

The Government encourages citizens to see threats as emanating in three forms: technical (e.g. infrastructure breakdown), natural (e.g. weather) and social (e.g. civil chaos, invasion). The Fire and Rescue Department under the Ministry of the Interior provides a website for citizens with all relevant information on how to prepare for crises and emergencies in these circumstances. It is available in English translation.⁵⁴³

In all the above respects, Lithuania fits a pattern shared with others, namely providing advice to its citizens to be prepared and to store food. In fact, the Interior Ministry admitted in 2023 that official advice was not shaping actual behaviour. Only 18% of people possessed an emergency bag, only 15% have discussed their family's disaster plan with their relatives, and only 9% of residents know exactly how to behave, while 41% think that they know.⁵⁴⁴ The Interior Minister understandably commented that this low level of engagement sits at odds with the rising risk of conflict. According to a recent study of Lithuanian agriculture, facing market conditions appears to have driven what Lithuanian agriculture does more than the imminence of military conflict.⁵⁴⁵ Farm resilience is not necessarily reflected in feeding the people. But the study noted that conditions and events could well change urban-rural connections.

The Netherlands

Currently, the Netherlands (NL) does not have a national strategy specifically for food resilience but its food policy has been one of the most developed in the EU with a highly productive farm sector, albeit facing significant environmental challenges, not least sea level rises.⁵⁴⁶ The NL has also slowly been developing one of the most integrated agri-food policies in the EU that recognises the need to reconnect primary production with public and environmental health.^{547,548} Some critics see it as still too dominated by farm interests.

The NL is acutely aware of its own food security, having experienced a famine in the late years of WWII. It was a founding member of the Common Agricultural Policy and has taken a consistently incremental approach to national agri-food policy linking health and environment with economic importance. In the 1980s it conducted a seminal review *Food from our own soil* by Theo Bakker into whether it could, if conditions dictated, produce sufficient food to feed its population.ⁱ It could but remained reliant on imported primary resources such as fertiliser.⁵⁴⁹

ⁱ Bakker's 1985 report is summarized (in English) on pg 36 of the more recent Ministerial 2011 Stress Test: <https://edepot.wur.nl/175599>

After the 2007-08 oil and food commodity price shock, like other countries (e.g. Australia in 2010, France in 2011),^{550,551} it returned to the issue. Again in 2011, concerned about a decline in available farmland, and rising evidence of pressures on what it called the 'European model of agriculture and food systems', it conducted a 'stress test' only this was for the viability of the EU type of food system.⁵⁵² The stress test included threats of ecological and political disruption, and recommended a change of direction.

Even before publishing this review, in 2010 the government ran an awareness-raising campaign '72 Hours'. Although this is no longer available, a former senior civil servant assured us it advised citizens to prepare for disasters by having food sufficient for 3 days. This undoubtedly laid the groundwork for what exists today.

In 2013 a longer, strategic study was published, commissioned by the Ministry of Economic Affairs from Wageningen University consulting with others such as the Voedingscentrum (Nutrition Centre) to consider whether the population could be fed if the borders were suddenly closed.⁵⁵³ It could. Titled '*Food supply: The Netherlands under extraordinary crisis circumstances*', it did not pull its punches.

Modelling six scenarios, it offered some broad conclusions of interest to our UK research, including that (a) a transition to autarchy would require considerable change but land use could give more variety than it did at present; (b) it foresaw citizens turning to the 'informal economy' more, including home-growing; (c) while producers could adapt to this stark situation, consumers would need more government help and intervention; (d) change would need to be phased in (e.g. changes to seed production and animal production); and (e) there would be shortages in early days, so attention to creating stockpiles now should be considered. This supply-focussed study did consider consumer behaviour but not in detail or specifically civil food resilience.

Developments since suggest more interest in that direction. It did also consider the transition to a more plant-based diet as part of that change. A recent example is the Dutch National Protein Strategy from 2021 that set out to increase self-sufficiency of new and plant-based proteins over the next 5 to 10 years, in a sustainable way that contributes to the health of people, animals and the natural environment.ⁱ

According to another interviewee, there is currently some movement towards a strategy for food resilience and "re-thinking in the Netherlands about how secure [its] food supply actually is." Two main reasons were given for this. Firstly, the Netherlands is aware that issues such as climate change and geopolitics need to be considered and addressed. Linked to this, the Netherlands is questioning its role in feeding others. Secondly, the Ukraine war has brought the issue of resilience and security back up the agenda.

As a result, the NL government is currently assessing whether food supply should become part of national critical infrastructure. The Ministry of Agriculture, Food Quality and Nature already participates in the European Food Security and Response Mechanism of the EU and NATO's Food and Agricultural Planning Group (FAPG). Our interviewee saw the latter as a key opportunity for governmental interaction and international exchange of best practice. The NL still values close contact with its UK counterparts in Defra.

Our interviewee was not aware of any resilience strategies at the local government level. However, so-called 'security regions' exist in the Netherlands. These are public bodies facilitating regional cooperation in dealing with emergencies and crisis. The country has 25 'Security Regions', collectively responsible for drawing up joint regulations and control rooms

ⁱ LNV: <https://magazines.rijksoverheid.nl/lnv/agrospecials/2021/02/nes>

for crisis management. These are run by regional or lead Mayors, under the Security Regions Act (*Wet Veiligheidsregio*) that came into force in 2010 and brought together existing emergency services in one framework.ⁱ

Although disaster focused, this response framework also covers food provision. The government official we interviewed informed us there are “public campaigns and information, on a national and regional level, which provide general information and guidance how to prepare for emergencies.” As part of this, the National Coordinator for Counterterrorism and Security (NCTV), part of the Ministry of Justice and Security, runs a ‘Denk Vooruit’ website (‘Think ahead’) giving advice.ⁱⁱ What is new that this is motivated by cybersecurity and not, as in the past, by floodings or blockades.

In 2024 the government reported that a year and a half after the Denk Vooruit campaign started,

*“more than half of the Dutch did not think it was necessary to prepare for a disaster, and only twenty percent stated that they had made all the preparations”.*ⁱⁱⁱ

The Denk Vooruit website provides a list of risks in the Netherlands, information on how citizens can prepare for these risks and how to put together an emergency kit to survive for the first 48 hours (not 72 hours, note) after a disaster which should include 3 litres of water per person per day and non-perishable food (see Figure 6.6). There is a general appeal to the national experience of dealing with crises (think dams, invasions) and examples of people making preparations. The tone is low-key and practical.

In October 2024, the issue of threats to NL society was brought up in the NL Parliament. The Ministry of Justice and Security strengthened its warnings to the public of threats from terrorism. It assured the public that, while government is prepared, the situation of risks to society in general (not just food) now needed public engagement, not least since help might take time to arrive due to the scale of possible shock:^{iv}

“The government is well prepared, but more and more is expected of society. Everyone must increase their resilience: governments, businesses, social organizations and residents. This includes, for example, bringing in an emergency package, with which people can save themselves the first 48 hours after a disaster. Because help can usually not be on the spot right away, not at all with large-scale incidents.”

The following month, a broadcast drama on NP01 TV channel simulated a major ‘black out’ or power outage across the provinces of Utrecht, South Holland and Zeeland.^v This was followed by a short speech by Prime Minister Schoof about the importance of being well prepared for these types of crises. The resilience approach is now doubled up as ‘resilience and resistance’. What effect on food planning or public engagement this will have in coming months remains to be seen.

ⁱ NL Safety Regions Act 2010: <https://www.risicokaart.nl/en/safety-and-law/security-regions-act> [accessed 4 January 2024]

ⁱⁱ Netherlands National Coordinator for Counterterrorism and Security, part of the Ministry of Justice and Security: <https://english.denkvooruit.nl/> [accessed 4 January 2024]

ⁱⁱⁱ Nederlands Digitaal) 12 November 2024: <https://www.nederlanddigitaal.nl/actueel/nieuws/2024/11/12/eo-uitzending-black-out-toont-grote-impact-van-mogelijke-cyberaanval>

^{iv} NL Ministry of Justice: <https://www.nctv.nl/actueel/nieuws/2024/10/25/rijksoverheid-biedt-informatie-nav-toegenomen-dreiging#:~:text=Op%20'Denk%20vooruit'%20staan%20concrete,hybride%20dreigingen%20in%20Nederland%20gebundeld.>

^v Blackout TV programme 11 November 2024: <https://www.nederlanddigitaal.nl/actueel/nieuws/2024/11/12/eo-uitzending-black-out-toont-grote-impact-van-mogelijke-cyberaanval>

Figure 6.6: Putting together an Emergency Kit (NL)

Putting together an emergency kit

With an emergency kit you are well prepared for the first 48 hours after a disaster or emergency. Putting together an emergency kit is often easier than you may think. You probably already have most of the items at home.

- Bottled water.** You need about 3 liters per person per day.
- Non-perishable food,** such as nuts, canned vegetables and dried fruit.
- Stay informed via a battery-operated radio and mobile with power bank.**
- Flashlight with extra batteries, candles and matches.**
- First aid kit with instructions for use.**
- Blankets to keep warm.**
- Whistle to let emergency services know where you are.**
- Cash.**
- Tools, such as hammer, saw and nippers.**
- Disinfectant gel, toilet paper, wet wipes, sanitary napkin, toothpaste and toothbrush.**
- Copies of IDs and a list of important telephone numbers.**
- Spare keys to the house and car.**

Keep the items in a convenient, easily accessible place. Use waterproof packaging, such as a backpack that you can easily take with you if you have to evacuate suddenly. Check the emergency stock every six months to see if the products can still be kept. Also consider your personal needs, and add items such as baby food, medicines and food for your pets.

Denk vooruit

For more information, visit www.english.denkvooruit.nl

Source: NL governmentⁱ

Sweden

The Swedish government is the country often cited by those interested in resilience policy as having taken sensible action to ensure preparedness for its population in the event of national emergencies and war. This approach has been developing since the late 2010s and, as with Latvia and Lithuania, was shaped by Russia's 2014 annexation of Crimea. From the outset, the Swedish state response to the invasion of Crimea was not limited to military preparedness but included food as a function to be prepared within a wider civic approach.

ⁱ NL Ministry of Defence advice on emergency kit: <https://english.denkvooruit.nl/prepare-yourself/putting-together-an-emergency-kit> [accessed 4 January 2024]

This approach built on earlier Cold War policy that prepared the public for response if conflict spread across the Nordic region. The attention on preparedness is particularly noteworthy given that, since the early 19th century, Sweden has been either militarily neutral or in modern parlance non-aligned. It has, however, developed formidable and profitable military industries, and its armed forces have been involved in many peace-keeping roles in conflict regions worldwide. But when Russia invaded the rest of Ukraine in 2022, Sweden made the momentous decision to join NATO, completed in 2024, thus overturning its two centuries of military neutrality. This has not altered its concern for food preparedness; on the contrary, it has intensified it.

Non-alignment never meant Sweden left its people undefended. As was discussed earlier (see end of Chapter 4), it has championed the notion of Total Defence, an approach that insists the best route for defence is to include all the people not just its armed forces.^{554,555}

Recognition that food matters in national defence is partly due to the collaboration and persistence of the two main government agencies charged to develop such policies and activities: the Swedish Civil Contingencies Agency (an agency of the Ministry of Defence) and the Swedish Food Agency. The former is concerned about the general task of building resilience, the latter about the food system and its importance for public welfare.

In 2024, the result of a two year review set up by the Cabinet was published: *Livsmedelsberedskap för en ny tid* (Food preparedness for a new era).¹¹⁵ This large report sets a new benchmark for acceptance of the risks facing its food economy and public protection. Food preparedness is reaffirmed within the ‘total defence’ strategy and what we called ‘total food defence’ (see Chapter 4).

The *Food preparedness for a new era* report is large. It does not flinch from the risks but sets out new priorities to protect the public as far as possible from them. It recognised that membership of the EU and CAP changed Swedish food security and that feeding the people continues to be EU-reliant. The report’s central thrust is on the need for new Food Security legislation that places full legal obligations across all levels of government, down to local and municipal, to feed all the people in a crisis. That legal obligation ensures that authorities cannot duck the responsibility. Funds are to be made available to that end. The report also recognises that a resilient food system requires all food sectors to continue on the road towards sustainability: lower environmental impacts, optimised health, better land management, engaged citizenry.

To achieve food security requires some adjustment of land use (Sweden has huge land mass, much down to timber), equipment, labour force, and critical infrastructure. A reorientation of the national food system around food security is to begin, addressing for example reliance on imported fertilisers as well as food. The new municipal powers are to enhance “local gathering of power for population survival.” Food storage should be dispersed across the country in rural areas. The sensitivity of food resilience – for times of conflict – requires new secrecy and confidentiality provisions in law. The report also raises the implications across Swedish government for particular agencies and ministries.

This, indeed, is a comprehensive central government report built on the need to engage across all levels of society. It faces the facts and articulates actions that the UK could begin too. Advice is not just put on a website (that may crash in conflict). It reflects the approach taken in the present report: basing food preparedness requirements upon physiological and nutritional needs (not an abstract personal responsibility ethos). It accepts that for civil preparedness, what matters is cross-government coordination, down to the local and

domestic level where people live and work. The tone is calm and firm. Feeding all the people in and for crises is to be the heart of Sweden's total food defence strategy:¹¹⁵

“We propose that food preparedness refers to activities that aim to maintain the food supply that is necessary for the population's survival, to ensure the most important social functions or to contribute to the military's defence capabilities.

“[...] We propose that the goal of food preparedness should be to ensure that the entire population over time has access to necessary food in the event of serious disruption or an imminent risk of serious disruption in the food supply.”

Even before the 2024 report, in 2022 MSB had made quite clear that food is an essential for life and must be protected and people made aware that supply can be disrupted for instance by power cuts or import blocks.⁵⁵⁶ It also coordinates building civil preparedness across ten sectors, with 'food supply and drinking water' forming one of them.⁵⁵⁷ The Swedish government sees public preparedness for wars and emergencies as vital and frames it as a collective responsibility across society. Well before the current shift in geopolitics, the Government had rethought its food strategy and committed to increasing home production where possible to reduce threats to food security.⁵⁵⁸

The Swedish Food Agency (Livsmedelverket) remains the lead body on civil preparedness in relation to food supply and drinking water, nationally coordinating crisis and contingency planning. Together with the Swedish Board of Agriculture, the Swedish Environmental Protection Agency, the National Veterinary Institute (SVA) and the county administrative boards, they are working to build food system resilience and food preparedness for normal times. These goals are implemented, among other activities, through awareness-raising efforts, through the development of support and exercises, as well as through dialogue and collaboration with other authorities and industry. As part of the overall plans, the cooperating agencies aim to ensure access to safe food for the Swedish population for about three months in the case of social disruptions.ⁱ

The MSB has been running preparedness campaigns since 2017. These will be ramped up following the 2024 report. The MSB homepage already made links for citizens to information for home preparedness, including an information sheet on food preparedness and a brochure *If crisis or war comes*, which suggests that all citizens who can should build a store of food to last for one week; it further advises how to store this food properly, how to cook it and provides a checklist of what kind of foods should be stored, which can be adjusted to individual preferences. Figure 6.7 is taken from the 2018 booklet sent to every household.

Municipalities and county administrative boards share responsibility with national government. Their role includes, for instance, reviewing and strengthening the robustness of the supply chains for food and drinking water. Businesses (in the food sector and beyond) are seen as having a vital role in Sweden's preparedness and are expected by government to prepare and plan to function in crises. Since 2015, consumers have been given clear advice about the need to engage diet as a route to good health and lower environmental impact living.⁵⁵⁹

ⁱ Swedish Board of Agriculture: <https://jordbruksverket.se/languages/english/swedish-board-of-agriculture> [accessed 4 January 2024]

Figure 6.7: 2016 Home preparedness advice - excerpt from *If Crisis or War comes* (MSB, Sweden)

Home preparedness advice

Your prerequisites and needs vary, for example, depending on whether you live in the countryside or in a built-up area, in a house or in an apartment. Here are some general home preparedness tips. Use what is appropriate for you and those close to you. It is a good idea to share certain things and borrow from one another.

Food

It is important to have extra food at home that provides sufficient calories. Use non-perishable food that can be prepared quickly, requires little water or can be eaten without preparation.

- potatoes, cabbage, carrots, eggs
- bread with a long shelf-life, e.g. tortillas, hard bread, crackers, rusks
- cheese spread, soft whey cheese and other spreads in tubes
- oat milk, soy milk, milk powder
- cooking oil, hard cheese
- quick-cook pasta, rice, grains, instant mashed potatoes
- precooked lentils, beans, vegetables, hummus in tins
- chopped tomatoes to, for example, cook pasta in
- tins of bolognese sauce, mackerel, sardines, ravioli, salmon balls, boiled meat, soup
- fruit purée, jam, marmalade
- prepared blueberry and rosehip soup, juice or another drink that can be stored at room temperature
- coffee, tea, chocolate, energy bars, honey, almonds, nuts, nut butter, seeds.

water

Clean drinking water is vital. Allow for at least three litres per adult per day. If you are uncertain about its quality, you need to be able to boil the water.

If the toilet is not working, you can take strong plastic bags and place them in the toilet bowl. Good hand hygiene is important for avoiding infection.

- bottles
- buckets with lids
- Plastic bottles to freeze water in (do not fill to the top as the bottle will crack if you do)
- mineral water
- jerry cans, ideally with a tap, to collect water in. You can also have a couple of clean jerry cans that are filled with water as a reserve. These are to be stored in a cool, dark place.

Warmth

If the electricity goes off at a cold time of the year, your home will quickly become cold. Gather together in one room, hang blankets over the windows, cover the floor with rugs and build a den under a table to keep warm. Think about the risk of fire. Extinguish all candles and alternative heating sources before you go to sleep. Air the room regularly to let in oxygen.

- woollen clothes
- warm all-weather outdoor clothing
- hats, gloves, scarves
- blankets
- sleeping mats
- sleeping bags
- candles
- tea lights
- matches or fire-lighter
- alternative heat sources, e.g. LPG heaters, paraffin heaters.

Communications

In the event of a serious incident, you need to be able to receive important information from the authorities, primarily Sveriges Radio's radio station P4. You also need to be able to follow how the media are reporting events, remain in contact with relatives and friends and be able to reach the emergency services..

- a radio powered by batteries, solar cells or winding
- a car radio
- a list of important telephone numbers on paper
- extra batteries/power bank for devices such as mobile phones
- mobile phone charger that works in the car.

Learn more about home preparedness at dinsakerhet.se

10
11

Source: MSB Civil Contingency Agency of Sweden⁵⁵⁷

In November 2024, a new advice booklet, *In Case of War*, was sent to every household in Sweden. The tone and context for civil advice are more stark. It covers a range of threat situations from invasion, terrorism, pathogens, extreme weather, offering advice on each and on gradations of security ranging from your home to underground shelters. It recommends psychological preparedness, digital security, food preparedness and what to do about your pets. The entire structure is around Total Defence.

The 32-page booklet is simply written, in three linguistic formats (Swedish, easy Swedish and English). The political context is explained more clearly. The food section is actually shorter than the 2018 composite (Figure 6.7 above) but the food recommended for storage is presented in clearer social and nutritional groupings (see Figure 6.8). The new food advice includes growing food yourself.

Figure 6.8: The 2024 ‘In Case of War’ booklet advice on food (MSB, Sweden)

Food

You need food that is filling, energy-rich and that can be stored safely at room temperature. Get food that can be prepared quickly, requires very little water, or that can be eaten immediately. Start building up your emergency storage by simply buying one or two additional items when doing your regular shopping. Good things to keep at home:

- Non-perishables:** Grains, cereal, pasta, rice, couscous, instant mashed potatoes, milk powder, tortillas, crispbread, crackers, salt, and spices.
- Tinned goods:** Tomatoes, vegetables, fruit, and ready-to-eat meals.
- High-protein:** Dried or tinned meat and fish, chickpeas, beans, lentils, and cheese in a tube.
- High-fat:** Cooking oil, pesto, sun-dried tomatoes in oil, tapenade, peanut butter, nuts and seeds.
- Energy boosts:** Fruit custard, jam, chocolate, honey, protein bars, and dried fruit.
- Drinks:** Coffee, tea, hot chocolate mix, blueberry and rosehip soup, juice, or milk.
- Food for children:** Gruel, infant formula, oatmeal, and baby food.



Make use of available fruits and berries. Grow edible food in your garden, on your balcony, or on a windowsill.

Source: MSB 2024⁵⁶⁰

Switzerland

Preparedness has been a high priority for Switzerland for centuries, with stockpiling and self-reliance being a key part of Swiss history. Like Sweden, it believes in making this investment during peacetime.⁹ It is a landlocked country with a lack of natural resources and a high dependency on imports. Only half of food consumed is produced in Switzerland, and it is a country dependent on the import of seed, fuel, fertiliser and pesticides.⁵⁶¹ Not being in the EU, Switzerland lacks access to the crisis mechanisms of neighbouring EU countries but the government believes food supply is in an overall resilient state. It takes this seriously.

The Swiss Federal Office for National Economic Supply (FONES) is responsible, together with the private sector, for ensuring that short-term disruptions and crises do not have massive consequences for the public and the economy. As part of this, the Swiss government has compulsory stockpiling in place, forming part of the National Economic Supply (NES). These compulsory stockpiles are anchored in law within the Economic Supply

Act (NESA).ⁱ FONES is in charge of keeping these stockpiles and for their distribution during disruptions.ⁱⁱ This is based on cooperation with the private sector which determines with government what needs to be stockpiled and how much. The most recent assessment from November 4, 2024, confirmed that for food Switzerland was sufficiently supplied.⁵⁶¹

Our understanding is that responsibility tends to lie primarily with private business, with stocks being property of private businesses rather than government. There is thus a tight and clear relationship between the Federal government and private companies on the finance.ⁱⁱⁱ Currently obligatory stocks include sugar, rice, edible oils and fats, coffee, cereals for human consumption and energy and protein sources for feed purposes, all being able to last between 2 and 4 months.^{iv} The range of compulsory stocks held in the country is published (the last update we saw was 11 December 2023).⁵⁶²

In addition to releasing stockpiles in a crisis, FONES has the power to change the declaration rules of food and loosen import rules, as well as in more severe crises to limit units made available per citizen while shopping, with the next escalation being rationing. In a longer-term crisis, the government would start managing food production overall.^v FONES regularly assesses the state of national economic supply in different areas.^{vi}

In April 2023 Switzerland announced its intention to raise its existing stores of three to four months' worth of food to twelve.⁵⁶³ The practicalities of this decision will be considerable.^{vii} And the administrative costs were estimated to rise by CHF17 million (\$18.9 million) plus an additional CHF84 million (\$93.4 million) for the expansion of the national stockpiles. The Swiss argument is that for a rich country this bill de-emphasises responsibility that otherwise would fall wholly on individual households but the policy shift is subject to continuing discussion.

In December 2023, the Federal Council debated the issue of supplies of essential supplies and services for Switzerland. Due to some political resistance to the proposed adjustments (actually increases) to the national compulsory food stockpiles, the Federal Council instituted a more detailed investigation into what exactly is needed to be sufficiently prepared for crises.

Some individual Swiss cantons including Zurich and Berne also provide information for citizens on how to create an emergency stockpile. Canton Zurich has created its own checklist for foods.^{viii} Canton Berne provides detailed information on its website on emergency stockpiling and also links to the FONES (central government) brochure. It has additionally developed an information sheet of how to cook food in the case of no electricity, which FONES refers to on its website.^{ix} Some leading Swiss supermarkets have written articles in their magazines about the importance of building stockpiles of drinking water and

ⁱ Swiss rationale for stocks - SwissInfo.ch: https://www.swissinfo.ch/eng/business/mandatory-reserves_why-switzerland-stockpiles-for-possible-emergencies/44917424 [accessed 01 12 24]

ⁱⁱ Swiss personal emergency stocks - Bundesamt für wirtschaftliche Landesversorgung: <https://www.bwl.admin.ch/bwl/de/home/bereiche/notvorrat.html> [accessed 10 January 2024]

ⁱⁱⁱ Bundesamt für wirtschaftliche Landesversorgung (BWL): <https://www.bwl.admin.ch/bwl/en/home/bereiche/pflichtlager.html>

^{iv} Bundesamt für wirtschaftliche Landesversorgung (BWL), Compulsory stock organisations: https://www.bwl.admin.ch/bwl/en/home/wirtschaftliche_landesversorgung/pflichtlagerorganisation.html [accessed 10 January 2024]

^v Bundesamt für wirtschaftliche Landesversorgung (BWL) see PDF "Magazin BABS 22/23 zum Notvorrat" at bottom of page: <https://www.bwl.admin.ch/bwl/de/home/bereiche/notvorrat.html>

^{vi} Bundesamt für wirtschaftliche Landesversorgung (BWL): <https://www.bwl.admin.ch/bwl/de/home/bereiche/versorgungslage.html>

^{vii} Swiss Federation: <https://www.swissinfo.ch/eng/politics/swiss-government-proposes-expanding-national-food-stockpiles/48446798> [accessed July 4 2024]

^{viii} advice on personal emergency stock to citizens from Kanton Zürich: <https://www.zh.ch/de/wirtschaft-arbeit/wirtschaftliche-landesversorgung/notvorrat.html#416718895>

^{ix} advice on personal preparedness for crisis from Kanton Bern: <https://www.bsm.sid.be.ch/de/start/themen/bevoelkerungsschutz-zivilschutz/bevoelkerungsschutz/selbstvorsorge.html>

food; this included for instance an article in 2017 in the Coop magazine, also linking to the government brochure,ⁱ as well as an article in the Migros magazine in 2017,ⁱⁱ as well as a current webpage on stockpiling on the Migros website.ⁱⁱⁱ

Citizens are nevertheless urged by the government to be prepared for crises. FONES advises citizens to build a stockpile of food to last for a week.^{iv} A brochure (in German, French and Italian) is available on the FONES website which explains how to build an emergency stock at home (see Figure 6.9 for checklist).^{xlii} This stock should include both food and other necessities such as medications.^{xlii}

Figure 6.9: My Personal Emergency Stock (checklist offered to citizens by Swiss Government)

Mein persönlicher Notvorrat

Getränke

- 9 Liter Wasser (pro Person)
- weitere Getränke

Lebensmittel
(für rund 1 Woche)

- Reis oder Teigwaren
- Öl oder Fett
- Konserven, z. B. Gemüse, Früchte oder Pilze
- Mehl, Trockenhefe
- Dauerwürste, Trockenfleisch
- Fertiggerichte, z. B. Rösti
- Fertigsuppen
- Hartkäse, Schmelzkäse
- Bouillon, Salz, Pfeffer

Getränke

- Kaffee, Kakao, Tee
- Müesli, Dörrfrüchte, Nüsse
- Hülsenfrüchte
- Zwieback oder Knäckebrot
- Schokolade
- UHT-Milch, Kondensmilch
- Zucker, Konfitüren, Honig
- Spezialnahrung (bei Nahrungsmittelunverträglichkeit)
- Futter für Haustiere

Hausapotheke/Hygiene

- Seife, WC-Papier
- Desinfektionsmittel
- 50 Hygienemasken pro Person
- persönliche Medikamente

Und ausserdem ...

- Batteriebetriebenes Radio, (Kurbel-)Taschenlampe, Ersatzbatterien
- Kerzen, Streichhölzer und/oder Feuerzeug
- Gaskocher, Rechaud
- etwas Bargeld

Auf den Geschmack kommt's an

Nehmen Sie bei der Zusammenstellung des Notvorrats auf die geschmacklichen Vorlieben der Familienmitglieder Rücksicht. Auch ein gewisser Vorrat an kalt geniesbaren Lebensmitteln macht Sinn. Im Übrigen sollten Lebensmittel sachgerecht gelagert, innert nützlicher Frist verbraucht und wieder ersetzt werden.

Herausgeber: BVL, 3003 Bern, www.bwl.admin.ch
Vertrieb: BBL, Vertrieb Bundespublikationen, CH-3003 Bern
www.bundespublikationen.admin.ch, Art.-Nr. 750.143.D

Source: Swiss Federal Government^{xlii}

There is also an online calculator for citizens to prepare their stockpile. Citizens can enter the number of people in their household (including whether they are vegetarian or meat consuming, as well as whether they have food intolerances against nuts, gluten or lactose),

ⁱ Coop Zeitung 2017: https://epaper.coopzeitung.ch/deploy/CZ/20170522/CZ21/pdf_noenc/63_55c61f36a9.pdf [accessed 10 Jan 2024]

ⁱⁱ See "Migros-Magazin" PDF at bottom of page: <https://www.bwl.admin.ch/bwl/de/home/bereiche/notvorrat.html>

ⁱⁱⁱ Migros Website: <https://www.migros.ch/de/content/notvorrat> [accessed 10 January 2024]

^{iv} Bundesamt für wirtschaftliche Landesversorgung: <https://www.bwl.admin.ch/bwl/de/home/bereiche/notvorrat.html> [accessed 10 January 2024]

as well as how many days they would like to stockpile for (up to 14 days); accordingly the website then provides a downloadable detailed table and picture of what to stockpile, including medicines and other necessities.ⁱ

The FONES website links to an animated education video demonstrating the importance of being prepared by using the example of an electricity outage. The Federal Office for Civil Protection (FOCP) also advises citizens to build an emergency stockpile of food and drinking water for one week and links to the FONES brochure for more information.ⁱⁱ It advises that people can “do without food for 30 days, but only 3 days without water”.

Critics of the stance taken by Switzerland might argue that its preparations are excessive and that, as a rich society, it has little to be concerned about. In 2018, the Centre for Security Studies in Zürich was asked by the Federal Office for Civil Protection (FOCP) to explore whether this was true. It concluded:⁵⁶⁴

“[...] while disasters create extreme impacts, vulnerability is not always caused by unusual factors. In fact, those people who are considered vulnerable in their everyday lives are also likely to be the most vulnerable in the context of a disaster. In this sense, the results highlight that a detailed analysis of the specific capabilities and requirements of various social groups is required to gain a social context-specific picture of vulnerability.”

Finally, Swiss authorities know that it is one thing to advise the public, it is another for that to happen. Agroscope, a federal agricultural research body, was commissioned to conduct a survey of Swiss households in 2017 to assess the preparedness of its citizens; it found that about one third of the population did not have an emergency supply in place and 70% did not have the recommended amount of drinking water stored.ⁱⁱⁱ

USA

The US system of food preparedness is presented mainly through two routes, the Department of Homeland Security (DHS) and the US Department of Agriculture (USDA) and various agencies under each umbrella. In the USA, as in the UK, the notion of food defence has been largely seen and addressed as a corporate matter or national defence of supply and much on the prevention of adulteration, deliberate safety tampering and so on.^{367,368,405}

In 2004, President George W Bush issued Homeland Security Presidential Directive 9 (HSPD-9) with the subject 'Defense of United States Agriculture and Food'. The purpose of this directive was to establish a national policy to defend the agricultural and food system against terrorist attacks, major disasters, and other emergencies.⁵⁶⁵

In 2022, this directive was superseded by the National Security Memorandum-16 (NSM-16) on Strengthening the Security and Resilience of the United States Food and Agriculture.⁵⁶⁶ NSM-16 continued the emphasis on supply rather than civil food resilience. The White House's accompanying briefing note (Fact Sheet) stated its purpose was to

“ensure that American families have access to safe, affordable food, that America's producers are able to get their goods to market, and that the American food and

ⁱ Bundesamt für wirtschaftliche Landesversorgung (BWL): <https://www.notvorratsrechner.bwl.admin.ch/de>

ⁱⁱ Federal Office for Civil Protection on emergency provisions: <https://www.babs.admin.ch/en/publikservice/information/ukraine/weiterethemen.html> [accessed 10 January 2024]

ⁱⁱⁱ emergency stock current information, Agroscope: <https://ira.agroscope.ch/de-CH/publication/39170> [accessed 18 January 2024]

agricultural system is better prepared for threats that may harm the health of crops and livestock and cause shocks to the cost or availability of food.”^{vi}

During the Biden-Harris administration, the US Department of Agriculture (USDA) assessed the resilience of US food and agricultural supply chains to take note of the Covid-19 experience.¹⁴ The 55-page assessment identified six priority vulnerabilities:

- (i) concentration and consolidation in production, manufacturing and distribution;
- (ii) labour needs;
- (iii) ecological and climate risks to crops;
- (iv) livestock and poultry disease threats;
- (v) transport bottlenecks; and
- (vi) trade disruptions.

None of these USDA recommendations appears to consider or address civil society *per se*.⁵⁶⁷ The focus remained on supply or the assumption is that supply is what matters most.

If a particular US state experiences a disaster of some kind – a hurricane or flood - that exceeds what it can address with local resources, the state Governor can apply to the Federal Emergency Management Agency (FEMA).⁵⁶⁸ This usually requires the presentation of a preliminary damage assessment, indicating the scale of difficulty and in which ‘Emergency Support Function’ (ESF) sector help is needed. Food is one of 12 designated ESFs.ⁱⁱ

FEMA was created by President Carter in 1979 by signing and Executive Order 12127 and became effective on April 1, 1979. Three months later on July 20 with Executive Order 12148, President Carter widened FEMA’s powers giving it “the dual mission of emergency management and civil defense”.⁵⁶⁹ Further revisions have occurred since, the most significant of which was after the Twin Towers and other sites were attacked in September 2001, when President George W Bush signed the new Homeland Security Act 2002. This merged FEMA with 21 other organisations under the new Department of Homeland Security. Further modification of powers followed two major hurricane disasters in 2012 and 2017.

FEMA is organised in ten devolved centres across the USA. It holds some food stockpiles in eight regional stores but we were informed that these are limited, with no suggestion they could feed the USA in a major crisis. FEMA now publishes an annual report with 2023’s the twelfth.⁵⁷⁰

The US Strategic National Stockpile (SNS) does not include food, as its name might imply, but only pharmaceutical and medical materials and related equipment. It is administered by the Department of Health and Human Services (HHS) and the stores are in secret locations.⁵⁷¹

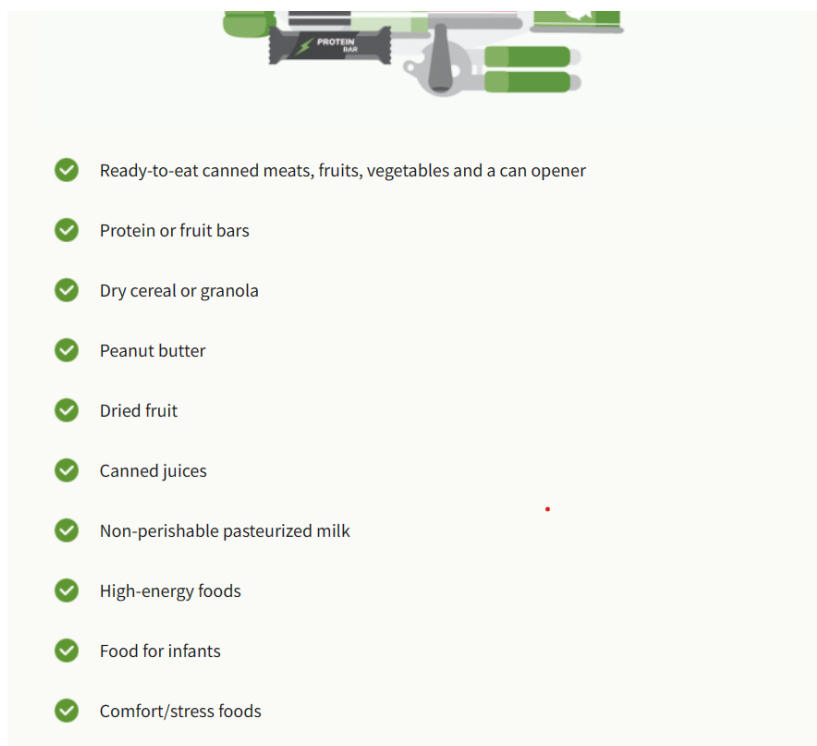
Like the EU and UK, the US used to hold extensive food stockpiles but they were mostly funded to maintain high farm prices by buying surplus and were run down from the 1980s. The US also holds a Strategic Petroleum Reserve (SPR). The USDA buys foods for domestic and international food aid programs, and also keeps a vault of “thousands of plant species and genetic material of livestock in the event of a disaster”.⁵⁷¹ This is held in Fort Collins, Colorado.

ⁱ White House Press Office: <https://www.whitehouse.gov/briefing-room/statements-releases/2022/11/10/fact-sheet-biden-harris-administration-releases-national-security-memorandum-to-strengthen-the-security-and-resilience-of-u-s-food-and-agriculture/> [accessed 4 January 2024]

ⁱⁱ USDHS emergency support functions for citizens: https://training.fema.gov/emiweb/downloads/is7unit_3.pdf [accessed 6 May 2024]

It is the Department of Homeland Security (USDHS) that picks up the *civil* challenge on food resilience. It hosts a website advising citizens how to prepare for emergencies and shocks (see Figure 6.10 for suggested food supplies).ⁱ The USDHS advises citizens to build an emergency kit, which should contain enough food, water and other supplies – “you may need to survive on your own for several days”.ⁱⁱ US citizens are advised to have more water than others - a gallon per person per day (just over 4.5 litres).ⁱⁱⁱ

Figure 6.10: US Dept Homeland Security: the ‘Ready’ website list of suggested food supplies



Source: USDHS Ready website^{iv}

The website also gives this advice in 12 languages, the most we encountered. And it proposes a wide range of resources for citizens and educational institutions, such as games and other educational material to engage children and teenagers in this topic. USDHS showed most sensitivity to the diverse needs of different age groups, too.^v It also provides culturally appropriate advice for diverse communities.^{vi} The US Government’s Ready website also links to a FEMA website where citizens can order preparedness publications via the post.

Citizens are advised to download the FEMA mobile app, which sends weather and emergency updates, locates shelters, gives preparedness strategies and more. The alert

ⁱ USDHS on food: <https://www.ready.gov/food> [accessed 4 January 2024]

ⁱⁱ USDHS on kit/equipment: <https://www.ready.gov/kit> [accessed 4 January 2024]

ⁱⁱⁱ USDHS on water: <https://www.ready.gov/water> [accessed 4 January 2024]

^{iv} USDHS on food: <https://www.ready.gov/food> [accessed 4 January 2024]

^v USDHS on children/age: <https://www.ready.gov/kids> [accessed 4 January 2024]

^{vi} US Government Ready website: <https://www.ready.gov/communities> [accessed 4 January 2024]

system is thus web-based more than paper-based, the reverse of Sweden, for example.ⁱ Since 2021, the US runs a National Preparedness Month campaign in September to remind and educate citizens about being prepared for emergencies and disasters. The Ready website offers multiple resources for this occasion, e.g. toolkits, social media toolkits, plus quotes and graphics from congressional co-chairs.

The United States Department of Agriculture (USDA) also provides information on emergency food preparedness for citizens; on its website it offers a guide on how to keep food safe during emergencies.ⁱⁱ Similarly [foodsafety.gov](https://www.foodsafety.gov), a government partnership website of USDA, CDC and the FDA, gives information on food safety during disasters, urging citizens to create at least 3 days' worth of emergency food supplies and giving advice how to keep it safe to eat during different emergency scenarios.ⁱⁱⁱ This is offered in three phases: before, during and after a disaster (see Figure 6.11). The advice was most recently given in September 2023 and is due for review in 2026.

There have been some academic studies assessing emergency preparedness among US citizens. One published in 2022 on whether advice such as all the above was followed by US citizens found most of the 572 respondents to the survey had an emergency food stockpile in place in line with guidelines and to last for at least three days. But fewer people had stored enough water for several days.⁵⁷² The data reported in this study was collected in 2014. The same research team in another paper gave a more cautious overview, exploring whether people on welfare were more or less prepared than the average.⁵⁷³ It found households participating in food assistance programs were no different with regard to water storage. They “are equally unprepared to provide an adequate supply of water during an emergency as non-participating households”.

The FEMA annual National Household Survey of Preparedness for Disasters provides a useful insight into civil preparedness. In 2020, for example, this showed only 51% of the population considered themselves as prepared overall for an emergency, a 2% increase on the previous year. Perhaps not surprisingly, US citizens vary considerably in how seriously they follow the advice to be prepared for disaster. In 2023, for example, on a sample of 7,604, FEMA reported:

- 11% were not prepared [for disaster] and had no intention of being so
- 17% were not prepared but intended to be so by next year
- 21% were not prepared but intended to be so within 6 months
- 18% considered themselves prepared for less than a year
- 34% have been prepared for more than a year

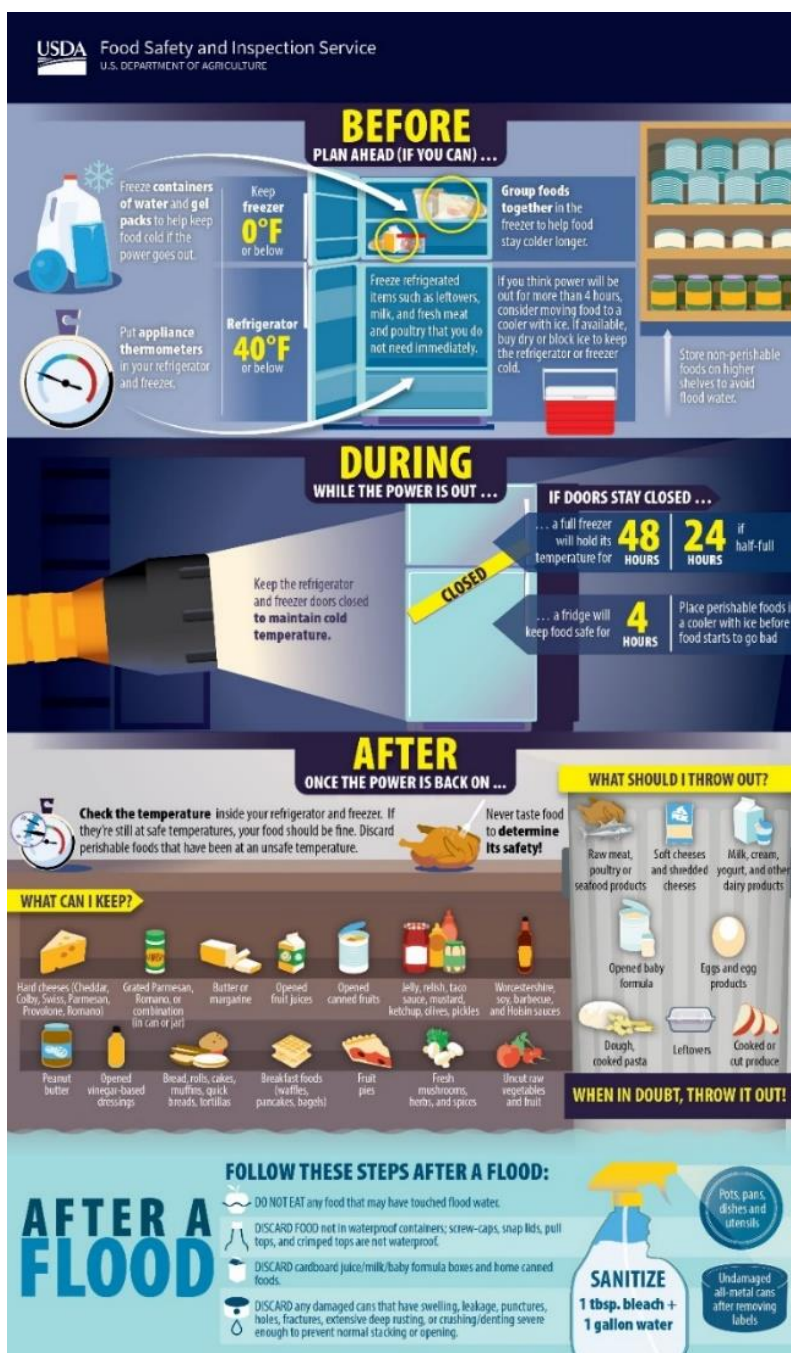
Thus around 49% felt themselves overall not prepared, compared to 52% were overall prepared (the figures rounded up so do not total to 100%). FEMA acknowledges that in 2022 only 55% of people had undertaken 3 or more of the 12 actions FEMA wants US citizens to do.⁵⁷⁰

ⁱ US alert system: <https://www.ready.gov/alerts>

ⁱⁱ USDA food safety in emergencies: <https://www.fsis.usda.gov/food-safety/safe-food-handling-and-preparation/emergencies/keep-your-food-safe-during-emergencies>

ⁱⁱⁱ USDA, CDC, FDA (2023): <https://www.foodsafety.gov/keep-food-safe/food-safety-in-disaster-or-emergency>

Figure 6.11: Preparing for Before, During and After Disaster strikes (US FSIS 2023)



Source: US FSIS 2023⁵⁷⁴

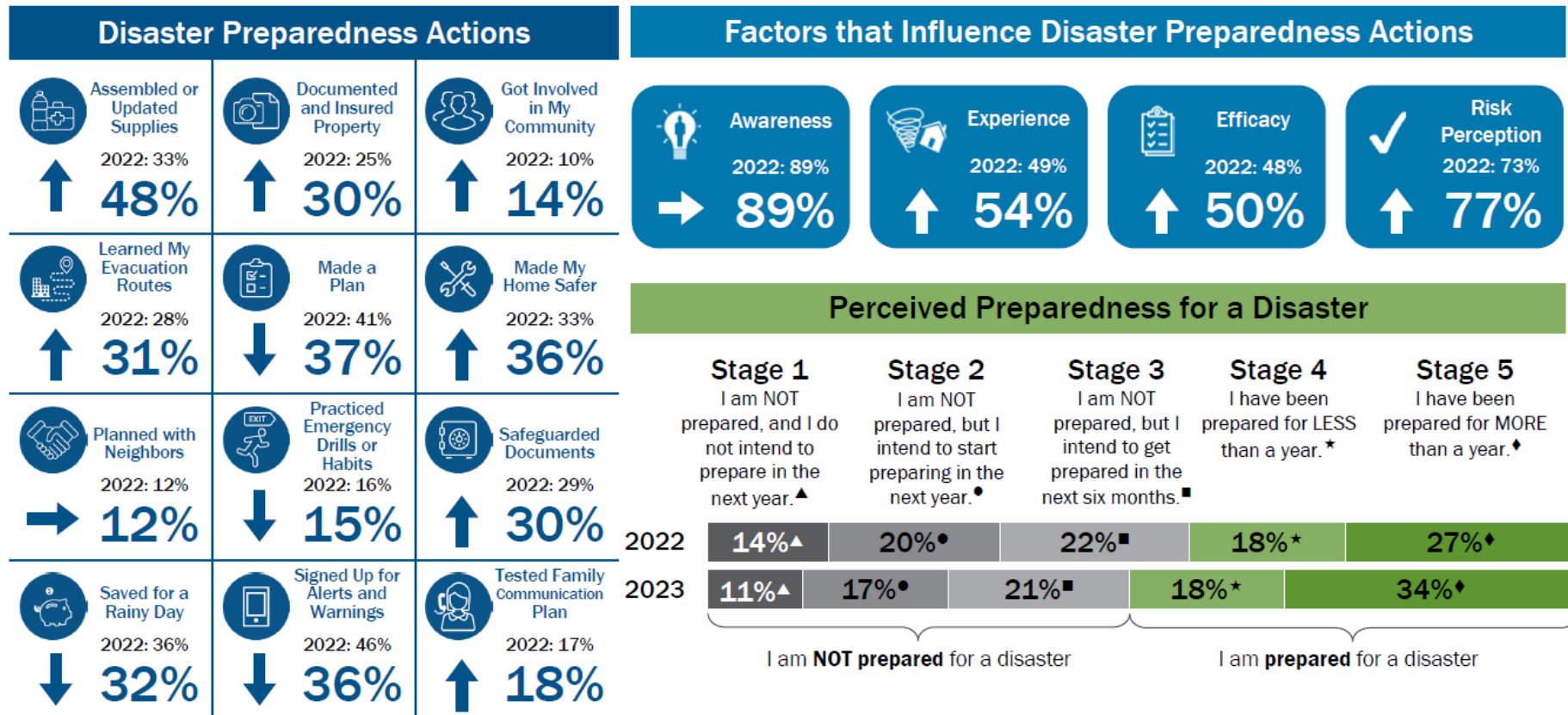
Usefully, the FEMA Household Survey on Disaster Preparedness monitors more than just perception but also contact with neighbours, and whether household planning advice is followed. Figure 6.12 gives an overview of FEMA’s 2023 Household Survey grouped under intentionality (on the left of the figure) and actions (on the right side).⁵⁷⁵ The number of households who had made a plan stood at 41% but only 18% had actually tested their family / household communication plan, up from 17% the previous year. And liaising with neighbours and community is equally low. Only 12% had prepared with neighbours. This suggests a not improbably decline from feeling prepared to actually being so in a comprehensive way.

Figure 6.12: FEMA overview of US citizen preparedness December 2023

National Preparedness Summary

n = 7,604

Arrows indicate direction of change in response rate from last year (2022).



Percentages may not add to 100% due to rounding.
The n size refers to the maximum response count for related questions and analyses; n size may differ by question and analysis.

With its federal and devolved governmental structure, like Italy, the US has diverse policies and actions worth investigation beyond the scope of this study. The General Assembly (government) of Maryland, for instance, created a temporary Food System Resiliency Council in 2021 with a view to a longer-term Food Council.ⁱ Its purpose is the improvement of resilience - defined very broadly as meeting health, societal, students and nutritional needs.ⁱⁱ States such as Maryland have conducted resilience reviews and begun to develop strategies. Often these draw on years of research, lobbying and civil society pressure. This is what happened in Boston and Baltimore where city administrations cooperated with local academics from 2013 to produce major reports in 2015 (Boston) and 2017 (Baltimore) that identified food vulnerabilities in the city and population.^{576,577} These drew upon and fed into the experience of many other cities across the USA.ⁱⁱⁱ

The California Department of Public Health also hosts a website on emergency preparedness. It advises citizens on how to be prepared, by building for instance an emergency supply kit,^{iv} It offers links to the American Red Cross webpage on how to put together an emergency kit, which should contain three days of food for evacuation and two weeks of food for home sheltering.

New York City hosts its own emergency preparedness website with a lot of resources in several languages. The New York City Emergency Management suggests a home supply of food and water for seven days.^v

Finally, it should be noted that President Trump has made trenchant criticisms of FEMA over the handling of 2024 North Carolina hurricane and 2025 Los Angeles fire emergencies, suggesting that there is little or no need for a federal system of emergency management and that this should be left to the States.^{vi}

Lessons and Recommendations

Considering these findings, we draw a number of lessons for the UK.

Lesson 1: Have an up-to-date assessment of food supply resilience

An up-to-date assessment of resilience of the food supply system can provide insight into where change is needed to improve resilience. The UKFSR, the official food security report, is only triennial. This ought to be annual, constantly updated and not duck importance of knowing really how secure it is. Switzerland, Sweden and Latvia provide examples of how national governments have taken action to understand the state of food resilience in their country, as a step towards building resilience.

The Swiss government, for instance, commissions an annual risk assessment of the food supply conducted by Agroscope, a federal agricultural research body. The 2021 report found that Switzerland has a high level of food security as demonstrated during the Covid-19 pandemic, that they are dependent on upholding imports during a crisis, and that due to

ⁱ Jane Lloyd, personal communication, based on Maryland Food System Resiliency Council work

ⁱⁱ Maryland General Assembly 2021: https://mgaleg.maryland.gov/2021RS/Chapters_noln/CH_724_hb0831t.pdf [accessed 1 November 2023]

ⁱⁱⁱ see appendix in Biehl et al (in main Endnote reference list at the end of this report)

^{iv} California Dept of Public Health: <https://www.cdph.ca.gov/Programs/EPO/Pages/Family-Disaster-Plan.aspx#>

^v New York City: <https://www.nyc.gov/site/em/ready/get-prepared.page>

^{vi} Reuters January 27 2024: <https://www.reuters.com/world/us/what-is-fema-us-emergency-agency-under-fire-trump-2025-01-27/>

increasingly complex risks to the food supply, measures to secure food security must be examined proactively.ⁱ

For Sweden, the Swedish Food Agency regularly maps and analyses food system conditions with the aim of preparing concrete proposals for different areas, contributing to its detailed work plan of how to build Sweden's food preparedness.ⁱⁱ And most significantly, the 2024 *Food Preparedness for a new Era* report recognised the need for new legislation to 'reorient' the food system around preparedness and give new powers to municipalities around a duty to ensure all people are fed in crises.

The Latvian government involves several ministries to ensure they understand the current state of food system: "to be able to act appropriately – to help resilience - the State needs to know how the current situation is in different parts of society. It needs to know where the food system, energy system, transportation systems are at present." Based on these continuous assessments, each responsible ministry is tasked with how to prepare different parts of the food system for crises and disasters. The Latvian government conducted another study in 2022, finding that 26% of respondents said they had an emergency stockpile of food.ⁱⁱⁱ

The US FEMA annual survey of household preparedness for disasters is a useful model that the UK could emulate. But it should be accompanied with studies that look at what people actually do in more detail.

Way forward: The UK should initiate a new rolling Civil Food Resilience Review with an annual report to parliament that notes the (currently triennial) UK Food Security Report but focusses on the state of consumer / civil food resilience. This should include a regular (perhaps annual) monitor of actions taken by citizens, not just their intentions or concerns.

Lesson 2: Advice to citizens

Most countries we looked at offer advice to citizens on food preparedness in one form or other. As noted just above, advice is not necessarily translated into action. Events and the messaging in events can be powerful motivators, but can be too late or generate panic rather than considered action.

Most countries we considered are prepared to announce to citizens that the risks are real; that there are limits to what can be done about prevention; and that collectiveness is essential. Solidarity and other-awareness in crises matter more than selfishness.

The advice we reviewed was in almost all cases disaster-resilience focused, rather than advising how to build long-term civil food resilience. But people we talked with saw the shift in thinking as contributing to more systemic change. Most countries seem to be in the process of realising that food crises may come more often than in the past. France had begun to reconnect urban and rural through its programmes from the 2010s. Sweden had honed its concept of total defence and now clearly applied it to food matters. In the UK, if there is civil advice, it is either buried or not known, by contrast to other countries, whose interviewees could quickly point us to such advice. In the USA, food system resilience strategies have begun to emerge at the local and city level, but we are not aware of explicit

ⁱ Agroscope: <https://www.agrarforschungschweiz.ch/en/2021/08/increasing-food-security-challenges-faced-by-switzerland/> [accessed 18 January 2024]

ⁱⁱ Livsmedelsverket, Ongoing work on food security: <https://www.livsmedelsverket.se/beredskap/livsmedelsberedskap--vad-ar-det/pagaende-arbete-med-livsmedelsberedskap> [accessed 18 January 2024]

ⁱⁱⁱ Latvian government brochure: https://www.sargs.lv/sites/default/files/2023-10/ENG_labots_indd.pdf [accessed 18 January 2024]

connections being regularly made to link this emerging focus on civil food resilience with existing federal disaster/emergency food provision. The second President Trump administration might, for example, reconfigure US agri-food policy but it is uncertain how that will shift what states or cities do, or direct the US food system more to societal than commercial resilience. Switzerland has particularly clear sub-national / regional advice given to citizens by each canton.

Canada, Germany, Latvia, Lithuania, the Netherlands, Sweden, Switzerland, USA and now the UK have all created government websites informing citizens on how to prepare for disasters and emergencies more generally, which all include information on stockpiling food and water for a certain amount of time. There is probably too much reliance on websites. They can go down. The few countries that distribute paper-based information tacitly acknowledge this. Websites allow governments to say: over to you.

Judging from the few studies of whether the advice is followed, rigorous scrutiny is needed in all countries as to the effectiveness of that advice. And if it is not, why that is so. Our understanding is that smaller countries, particularly near Russia, are engaging more deeply with their people on coming pressures. It is not hard to fathom why.

Way forward: The UK should note what other countries do when reviewing the 2024 *Prepare* website. Other modes of engagement are needed. Citizens need encouragement to engage with what risks exist, what kinds of emergencies and disasters could happen, how to prepare, and why this is important. Examples of what people in different circumstances can do would help win identification. In the expectation that websites can go 'down' in crises, the UK should emulate others and present key information to each household in paper form.

Lesson 3: Adjust the messages to the political context and in ways the public can understand

The context matters. While the features of food resilience might be fairly constant, the drivers of immediate dynamics may not be. A shift of tone and urgency in advice some governments gave to their peoples was noticeable even in the two-year duration of the present research. Changed geopolitics, rising consciousness that climate heating is already affecting food systems, and the duration of the Ukraine war, all these have combined to remind even affluent societies that food security cannot be assumed as much as it was. The utopian days of 'food from anywhere' may be over. What might have been seen previously as a matter for 'foreign policy' is now an internal policy matter too.

In The Netherlands there has been a shift of emphasis from floods to cybersecurity. Not that floods no longer matter – that concern is hardwired into the NL history and psyche – but cybersecurity is new and pressing. Sweden has witnessed an intensification of its concerns first expressed in 2018. Overt conflict has become even more pressing.

Whereas Sweden sent a new booklet in November 2024 to all residents based on and advised about the possibility of war, the Netherlands took a different route. On November 11 2024 a TV channel had a 'Black-out' programme that covered what might happen if systems went down and the 'ordinary' public was left with no information or services or water to flush their toilets.¹ This was followed by a speech by the Prime Minister. This received some negative reaction. But the purpose was to point people towards a current weblink: Think

¹ Netherlands Digital (2024) <https://www.nederlanddigitaal.nl/actueel/nieuws/2024/11/12/eo-uitzending-black-out-toont-grote-impact-van-mogelijke-cyberaanval>

ahead (denk vooruit).ⁱ How such messages and new emphases are communicated matters. A TV programme might help but a comprehensive public engagement would be better.

Way forward: The UK government must take mass psychology and the confluence of drivers of public awareness more seriously. To launch a website is not the sum of public engagement.

Lesson 4: Governments do not agree how much or for how long consumers should stockpile food

In Germany, the Federal Office of Civil Protection and Disaster Assistance (BBK) website provides information for citizens on “Personal Preparedness” for a disaster; as part of this citizens are advised to build a stockpile of food and drink to last for ten days. The US Department for Homeland Security (USDHS) advises sufficient for “several days”. Sweden’s MSB and Switzerland advise one week. Latvia informs citizens that they may be on their own, i.e. without functioning government if there was an invasion for at least 72 hours. The Netherlands advises for “the first 48 hours after a disaster”. The government of Canada simply advises building a food and water stockpile as part of preparing for emergency.

With no real certainty about the actual length of time citizens might have to fend for themselves, it might be prudent to advise all households to stock more food and hold at least a week to two weeks’ supply of water. But that is easier said than done. In current conditions, this is unlikely to be welcomed by the millions of UK households who already eat poorly and whose food budgets are sorely squeezed already. Communication and practical support will need to be carefully thought through. Again, some caution should be applied to any thought that if a website exists, the job of civil food resilience is complete.

Way forward: The UK government should conduct an inquiry into the realities, possibilities, viabilities and options for stockpiling at the national, regional, local and household levels.

Lesson 5: We should distinguish between short-term and long-term approaches but have both

Most countries focus mainly on building resilience short-term, in and immediately after a shock. But resilience also requires the normalisation of food security in the first place. Sustainability is important but not the sole predictor of (or route to) preparedness. The Canadian four stage model overtly recognises that. Part of the risks today from the food system is that it has been designed on assumptions that downplayed the possibility of food crises for affluent economies. Markets and consumers rule. Food crises will not affect us.

This framing no longer holds true. Germany, the Netherlands and Sweden have woken up to the need to work rapidly on longer-term resilience. The UK still has not but it can learn from others’ strategies and programmes to build civil resilience into the heart of what is done. A mix of ‘just-in-case’ thinking and practicalities is possible. The outstanding example of what could be done is the Swedish commitment to legislation that enshrines a duty to ensure all are fed in crises. This would reframe what the UK seeks from its farmers and growers, for example, and provide the requisite mix of short- and long-term commitment to a policy that puts real security into food security.

Way forward: The UK currently has no national food policy or strategy other than those inherited from the previous Conservative government reaffirming business-as-usual. The

ⁱ Netherlands Government (2024). Denk Vooruit. <https://english.denkvooruit.nl/>

Labour UK government should legislate for a new comprehensive plan for food security and resilience stressing the importance of feeding all the people well for good and bad times.

Lesson 6: Consistency and co-ordination between governance levels and different sectors is essential

Many countries we examined involve and give powers to the different levels of government. Some are making food resilience a clear duty. The UK currently does not. The UK must embrace food as a collective and multi-level responsibility. Choice culture meets its nemesis in crises. The British public saw that in Covid-19 and was reminded what previous generations knew. If you haven't food yourself, you need others to share theirs. *In extremis*, this requires rationing. Principles of equity and fairness, feeding according to need not just income, come into play. One can only realise this if there is leadership at all levels of governance.

Compared to many countries, the UK's sub-national governance lacks power. There is some devolution (to Wales, Scotland and N Ireland) and 'down' to cities and regions within England as well in varied ways. Not all Mayors have the same range of powers. No wonder there is little coherence (see more in Chapter 9).

In Germany, the Bundesländer are in the first instance responsible for tackling a disaster situation during peacetime crises. Only when their capacities have been exhausted will the State be asked to provide additional aid. The central government food reserves, for instance, will only be provided if individual Bundesländer request additional aid. The Bundesländer, regions and some cities are then responsible for transport, processing (bread), and dissemination of food.ⁱ

Sweden also displays multi-level governance in relation to food system resilience. Municipalities and county administrative boards share responsibility with national government. Their role includes reviewing and strengthening the robustness of the supply chains for food and drinking water. ⁱⁱ The Swedish Food Agency's role is partly to provide support and tools for local authorities, county administrative boards, and drinking water and food companies.ⁱⁱⁱ

In Latvia, local governments also have clear responsibilities for crisis preparedness. Cities, towns and localities need to be prepared for 36 different risks which have been identified by the Ministry of Interior. Local authorities do not have any specific responsibilities in relation to food other than needing to maintain essential services; local retailers would need to be coordinated by the local authority.

Way forward: Given the inconsistency of sub-national powers in the UK, it will be hard to create coherence across the UK and up and down the levels of food governance without local government reorganisation. This is beyond the scope of the present report but we consider it essential for the regions, cities and local authorities to be given clear roles and responsibilities, as well as opportunities for engagement with the private sector and civil society to produce effective short and long-term food resilience strategies.

ⁱ Frequently asked questions about German emergency stocks to Bundesministerium für Ernährung und Landwirtschaft:

<https://www.ernaehrungsvorsorge.de/staatliche-vorsorge/haeufig-gestellte-fragen-faq>

ⁱⁱ Livsmedelsverket, Food preparedness for public actors: <https://www.livsmedelsverket.se/beredskap/livsmedelsberedskap-for-offentliga-aktorer>

ⁱⁱⁱ Livsmedelsverket, Food Security: <https://www.livsmedelsverket.se/beredskap/livsmedelsberedskap--vad-ar-det>

Chapter 7: Making the public the focus for civil food resilience

“Hungry people are not always violent, and violent people are not always hungry.”

World Food Program USA, ‘Winning the Peace’ report (2017) ⁵⁷⁸

Step Two: Assess the public for its views and readiness for engagement

Nominally, the UK’s ‘whole of society’ approach to resilience is admirable and offers appropriate avenues for food system resilience development. But, as previous chapters have shown, there is insufficient attention to the demand (consumer) side of food systems, compared to the supply side. The Resilience strand of public policy is poorly linked to food security thinking. The Civil Food Resilience Gap is real and widening. This skewing of reality is a reminder that the UK’s aspiration of a ‘whole of society’ approach to resilience requires more work. Things are moving too slowly and without the necessary co-ordination.

A senior industry person, however, felt that UK public awareness is poised to intensify:

“There is a sub-text emerging here. The public notices some things such as the price of food, the change in promotional activity and a reduction of food ranges post Covid, and how gaps on shelves are now more common. They are becoming aware. Availability levels are at the lowest since the early 2000s. Some supply chains had got too narrow, too dependent on a few suppliers, so are more disruptable. But does the public fully connect this and see this as total risks and vulnerabilities? Not yet but I do think they are poised to become fully aware. They are certainly beginning to join the dots between consumption and production, and to ask: why and how does this all cost more?”

The same interviewee, asked how the public could be better prepared for food shocks, said:

“This is the most difficult question. We have taken consumers with us that good quality is the standard and always available. Consumers are disconnected from their food supply – what is being done on their behalf to secure their food. So rowing back on those expectations is really problematic. If food is to be more limited or seasonal, for example, that’s not an easy message. It’s the most difficult in fact. The key takeout from recent shortages is that the population does not expect them to be repeated and gets angry when they are.”

Specialists are already concerned. Jones, Bridle *et al* noted in their 2023 study that, if the public does not get fed in and after crises, the likelihood of civil unrest and even food riots becomes greater.³¹ Food is a social as well as nutritional need. The incidence of shoplifting and pilfering is already a cause of industry concern.⁵⁷⁹ The BRC reported that figures of theft from retailers rose 26% in 2022 as the cost of living squeeze tightened. Products such as fresh meat, milk and baby foods featured.⁵⁸⁰

We know from experience that, if there were a catastrophic disruption to food systems in the UK – an extensive destruction of food infrastructure or power outage across a large conurbation or a combination of extreme events – one of the first things that would matter is some kind of food provision. Countries bordering Russia also made that clear to us. Impacts would depend on the commodity: a loss of soft drinks and chocolate might cheer nutritionists

but be bad for morale; a loss of fruit, tomatoes, cucumbers and salad in winter might be easier to shrug off in national morale terms (given the UK's low consumption) but worry public health specialists. The point is that disruption of food could result in different effects, on which there is some evidence, such as:

- *Physiological*: deprivation studies show the importance of maintaining minimum nutrient requirements and the long-term effects of not doing so.^{581,582}
- *Socio-cultural*: factors such as social class, income, religion, taste, choice experience, and expectations all frame how resilient a person or cohort can be in crisis; and how people act in disruption affects others.^{583,584}
- *Psychological*: food is a factor for morale and stability at national, household and individual levels.^{578,585,586}
- *Economic*: as the UK's major employer (4.1 m jobs), closure of any major sector could have quick economic effects; studies exploring this have increased considerably in the last few years.^{587,588}

In creating websites or booklets or public information campaigns, it would be wise to draw upon different strands of evidence and thinking such as the above. Ideally, proper reviews should be conducted before major crises. But we know already that better crisis management is needed, judging by reactions to events such as repeated widespread flooding in 2024, when the public understandably asks: 'why weren't we warned early?' and 'why are one in a century events happening more often?', and 'why weren't warnings taken seriously earlier?'. The politics are too often being downplayed if not actually dodged.

The reason infrastructure is not up to the job is often an unwillingness to persuade the public that this is a national priority. 'More pounds in your pocket now' *versus* 'more taxes now to prevent someone in another area being flooded out' - these public policy dilemmas are very real politics when budgets are squeezed. But knowing how to listen to the public mood while leading it is a deft skill.

The UK has a long tradition of monitoring the general public mood. It began with social scientists such as Mass Observation in the interwar period and into WWII,⁵⁸⁹ and was incorporated into government in that war, spearheading what is now a vast 'people tracking' industry ranging from opinion polling to marketing. This monitors almost all aspects of public behaviour and has been used most extensively and systematically in the food sphere by marketing and advertising commercial interests for its role in purchasing choice. The work and findings tend to reflect commercial interests to sell more products. This is not the same motive as informing resilience.

There have been, however, some attempts to gauge public mood on resilience. An Ipsos/Halifax international security poll has been running since 2015. In 2021, this found 80% of British people thought the world had become more dangerous in the previous year.⁵⁹⁰ Asked differently, almost in reverse, 43% of GB respondents thought the world had overall become better than worse, suggesting some hesitancy within the preliminary pessimism. People's concerns worldwide varied but included: terrorism, armed conflicts, hacking, and threats to their families and livelihoods. 80% of the British were concerned about terrorism (one of the highest among the 28 countries surveyed). 52% of the British thought there was a 'very real' or 'somewhat real' threat from natural disasters to the country, up 6% on the previous year. Overall, 80% of British respondents thought the world had become a more dangerous place and 56% thought a World War III was likely in the next 25 years. Given the public's sober view, confidence in their government's capacity to respond to such threats is relevant. The GB responses gave Government a 50% confidence rating, 3% below the average for the 28 countries (see Table 7.1).

Table 7.1: Confidence in government ability to provide security and response to threats, GB respondents

Q: If any of the following were to happen in the next twelve months, how confident are you that appropriate levels of security and protection could be provided by your government or that its agencies could respond effectively to?	Confident or somewhat confident, GB Response %	28 country average response %
Major <i>health epidemic</i> in your country	47%	51%
Major <i>natural disaster</i> in your country	50%	53%
<i>Terrorist attack</i> in your country	56%	47%
<i>Violent conflict</i> between ethnic or minority groups in your country	46%	46%
Your country being involved in <i>armed conflict with another country</i>	51%	46%
<i>Nuclear, biological or chemical attack somewhere in the world</i>	42%	44%
<i>Personal safety</i> or you or your family being violated	50%	46%
<i>Hacking into your personal information system</i> for fraudulent or espionage purposes	47%	45%

Source: Ipsos/Halifax 2021⁵⁹⁰

Influenced by this Ipsos global inquiry, in 2022 the government of New Zealand conducted its own National Security Survey Report, providing more detailed demographic segmentation of attitudes.⁵⁹¹ The UK Government has committed to a similar exercise to inform the Resilience Framework. ‘Helicopter’ surveys (views from above) such as this do not provide the fine detail that civil resilience ideally requires but they do suggest some public uncertainty and nervousness about government capacity. As we noted in Part Two, this verdict might be justified despite the public not being aware of the detail. Commentators as well as social scientists have noted that across the globe, there appear to be some political trends away from demands for more democracy and towards autocracy and strong leadership. These are symptoms of insecurity.⁵⁹² The deep explanations for this are beyond the scope of this report but many point to issues of widening inequalities, precarity of employment and weakening of trust in politics, all of which are relevant to resilience building.

The ONS Opinions and Lifestyles Survey tracks what the British public thinks important. In April 2024, the cost of living was judged the most important issue facing the country by 87% of the representative sample, with food cited as the most important factor within that by the 55% who had experienced a rise in their cost of living the previous month.⁵⁹³ The same ONS tracker reported that the overall price of food and non-alcoholic beverages rose around 25% between January 2022 and January 2024, and that in the 10 years prior to this, overall food and non-alcoholic beverage prices rose by 9%. Prices in restaurants and cafés rose by 8.2% in the year to January 2024, up from 7.7% in the year to December 2023. This implies that the role of food within the cost of living is already a concern for the British.

The FSA also conducts a regular *Food and You* survey of public trust in the UK. Broadly it shows a high levels of trust in food, but a fifth of UK consumers are categorised as food insecure (see Chapter 4 for what that means):⁵⁹⁴

- 80% of respondents had no concerns about the food they eat, and 20% of respondents reported that they had a concern.
- Respondents with a concern were asked to briefly explain what their concerns were about the food they eat. The most common concerns related to food production methods (25%) and to food safety and hygiene (24%).
- Respondents were asked to indicate if they had concerns about a number of food-related issues, from a list of options. The most common concerns related to food prices (66%), food waste (60%), and the amount of sugar in food (59%).
- Across England, Wales, and Northern Ireland, 80% of respondents were classified as food secure (67% high, 13% marginal) and 20% of respondents were classified as food insecure (10% low, 10% very low).
- 80% of respondents in England reported high or marginal food security, with 78% in Northern Ireland, and 74% in Wales. Low or very low food security was reported by 20% of respondents in England, 22% in Northern Ireland, and 26% in Wales.

Not all surveys suggest such confidence and point to consumer concerns about lack of ‘truth’ about food. A YouGov survey in late 2024 conducted for a coalition of health organisations found almost three quarters (74%) of consumers believed food companies were not honest about the health impacts of their food, while a further 17% said they did not trust them to be honest. High levels of processing in food was the biggest concern for consumers (72%), followed by sugar and saturated fat levels in their food (61%) and salt levels (50%). Just 13% said they believed food companies would reduce unhealthy ingredients in food without government intervention.⁵⁹⁵

Organised civil society in the UK

The UK has an active and experienced civil society food sector. Since the 1970s, this has grown in both size and influence. Some Civil Society Organisations (CSOs) operate at national level, interacting with key decision-makers, while others face ‘outwards’, addressing and appealing to the mass public. These roles are not mutually exclusive. A recent study for UKRI categorised the type of work CSOs do as including four ‘prominent roles’ which they adopt when navigating knowledge-policy interfaces. These roles see CSOs acting as: *insider advocates* who try to influence policy-makers directly; *critical friends* who provide insights but are reserved about being too radical; *watchdogs* who set out to raise public awareness and to advocate particular policies and form coalitions; and *change agents* who tend to work practically at the grassroots.⁵⁹⁶ CSOs often draw on each of these roles; they are not mutually exclusive and are probably all needed to build civil food resilience at the local level.

Mass psychology: what might dent or make consumer confidence?

Several interviewees for this report judged the UK public has become accustomed to plentiful food, and have forgotten or not learned its risks and vulnerabilities. The postwar food revolution has created expectations of a relatively cheap (perhaps too cheap) and constant flow of food. This is now being altered. Supermarket availability, as measured in

regular spot checks such as *The Grocer's* weekly report on availability around the country suggests shelves or parts of shelves are frequently not fully stocked. Perhaps this does not matter, but the semiotics do. People are becoming accustomed to unavailability. If stock is more intermittent, the need for trusted sources of information becomes more, not less required, if consumer confidence is to be maintained. Brexit barriers to trade are cited as part of what lies behind lower availability, but others see room for innovation and more intra-UK food business. When and if deeper or multiple shocks occur to the food system, having trusted sources of information will become more important.

One interviewee asked the question:

“Who could provide this platform of trust for food? There are bodies already in the zone such as the Food Standards Agency and Dept of Health but my concern at present is how to judge trustworthiness.”

A retail specialist interviewee posed a related question:

“And who should prepare the public for food shocks? I am not sure the public listens to Defra and the government on food. Defra thinks the public doesn't trust it but that the public does trust the supermarkets. So in Covid, they left it to the retailers. The Defra comms team didn't want their people to get involved as public faces. There's a danger of the public thinking they're being lied to. Would anyone believe the Minister if he or she said something?”

A senior industry insider concurred with this view, saying:

“Thérèse Coffey [Defra Secretary of State at the time] put it badly in February 2023 when she said that people could shift their diets if necessary and that veg such as turnips could be delicious. In some respects she was right, even though her remarks caused a storm. What needs to be said is that people have to have the skills to be able to change in that way, if there is a crisis. They need to have basic understandings of what can be perfectly acceptable diets.”

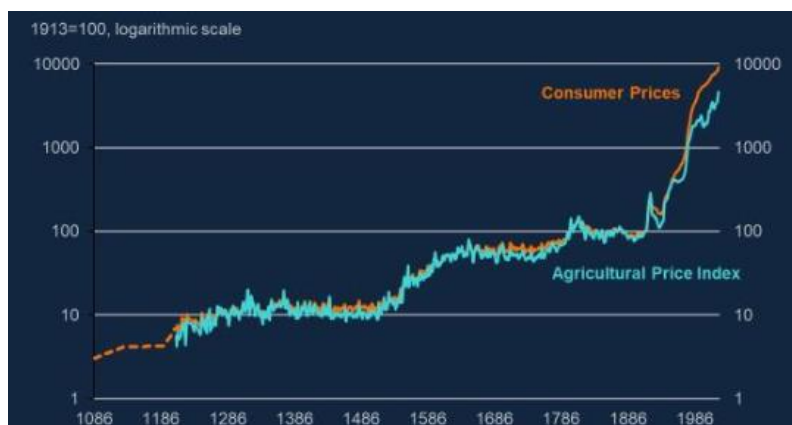
UK consumers consistently view price as the or a top factor when choosing food, so it is of little surprise that rising food costs have been such a high concern. But would this fade if prices fell? For that to happen would require a glut, and there is little prospect of that at present. Rather, analysts think the era of cheap food might be over and that prices relative to incomes might well stay high. Food price inflation was rising in 2021 even before the acceleration caused by the February 2022 Russian invasion of Ukraine. This sparked another sustained period of price instability and heightened political concern about the cost-of-living crisis.

Andrew Bailey, Governor of the Bank of England, in a major speech calculated that food price inflation – when running at 19.1% in March 2023 – was adding 2% to the total inflation figure for the UK. Although headline inflation had dropped to 4.6% by October 2023, food price inflation was still at 10.1%.⁵⁹⁷ He confirmed that, while retailers and other powerful blocks assured him that food prices would drop quickly, the sceptics such as farmers (who know where the money goes), were correct in disagreeing that prices would drop quickly. Although headline inflation dropped to 4.6% by October 2023, food price inflation was still at 10.1% only to drop later.⁵⁹⁷

Using the Bank's long-term data, Mr Bailey produced a remarkable graph suggesting how prices have risen for a millennium, a long view even for a banker (see Figure 7.1)! He noted that farm and consumer prices began to diverge in the late 19th century, which is when food supply chains began seriously to lengthen. But, he stated, given that food prices are

generally far lower today than in the 1950s, food inflation has less impact today than it did then. This is perhaps less of a comfort to people cutting back on food today than to a central banker. To his credit, the Governor did note how food price inflation affects people on lower incomes disproportionately. The point here is that drops in food prices are unlikely. One could conclude that therefore the consumer squeeze is more likely to continue but much depends on relative prices and the cost of food relative to incomes.

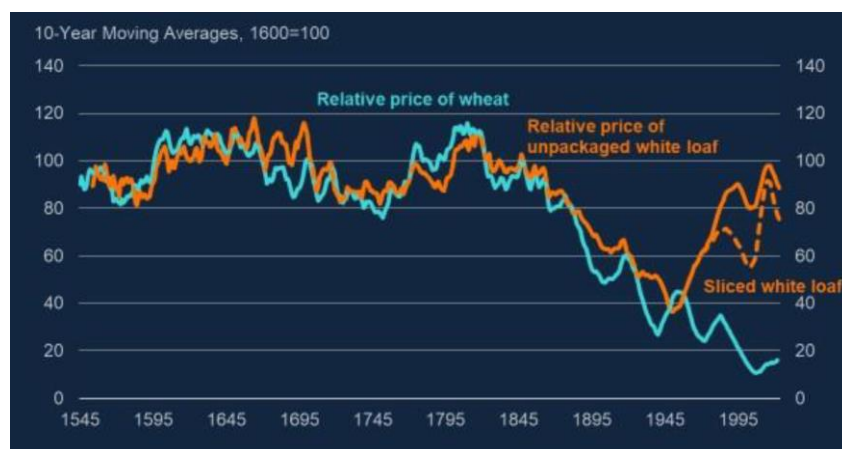
Figure 7.1: Consumer price index and agricultural price index 1086 to present



Source: Bank of England / Andrew Bailey 2023 chart 2 ⁵⁹⁷

Such distinctions becomes clearer when looking at recent, not long-term trends, and at single commodities such as wheat versus bread prices. In Figure 7.2, Mr Bailey gave data across a mere five centuries, showing relative prices of wheat and an unpackaged white loaf from the 16th century to present, showing the gap between them widening in the post-WWII period. But what about the public's capacity to pay for a decent diet?

Figure 7.2: Prices of Bread and Wheat relative to headline consumer prices



Source: Bank of England / Andrew Bailey 2023 chart 3 ⁵⁹⁷

Way forward: The mass psychology of food resilience deserves critical attention. Old patterns of government communication sit ill with modern media yet in crises, trusted sources of advice are still needed. The Resilience Directorate, Defra and UK researchers should review current communication and develop more appropriate messaging and public engagement systems that neither ignore evidence from the psychological and behavioural sciences nor patronise the public.

Food insecurity for people on low incomes: what is essential?

The UK, although a rich economy, has produced over a century a considerable literature of detailed science-based expertise about the effects of food poverty and insecurity. Apart from those who argue that it is up to people in such circumstances to sort out their life chances, the majority of such analyses point to how deep wells of poverty act as a drag to societal cohesion. This is again the case today, with even people in work taking recourse to food banks. In WWII a source of success for the system of food rationing was that it was based on a principle of the equitable need and supply. War urgency legitimised a shift from a period of great inequality and food-related ill-health to one that proclaimed all were treated fairly. That sense of fairness, on which the British often pride themselves, contributed to food resilience and national effort, and to support for the Beveridge national insurance reform being rolled out post-war.

A not dissimilar disjuncture of supply, cost, need and consumption is present again today. And almost certainly there would need to be a firm statement of ‘food fairness’ to ensure support for civil food resilience measures. Organisations set up to address immediate crises – food banks, second harvests, community kitchens – told us they know that what they do is not enough and they look to wider socio-economic solutions.

City Harvest, a relatively new organisation set up in 2014 with City of London funding, talks of the need to help people in crises to move from ‘lifesavers’ such as soup kitchens to ‘traditional’ food banks to community food projects and community meals and thence to independence.⁵⁹⁸ The Food Foundation, also founded in 2014, noting the drop in the height of UK children in recent years as an indicator of poor living conditions, states that “children’s health has not been taken sufficiently seriously. Policy has been lacklustre. [...] children’s health is deteriorating.”⁵⁹⁹

Older organisations such as the Red Cross or food security charities tend to argue in broader terms. They have known for a long time the case for broader systemic transition. In May 2023, for example, the Joseph Rowntree Foundation (JRF)’s cost-of-living tracker estimated that 7.3 m low-income households (the bottom 40%) went without essentials – such as showers, essential transport journeys and warm homes – or were experiencing food insecurity. It stated:⁶⁰⁰

“Food is the essential item that households were most likely to be going without, with 5.7 million experiencing food insecurity.”

Here, food insecurity was measured as cutting down the size of meals or skipping meals because there was not enough money for food; or being hungry for lack of enough money for food.

The JRF and other organisations have proposed a new Essentials Guarantee to ensure that welfare support such as Universal Credit never drops below the level at which this can be

met and that deductions (such as the repayment of debts to the Government at unaffordable rates) can never pull support below this level.

If there were to be another pandemic or severe shock to the food system, immediate help to those 7.3 m people would be necessary (see also the section on emergency food provision later in this chapter). If resilience is to be a whole of society approach, the narrowing of diet-health inequalities would quickly become an indicator of fairness and an arbiter of whether society really is 'all pulling together'.

Way forward: To ensure the 'whole of society approach' to food resilience is delivered, an Essentials Guarantee that includes a nutritionally sound food costing should be produced by DHSC, SACN and other appropriate bodies as a consideration in planning for any future food rationing or other emergency food provision.

When citizens are advised to stockpile food for a crisis, the issue of skills becomes pertinent. Do people know how to manage it? Can they cope under varying conditions? For how long? For 40 years, since the teaching of domestic science was severely reduced in schools, there has been a debate about the state of UK cooking skills - not just about why they are patchy but whether formal teaching makes a difference. Food education is compulsory in England in Key Stages 1-3, with an option at GCSE but no A level available.

Teachers in food education insist that cooking skills help people exert some control on their food as well as channelling people to work in food industries.⁶⁰¹ Yet in 2022 a YouGov survey found that only one in three British people describe themselves as very confident to cook a meal from scratch without a recipe.⁶⁰² One in ten (10%) are unable to do so. But confidence increases with age. Public intentions appear to be positive, however, with the desire for health being high. *BBC Good Food's* annual survey for 2023 suggested 69% of people think they eat healthily but a third (34%) say they eat "intuitively listening to what their bodies want".⁶⁰³ That logic can justify a wide range of eating behaviour.

These are snapshots of current normality, not of capacities in crises or shock. Managing food in emergency or post-crisis circumstances suggests the UK would do well to consider whether the people have appropriate cooking and food skills. If public advice is to be taken seriously and actually applied in shock situations, the level of cooking and crisis food skills requires some attention. The rise and rise of pre-processed foods has altered the cultural 'bank' of food skills. There may be no shortage of TV programmes displaying competing culinary skills but this is not the same thing as a population sharing a modicum of basic and emergency food skills and how to feed people under conditions of duress and disruption.

There have been small-scale attempts over the decades to build mass cooking skills, from the 1990s Get Cooking campaign by BBC Good Food and the Department of Health, to the Royal Society of Arts' food bus touring round schools with no facilities, to the current work of NGOs such as the Cookery School's 'National Cooking Programme' 20-day Live Crash Course in Cooking and the experienced Chefs in Schools and School Food Matters programmes. Their modern experience needs to be reframed to include crisis skills. This might perhaps give some motivation and reality check to those who argue that cooking is a matter for individual choice. Certainly, existing Key Stage 1-3 cooking classes – that provide skills to the age of 14⁶⁰⁴ - should be reviewed with resilience and crises in mind.

Way forward: A programme of basic food skills including cooking simply, in or after crises, should be developed for schools, communities and relevant professions. This should make it clear that civil food resilience could be as important as other goals such as public health and sustainability in the skills armoury of modern good citizenship. This should draw on the

extensive experience of cooking education and media cooking, while recognising that skills needed in and after crises can draw on 'normal' times but might be very different.

Can resilience be left to rational individual choice or to experts or to collective responses?

Resilience planning has to negotiate what happens when normality is punctured and when consumers as engines of rational behaviour have to operate in changed circumstances. The 'rules' of normal discourse are likely to be disrupted, and unless there are other norms and preparation, some volatility would be possible and perhaps likely. New conditions can exert a pull on deep psychological traits as well as learned behaviour. At such moments – as happened in Covid-19 – the public can be appealed to act in a national interest, for the common good, or simply in whatever way the crisis necessitates. Behaviour legitimated in crisis can change if and when crises evolve, too.⁶⁰⁵

Until the publication of the Prepare website in May 2024, British citizens had been given little guidance on how to behave in food crises. The choice ethos that has dominated food systems for decades is not helpful in crisis. Even in normal times, diets are actually shaped by many other factors: family, class, income, gender, ethnicity, location in the world, history. These are all overlaid on physiological dynamics, cultural values, and the commercial determinants of marketing and advertising. In the last 20 years, these have been amplified by exploitation of new electronic media, product placement, the emergence of influencers, and more.⁶⁰⁶

Can these forces be aligned to improve social resilience? And what advice can science provide? The role of influencers and new media in crisis management is uncertain. Channels through which disbelief, 'fake news' and suspect fringe science have been popularised. Interpretations of what is real can be deeply fractured. Food culture is no exception to this and already has many diverse views and versions of reality. This is worthy of much more research and thought, not least about communications and expert advisory structures.

In Covid-19, the public became more familiar with the various advisory systems clustered around the chief scientific advisers and the Scientific Advisory Group for Emergencies (SAGE) system. Guidance on that organisational mix was issued in 2012 and revised since.⁶⁰⁷ SAGE has no fixed membership; it depends on the particulars of each emergency and can draw on existing specialist advisory bodies. The system has been criticised for failing to address devolved governance.⁶⁰⁸

In Covid-19, SAGE could draw upon social scientists to advise on public behaviour. There was some disagreement about what was being done, sufficient to motivate some leading scientists to create an Independent SAGE, chaired by a former Chief Scientific Advisor.⁶⁰⁹ This ran from 2020-23, produced 50 reports, was crowdfunded and acted as a public high level monitor, a reminder that neither science nor advice can be assumed to be neutral or contestation-free.

Part of the idea behind initiating the process of creating the Food Standards Agency in 1997 (it began in 1999) was to have a public institution that could be trusted in crises.⁶¹⁰ With its remit narrowed to safety rather than widened to cover all food matters, the role of the FSA in food resilience is uncertain. Yet the case for having an existing body advising on food resilience matters is often made in private. Is it one is not the same question as could it become one, and if so what is required of it?

We need to stand back and consider the role of public advice. Part of the thinking behind the UK's system of chief scientific advisors that has evolved over the last two decades was that it would turn enable the best advice to be available to Ministers.⁶¹¹ In reality, this advice system has to operate in the context where many other powerful positions also exist. Whether the advisors are internal to government, advising ministers, or facing outwards to the public might require different duties and skills.

Some Whitehall voices argue the public is 'best kept at arms-length' while others counter that it is ultimately always best to 'be straight' with the public. Some of our interviewees noted there might be a need for 'command and control' structures where split-second decisions have to be made. Military and medical people are trained into this. Others stressed that civil food resilience requires more fluidity of understanding about where the public starts from, and the need to begin engagement well before crises.

The decline of local agri-food advice and education institutions

This raises important questions about the role of knowledge and expertise. The last government had moments where senior politicians damned experts only to have to rely upon them in Covid-19. The interviews conducted for this report, the international cases and the extensive literature consulted, all point to the need for civil food resilience planning to be able to draw on the UK's rich body of science and academic interest in food matters even though there has not been much attention so far to deep food crises. With industry now more nervous about the future, this may change.

For over half a century, since the 1971 Rothschild report, UK food science (like all science) has been asked to commercialise, capitalise and work in projects in a 'contract culture' and 'near market' approach.^{612,613,614} Rothschild's thinking was to inject purpose and efficiency into the science-government relationship. Today that framework again needs readjustment, with a mix of resilience-based pursuit of diversity and public interest perspectives brought to the fore. Arguably one area that deserves quick attention is support for agri-food systems to build food security appropriate for the UK's very diverse regions and terrains.

In 1862, under the Morrill Act, the US set up a system of land-grant universities that were given some public funding to provide research and education to ensure US agriculture flourished. In a more haphazard way, the UK in the 19th century created what turned into a system of mostly county-based colleges of agriculture. Unlike the USA which retains its land-grant university scheme,⁶¹⁵ the UK has seen its agriculture research be radically altered from its highpoint. Colleges have been closed (e.g. Wye in Kent, Seale-Hayne in Devon, Newton Rigg in Cumbria). Others have been incorporated into Research Excellence Framework (REF) driven institutions and thus altered their locality and industry focus.

Fresh from the shocks of World War II, a National Agricultural Advisory Service (NAAS) was created in 1946, later called the national Agriculture Development and Advisory Service (ADAS), part of the Ministry of Agriculture, Fisheries and Food. Its function was to support practical farming improvement with an aim never to let UK food security weaken again. It was privatised in 1997 and bought out again in 2016. This commercialised approach to agri-food advice now needs to be entirely reshaped for the public interest with food security and resilience uppermost in any criteria for development.

What role could education and research fulfil in this transition? One route would be to create or designate one institution as the lead place for food system advice and research. In 2015, the idea for a College for National Security was mooted in the Strategic Defence and Security Review.³⁰¹ One suggestion has been for this to be for security and resilience.⁶¹⁶ The

changes now planned for the Emergency Planning College based in Yorkshire (managed for the Cabinet Office Resilience Directorate as an outsourced body by Serco) to become the integration for a Resilience Academy could be just what is needed. The intention is to link it with other bodies such as the UK Government Leadership College, the College for National Security, UK Defence Academy and the College of Policing.ⁱ This could make sense, but if this is to be source of food resilience advice, it will need specialist input. The terms of reference and direction should be carefully considered.

One institution would not be sufficient. The economic and strategic importance of the food system means it would be more appropriate for the UK to (re)create a regionally-spread system of agri-food colleges and universities (echoing the US land-grant system) to help drive the sustainability and resilience of the food system *and* society. The potential for this coalition approach has been shown by a variety of recent consortia such as the N-8 consortium group of Northern English universities working on improving farm to fork multi-sector collaboration,ⁱⁱ the IFSTAL coalition of Universities sharing postgraduate food systems education,⁶¹⁷ and the role of Universities in the emerging Yorkshire FixOurFood regional approach.⁶¹⁸ We have also noted the value of locally based higher education's involvement in resilience work in Belgium, France and Australia (see Chapters 6 and 9). Sweden's Defence College has also entered this territory. The UK's tendency is to centralise when what is required for agri-food is more decentralised and distributed.

An aspect that the UK could learn from the continuity the USA gains from its land-grant system is not to rely on short-term projects, in which expertise and insights are created only to be dissipated. Food resilience cannot be reduced to a land focus, important though that is. It must be systems-wide, and engage specialists across the food disciplines, such as catering, retail, consumption, horticulture and cultural life, too. Continuity and stability, not short-term 'projectitis', are required for UK society to be better prepared for food shocks.

Way forward: UKRI, Defra and the Chief Scientific Advisors group should review the possibility of a new nation-wide, regionally representative system of agri-food research and education to include expertise of all levels, not just a few top-ranked universities, and to begin the development of a regional and devolved system of colleges specialising in multi-disciplinary agri-food training, education and research to inform the public, and to aid Local Food Resilience Committees.

Individual versus collective responsibility

Food *in* war is not the same thing as food *as* war. The mass of the people do not necessarily behave either as rational individuals or as the 'mindless herds' so feared by late Victorian social psychology.⁶¹⁹ Crowds do have dynamics – as studies of crowd behaviour at football matches attest⁶²⁰ - but civil food resilience also requires recognition of the diversity of motives and starting points that frame reactions in crises. Football crowd behaviour may not be the only signpost for mass public behaviour. Today, more than concerns about undesirable herd behaviour, there is if anything an assumption that behaviour can always be framed by nudge thinking. The Cabinet Office has been hugely influenced by this.^{621,622} The scale of what may be required to shift mass public behaviour suggests a tension between small-scale creeping individual change and responsibility for mass behaviour shift should be assumed. A social science academic told us:

ⁱ Emergency Planning College: <https://www.epcresilience.com/about-us/our-news/government-publishes-first-national-framework-resilience>

ⁱⁱ N8 AgriFood Research: <https://www.n8research.org.uk/research-focus/legacy-programmes/n8-agrifood/>

“There is too much thinking by government agencies like FSA and Defra that you cannot trust the public to do the right thing in a crisis and that there is a deficit of public understanding about food safety, healthy diets and related issues. This is nonsense. It’s essential to trust the public. [...]”

“The reflex of Defra and government’s main thinking about the public is based on Nudge and individualistic appeal. This is the thinking promoted by the Behavioural Insights people in the Cabinet.ⁱ Today there are more social scientists with a broader outlook around and in Defra and advising the Food Standards Agency, but they could be better and more fully used to help shift thinking on where the public stands on food crises. The individualistic framework needs to be broadened.”

It is highly likely that environmental and other threats to the food system will ‘stretch’ the capacity of individual food resilience. As Oliver and colleagues have stated:⁶²³

“[...] individualistic trends in society might be responsible for a growing pattern of private adaptation to environmental threats, whereby new technologies and access to resources increasingly support individuals reducing risk for themselves, their families, and businesses. These trends can influence how people act to reduce personal exposure to environmental risks, such as extreme weather events. For example, when dealing with the effects of climate change, wealthy individuals are able to cool their own houses, protect themselves against flooding, and preferentially secure water resources during drought events. Such actions might come at the expense of mitigating environmental damage and, if they hamper resilience for others, also raise questions around environmental justice.”

Less wealthy people have fewer options but they too will want to protect their households and families in disrupted times. That can be the starting point for strategy, but the issue that emerged from interviewees was that people’s food security is most likely to come from inter-household and community collective support not individualistic self-preservation. This collective orientation was appealed to and visible in Covid-19 with people creating and using street and locality connections such as community *WhatsApp* groups. Those channels might be disrupted in some crises such as a mass power outage. What matters now is being able to create bonds of trust and community support that could use social media if they are available, but must be able to work and share food functions in other ways if those modes of communication were down.

Our research showed that food civil society organisations have been developing the kind of social leadership and skills-sharing mechanisms that could be brought into official civil food resilience preparation. One interviewee gave the rationale:

“Civil food resilience has to be based on developing a partnership approach to food as a system. It’s what bodies such as the Sustainable Food Places and others are about – partnerships that foster confidence. The Soil Association for example created My Food Community,ⁱⁱ a development programme for leadership skills.”

We are concerned about a gap between this kind of civil society self-help and the much more limited, formal emergency planning for food resilience. There appears to be no mass scale of guidance on offer. As was noted in the Timeline (see Chapter 4), the 2010 forerunner of the current NRR system gave some advice to citizens to protect themselves,

ⁱ This was created in 2010 as a Unit in the Cabinet Office but was floated off and is now a social purpose company since 2021 owned by NESTA: <https://www.bi.team/about-us-2/who-we-are/>

ⁱⁱ My Food Community: <https://www.flgettogethers.org/my-food-community/>

only for that to fade in later versions,²⁹⁹ but that the NSRA, while recognising the possibility of food being affected by some kinds of attack (terrorism, cyber or public health),^{300,301} did not give direct mass advice. All crises are opportunities and occasions for narratives and explanations to emerge. If there are no official or evidence-based explanations, other memes, tropes and lines can have a free run.

Trust in disaster preparedness: getting beyond the ‘Keep Calm and Carry On’ myth

Like all nations and in all its diversity, the UK can relish positive symbols of collective success in adversity. If at all, when faced with the need for mass preparedness, modern public discourse does have a tendency to draw on WWII Ministry of Food experience of rationing and fairness. The ‘Keep Calm and Carry On’ slogan is often cited. In fact, ‘Keep Calm and Carry On’ was not used in WWII. It was prepared for use in 1939 but never rolled out and only rediscovered in 2001.⁶²⁴ As the Imperial War Museum explains, the idea behind that slogan - alongside others that *were* used - was to provide reassurance rather than to do anything specific.

‘Keep Calm and Carry On’ was initially felt to have potential as it drew on Lloyd George’s WWI ‘carry on’ phrase. The purpose for any posters was to achieve three things: get attention; be persuasive while not talking down to people; and be memorable.⁶²⁴ But it was not used.

What was effective in WWII was the coherent and persistent system of food control (Beveridge’s phrase), a massive and complex approach across the entire UK food system, updated from WWI’s experimentation with food rationing. It appealed to and was based on a public health conception of equity and diversity. People’s physiology may vary due to age, sex and conditions in which they existed, but nutrition science and public health experience could make sense of these and create a broadly fair food allocation system. Rationing was the opposite of choice – although it left a small degree of choice in what people spent their ‘coupons’ (their notional right) - but it was based on need, not economic or social status.

How would today’s consumers react to a major food crisis? We do not know. A senior industry person told us:

“I think we need consumers to be encouraged into a better understanding of what shocks might mean. We don’t need them to go into crisis mode but to know what to do when there is. [... The Covid pandemic] raised for me that government had a lack of understanding of public reactions and of consumer behaviour.”

Consumers today make more assumptions and have been used to more choice than their predecessors. There is an assumption that food will be there, coupled with some scepticism about authority’s capacity to ensure it is. Trust is not something that can be bolted on; it has to be built and experienced, as the OECD recognised in a report on the issue.⁶²⁵

Putting *civil* resilience onto a legal footing would help. There is no legal requirement for the UK government to ensure that all people are fed under either normal or exceptional circumstances. There is no right to food, other than in the weak sense that the UK is a signatory to the 1948 UN Declaration of Human Rights. This means – as happened in Covid-19 – that responsibility for trying to ensure the weakest or people at risk do receive food devolves to others. *De facto*, responsibility mostly falls to the individual or family or

household level, with 'community spirit' stepping up according to their capacity. Hence, when and if there are shortages, stockpiling may be available to those with surplus cash, but not to others.

The tried and tested alternative would be to have a system of rationing of basic foods and good prepared to start if the crisis continued, as happened in WWII building on the WWI experience. An *ad hoc* and somewhat chaotic version of rationing occurred in early days of Covid-19, with supermarkets taking the role of controllers. They limited how many of 'this' or 'that' product consumers could buy.

Ways forward: An equitable system would not devolve how rationing was framed to supermarkets but would ensure some guiding principles by which it was done so that it could be, and be seen to be, fair. This should be prepared now.

Supermarkets might argue that they are suitably trusted to operate under such circumstances but the key factor is ultimate accountability. Who should be trusted to ensure fairness operated?

According to the Ipsos Global Trustworthiness Index 2022, in Great Britain, doctors are most trusted (66%), then scientists (62%) and teachers (59%). This is a fairly consistent picture over time and across other countries, while politicians (16%), government ministers (17%) and advertising executives (16%) compete as to whom is least trusted.⁶²⁶ Yet in crises, as happened in Covid-19, people do turn to, or at least listen to, the government despite such low ratings. They want to know what the Prime Minister advises.

The significance of government imprimatur has also been found by the Food Farming and Countryside Commission's (FFCC) 'National Conversation', a process of citizen engagement in 2022-24.^{198,627} It found that "people, across all walks of life, want government to act on food". It found no evidence of public worries about an interfering 'nanny state' on food matters and, rather, that families "expect those in power to work hard on difficult issues" for them.

In 2022, ONS published its census data on public trust in government, and contrasted it with trust in other people (citizens).⁶²⁸ This found 75% of the UK population report they are trusting of most other people, higher than the average among other OECD countries who participated in the survey (67%).⁶²⁸

Levels of public confidence and trust in the UK government was driven by perceived openness, fairness, reliability, responsiveness and integrity. The UK picture was not positive overall:

- 35% of the UK population stated that they trusted the national government. This is lower than the OECD average of 41%.
- 42% of the population reported that they trusted local government.
- 55% trusted the Civil Service.
- Trust in public services was higher than trust in the national or local governments, with the NHS the most trusted public service (80%), followed by the courts and legal system (68%).

Whom might the public trust to deliver messages on civil food resilience? Ipsos has run a specific 'veracity index' in the UK for forty years. Its most recent, conducted in November 2023, showed politicians had the lowest "trust to tell the truth" rating it had ever recorded,

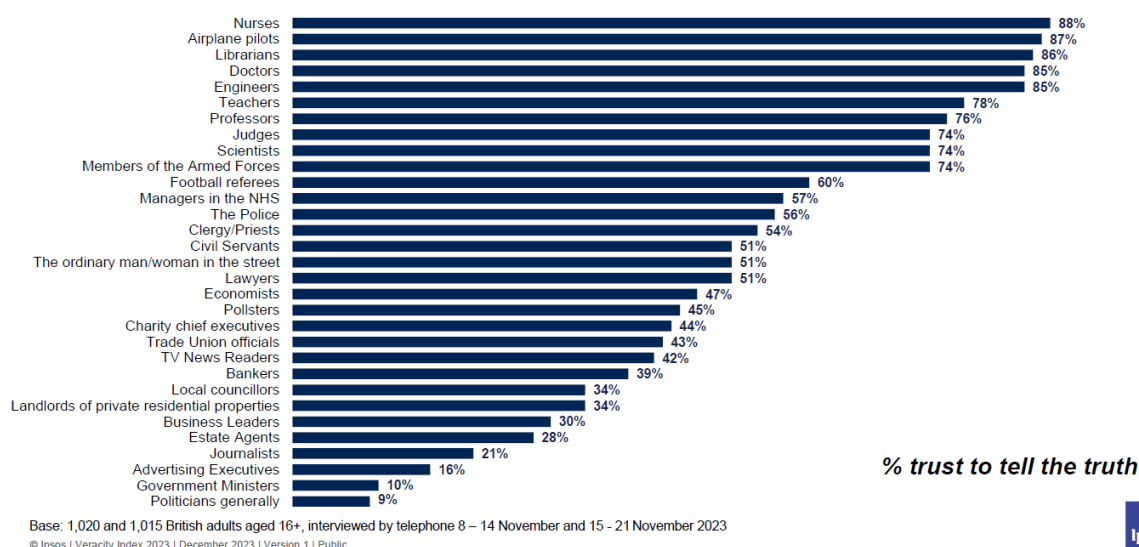
believed by only 9% of the population (see Figure 7.3),⁶²⁹ lower than recorded in the international study.

Although a new government is in place since these data were gathered, the consistently low trust in politics and politicians suggests that it matters who offers advice on food resilience matters. The figures here are averages, cut across by politics, age and other values. Labour voters tend to trust trades unions more than do Conservatives. 19% of Conservative voters in November 2023 trusted Ministers, for example. But however fractured, these figures are low. Such demographic difference can matter in crises – another reason to craft food resilience messages carefully.

The purpose of setting out to enhance civil food resilience is to deliver that ‘whole of society’ approach, and it is why this report takes the public health approach of aiming for a population reach. But if trust in government and politicians is low, where does this leave the strategy?

Figure 7.3: IPSOS Veracity Index 2023

(Q asked: “ Now I will read you a list of different types of people. For each will you tell me if you generally trust them to tell the truth, or not?”)



Source: IPSOS 2023⁶²⁹

One answer would be to segment the approach and to target messages and actions for different groups appropriately for them. One of the senior Whitehall insiders we interviewed said:

“We need to think how to get messages about preparation for food shock into or appropriate for places where consumers actually meet or get the food, e.g. Deliveroo! The way people buy food in shops, online, on social media apps, can be so varied today. When and if we want to get messages out, we need to think about where and how. We need to explore what the messages are or could be, and who the people and food sectors are that matter for consumers contact.”

Another approach is to draw on where high levels of trust do exist, and to build on that. The high level of trust in other people offers hope. It justifies the approach taken by citizens' juries and society-based processes of deliberation. This method is simple: a challenge is put to a representative group of the population to see if they can come to a decision about what to do about it, and their deliberation is helped by information and evidence being provided to help them. Outside interests, experts and experience can be called as witnesses. These methods of deliberative democracy have become more common in recent years but, as happened with the Climate Assembly process in 2020,⁶³⁰ the problem can lie not in the jury process, but in the follow-up. Is any notice taken of the results? The 2020 Climate Assembly – when six Commons select committees pooled resources to host a 'jury' of 108 nationally representative UK citizens to consider what to do about climate change – was meticulous in producing consensual proposals but still ignored by government.⁶³¹

The Covid-19 pandemic showed how when the crisis was overwhelmingly accepted to be very serious – life-threatening on a mass scale – the UK public did trust officialdom and did adopt behaviour it was asked to follow.

The Lloyd's Register Foundation has, since 2015, taken great interest in the UN's disaster preparation thinking and the Sendai declaration. It provides a rare insight into global public perceptions of and confidence in infrastructure. Its 2021 global survey into critical infrastructure resilience and perceptions of disaster preparedness showed that concern about loss of food in a natural disaster was greatest among those who have experienced it.⁶³²

This is not yet the case for the UK. The 2023 survey was on public confidence in governmental preparedness for disasters. Trust in both local and national government in this respect was worryingly low.⁶³³ But in Europe, unlike other regions, confidence was greater in the capacity of local, rather than national, government to be prepared for disaster and thus able to act for citizens. That local dimension certainly aided coming together in Covid-19; altruism and other-centredness were appealed to and prospered, as did interest in local food sourcing.⁶³⁴

Academic research suggests that trust can grow during the duration of disasters.⁶³⁵ It is not fixed.⁶³⁶ This is why government has been attracted to the behavioural science such as 'Nudge' thinking and motivational studies as routes to change behaviour.^{621,637} Do it below the radar, without appearing too heavy-handed. Whether Nudge is appropriate for all circumstances is a different matter, but certainly behavioural science suggests behavioural shifts are a function of many factors. They recognise the limitations of individualist or rational choice theory and the more immediate importance of environment and policy drivers of change.

This is the appeal of broader perspectives on behaviour change such as Professor Susan Mitchie *et al's* Behaviour Change Wheel that has also been tapped in crises (see Figure 7.4).⁶³⁸ A criticism is that models can assume or over-stress rational and orderly governance, with room for tidy, measurable interventions, whereas in reality behaviour can be messier. In truth, we do not know enough about how the public *en masse* or in segments would react to particular food threats or to more sudden food shocks. Insufficient attention has been paid to how affluent if divided societies such as the UK might respond to food dislocation.

If the Government did want to engage the public in civil food resilience, getting the balance of capability, opportunity and motivation right will require clarity and 'dummy runs' (perhaps why some country preparedness systems urge each household to conduct such exercises).

Many recommendations made in this report are, in part, designed to provide leads for categories suggested by analyses such as this Change Wheel.

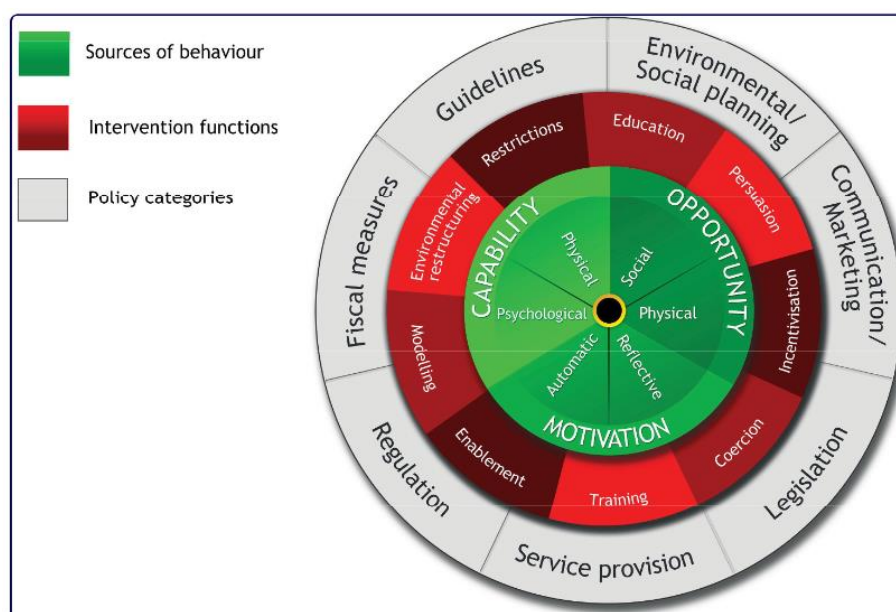
The UK Government already has an Emergency Alerts system.⁶³⁹ On April 23 2023, the Government test activated a ‘bleep’ to all mobile phones and tablets. This would only be effective if citizens already knew options for actions. The official website said that in crisis it would tell citizens what to do, but the system also offers an opt-out. As one of our international country case study interviewees asked:

what if the mobile phone system went down in the first place?

The mobile phone network closed when the Kings Cross bombing occurred in London on July 7, 2005.

Our understanding is that mobile phone operators could, if engaged as part of the resilience system, be required to release extra bandwidth to keep systems operational for longer. On a ‘what if?’ principle that even that might break down in a deep crisis – such as invasion - is why ‘frontline’ Baltic states tell citizens to assume in an invasion that the government has collapsed for a few days and that the citizenry may be on its own for days. Before a government can regroup, possibly in exile, it is best to assume you are on your own in your community (hence that community strategic focus).

Figure 7.4: Michie et al’s Behaviour Change Wheel integrating policy, sources of behaviour and intervention



Source: Michie et al (2011)⁶³⁸

Possibility of risk coincidence, amplification or cascade: food as polycrisis

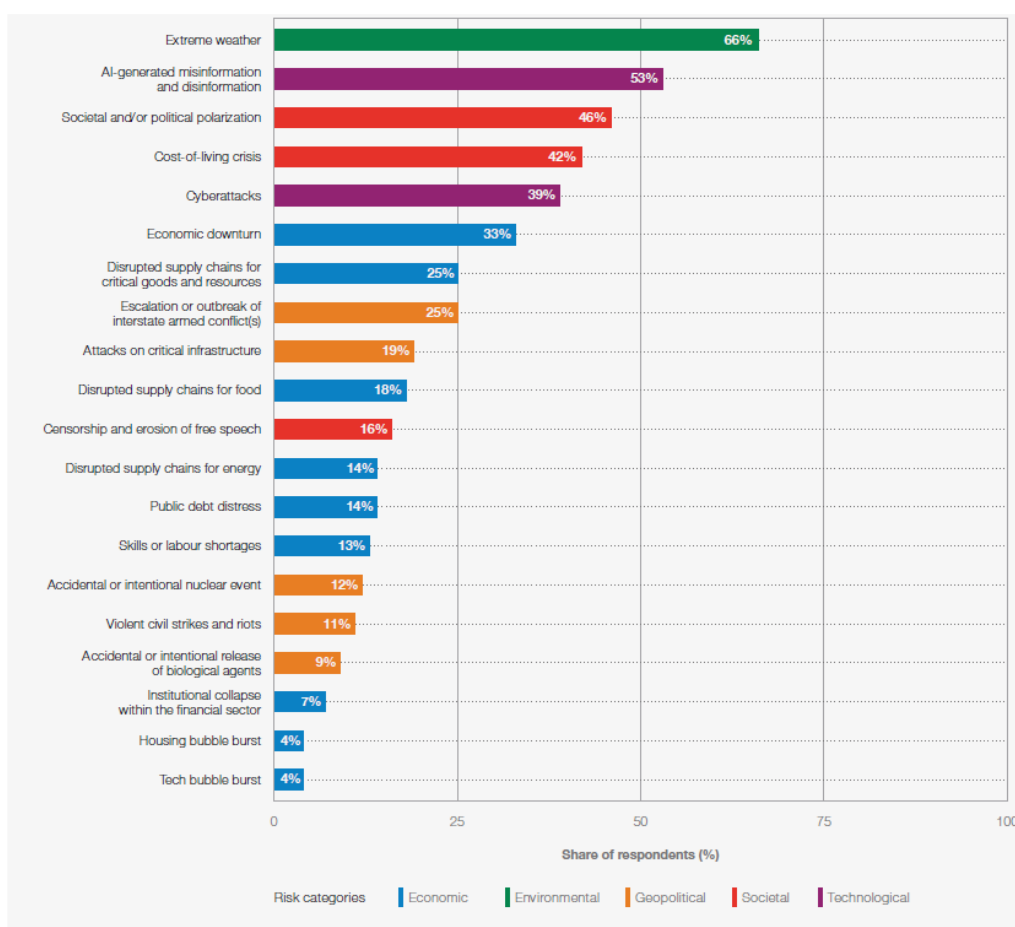
Interviewees for this report noted the whiff of British exceptionalism in how the British Government addresses the possibility of food crises. It will happen to others, not us. And we

can act honourably on the day, so there is no need to worry people now. A very experienced former Whitehall and industry executive feared inaction:

“My worry is that the reflex of government is not to do anything and to believe that Britain is somehow exceptional and different, insulating us from extreme events elsewhere. That political reflex must change – at least in terms of the Government’s own contingency planning. How far that is shared with the wider public is another issue. But it ought to be possible to raise awareness of the kinds of issues involved and of future challenges without causing undue alarm. If done well, that ought to reduce the risk of so-called panic buying as and when problems do occur.”

Pressure to dismiss complacency has been growing. The World Economic Forum’s annual Global Risks Report, for instance, has for years indicated business concerns about food in one aspect or another (see Figure 7.5). The 2024 report rated disruption to supply chains for food as its tenth highest risk. And the nine risks higher than food all have the potential to disrupt food: Extreme weather, AI-generated misinformation and disinformation, Societal and/or political polarisation, Cost-of-living crisis, Cyberattacks, Economic downturn, Disrupted supply chains for critical goods and resources, Escalation or outbreak of interstate armed conflict(s), and Attacks on critical infrastructure.⁶⁴⁰

Figure 7.5: The 2024 current global risks landscape



Source: WEF 2024⁶⁴⁰

One might ask: how can food *not* be taken seriously? Threats can ‘feed’ on each other. They can cascade and amplify. This is why scientists are now concerned about the possibility of polycrises. In 2023, a report by Eberle and colleagues at the United Nations University demonstrated the interconnectedness of six risks and how these could be tipping points into major global shock.⁶⁴¹

The six global risks they considered were a mix of ecosystems, technology, living conditions and business:

- Accelerating extinctions: a chain reaction to ecosystem collapse
- Groundwater depletion: loss of underground water risking food supply
- Mountain glaciers melting: what happens when ice thins
- Space debris: the disfunction of satellite ‘eyes in the sky’ systems
- Unbearable heat: humans having to live in unliveable conditions
- Uninsurable future: with rising risks, insurance becomes unreachable

Their proposal was, firstly, the need for an acceleration of inter-disciplinary research to provide the warnings. Secondly, they offered a four-category approach to assess any solutions being offered for the risks. All that humanity can do is a mix of four approaches to: delay, avoid, adapt and transform. “Because risks are interconnected, so are most potential solutions.”

Eberle *et al*’s approach did not include geopolitics that can introduce an extra element of volatility and unexpectedness. When the Houthi insurgency in the Yemen started attacking shipping in the Red Sea this rapidly redirected maritime trade around Africa, adding costs.^{642,643} A Chatham House paper, for example, has shown how food and energy pressures are woven into social and geopolitical tensions; they are not external.⁶⁴⁴ As one specialist told us:

“The UK’s response to this food-energy crisis was not to act on the demand side (by for example giving advice on saving energy) but to open up more oilfields. Demand-side mechanisms to enhance food and energy security, and to build resilience, were not and are not on its agenda. The effect is that action is in limbo.”

If WEF, Chatham House and other researchers are now troubled by the possibility of risk cascades at the macro-scale, it is at the local scale that those effects are experienced by the public. In 2021-22, for instance, growers in the Lea Valley north of London, a historically important horticultural industry area for feeding the capital, saw the costs of growing a cucumber rise from 25p each in 2021 to 70p in 2022.⁶⁴⁵ 10% of growers were reported to have closed down due to rising costs. And as part-time importers of foods to fill the contracts with retailers, they also had difficulties with cross-border delays, and labour pressures.

Table 7.2 conceptualises what a cascade could be for consumers. Although they can try to buy their way out of such pressure, even the wealthy have little control over such dynamics.

Table 7.2: The cascade of accumulating risks for consumers

Geospatial level	Where	Example of risk	Food effect
<i>Global</i>	Planet Earth	Climate change; ecosystems change; geopolitical	Supply; sourcing; price; drought; hunger
<i>Continental</i>	Europe	Ukraine war; fires; drought	Retail disruption (empty shelves); Grain market volatility; fossil fuel price escalation
<i>National</i>	UK	Brexit; trade uncertainties; major storm damage	Simultaneous damage to transport systems disrupts food distribution
<i>Regional</i>	Wales; Scotland, NI; England's 8 regions	Flooding;	Long-term damage to productive land
<i>Local</i>	Town; city; village	Energy price disruption or price rise	De-incentivisation of growers to plant
<i>Household</i>	Individual	Rumours or real notice of imminent shortages	Stockpiling; worries, shortage;

Source: authors

The Ten Step Cycle: what government says it will do in / for a (food) crisis

It is not entirely clear to outside researchers at what stage emergency alerts would be triggered. Presumably this is a matter for the COBR system. In the public domain, however, there is a Ten Step Cycle document of advice given to LRFs on how and when to communicate with the public. LRFs have duties laid down by the Civil Contingencies Act (2004). These are to:

- maintain arrangements to warn, and provide information and advice to, the public if an emergency is likely to occur or has occurred;
- put in place arrangements to make information available to the public about civil protection matters.

In 2007, the Civil Contingencies Secretariat (now divided into the Resilience Directorate and the COBR Unit) created a National Steering Committee for Warning and Informing the Public (NSCWIP) containing practitioners “professionals, practitioners and academics with a wealth of experience” as the website states, who developed the *Ten Step Cycle* (see Table 7.3). This does not appear to have been updated recently. The most recent newsletter on the website is from 2013.¹ This lacks any sense of community or public engagement or ‘people-centredness’. It is within the classic top-down mode.

¹ NSCWIP Newsletter March 2023 on its website: <https://www.gov.uk/government/groups/national-steering-committee-on-warning-informing-the-public> [accessed November 27, 2024]

Table 7.3: The Ten Step Cycle for Communicating with the Public (Cabinet Office)

Step	What it entails
Step 1	(a) Establish a Public Warning Task Group as a subgroup of your General Working Group. (b) Establish an audit process – rationale for decisions made
Step 2	Use the Community Risk Register as your starting point
Step 3	Identify and agree your Lead Responders
Step 4	What systems and arrangements are already in place in your area? What level of capability is in place already and what are the limitations? Where are the gaps?
Step 5	Identify your target audiences. Where are they located? Identify vulnerable groups. Has the gap analysis changed as a result?
Step 6	Consult the public in your area, discuss your work with neighbouring LRFs and seek out examples of good practice. (a) Consult the public in your area (b) Talk to your neighbouring LRFs and other practitioners (c) Seek out and take advantage of examples of good practice
Step 7	(a) LRF to decide what is sufficient – set your standard. (b) implement LRF agreed control measures
Step 8	Implement a comprehensive training and exercising regime, to test your warning and informing arrangements.
Step 9	Ensure that all stakeholder communities are informed on a continuous basis through the design and implementation of a regularly updated education and awareness raising campaign.
Step 10	Measure the effectiveness of your implemented control measures, review, and adjust as appropriate.

Source: Cabinet Office (2007/2011) Ten Step Cycle³⁴¹

The National Preparedness Commission has already commented on improving communications in crises. Scully and Shaw distilled a number of lessons including: noting, not ignoring, the role of social media, the need to address disparate social groups, the role of science, and the importance of democratic processes.⁶⁴⁶ Distinctions in communications are needed as to whether there is a rapid shock such as a terrorist attack or long shocks such as climate heating. But sometimes they collide, as when flooding (reflecting climate change) comes.

Governments do appear to have a problem over communication, not just for food. Consider the position on energy in two reports, published simultaneously in March 2023: *Powering Up Britain: Net Zero Growth Plan* and *Powering Up Britain: Energy Security Plan*.^{647,648} The latter expressly acknowledged how the invasion of Ukraine raised security risks. Both reports focussed on supply and ignored consumption and prevention (unfortunately underlining the validity of critics that the UK is blind to the benefits of retrofitting housing and generally cutting consumers' need for energy). The Committee on Climate Change meanwhile has for years urged that a systems approach includes acting with consumers to reduce CO₂e by 60% by 2050. The *Powering Up Britain* reports say nothing about food, of course, but its supply focus underlines the urgency of future Governments facilitating consumers change. Neither Net Zero nor Food resilience will be achieved without public engagement.

The Parliamentary Office for Science and Technology picked up this challenge for energy, much of which applies to food.⁶⁴⁹ Even within a ‘soft’ approach framed as ‘green choice’, its advice stresses (a) the need for clear and consistent policy direction from governments (b) the use of trusted voices to communicate messages; (c) using different forms of public engagement with different groups of citizens; (d) having long-term and tailored strategies; and (e) making green choices more accessible, affordable, attractive, and easy.

Emergency food provision and infant foods in crisis

There is a UK system of emergency food provision that technically provides the civil safety net for food need in the UK. A specialist in this matter referred back to the legacy of WW1:

“Despite the Ministry of Food having been closed in 1921, one of its legacies that remained were the divisional officers of the Civil Emergency Food Organisation at local authority levels. These quickly helped establish local food committees: these local officers had the advantage of local knowledge and structures and being embedded with local authority structures. Each Local Food Committee consisted of 15 members of which ten were to be non-trade members and the remaining five to represent the following: a co-op official; a private butcher; a private grocer; and two retailers. These helped inform local rationing and, through their knowledge of local areas, helped establish local priorities for rationing.”

A century later, in Covid-19, an emergency food parcel system was set up, based upon calculations that there were 1.5 million “extremely medically vulnerable” people in the country who would need food taken to their homes. It began to contact people to see who lacked family or friends who could do this but there were criticisms that the parcels did not all provide good nutrition and that some went to people who did not need them. The specialist cited above, commenting on emergency food systems, said:

[..] they are patchy and unprepared for current situations. In Covid, parcels went to the wrong people. There was no proper registry. We could have better understanding of diet diversity among different social groups. If the state does have measures, they are too crude, too ‘one size fits all’.

A local government specialist also commented post-Covid-19:

“Food was already coming up before Covid. It’s becoming a big issue for local authorities (LAs). Emergency provision for food and fuel was given more attention and extra grant-aid in the Covid and cost of living crises periods. The policy emphasis was initially on school meals in holidays, for example, but that’s now shifted because the demand is so heavy that it would drain the bulk of the government’s Household Support Fund to LAs.”

This report learned of some ‘chaos’ in provision under Covid-19. One LRF told us that there were plans for getting food to isolated people in emergencies before Covid-19:

“only for it to be taken away from us by Government when it took over the services of the delivery company we had arrangements with! We were in effect ‘gazumped’ by government for the contract to provide food in the emergency. We didn’t know that imposed isolation was going to be a tool in the armoury. Suddenly to have the contractor saying ‘sorry our food has to go elsewhere’ is not good. We got offered 25kg bags of rice when we needed more accessible food. We didn’t know that long-term isolation and lock-downs would be a possibility. There was, in formal terms, a failure to identify the hazard. We had no approach for risk reduction.”

The UK has various forms of (emergency) food welfare, applied differently across the regions.⁶⁵⁰ They include welfare emergency provision such as vouchers and emergency direct provision in the form of boxes of food delivered to people in their homes in lockdown.

Research by Dr Hannah Lambie-Mumford and colleagues on the Covid-19 crisis showed this emergency provision relied on a mix of retailers and charities (see Table 7.4). Three types of at-risk groups were identified: people shielding (the elderly and medically at risk), people moderately clinically vulnerable, and people on low incomes. Some modifications to provision were made over the pandemic's two years and the experience has been summarised for UKRI.

Lessons learned included the importance of patchy provision, regional disparities and lack of forward planning. These again pointed to the lack of clarity about whether provision should be centrally directed or devolved more to the local level, and about how to achieve optimum flexibility with universality of provision. Again, it indicates the case for a food specific organisation through which such local intelligence can be acted upon as well as providing a link to the nationally directed system of LRFs. This should be addressed both centrally and at the local level by the creation of the new Local Food Resilience Committees proposed by this report (see Chapter 11).

In effect, the panoply of food welfare – some going back more than a century such as school meals, meals on wheels and school milk – is in need of an overview and reform. That was a major focus for Henry Dimbleby's National Food Strategy first and final reports,^{6,21} and has been a refrain from respected voices in public health and social policy.^{486,488,651 486,488,651}

One practicality was raised with us: who defines when there is an emergency food situation? Our general finding is that despite being a CNI, there seems to be little grip on food as *a civil crisis* – this despite the kind of sobering state of trust outlined earlier in this chapter.

Table 7.4: Types of national responses to address threats to household food security for at-risk groups during COVID-19 (March - August 2020)

<i>Shielding population</i>	<i>Moderately clinically vulnerable</i>	<i>Low income</i>
<ul style="list-style-type: none"> • Government food grocery box schemes • Priority supermarket delivery slots • Government financial support • Third sector provision (Salvation Army and Red Cross home delivery parcels, food bank support) 	<ul style="list-style-type: none"> • Priority delivery slots • Government financial support • Retailers shopping hours for moderately vulnerable, increased supermarket delivery capacity • Third- sector provision (Salvation Army parcels and Red Cross hardship grants, food bank support, initiatives supported by FareShare) 	<ul style="list-style-type: none"> • Government financial support • Free School Meal replacement schemes • Charitable emergency assistance (food banks, meal projects)

Source: Lambie-Mumford, Gordon, Loopstra, et al 2022⁶⁵⁰

Under the CCA 2004, a food shock or emergency would presumably activate the COBR system. International experience suggests the importance of having a system of **warning points – thresholds at which different actions and alerts are activated**. Clearly, at

present the fact that there are 4.2 m children in poverty in the UK, measured on official criteria,¹⁰² is **not taken as a warning point**. How can that be? Activating a regional or local warning point would almost be beyond the LRF competence or responsibility. It is why, as emerged in the survey of LRFs for this report (see Chapter 10), some LRFs simply deferred to Defra. Whether Defra has the competence to serve this function is also a moot point.

Ways forward: Co-ordination and clarification of how to set warning points for food shocks warrants urgent attention and multi-agency engagement.

The issue of warning points should not be deferred. One specialist said it was not possible to ‘do resilience’ unless warning points are built in and added that “warning points analysis is more boring than building video war games but more important.”

Their purpose is to warn so that something can be done. In preparing them, time constraints have to be analysed: how much time is there before the crisis ratchets up? Someone, some unit, some line of command has to be responsible, if there is a warning point. And those responsibilities lie with a person to ensure that there is action.

At the international level, the UN’s WHO and WFP have a joint system of ‘hunger hotspots’, using the IPC grading system for food insecurity (see Chapter 2).⁶⁵² In June 2024, this forewarned of 18 hunger hotspots across the globe. There is much international experience of thinking and reacting practically to such graded warnings,ⁱ with leading international emergency organisations such as the Global Disaster Center - set up by the American Red Cross and the International Federation of Red Cross and Red Crescent Societies (IFRC) - supporting the creation of Community Early Warning Systems (CEWS). CEWS “go beyond the concept of the community as a receiver to one where they can also be a producer and facilitator” and almost invoke the model of responsible citizen science, defining CEWS as:

“an effort by or with, but not for, a community to systematically collect, compile and/or analyze information that enables the dissemination of warning messages that when actionable can help the community (or others ‘downstream’) reduce harm or loss from a hazard (or threat) event (or process).”⁶⁵³

The UK should remember how important annual reports from Directors of Public Health were in the past. They operated as those ‘warning points’ providing evidence of localised problems.

We should not be surprised that, in deprived areas of the UK and even in apparently wealthy ones such as London, there is some despair at what to do about food insecurity. Liberal voices in the food industry even in the early 1990s thought the market failure of unmet need could be solved by more efficient food redistribution. Studies had been showing a resurgence of food poverty,⁶⁵⁴⁻⁶⁵⁶ at the same time as the food industry was aware of its waste problem: food nearing ‘sell by’ dates, factory mistakes and mispackaging.

Charities such as the Trussell Trust, Fareshare and the Felix project grew into this space. But they have not been able to stem the rising tide of need, ably monitored by other charities such as the long-established Joseph Rowntree Foundation and the newer Food Foundation from 2014. Local government - even as large as the Greater London Authority trying Re-London,ⁱⁱ Hubbubⁱⁱⁱ and many other schemes motivated by waste reduction, the circular

ⁱ e.g Practical Action: <https://practicalaction.org/early-warning-systems-saving-lives-and-building-disaster-resilience/>

ⁱⁱ ReLondon is a recycling body of the Mayor and London Boroughs: <https://relondon.gov.uk/>

ⁱⁱⁱ Hubbub is an environmental charity partly working on food waste: <https://hubbub.org.uk/>

economy and anti-poverty impetus - has not been able to move 'upstream' in policy terms to prevent the problem in the first place.

Infant foods: an example of emergency need

In emergencies, one section of the population that quickly comes into focus is new-born or infant babies. We were informed during the present research that the state of national infant food resilience in the UK is in effect unknown and that, although the majority of mothers in the UK set out to breastfeed, and most maternity units in the UK are either already accredited by UNICEF Baby Friendly UK, or on the path to accreditation, support for breastfeeding is much more fragmented once back in the community or back at work. This gap between the known ideal and reality has been a troubled area in UK public and maternal health for decades (and not just in the UK).⁶⁵⁷ In the first quarter of 2022, over half of babies in England were already exclusively formula-fed by the age of six-eight weeks.⁶⁵⁸

But what does this mean for infant feeding in a crisis? Recourse to baby foods could be a matter of life and death.

The infant formula supply chain is highly concentrated, a situation that could render many British babies highly food insecure in the event of a significant emergency.⁶⁵⁹ The UK infant milk market is dominated by four major brands, two owned by one company. In 2024 the Competition and Markets Authority announced an inquiry,⁶⁶⁰ and in November 2024 presented interim findings from an inquiry into this market, suggesting parents are "paying over the odds".⁶⁶¹ Currently, there is just one producer of infant formula in the UK, and this accounted for only 1% of the total market in 2021/22 according to Mintel.⁶⁶²

This is a narrow product sector with a high dependency factor, leading to considerable vulnerability to disruption, price spikes or other shocks. Specialists were alarmed at how, between March 2021 and April 2023, the seven standard powdered first infant formulas sold by the market leaders increased in cost by an average of 24%, and the only 'own-brand' infant formula increased by 45%.⁶⁶³

One expert body told this report that:

"there are currently no national policies relating to infant feeding in emergencies, and, as a result, a lack of co-ordinated systems and processes to protect breastfed or formula fed infants in emergency situations. For example, there is no requirement for Local Resilience Forums to plan for the care and feeding of infants in emergencies, to ensure the provision of appropriate formula milks and safe and hygienic preparation facilities, or even to map out local trained breastfeeding support capacity including the UK's very strong Third Sector."

The importance of infant feeding is acknowledged by LRFs. A recently published study of the 42 England and Wales Local Resilience Forums first noted in 2017 that there was considerable variation in what the LRFs advised for emergency situations. A follow-up in 2020–2022 for the same study again found variation. The study therefore recommended that if the UK emergency planning guidance used established international guidance, this "would improve consistency between LRFs and better protect infant, child and maternal health and well-being."⁶⁶⁴

This issue illustrates how even when there is an official NHS policy to support mothers in breastfeeding, the reality is that other can be created. Against official guidance, most babies in the UK are reliant on infant formula to survive, meaning infant formula is necessary for

infant food security. This is surely a case where the Government should ensure that parents and carers can access appropriate (safe and suitable) infant formula, if it is needed, while longer-term in universal breastfeeding support is also essential.

What consumers say they want

To our knowledge, no polling has yet been conducted on what consumers might want as advice on preparation for food crises and resilience. Other countries do give advice on what and how much food and water to store but this is very unspecific. As earlier sections of this report have shown, large numbers of British people already under- or mal-consume. Advising them to store food would be divisive if they cannot afford to eat adequately daily already. And the messaging should be carefully crafted.

There is polling on the public's general aspirations from their food. A large sample poll (N = 6,175) for the FSA and Food Standards Scotland in 2022 looked at public concerns and interests, and perhaps unsurprisingly showed people generally want food that fits the bill for health and nutrition, environment and ethics, price quality and convenience, consumer interests over business power. They want hygiene and safety standards, equitable access to safe, healthy, affordable food, easy informed decision making and trustworthy food information.⁶⁶⁵ In normal life people juggle what they could versus do eat according to circumstance. Pollsters don't normally ask questions about what would happen if calamity happened. But there are pointers.

The FSA's monthly consumer tracker for January 2024 shows fairly consistent levels of public concerns about food over the last year.⁶⁶⁶

- The top three concerns were food prices (87%), food poverty and inequality (77%) and ultra-processed or the over-processing of food (75%).
- One in five (20%) worried about their household not being able to afford food in the next month, with 43% of people limited a lot by a health problem or disability saying they had this worry (compared to those limited a little (26%) or those without a health problem or disability (19%)).
- 59% of respondents were confident in food supply overall but only 37% were confident that there were affordable options.

A poll for the NFU has suggested strong support for UK produced foods, with 82% supporting the idea that government should set targets to increase British food production.⁶⁶⁷ But this might not matter in crisis. Whether there is access to local food would matter much more. Centre for Food Policy researchers into how families coped with food in Covid-19 lockdowns concluded that families benefit when they have access to a diversity of food sources in addition to supermarkets.⁶⁶⁸ It is extremely difficult for families experiencing financial insecurity to prioritise nutritious foods in times of crisis but this is not because the families don't think nutritious food is important. It is just a challenge among other demands of daily life.

One researcher explained how food can already be a burden to some mothers:

"[...] low-income mothers in particular have a lot to lose in future crises as reproductive labour relies so heavily on energy, food and transport systems and those without financial or social capital lack the means to circumvent disruption. We need to be more aware of how gender and socioeconomic inequalities intersect to shape the impact of future crises on nutrition and health."

A recent study in a London Borough with a mix of very affluent and poor citizens found people on low incomes already having to cut back on food because it is a flexible item in household budgets. It found:

“the Cost of Living crisis has exacerbated existing hardship. People who are experienced at living on a small income are now constantly re-budgeting. The precarity of their financial situation is having an impact on many people’s mental health, causing depression and panic attacks not previously experienced. Any small financial cushion has been stripped away. [...] People’s income is mostly going on rent and bills and so food and transport costs are where they cut back.”⁶⁶⁹

In this context, asking such populations to store food or get better prepared for shocks is misplaced rather than wrong *per se*. For it to apply, more attention should be given to people’s conditions now. Their ‘precarity’ must be factored into civil preparedness strategy. Some interviewees also supported building upon the experience of bodies such as food banks which could be turned into social catering, perhaps echoing the WWII British restaurants.

A civil society organisation told us:

“Our experience is that many people have some awareness and want to do something but feel helpless. They need help to organise and do something that they feel is of benefit to them, their community and the country as a whole and is not a greenwash.”

Lessons and Recommendations

Lesson 1. Crisis management and successful resilience are not helped (and can be worsened) by individualism - everyone doing their own individual thing. More attention is needed on how to bolster the community interest, the collective, the general societal good. A food system that is already divided has an uphill task in this rectification, and pre-existing tensions can accelerate difficulties in emergencies and crises.

Way forward: Civil food resilience must be articulated by Government and shared with local and regional bodies as a public good. The ‘whole of society’ principle should be manifest in, and deliverable through, all food planning.

Way forward: DHSC, Defra, together with expert advisory bodies should review whether the UK has an adequate system of early warnings for food emergencies and shocks. Noting international experience, this should consider the creation of a formal, graded system of ‘(early) warning points’ for food emergencies that could be applied at the local civic level. This could be used, for example, in Community Risk Register assessments.

Lesson 2. The policy nervousness about rationing is understandable but must be put to one side. Normal market dynamics are in effect a form of rationing and in Covid-19, retailers imposed limits on consumer purchases. World War II rationing worked sufficiently well because it took account of people’s nutritional status in allocating requirements via a points system. A review of options for equitable access should include public scrutiny. Studies of dire conditions have sometimes uncovered paradoxical gains. The Iraq war, for instance, found that due to severe curtailment of access to sugar, not least due to economic sanctions, some diet-related conditions actually improved. Diabetes and dental caries declined.⁶⁷⁰ This

is not a justification for war; Iraqi people suffered greatly and the food system was severely disrupted.⁶⁷¹

Way forward: An independent inquiry, including public representation (and perhaps a citizens' jury) should review rationing possibilities, taking into account modern nutritional knowledge and modern means for applying rationing. It should recognise the existence of socio-economic divisions within society.

Lesson 3. Pending the forthcoming Government report on public perceptions, there should be some caution as to what the public mood on food resilience in crisis might actually be. This should not be an excuse to maintain a default position of not trusting or engaging with the public. The National Preparedness Commission has already raised this issue.⁶⁴⁶

Way forward: HM Government should consider carefully not just what messages are prepared for food crises but who generates and presents them. This is not a task that should be contracted out but must be organised to both build on and engender trust. Independent bodies of experts and scientists should be centrally involved in this process.

Lesson 4. An independent study into what messages and engagement might 'work' best is needed for different social groups including people hard-to-reach.

Way forward: UKRI should be asked to fund and produce a critical analysis of public messaging on food matters, noting existing institutions, levels of trustworthiness and the need for independence.

Lesson 5. The existing *10 Step Cycle for Communicating with the Public* warrants revision. It could be perceived as patronising and excessively top-down. It is too 'blunt' an instrument and assumes all crises are similar. More nuanced and scenario-specific communication systems are needed to fit short- and long-term food crises, different cultures, and income groups.

Way forward: The UK should produce clear citizen advice for food resilience under different circumstances. This should be done in consultation with and testing for multiple demographic segments to ensure all UK citizens feel it is, and they are, clear.

Way forward: The National Steering Committee for Warning and Informing the Public (NSCWIP) advice should be updated.

Chapter 8: What the public can do

Citizens' range of options for acute / chronic crises

There is no perfect or single direction or mechanism through which the public can maximise its civil food resilience. There is no single lever to pull. But complexity does not stop people from building resilience in various forms or exploring and experimenting where they can. Experience at international, national and local levels is varied. What people can do is a function of many variables and conditions. Table 8.1 gives a succinct overview of different levels for civil resilience. This draws from work by Professor Erio Ziglo with the WHO European Region considering individual and community resilience from a health perspective. It proposed that a key factor for resilience – and for the assessment of resilience potential – is:⁵⁷

“the level of control (or lack of it) that a person has over her or his life.”

To build on that, and apply a civil perspective, the present report proposes that what is required is **to strengthen the conditions in which people live such that their control and collective or community support enhance the level of control that people have over their lives.**

Table 8.1: Different levels of resilience and what they require

Type of resilience	What it is	What it requires	Comment
<i>Individual</i>	Sufficient resources to adapt in face of shock; resolve to adapt and recover	Range of practical skills; a good level of self-confidence; knowledge of possible outcomes; Awareness of limitations	Even people with considerable resources and skills can be disempowered in crises. Everyone benefits from pooled efforts, and the mix of strengths and weaknesses
<i>Household or social group</i>	Adaptation in face of adversity, trauma, tragedy or threat; and ability to recover from shock	Skilled personal attention to be available; family or household relations aware of the possibility of shocks	Confidence-building and preparation at household level; Appropriate skills development and planning; knowledge of roles
<i>Community</i>	Ability of social groups to withstand and recover from unfavourable circumstances	Group support; professional infrastructure; social networks; contacts lists	Sometimes called 'social capital', this is actually a social process that strengthens bonds over time, building human networks; it is people nearby among whom there is trust
<i>Regional (sub-national)</i>	Flexibility across the wider region, plus capacity to put resources where needed in crises	Finance; equipment and resources; facilities; trusted leadership	Clear leadership and social commitment mediating between national and local/household levels

Source: authors drawing on WHO (2017)⁵⁷

In everyday terms, resilience is significantly affected by confidence and whether people are used to expressing themselves, having some leverage over their circumstances and engaging with adversity. If people are already marginalised, they are likely to lack of a sense of their worth and rights (whether legally or culturally enshrined) and thus their potential for civil resilience. Civil resilience is about having a shared and communal sense of confidence. This is a connection long accepted within emergency policy circles – people acting on the aftermath of disaster and staving off total disempowerment and abject defeat. It's an approach rooted in mass psychology, essentially, and was notably articulated in analysing famine and hunger by Amartya Sen and colleagues in the work for which he received the 1998 Nobel Prize in Economics. If people at risk of hunger have a sense of entitlement to food, this contributes to their demand for positive outcomes in crisis.^{72,399} Passivity makes disaster and aftermath worse.

UK citizens currently have no legal right to food. Some background to this is discussed elsewhere (see Chapter 9). Interviewees (especially at local authority level) stressed to us the importance of the lack of such legal duties. If there is no legal duty on the state to provide all citizens with food in the best of times let alone a crisis, preparedness and the capacities of bodies that might be able to help is severely diminished.

Step Three: Map the community's food assets

An understandable reflex, when faced with the prospect of food shortage, is to stockpile. As we noted in various country case studies (see Chapter 6), some advise citizens to do this and some give more detailed advice than others on what this should be. The public's capacity to do anything, however, depends on resources, supplies, and funding. We noted in the Lithuania country study earlier that the relevant Minister has reported the low response rate. It is a truism that advice may not be followed. In such eventuality, a government could 'blame the public', of course, but that is not a good situation for resilience enhancement. It would be wiser to consider: what conditions could be created in which the advice would be automatic and mass scale? Perhaps do not start on a strategy with a high chance of failure.

The Fair Futures UK project is currently taking a more considered and community-appropriate approach. This NIHR-funded project has adopted a co-operative approach across different Mayoralities and universities.¹ Looking at the resources in two mixed communities – Bradford and Tower Hamlets in London - the Fair Futures Project is asking those communities to assess what emergency food systems they have by mapping what it calls Community Food Assets. It asks people to say what they find useful among:

- food parcels for people in need
- community meals
- community cafés
- food banks
- support services
- food pantries
- social / community shops
- community gardens

¹ Fair Food Futures is a project by the University of York, UCL Institute of Education, the University of Bradford and Bradford City Council, funded by NIHR: www.fairfoodfuturesuk.org

- allotments

Such community mapping could be conducted by any town, locality or city region. It introduces a democratic element into assessing need and recognises that what might be deemed valuable by official policy may be experienced as restrictive at ground level. The approach incorporates local people's knowledge of signposts to assets and their assessment of which ones have a value. It is an approach that could and almost certainly should be expanded.

We strongly support this kind of starting point for civil food resilience. Involve and listen to the public. Develop sound methods for the mapping of community food assets.

Extreme resilience preparation for extreme threats?

But what of stockpiling? Faced with the possibility (if not reality) of extreme threats to food availability, people do take recourse to stockpiling. Interviewees across the sectors made reference to it either for themselves or as a mass phenomenon. It is quite a common for the public to say something like 'I'd make it a priority to be able to defend and feed my family; etc, etc.' But what people would and could actually do in a crisis is determined by circumstance and events more than *a priori* motivations. In H G Wells' famous 1898 science fiction novel *War of the Worlds*, Wells' central character survives by discovering and eating remnants of others' larders and storage, not his own.⁶⁷² Food in crises might depend on whether there are stocks, not that they must be yours. The community and networks provide the buffer stock. And in effect, social support may matter more than whether you can barricade your own house and feed the household for a week.

The temptation to slip into a 'prepping' language and mentality is there. The policy and community challenge is how to caution 'me, me, me' thinking and encourage it to become 'us, us, us'.

The US terms of 'preppers' and 'prepping' identifies people who have an apocalyptic understanding of life and politics. In Michael Mills' terms, they are "driven to prepare by peculiar and delusional certainty that apocalyptic collapse will occur in the near future". In his study of 38 preppers across the USA, Mills, a British academic, found they did not in fact have a defined understanding of impending apocalypse but were preparing because of uncertainties rather than certainties. They were responding to uncertainty anxieties around disaster risks and were partly fed on what Mills described as "consumption of disaster-based speculation in mainstream news media".⁶⁷³ Even mainstream documentaries could feed rather than deflate the uncertainties.

Preppers focus on individual survival for when mass possibilities have diminished and when the state's capacities may also have collapsed or are severely curtailed. Prepping is the rationalised pursuit of medium-term food survival, self-defence, and the means for existence in remote areas.

Another study reported how a wealthy US prepper bought a decommissioned underground nuclear bunker and turned it into a self-contained 15-storey unit where multiple families could survive, it was claimed, for five years.⁶⁷⁴ This extreme élitist mentality is akin to those seeking to colonise the moon or, even more absurdly, Mars some time ahead, - the kind of escapism lampooned in the 2021 film 'Don't look up' in which disaster struck and the selfish

survivalists survived only to be wiped out by other threats at their apparent moment of escape.

US prepping has been commodified. One website estimates annual US spending on goods for emergencies was worth \$11 bn. Among those anticipating disasters, the top items purchased were food and water (21%), toilet paper (15%), medical supplies (14%), survival kits (12%) and a 'stash of cash' (9%).⁶⁷⁵ The 2023 annual report of the US Federal Emergency Management Agency (FEMA) states that 55% of citizens undertake three actions to make themselves 'more prepared' for emergencies.⁵⁷⁰ Given the range of tasks they are supposed to do (see Chapter 6), this in fact suggests little preparedness. The FEMA survey of community concerns does not even ask about the possibility of non-availability of food but does recognise the possibility of food contamination. Even that is not rated as high risk or a potential stress.

The UK to date has no extensive US-style prepping. There is little wilderness to which extremists can retreat. The UK does however have a tradition of outdoor rambling, climbing, walking and activity whose skills could conceivably have some applicability in extreme crises. But in a food system where the vast majority of people are routine purchasers, not providers of food, their role as active citizens is mostly circumscribed, fairly hand-to-mouth, regularised, routinised and based on assumptions of normality, even though that 'normality' is fluid over time. They (we all) are limited to being at best discriminating consumers. They pay for and consume what supply chains can deliver. Houses (unless old or large) tend not to be designed with larders. Storage tends to be in the kitchen and short-term. Modern living is built around a capacity for immediate rather than long-term supplies.

When supply chains are disrupted, the access and availability of just-in-time outside food sources may be severed. Crises overturn normality. What people can do may be limited. Shops may be closed or stocks disrupted. What then?

Two Bradford academics, Mahroof and Breen - one a specialist in supply chain management, the other in health service operations - have proposed that prepping can be filleted to extract sensible rules. There's nothing wrong with "thinking ahead and being proactive" or having a store of tins. "It's the opposite of panic buying", they argued; it makes sense to think about basic needs.⁶⁷⁶

In the present research, when interviewees (and participants or audiences in meetings during the final research phase) were asked what society should consider for disaster preparation, suggestions tended to draw both on common knowledge and the view that the food economy needs to be reoriented to provide more stocks, more food back-up than it does at present. Communities need to be able to share the stocks they have. People need time to prepare collectively. Society needs to build longer-term capacities as well as to act swiftly in food crises. There need to be pre-existing food resilience plans and people or organisations that have thought about the situation. The sticking point in discussions was often around inequalities, low incomes, poor resources, and communities left behind. This is the critique of the Emergency Planning College's recent *Prepare* advice website.

A senior Whitehall insider agreed but saw a fundamental distinction too:

"We must distinguish between individual attempts to be resilient and community resilience. These two need to be separated. Survivalist and individualist attitudes will not be sufficient to address the scale of society-wide stress that are likely. We need more attention given to what a collective, community strength could be."

If food resilience is to be genuinely 'civil', this requires – as happened in WWII – a recognition that UK citizens are not equal, do not all have appropriate facilities and have great differences in income and savings, but that the state can act as facilitator and enhancer by filtering possibilities according to people's circumstances and conditions. As senior representatives of one major city authority told us:

“Local authorities are already stretched; they lack resources; they cannot suddenly become alternative retailers to the needy.”

But if this is the case, what would be needed to facilitate civil food resilience? The food system would have to be restructured away from its market norms. Several interviewees noted that, in Covid-19, the Government was reluctant to do anything except encourage the already dominant food retail forces to do their best. But what if they themselves have been disrupted?

Strategically, Government must get a grip of this situation.

Firstly, it must be clear about where supplies exist and where and how it could build stocks. Secondly, it must engage with the public and encourage collective, sensible discussion and thinking about how people can be fed or feed themselves in different contexts and ways. Such advice should be thought through from the perspective of someone with disadvantages and should acknowledge the possibility that food supplies or the means to cook might be severely disrupted. One researcher told us:

“One could argue that people could get better prepared by storing and preparing food at community level but generally UK society has got used to having food constantly and conveniently available. People don't or cannot (due to space) store much food. Also they don't have the skills that people in Poland or Eastern Europe for example have where they can draw on the experience of past dire times and even on those peasant era skills. These skills and assumptions don't exist in the UK in that way.”

A defence analyst with a strong food focus on conflict offered a sideways view about preparedness:

“People have no other way of feeding themselves than through the supermarket. It is symbolic that many people, for example, have cars on their front gardens where food could be grown. It may sound small-scale and extreme to suggest there's a domestic tension between cars and food but it represents a cultural option. [...] Almost certainly, there will have to be an element of diversification at the societal level. People growing more food would illustrate that diversification. We have to recognise that currently the food system too often stops people from becoming more resilient.”

How can that block be stopped or reduced? One Baltic government interviewed for this report developed its food resilience planning for the public on the assumption that there might not be any functioning government at all after an invasion. Its approach was to be quite firm. Government can act before a crisis and help build resilience but the public might well be on its own in a full-scale crisis such as an invasion.

Civil food resilience has to have a hard and practical function: ensuring people can be fed or feed themselves by household or community or on the move when infrastructure is down. The practicalities will not be fixed, said one interviewee. Different skills are needed for different circumstances. And that is why extreme individualism is not the best strategy. Circumstances are likely to need more than one brain, one skill set and one world view. Machismo, brawn and individualism may be an impediment.

A defence analyst saw the social delicacy for the UK but also the potential to involve not just domestic food production where possible (we turn to gardening just below) but to tap into other undervalued skills that people might have. Abnormal times might be strengthened by recognising practical and social skills not normally acknowledged.

Crises frequently demand speedy responses within the locality. That means getting food to the people in forms that can be eaten if domestic facilities and appliances are no longer available. There is little point stocking food in a form that reduces whether and how it can be consumed. There may be no cooking facilities. Or it means ensuring in advance that there are supplies available where shocks might fall. This is yet more reason to ensure the food system offers diversified and distributed rather than concentrated supply chains, as shown in Paul Baran's RAND schema (see Chapter 2).

As noted already, there is currently little slack or static (stored) stock in the food system. When a degree of panic buying occurred early in Covid-19, this was not irrational but rational behaviour, but interviewees – particularly those with firsthand experience - were clear it accelerated the problem the buying behaviour was trying to alleviate. When systems go down, few people are prepared for the rawness or know what to do. This is why preparation *before* shocks matters. It points to the wisdom of those countries who approach food as a challenge of creating structures and organisations that can marshal resources to feed people and help get them back on their feet such as Sweden's calls Total Defence applied to food.⁵⁵⁴

Way forward: The Government should set up an independent review about stocks. This should explore: (a) the feasibility of industry moving to a more decentralised system of storage and distribution; and (b) how best to use existing facilities within towns, cities and communities to give all people confidence that there will be basic food infrastructure in each region in the event of crisis.

The UK has many organisations with relevant solid experience of food management in disaster situations. LRFs and the Resilience Framework officials might refer to the Red Cross or Citizens Advice (CA), for instance, but there is a wider experience available to tap too. The 15 charities that work across 60 countries and liaise through the UK Disasters Emergency Committee is a formidable resource. Many have invested in capacity building in far-off countries that could be applied here.ⁱ Even though they aspire to make themselves obsolete, the Trussell Trust and IFAN food banks also have a rich experience of civil food resilience preparation. The Trussell Trust alone delivered 3 million food packages in 2022-23. One senior executive in a large civil society organisation when asked what should be done now to improve civil food resilience, replied:

“I think that building up some form of community storage of food is important. This needs thought. Perhaps food banks could be turned into this direction. I know from my own participation that some food banks have reasonable secure food storage and knowledge already. That experience could be built on and perhaps expanded. They also have sensitivity about food needs and people's feelings.”

The food service sector is, by definition, public-facing and has experience of helping feed people at scale. Closing it down in Covid-19, rather than harnessing and repurposing it, illustrated the paucity of planning then. (It was just as wrong to turn it into a spreader mechanism through the 'Eat out to help out' programme later). Both actions showed how

ⁱ Disasters Emergency Committee: <https://www.dec.org.uk/who-we-are>

little attention Whitehall had given to the hospitality sector. The reflex to 'leave it to Tesco *et al*' kicked in. Yet hospitality's potential to be local distribution points should not be underestimated. It has different supply chains and sourcing than the giant retailers. If Baran's decentralised and distributed approach to resilience planning was applied to food, food service's diversity of supply and outlets would feature, not be closed down.

In 2018 a survey for the British Red Cross' *Ready for Anything* report suggested the British population is anything but. Only 26% of 5,000 UK adults surveyed then thought they would be affected by a major emergency, but 70% admitted that nobody in their household had taken steps to prepare.⁶⁷⁷ We await the government's UK public perception report to see if this lack of preparedness still exists, particularly at scale. While the Red Cross' *Ready for Anything* tapped into views that 'emergencies' were at the household level or the Manchester Arena bombing scale, the impact of extensive systemic disruption is not known. The Red Cross meanwhile stresses the importance of kindness and emotional support in crises. We are reminded that people exist in communities, households, cultures, networks and webs of contact with others. Resilience comes from engagement in that multi-layered collectiveness and co-operation.

Basic food needs: what are they for modern food tastes?

The issue of stockpiling raises the problems of what to stockpile and who should do it; and how to decide what is necessary and what criteria to apply to allocate resources at community, local and national levels. The most obvious criterion for storage is health, ie nutrition, hygiene and storability. There is little point in storing only what is pleasurable (the child's favourite food) unless life-supporting. Yet pleasure can maintain morale. This is something that countries we have considered are beginning to grapple with. The UK's *Prepare*, so far, shows little sign of how anyone can balance the criteria.

There are three types of argument for making public health more central in long-term resilience thinking and planning.

The first is a *social utilitarian argument* that poor public health is socially inefficient and a drag on the economy or workforce, sapping healthcare resources. This is a position associated with and championed by, among others, Joseph Rowntree, whose support for workplace canteens to feed his chocolate workforce contributed to the arguments for what became the creation of British Restaurants in WWII.^{678,679}

The second is a *resilience argument* associated with Nobel Prize-winner Amartya Sen from his studies of hunger and famine.^{399,680} Sen and colleagues argued that a people that feels confident and entitled to be fed will demand resources rather than accept its lot and thus allow others to allocate food resources to their possible detriment. Reallocation of resources can help prevent a slide into famine or bring in resources if the people are 'hard' in demanding it, threatening social instability unless met.

The third is a *humanitarian argument* that in modern times can be traced to the 1930s and '40s debates about rights that culminated in the 1948 UN Declaration of Human Rights. Prevention of hunger and 'want' in that Declaration is still the bedrock for much food justice and food rights work and laws today.¹¹⁷

All three arguments reinforce the case for societies setting baseline diets as a calculation of the essentials for decency in life. In the late 19th century, US nutritionist W O Atwater, even

with limited understanding of nutrition compared to today, began to chart for the US government how much food was needed to keep workers working in different types of labour.⁶⁸¹⁻⁶⁸³ The UK resisted such knowledge and it was left to independent researchers such as Seebom Rowntree, scion of the York chocolate family, to champion its application. Come wars, this application of nutrition science became critical. It regularised rationing and distribution, as well as helping calculate what imports were vital and what crops ought to be grown if they could be – what the Ministries of Food when created in 1916 and again in 1939 had to do.¹³²

In theory, a process of calculating basic and above basic needs applies to the calculation of welfare payments today. In reality, as Donald Hirsch and others have shown today, this doesn't happen so smoothly.⁴⁸⁶ It ought to be what underpins any public advice such as the *Prepare* package.

The WHO provides general calculations of human needs for food and water. For water, for example, the WHO states minimum needs for emergencies are 2-3 litres per day (lpd) plus 2-6 lpd for basic hygiene, plus 3-6 lpd for basic cooking needs. This is a total of 7.5-15 lpd basic minimum for survival (see Table 8.2), and conceptualised within a nod to Abraham Maslow's hierarchy of needs (see Figure 8.1).⁶⁸⁴ Emergencies are given at the peak of the hierarchy while a sustainable normality requires attention to the base.

Table 8.2: How much water is needed in emergencies: WHO's simplified table of requirements for survival per person

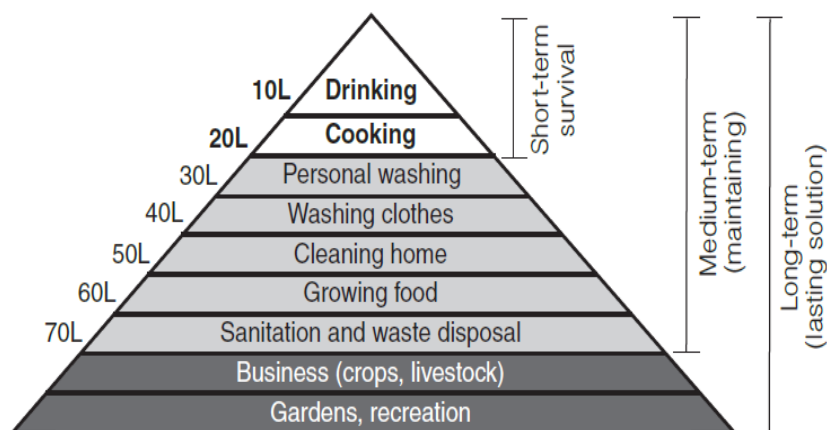
<i>Type of need</i>	<i>Quantity (lpd)</i>	<i>Comments</i>
Survival (drinking & food)	2.5 to 3 lpd	Depends on climate and individual psychology
Basic hygiene practices	2 to 6 lpd	Depends on social and cultural norms
Basic cooking needs	3 to 6 lpd	Depends on food type, social and cultural norms
Total	7.5 to 15 lpd	

Note: lpd = Litres per day

Source: WHO and WEDC, 2013⁶⁸⁴

Compared to the WHO estimates of 7.5-15 lpd for emergency water use, the UK's average use of water is 140 lpd, twenty times that basic minimum.⁶⁸⁵ In crises, UK consumers would undoubtedly be in for a considerable psychological shock and distress. Even for advice on emergencies, it should be noted that the WHO recognises the importance of thinking about water for food growing. UK citizens might think they have few intrinsic water shortage problems – albeit many with regard to river pollution from sewage - but at times and in some regions there are serious problems. In England, the Environment Agency (EA) singles out Sussex, Cambridgeshire, Suffolk, and Norfolk as already at risk.^{686,687}

Figure 8.1: WHO's conceptualisation of a hierarchy of water requirements



Source: WHO and WEDC 2013⁶⁸⁴

Wasted water and leaking pipes are a continual problem, exacerbating the pressure of climate change's impact on precipitation patterns. Water analysts argue that food should be seen as embedded water and that foods vary greatly in how much embedded or virtual water they represent.⁶⁸⁸ And they have been raising concerns about rich countries' water use for years.⁶⁸⁹⁻⁶⁹¹ A detailed account of the UK's internal and external water footprint in its agri-food system was published in 2018.⁶⁹²

Like the Committee on Climate Change, Natural England reiterates concern about poor water planning and points to areas likely to be badly affected by rising sea levels (caused by climate heating).⁶⁹³ These are lands historically associated with intense food production. That this risk does not feature in the NRR as a source of national risks can be explained by the fact that that document's focus is on acute risks not chronic ones (though climate change is acknowledged as a risk). Be that as it may, embedded and actual water use is likely to add pressure for change in food systems and diet. Over time, embedded water in foods will become a more salient factor in choice. Lifestyles and infrastructure are at odds. While political concerns are continually raised about failures in UK water planning, sewerage, underinvestment, ownership and pipe leakage, concerns about consumption of what Professor Tony Allen, the father of water analysis, called 'hidden water'. But already crops imported to the UK are being affected by droughts and floods in zones that feed the British.

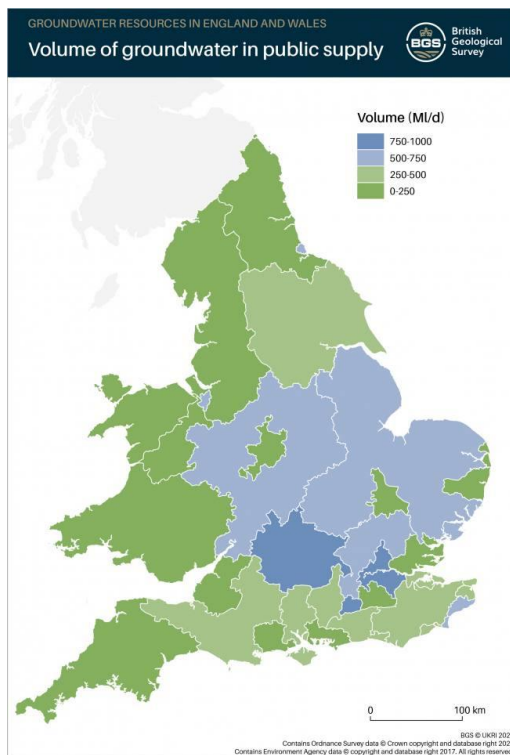
What of UK water resilience? The British Geological Survey estimates that groundwater provides a third of water in England but less in Wales and Scotland.⁶⁹⁴ Figure 8.2 gives the volume of groundwater. Mid- and East England are more likely to face problems of reliability (blue in the map) and drought, i.e. less rain to filter down into groundwater.

The National Infrastructure Commission (NIC) is already engaged with the Environment Agency and water companies and planning to reduce reliance in the future. In 2020 the EA published a new Water Framework promising to shift "from company level planning to planning at the regional scale". It warned:

"If no action is taken between 2025 and 2050 around 3,435 million extra litres of water per day will be needed for public water supply".⁶⁹⁵

We might ask: if for water, why not for food? And if the EA has been unable to prevent sewage pollution, what leverage does it have on food production?

Figure 8.2: Volume of groundwater in public supply, UK in 2021



Source: British Geological Survey 2021

The policy difficulty of stockpiling in a Just-in-Time era: national vs private stockpiling

Stockpiling raises questions. Is it a good thing? Who should do it? What to stockpile?

As the significance of Covid-19 dawned on consumers in early 2020, consumers everywhere began to stockpile. This caused ‘runs’ on manufacturers who in some countries reported they sold in two weeks what previously they had sold in a month. The *Financial Times* noted at the time that it meant “countries follow consumers” and some themselves stockpiled.⁶⁹⁶ Nation states can have bigger purchasing power than individual households.

In effect, the UK public is at present the last line of potential food stockholding. For this reason, the topic was consistently raised in interviews. Food industry experts interviewed for this research saw the ‘trickiness’ of recommending stockpiling. This was not necessarily because it would cause difficulties to supply chains, though that could be an issue. A trade body interviewee commented:

“It’s not cost-effective to keep large stock levels and more issues with climate change and other interventions means we’ll have to get more used to non-availability in the

store we usually shop at, whichever that is. Consumers are learning they might have to get something elsewhere. [...] So I think we need more careful monitoring of how the public is adapting to the new reality.”

Crucially, storage has been made obsolete in the modern food economy. Cities and towns have 24-hour opening. Home delivery has added another layer to nominal consumer food sovereignty. The entire UK (and European) food systems have been hard-wired for Just-in-Time logistics (see Chapter 2). This creates a very modern mix of vulnerability and efficiency. There are no stockpiles, only flows. The point of JiT is to make stockpiling unnecessary. The globe becomes a sourcing network. But that was then, and we are now in a more fragmented and nervous world. At the individual level there are difficulties with stockpiling – it requires resources, domestic space and skill - when consumers have been encouraged to simply order what they want, when they want it.

If there is to be advice on maintaining a food store – and it can make sense in some circumstances - this must be thought through carefully. The FSA as the body responsible for food safety has not, to our knowledge, been publicly asked to advise on domestic storage for crisis. It does, however, provide advice for food banks and charities on how to store food safely in normal circumstances.⁶⁹⁷ This assumes electricity (to maintain correct temperatures) not for when and if there is a power outage. This is where the wisdom of Sweden’s MSB emerges. It formulated advice “to help us become better prepared for everything from serious accidents, extreme weather and IT attacks, to military conflicts.”⁵⁵⁷

UK citizens need advice for a similar range of eventualities. This includes skills in managing food preparation perhaps without a heat source for cooking. In WWII the Ministry of Food (MoF) provided household food advice but this was before the age of mass domestic ownership of refrigerators. This expanded post war but it was not until the 1970s that half of British households owned one.⁶⁹⁸ In WWII, the safety problem was management of cans and public fears of botulism and spoilage.

Sweden’s 2018 household advice – ‘If crisis or war comes’ - attempts to overcome difficulties by encouraging citizens to take the general advice and tailor it to their circumstances. The 2024 update is in the same vein. The UK National Preparedness Commission, in its summary of the Swedish booklet, noted this was to:

“consider these checklists as general tips, to use what is appropriate for themselves and those around them, and to share and borrow resources from others. The reader is encouraged to stock non-perishable food ‘that can be prepared quickly, requires little water or can be eaten without preparation’.”⁶⁹⁹

The problem of household stockpiling

The problems with household stockpiling today can be summarised as follows:

- income and socio-economic realities come to the fore, such as poverty and inequality;
- reliance on equipment that might not function;
- storage facilities might be lacking;
- even those with ample storage are vulnerable to power outages;
- the UK has uncertain skills in management of alternative forms of storage;
- dietary tastes are disconnected from what might be stored domestically or locally;
- the level of capacity to cook diverse diets from dry or canned goods, or knowing how to produce uncooked nutritious meals is uncertain.

At the minimum, a household that has a 'store' under beds, in or on top of cupboards or larders or freezers (not all have these) has the possibility of a few days' food provision, so has more security than those without or whose domestic circumstances mean they lack facilities. They have less security if reliant on 'hand-to-mouth' provision from daily shopping. Home delivery services for the infirm would be more important than for the mobile.

UK food resilience preparation should take more account of the possibility of varieties of disruption. Government should consider providing advice for different gradations of emergency food preparedness, ranging from short-term supply hiccups to serious systemic disruption.

The advice should be tailored to real circumstances as well as trusted to be what people require. And such advice should be carefully formulated to avoid accusation the advice is framed by conflicts of interest.⁷⁰⁰ Trust is everything.

Larger-scale stockpiling: national to community

Few people consulted for this report mooted a return to national stockpiling. But it remains as a possibility.

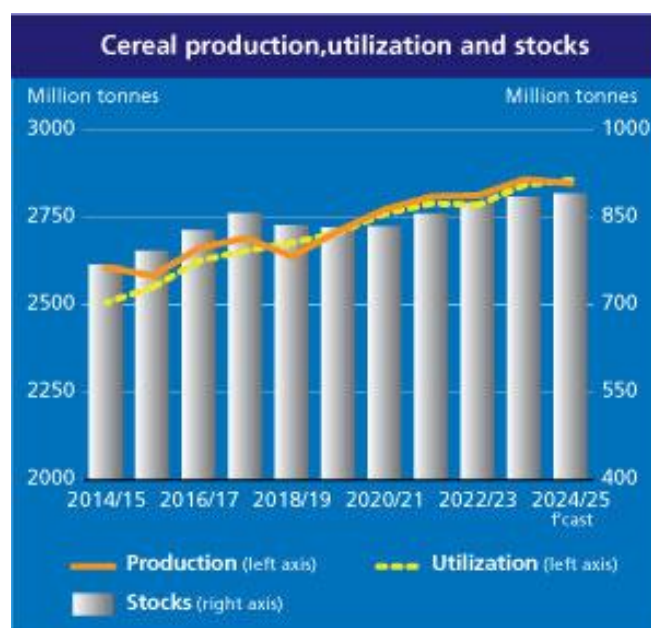
Stockpiling is possibly one of the oldest food policies. To store food to cover times when weather or conditions allowed was a form of wealth. Stores are capital. Conflicts could be decided by whether a beleaguered city or nation could feed itself when invaded. And if food went bad, security fell so the emphasis has always been on storable or what today be called long shelf-life foods such as grains, oils and dried foods. Entire cuisines have developed on this.

Countries such as India and China have long held food stocks. The arguments for holding stocks include: they bring price stability, feed people, and are an insurance against external pressures.⁷⁰¹ They give confidence in an unstable world. In 2023, the Indian Government Ministry of Cooperation announced an ambitious plan to increase its food stockpile and to build more local food storage capacity, involving 130 million farmers in the process.⁷⁰² The programme is to enable farmers to improve their technical capacity – purchasing elevators and storage equipment. This is partly a technical investment and partly to double national stocks.⁷⁰³ The policy was not greeted favourably by the free-trade oriented World Trade Organisation or the EU.⁷⁰⁴

The FAO updates world data on key world food markets such as grain, oils, meat and more (see Figure 8.3). In compiling such data its economists distinguish between production, supply (what gets onto markets), trade (exchange) and what it calls 'ending stocks'. It then produces 'stock-to-use' and 'stock-to-disappearance' ratios. These are published in Summary Tables by commodity group such as for grains (see cereals summary in Table 8.3).⁷⁰⁵

The problem with such calculations is that while they are informative about markets and trading, the figures are not estimates of stock actually to feed people. But it is this that is necessary for resilience. Output is one thing but **how many people are fed per hectare** was the question raised by Dr Emily Cassidy and colleagues exploring food security in a seminal paper on agricultural productivity a decade ago.⁵¹⁴ The figures presented in the FAO Tables above are reassuring until we remember wastage and how much of world cereal crop is fed to the equally numbers of farmed animals.

Figure 8.3: Cereal production, utilisation and stocks, FAO 2014/15 - 2024/25, million tonnes



Source: FAO 2024⁷⁰⁵

Table 8.3: World Cereal Market Summary Table, FAO 2021/22 to 2024/25 forecast, million tonnes

World cereal market						
	2020/21	2021/22	2022/23	2023/24 estimate	2024/25 forecast	
					Previous (4 Oct 2024)	Current (8 Nov 2024)
 million tonnes					
Production ^{1/}	2 773.4	2 810.3	2 813.5	2 859.2	2 852.7	2 848.1
Supply ^{2/}	3 604.6	3 643.5	3 667.9	3 731.9	3 730.3	3 731.8
Utilization	2 761.7	2 789.8	2 786.3	2 843.2	2 855.9	2 857.4
Trade ^{3/}	483.3	484.7	479.4	504.6	488.1	485.0
Ending Stocks ^{4/}	833.2	854.4	872.7	883.8	888.1	888.6
 percent					
World stock-to-use ratio	29.9	30.7	30.7	30.9	30.6	30.6
Major exporters' stock-to-disappearance ratio ^{5/}	18.2	19.0	21.2	21.1	20.5	20.8

Source: FAO 2024⁷⁰⁵

50 years ago world governments were still alive to the value of holding stocks of key resources to ensure people were fed. Indeed at the 1974 World Food Conference (WFC) governments agreed in principle to create a world system of nationally held but internationally coordinated food stocks.⁷⁰⁶ This was part of the WFC's ambitious range of measures including strengthened early warnings of food shortage and the creation of a new world food authority. The USA was in favour of a new international system; as a major exporter, it was aware how destabilising price fluctuations could be. But the economic paradigm was beginning to change towards monetarism and free market thinking, and the proposal withered partly because countries could not agree on the price.

Today, neither the EU on which the UK depends, nor the UK hold stocks. And JiT's success has been to obviate the need for stocks. Or so it was thought. A rational food world would simply move food to wherever demand (i.e. available finance) would pull it.

The idea of stocks as a key measure for food security keeps returning. But held by whom?

The 2011 Netherlands report chaired by Dr Wouter van der Weijden proposed the case for 'buffer stocks' to build national capacity and restrict commodity and price speculation.⁵⁵² And the Netherlands' 2013 modelling study did consider such a possibility and that it might be necessary in the early phases of any severe shock to a national food system.⁵⁵³ Switzerland, almost alone, has long operated a national stockpile sufficient for three months and is presently extending this to a one year horizon (see Chapter 6). The UK holds none today but began to stockpile early in WWII when Lord Woolton purchased the Canadian wheat stock in secret.⁹ With today's electronic and satellite-monitored Futures and 'virtual' trading markets, such secrecy would be hard to repeat. If there are to be stockpiles, whether household or national, they would have to be created in advance and openly. If geopolitical tensions over food rise, this should not be ruled out.

The Birmingham Food Council (BFC), a small registered Community Interest Company (CIC), has raised the possibility of *local* food buffer stocks for crises.⁷⁰⁷ It proposed a 'distributed buffer stock system' in localities across the country, not just its own city, and run for communities by communities.⁷⁰⁷ This would require decentralised stores, possibly utilising existing cold chain stores currently used for fast turn-around in Just-in-Time systems. The BFC mooted that community catering services could provide suitable supply chain management for such stocks, on the assumption that caterers can store food more easily than other community sectors.

A chief executive of a large national civil society working closely with government commented:

"I don't think any of these kinds of developments would be possible unless food resilience and supply risk becomes (or is made into) more of an issue for the general public. They are currently only partially aware of possible shortages or difficulties. The danger of panic buying could be better managed or partially prevented by including the public into things, surely."

Be that as it may, the issue of stockpiling deserves more serious attention than it current receives, and on a just-in-case principle, should at least be studied and its practicalities explored for modern times and conflicts.

Way forward: DHSC, the Office for Health Improvement and Disparities (OHID), and the FSA should create a special committee on household food stockpiling, taking account of and exploring options for household financial and demographic realities.

Way forward: Defra, academics and the logistics industry should conduct studies into whether stockpiling at community, regional or national level is possible, how they could be operated, and under what conditions should be initiated.

Mass kitchens, community cafés and cooking

There are many traditions and much experience of mass catering on which civil food resilience planning could draw. The **travelling kitchen** is one of the oldest forms of public food provision and developed in both civil and military forms. Until the 19th century, military expeditions had their camp cooks but not necessarily extensive stores. Provisions tended to be plundered, hence the brutal tactic of scorching the earth in retreat (to prevent the aggressor benefiting from missed harvests). Famously, British military catering improved when Alexis Soyer the French chef at London's Savoy Hotel put his skill and engineering at the army's service in the Crimean War.³⁷⁰ The success of his camp kitchen equipment revolutionised army catering. Navy catering, by contrast, always had to take stores with it and have access to known and secure refitting and refuelling stops across the world. To some extent this is still the case today, and both army and navy catering offer important experience on which civil crisis food management should draw.

Another crisis feeding option is better known as the **soup kitchen**. This is associated with dire and sometimes hard conditions when potentially mass scale provision of basic but nutritious food (usually soup plus bread) is made available either on-site where the need is and where at-risk groups such as homeless rough sleepers or vagrants gather, or nearby at known spots. Charities such as St Mungo's and other providers offer simple one-pot or one-cup meals in this format. UK experience in this format has deep roots. It is an approach to mass feeding recorded here first in the late 18th century, and almost certainly 'borrowed' from the devastation across Europe in the Napoleonic war period and economic disruption. One recent historical study suggests that soup kitchens expanded in the 19th century to feed perhaps more than 10% of the population in the hungry months of wintertime.⁷⁰⁸ Responding to the period of austerity in the 2010s, a study found that one soup kitchen in just one part of north London expanded from feeding 12 people per night when it first started in 1994 to producing 10,000 meals a year by 2016.⁷⁰⁹

This is a form of mass catering whose experience for emergencies should not be ignored but it has its critics. Shelter, the homeless charity, identified two main criticisms.⁷¹⁰ Firstly, that soup runs maintain people in their conditions rather than help them move into proper accommodation. Secondly, that they service people who are not actually homeless. Shelter itself disagreed with these criticisms, judging it more important to ensure there is no duplication of provision and that help is provided for people to move on from homelessness.

For the present inquiry, the existence of organisations experienced in running soup kitchens should be noted, and their skills relevant for emergency planning and civil food resilience should be drawn upon. Should part of every locality or region's civil food resilience planning be to have soup kitchen equipment and skills? For short-term shocks this might be just what is needed.

A different take on mass catering was pioneered by anti-waste campaigners inspired by Tristram Stuart's critique of UK food waste.⁷¹¹ **Feeding the 5000** began in 2009 with a mass feed-in in Trafalgar Square, London, using food that would otherwise have been wasted.⁷¹² The scale at which the catering providers could operate indicated the scale of normalised

waste food. The intervention and campaign spread and is now run internationally as FeedBack Global. It combines moral alarm at the folly of food waste with practical use for pleasure, and draws in a new generation of young chefs who see value in mass catering. Their skills should be noted.

The growth of festivals in the UK over recent decades has introduced another related form of out-of-home eating. It too has nurtured a large number of often SME **Festival Food providers** specialising in simple meals and culinary categories. They have professional bodies such as the Association of Festival Organisers (AFO) – started in 1987 as community festivals began to grow - and the Nationwide Caterers Association (NCASS) that includes the kind of independent outdoor food businesses that feed them.⁷¹³ These offer another channel with the advantage of commitment to hygiene and training to meet environmental health and food safety requirements.

In Covid-19, **small restaurants and cafés** that had their own suppliers were able sometimes to repurpose themselves as ‘shops’ selling direct to consumers. The Government is now seen as having been too hasty in closing down the entire hospitality sector when it or some of it could have maintained diversification. Parts of the hospitality sector can provide more distributed and decentralised supply chains as well as more human-scale trust relationships.

Community cafés are another model of collective eating that has re-emerged in recent years. These are not in chains but almost always the result of civic specific and local initiative. They have an echo of the WWII system of British Restaurants.⁷¹⁴ Whereas the modern community cafés tend to be small and rare, British Restaurants had the backing of the state and became quite common. British Restaurants began in 1940 as a vehicle for provision of cheap, nutritious out-of-home meals on a mass scale.⁷¹⁵ They were to be a social service filling a need created by a time when people were working outside or away from home and working long hours undertaking extra war-related volunteering or having had their domestic facilities destroyed. It was part of a raft of initiatives on food responding to the austerity of war including rationing and the huge expansion of school meals.¹³²

The idea for British Restaurants grew from the pioneering work-based canteens that enlightened employers such as Seebohm Rowntree of the York chocolate dynasty had trialled in his own factory. Rowntree found that not only did workers’ health and time-keeping benefit but wider York society too.^{679,716} People did not go home to eat only to be slow to return or to go (on pay days) to the pub. Instead, they could eat a decent meal in a clean, non-work space in the factory – the canteen. Low- or no-profit meals helped labour relations. This was a utilitarian argument refined in WWI during which Rowntree was director of welfare to the British Ministry of Munitions. There he argued that canteens contributed to safety as well as efficiency. The experiment was approved later by, among others, the US Bureau of Labor that reproduced a UK memorandum on canteens thus:

“In the highest interest of both employer and worker proper facilities for adequate feeding arrangements should be available in or near, and should form an integral part of, the equipment of all modern factories and workshops.”⁷¹⁷

It was this social approach to eating that was revamped in the WWII British Restaurants proposal. Winston Churchill initially resisted it, fearing its communitarian ethos but saw the logic and insisted, if they were to exist, they should at least appeal to nationalism and the status of restaurants not proletarian canteens or cafés!⁷¹⁴ British Restaurants they duly became.

They were run as municipal enterprises, for profit, and self-financing. At their peak, they provided half a million meals a day.⁷¹⁸ Their value lay in the recognition that communal eating was a need for times when people either lacked facilities or were out of their homes working in jobs and in war work in 'spare' time (being air-raid wardens etc). Today's multi-job economy has some similarities. As municipal enterprises, some continued well into the postwar period. Historians have since been divided over whether they were a boon to women, liberating them from 'received' cultural expectation that feeding was their role, or whether this overstretches the reality. At the time, there was also concern about whether they could meet the goal of good nutrition, given dire shortages and rationing. Certainly, there was regional variation.

Nourish Scotland, the Scottish civil society food organisation, sees the need again today for a coordinated public enterprise reclaiming eating out as a collective good. It has been building support for a new chain of '**Public Diners**' operating as civic enterprises, providing sound nutrition at affordable prices.⁷¹⁹

To date there is no national or even regional coordination or policy framework for community cafés. Those that exist are often the result of local civic enterprise and initiative. Some are supported by local authorities. Most are run by and as civil society or community enterprises. Unlike food banks which are now so common and organised into at least two associations, no statistics are collected for 'social eating initiatives' (SEI), the term used to describe community cafés created often to bridge the gap between food waste and rising social need. The best estimate is that there are between 20 and 50 SEIs.⁷²⁰ By contrast, at the end of 2023, food parcels were given out from 1,646 locations via the Trussell Trust's 1,400 food banks and from at least 1,172 independent food banks organised under IFAN.⁷²¹ The next section describes one such SEI café to illustrate its contribution to civil food resilience.

REfUSE, a community café with "a story that will take you from a me, to a we"

REfUSE is a community café on the High Street of Chester-le-Street, Durham, launched in April 2018 by two women, Nikki Dravers and Mim Skinner, after three years of running pop-ups.⁷²² They wanted a permanent location, found one to share with another organisation, and refurbished it with volunteers. The motivation was partly to tackle food waste, as Marsha Smith and John Harvey researching it later identified,⁷²⁰ but entirely through community action. It is a community project, not a poverty project. It operates a discrete 'Pay-As-You-Feel' system that makes nourishing food affordable for anyone. Other SEI community cafés operate similar payment systems.

For this report, we asked REfUSE questions about how it works, its own networks, how it is funded, how many meals it serves, its style and whether and how it contributes to the skills of people. While agriculture often likes to talk of its multi-functionality, that term fits community cafés too. The main message is that the café is about warmth, social contact, confidence, social values, and its food use is driven by the continual scandal of wasted food while a cost-of-living crisis affects millions of people in the UK. Each month REfUSE "intercepts", as it put it, approximately 12 tonnes of food that otherwise would have been binned. Collected one day, it will be on the menu the next.

"While the environmental impact of food waste increases, so too does the cost of living. [...] It's breathtaking how much food goes to waste. This place saves that. [...] It's all packaged in plastic. If we didn't take it, it all would have gone to landfill. [...] As a nation we are capable of feeding everyone, but we don't."

It would be easy to look the other way but REfUSE sees this as systemic trouble. “The storm is coming. The storm is here. We cannot wish it away.” As one person put it in a short film about the café:ⁱ

“Everyone is fighting their own battles; that’s life, isn’t it? But here we don’t fight those battles on your own. This place teaches you life doesn’t have to be perfect to be beautiful.”

REfUSE has a very individual tone and style. It is not a chain. There is a history to its function, however, with many pointing back to British Restaurants in WWII. Writing about REfUSE in the year it opened, academics Jane Midgeley and Sam Slatcher described these modern community cafés as “places of quiet activism and reciprocity”.⁷²³ These are places which inject the ‘social’ into community interest.

REfUSE is a one-off but at the same time indicating a common social role and lending weight to Nourish Scotland’s proposal for more coordinated Public Diners. It is well-networked and contributes to wider food resilience. It liaises with other SEIs and is part of (and on the Board of) Food Durham, Durham’s Food Partnership.ⁱⁱ It is supported but not funded by the Council. It runs events and activities related to food growing, sustainability and access to healthy food. It does that in partnership with schools, community centres, and other charities. It also has a “long-held partnership” and shares a building with Handcrafted, a local charity which provides housing, positive activities and support for people with chaotic lives due to things like substance misuse, homelessness, poor mental or physical health, unemployment, and being in the care system.ⁱⁱⁱ The café is a route into employment for some.

Like many community organisations, it is linked to local churches, a toddler group, and a community choir, and various other NGOs locally, such as a housing association, NHS social prescribers, community support officers and social services. It provides food for other charities and sees itself as one among various such organisations. One person at REfUSE told this study:

“We’ve been on the same journey over the years with groups such as ShefFood in Sheffield and Magic Hat Café in Newcastle and occasionally gather to share ideas and mutual support.”

How does it survive financially? About a third of REfUSE’s funding is from grants and donations from a range of providers, including private and family-run trusts, the Big Lottery and Postcode Lottery, and housing associations. It receives some local government grants (especially in Covid-19) and from WRAP, the food waste consultancy. Roughly two thirds of its funds come from its own work.

“As a social enterprise we aim to make “profit for good” where all profit goes into fuelling our work. So, over the years we’ve done all sorts of enterprising activities: catering for events like weddings and conferences; making and selling pickles and chutneys; running weekly themed restaurant nights with a set price for a fancy three-course meal; selling “Waste Not Boxes” of surplus food; and renting out our space to other charitable organisations. The café itself runs on a Pay As You Feel basis at a loss of course, but we do make something as we have range of customers who pay

ⁱ Soul Food is a 9 minute film about REfUSE Café: https://www.youtube.com/watch?v=0jHK_6aPSys&t=522s

ⁱⁱ Food Durham: <https://www.fooddurham.net/about-us>

ⁱⁱⁱ Handcrafted: <https://handcrafted.org.uk/>

very varying amounts; and through charging set prices for hot drinks – your barista-made lattes and flat whites sell at the standard high street price.”

The local council provides support by not charging Business Rates (it could charge a Community Interest Company such as REfUSE at a rate of up to 80%). It had start-up funds from the Area Action Partnership for some of its capital costs when it first built the café.

“In Covid, it received business support funding and Covid emergency response funding, when the café was closed but still delivered over 90,000 meals to those that needed it.”

Conscious of the environmental impacts of food waste that it partly seeks to reduce, REfUSE has played its part in the Council's Net Zero and Neighbourhood teams, such as being paid to promote the Olio (food-sharing) app,¹ and has put on *Feeding the 5000* events in market squares around Durham County.

The café serves an average 65 meals and 90 hot drinks a day, and about 100 meals at weekends, with a “buzz to the place” especially around lunch time. The café is open 5 days a week but the space is used for toddler groups, a community choir and church groups on the other days, so it's a thriving hub of community every day of the week, and often evenings too.

“Because we serve flat whites, good quality food, and have a really good children's play area, we attract a wide range of customers, not just those struggling to afford nutritious food.”

Volunteers at REfUSE come from all backgrounds and capabilities, and REfUSE's five-year plan includes the objective “to *build capacity for community-led transformation* through experiencing, seeing and doing”.⁷²⁴ It runs an ‘access to volunteering’ program funded by a local housing association. Referrals come from a variety of services. Referees get one-to-one support and a safe environment to learn skills, from chopping carrots to making coffees. They have a training kitchen where Handcrafted runs cooking lessons every day, and they put on events like learning to slow cook, and workshops on pickling and fermenting food, making marmalades, pressing apples, etc. Charges for these are banded but free to volunteers, who all also receive food hygiene training.

“While some are barista trained, we all train each other, sharing tips and recipes in the kitchen. And we are about to start a Men's Pie Club in our kitchen space. If we do external catering, this is an opportunity for people to get paid work experience and learn hospitality skills fit for the workplace. Many of our volunteers have gone on to paid employment. One has even started up their own little café in Newcastle.”

Surely, this community café points to the potential for this kind of community eating to have a wider role in the event of shocks. It reinforces the case for space in resilience planning today for a new system of community cafés under a more appropriate branding.

British Restaurants were not the only crisis intervention in the wartime food market. The hospitality sector of that time was *not* closed down. In WWII, food consumption may have been subject to controls, but the framework thinking did aspire to deliver the notion of common good and value. War and crisis may have constrained the affluent in their eating compared to their pre-war freedoms, but the net effect was an improvement in the health of

¹ Olio is an international commercial enterprise whose subscribers share unwanted goods, including food. It has a high proportion of members in the UK - <https://olioapp.com/en/>

people on low incomes and those living in wartime deprivation. The food regime certainly contributed to the generation of cohesive spirit. The lesson is again appropriate today.

Way forward: A new Citizens Catering Resilience Advisory Group (CCRAG) should be created to include chefs, dietitians, social researchers, citizen representatives and domestic science specialists to advise on three channels for catering: festival, community and emergency catering. This new CCRAG should: (a) contribute to the formulation of practical advice on domestic stockpiling and cooking or food preparation with and without cooking, and (b) consider what infrastructure is required at community level for emergency mass catering, drawing on modern experience ranging from festival and community food provision to crisis interventions such as soup kitchens.

Way forward: Together with the above new CCRAG, an inquiry should be conducted by DHSC, FSA and civil organisations such as Citizens Advice, Neighbourhood Watch Network and the Royal Voluntary Service, together with food specialist NGOs. This should review lessons learned in Covid-19 on emergency food parcel provision, consider what might be needed ahead, and whether other options could be developed via mass and local catering such as is to be explored under the Recommendation above.

Shopping as or for resilience

In a food crisis or threat, where can citizens get food? In normal times, the shop provides this function. If one retail chain is disrupted, there are others. But what if the scale is greater? This possibility lies behind the stockpiling debate. As a number of interviewees noted, collective forms of help might be needed when markets wobble. How could that fit today's retail environment?

About 10% of food sales are made through the internet (much lower than clothing), and 40 pence in every pound spent by consumers in retail goes to food.⁷²⁵ Estimates vary but the top 10 supermarket chains have around 15,500 actual stores.⁷²⁶ The Association of Convenience Stores estimates there are 50,387 convenience stores, 71% of which are independent while some of these overlap with the big chains.⁷²⁷ And there are 1,581 farm shops with £1.4 bn sales (not just of food).⁷²⁸ Food is also sold in many more outlets than just specialist food ones: take-aways, pubs, cafés and more. They have supply lines. Conservatively we can estimate tens of thousands of food shops from which the British buy food but by volume, most is purchased from the giant supermarkets.

From a resilience perspective, mindful of the possibility of different gradations of threat from scams, ransomware, satellite dependent logistics, and *in extremis* hostile attack, ensuring diversity rather than concentration becomes a strategic priority.

The first line of defence lies, of course, with state security (e.g. NCSA, MoD, CCS) and corporate security procedures (in-house and/or outsourced) to prevent threats happening but, if they did take effect in any form, some degree of civil food resilience would also be required.

If normal shopping is impossible after shock, forms of 'abnormal' shopping could emerge: ranging from stockpiling to panic buying, looting or thieving. There is no reason to expect that this would not occur in the UK. Food retail diversity as well as community and social support are in this respect bulwarks against extreme reactions. As was outlined earlier, and confirmed by interviewees, in Covid-19 Government relied almost totally on the big retailers

and paid insufficient attention to the more numerous rest. It would be sensible to consider how the full range of existing food provision could be switched or adapted in difficult times.

Food Markets are held either in known open-air locations or from permanent buildings. Some are in old town centre locations, sometimes with little parking. Some even operate in more temporary set-ups. Markets, as early economists recognised, symbolise flexibility. They often have more localised and diversified logistics. This less-structured format is common in markets around the world.

In Covid-19, markets were exempt from lockdown but, to our knowledge, no national review of how they operated has been conducted. Different operators contacted for this report suggested political attention should be given to whether and how they could operate under different circumstances. In country areas, market days rotate; the 'same' market stall might travel to various towns on different days across a region. How this could be incorporated into local civil food resilience would best be left to local knowledge but would benefit from a national steer.

Asked to consider how markets might contribute to civil food resilience, one market analyst interviewed for the present research said that a shift of mindset by the public as well as by traditional market owners such as local authorities and other 'managers of public space' was needed.

"People have to be more open to changing their habits and not exclusively rely on the giant supermarkets. They have to relearn how to food shop and to build some diversity into their shopping patterns. Buying food in a non-branded, non-packaged format is different. They need to ask the questions you cannot ask of a pre-packaged food: What can I make with this? How do I process it without cooking? What does it taste like?"

"A market is and should be a kind of public space, where people meet to access food. It's where civil food resilience could find another form. But this requires the owners and managers of that space – often councils – to have the resources linked to a vision that the market is about people and their food.

"Really, what is needed is a rethink about how markets could be used more flexibly in times of food crisis."

This is a 'back to basics' approach to resilience, linking cultural and culinary skills to flexibility and diversity of access routes to food. The potential for markets to contribute to civil resilience is clear. The long-term expertise of bodies such as the Local Government Association (LGA), the National Association of British Market Authorities (NABMA), and small- and medium-sized stallholders should be sought.

Way forward: The Local Government Association and National Association of British Market Authorities, taking expert advice, should be asked to consider options for improved use of markets in times of food crisis and to make recommendations for how they could liaise effectively with Local Resilience Forums and contribute to the proposed Local Food Resilience Committees.

Markets have been a key feature of food systems for millennia, whereas **Food Banks** have become a UK feature in a few decades. Most operators of food banks are troubled at how they are now thought of by policy-makers as permanent. They were initially created as temporary organisations to compensate for fraying state welfare. To their credit, aware they

are being factored by the state into permanence, UK food bank organisations are committed to phasing themselves out. The CEO of the Trussell Trust, for example, made it clear in its manifesto for the 2024 election:

“Food banks are not the answer. They will be there to support people as long as they are needed, but our political leaders must take bold action to build a future where everyone has enough money to afford the life’s essentials.”

They see themselves as symptoms not solutions for extensive food inequality.⁷²⁹⁻⁷³² But they are relied upon by sizeable at-risk sections of the population. In April 2023 to April 2024, the Trussell Trust, one of the two major food bank networks, distributed 3.1 million ‘emergency food parcels’, a 95% increase over the last five years. 655,000 new people used a food bank in the 2023-24 period. They have become, like it or not, a repository of skills and knowledge in managing food for emergencies and finding and using buildings for that purpose such as halls, unused buildings and churches.

Could Food Banks evolve into something else? One academic interviewee recognised the contradictions faced by Food Banks:

“I see some demand for civil food resilience emerging but it’s mostly at the small and local levels. Building resilience at the local level gets people to engage. We saw this in the pandemic. Food banks have come to the fore recently. They could be presented as helping deliver food social resilience but in reality they are very aware of the limits to what they can do. I think it’s good there’s more discussion of how resilience could be improved beyond food banks. My concern is that they have just become part of the current food system. They need an exit strategy and be part of something different.”

A senior food industry executive also recognised the significance of food banks as a sign of market failure, but saw the implications as even wider - a failure to address consumption:

“Everyone is frightened to death to address the food consumption issue but it will have to be addressed and it might take a crisis to force the issue. If the system was working well, the incidence and need for food banks would not have gained such traction, for example.”

Another ‘shopping option’, far smaller, is provided by the new generation of **Community Interest Companies (CICs)** such as the Community Shop Group. The government created the legal status of CIC to be a set of rules covering how social enterprises could operate.ⁱ

The Community Shop Group began in the north of England as one among many attempts to syphon food that otherwise would be wasted towards people who could benefit.⁷³³ It provides a shop, community kitchen and membership club in one format. In some respects, this is a recreation or reinvigoration of some features of the 1840s co-operative movement. But whereas the Co-op movement set out to own the means of production from farm to shop,^{734,735} Community Shop relies on donations and support from food companies. Members benefit from food purchases well below conventional prices.

Could communities be encouraged to create a new generation of **food co-operatives** for their own resilience? The original Co-op movement was also born from a recognition that existing structures were not benefiting working people, and that food was sub-standard and

ⁱ HM Government: <https://www.gov.uk/set-up-a-social-enterprise>

unaffordable. It prospered partly because it identified with and was supported by a large proportion of working people (low and middle income) who supported the anti-profiteering and mutual aid ethos. It pioneered the introduction of supermarket formats to the UK in the 1940s but was eventually overtaken by more highly capitalised private multiples. In the 1970s another wave of 'new' food co-ops emerged promoting foods then harder to come by such as wholefoods and organic foods.⁷³⁶ Specialising in dry goods such as pulses and grains and in buying in bulk then dividing it into smaller bags was something that individuals and households could consider. They were hard work, and conventional retailers soon started selling such goods.

But the point remains and is illustrated today by the desire of food banks and community pantries to become something else, that community-oriented food retailing might be brought into food resilience planning. The UKRI call for resilience research might fill some gaps identified by academics in this field.⁶⁶

Way forward: The range and possibilities for community support schemes, community-based storage and community food retailing deserve exploration and consultation from a civil resilience perspective. Government should produce national guidelines for alternative food retailing in times of emergency, taking account of local conditions and available public and private space.

Changing culture or changing minds for collective storage?

What might be learned from other types of collective storage? Almost all religions, for example, offer cultural 'rules' about eating. Prophecies of crisis and sometimes extreme harm to the faithless provide encouragement to follow the rules. Some are prescriptive; many are linked to significant events or people. Few are as detailed in long-term perspective as the Church of Jesus Christ of Latter-day Saints (colloquially known as the Mormons). This religion is decidedly apocalyptic; it believes that a period of destruction will prepare for the second coming of Christ. Believers are urged to make practical preparation including food storage to enable them to survive that intermediary period.

Two points can be made about the presence of cultural rules. The first is on the practicalities. It could be argued the Mormon advice echoes some extreme US preppers in their practical preparation for food crisis. In fact a distinction can be drawn between the individualism of preppers and the strict communality of the Mormon. All its believers must follow this advice. Secondly, cultural rules on food crises are not the terrain only of the state. There are competing sources and rationales in food advice for emergencies. Some rules are offered as fundamental life rules, such as the Mormon advice below. Others are for only certain moments or conditions, such as the rules offered by the US Red Cross and the US Department of Homeland Security, that follows.

The Mormon advice: long-term three months' storage

Mormons, the colloquial name for followers of the US based Church of Jesus Christ of Latter-day Saints, offers firm advice to its members, with videos, and other links. These include on foods lasting more than 30 years, products, packaging, conditions, use of plastics, and more.⁷³⁷ Nutrition advice and calculations are produced by the Nutrition department at Brigham Young University, its own higher education institute (see Figure

8.3).⁷³⁸ They are required to stock three months' supply of food, water and financial reserves, as a minimum, partly to support neighbours and fellow believers.

Figure 8.3: Advice from the Mormon Church (2019)

AN APPROACH TO LONGER-TERM FOOD STORAGE			
Department of Nutrition, Dietetics and Food Science, Brigham Young University			
Revised September 2019			
<i>The amounts of food listed below provide adequate calories and protein for an adult for one year. However, there are many other possibilities. Adjust the kinds and amounts of food stored based on personal needs and preferences, and by experimenting with recipes.</i>			
<ul style="list-style-type: none"> • Water is a critical storage item. A common recommendation is to store 14 gallons per person for a two-week supply and to rotate the water periodically. Because it is difficult to store large amounts, a means of water purification is needed. • Shelf life: Long-term food items (most packaged in low oxygen) will generally have an acceptable taste for at least 30 years (except as noted) when stored at room temperature or below (but not freezing); however, some nutritional losses will occur. Foods stored at higher temperatures (e.g., in attics, garages) will have a much shorter shelf life. • Short-term food items that must be rotated faster than used could be donated to a food bank before their expiration date. • Bolded items are available at Home Storage Centers of The Church of Jesus Christ of Latter-day Saints and through the on-line store at store.churchofjesuschrist.org. (Approximate weights are calculated from weights listed under "Prepackaged Items" shown on the "Home Storage Center Order Form.") 			
	per person amount	# cases (6 cans per case)	approx. weight (lbs)
Long-term food items – at least 30 year shelf-life			
<i>Grains (types are interchangeable based on individual preferences, e.g., 1 case of rice for 1 case of wheat)</i>			
Wheat	24 #10 cans	4	132
Rice, white	12 #10 cans	2	65
Oats, rolled	12 #10 cans	2	29
Pasta (Macaroni or Spaghetti)	6 #10 cans	1	21
Legumes (Beans, Split Peas, Lentils)	12 #10 cans	2	62
Milk, nonfat dry (15 year shelf-life)	12 #10 cans	2	49 (or 28 pouches)
Sugar (or other sweeteners—see below)	12 #10 cans	2	70
Apple Slices, dried	6 #10 cans	1	6
Potato Flakes	12 #10 cans	2	22
Carrots, dried (10 year shelf-life)	3 #10 cans	-	8
Onions, dried	1 #10 can	-	2
Salt, iodized	8 lbs		
Baking soda (for baking and to soften old beans)	1 lb		
Baking powder	4 lbs		
Vitamin C tablets (@ 90 mg)	365 tablets		
	approx. unopened shelf-life (years)	per person amount per year	
Short-term food items			
<i>Fats and Oils (types are interchangeable based on individual preferences; storing a variety of fats/oils helps with rotation)</i>			
Cooking/Salad Oils (e.g., soy, olive)	1+	2 gallons	
Shortening/Frying Oils	1+	3 cans @ 3 lbs	
Butter/Margarine (stored in freezer)	1	6 lbs	
Mayonnaise/Salad Dressings	1	3 quarts	
Peanut Butter/other butters	1+	6 lbs	
Fruit Drink Mix (or bottled multivitamins)	2	3 #10 cans (or 8 pouches)	
Spices/Flavorings/Bouillon/Condiments	2+	-	
Eggs, dried (for baking, not frying)	3+	2 #10 cans	
Yeast	5+	2 lbs	
Other sweeteners (e.g., honey, molasses, brown sugar, jams, jellies, syrups)			
<i>Storing other canned or dried fruits, vegetables, meats, etc. will increase variety and nutritional value</i>			
Nonfood items			
Can opener			
Grain grinder			
Recipes – that use only stored ingredients			

Source: Mormon Church (2019)⁷³⁸

The dietary advice is centred on grains, arguing that they can have long shelf-life, if well-managed domestically, and responsibility to follow the strictures is placed on the believer who is recommended to calculate daily needs in the household and multiply them for three months. It also advises on storage suitable for 30 years distinguishing between types: foil, pouch, plastic etc. Shorter-term, an advisory 3-month food storage list for every average adult per household suggests at least 90-100 lbs of grains, 14-16 lbs of legumes, 7-9 lbs of dairy, 15-17 lbs of sugar, 2 lbs of salt (plus assorted herbs and spices), and 7-9 lbs of fats.

The 4-stage US Dept of Homeland Security & American Red Cross food emergency advice

The 2004 USDHS household advice formulated together with the American Red Cross, by contrast, considers food needs for a few days. But the 4-stage process that US citizens are encouraged to follow is important. The focus is on a domestic process of engaging with preparation. That can be challenging enough for households to keep in store and rotate.

The 16-page booklet from 2004 – still on USDHC’s relevant website in mid-2024 - gives plentiful advice on what citizens can do to feed, warm and water their households if there are emergencies, what to do if power goes off, how to cook without power, and more.⁷³⁹

It suggests three categories of foods to store: (a) foods to consume within 6 months; (b) foods to use within a year; and (c) foods which can be stored indefinitely, if properly stored. This implies a degree of household management skills that perhaps cannot be assumed. It also assumes a degree of household stability. Each household is recommended to make a Plan in four stages.⁷⁴⁰

Stage 1 is to discuss what the family/household would do in a crisis, asking all to contribute to clarify or decide:

- 1) how they will receive emergency alerts and warnings (NB this presumes someone or some agency will do this);
- 2) Where to go for shelter in an emergency (it presumes there is one);
- 3) What evacuation routes exist;
- 4) How the family/household would communicate in an emergency; and
- 5) Creating an ‘emergency preparedness kit’.

The emergency preparedness kit should include:

- Water (one gallon per person per day for several days, for drinking and sanitation)
- Food (at least a several-day supply of non-perishable food)
- Battery-powered or hand crank radio and a NOAA Weather Radio with tone alert
- Flashlight
- First aid kit
- Extra batteries
- Whistle (to signal for help)
- Dust mask (to help filter contaminated air)
- Plastic sheeting and duct tape (to [shelter in place](#))
- Moist towelettes, garbage bags and plastic ties (for personal sanitation)
- Wrench or pliers (to [turn off utilities](#))
- Manual can opener (for food)
- Local maps
- Cell (mobile) phone with chargers and a backup battery

Stage 2 should consider specific needs which need to be built into Step 1 above. These should consider:

- Different ages of members within your household
- Responsibilities for assisting others
- Locations frequented
- Dietary needs
- Medical needs including prescriptions and equipment
- Disabilities or access and functional needs including devices and equipment
- Languages spoken
- Cultural and religious considerations
- Pets or service animals
- Households with school-aged children

Stage 3 should create a written Plan. A standardised form is provided on the website.

Stage 4 is to rehearse all the above.

On 13 September 2023, as part of National Preparedness Month, FEMA gave updated advice (but retained the 2004 advice). Billed as about food safety, it was open about “preparing for disaster”.⁷⁴¹ It gave advice under headings:

- what types of food to include in an emergency kit
- how to store food that lasts
- dangers of a power outage (mainly loss of refrigerator and freezer)
- steps to take (on food) after a disaster
- how much food to store for emergencies

This advice still assumes return to a modicum of normality. Post disaster, it talks of washing “cans and pouches with hot, soapy water” as though the water and power will be quickly back on. Maybe they will.

Is there common ground across the various sources of advice on what the public should do?

As was seen in the country studies (Chapter 6), governmental food emergency advice, however reassuring or stark, shorter- or longer-focussed, appear to share some common features. They aspire to provide:

- a trustworthy, reassuring set of actions;
- a tone of authority;
- advice that is a mix of practicality and feasibility based on Western standards of living;
- the rationale for following the advice;
- some indication of a process to follow; and
- some (but not too much) acknowledgement that (some) groups / people might not have capacities and commitment to follow the advice.

Jane Lloyd and colleagues’ 2023 comparative study of advice from different countries agrees there are common themes.⁸² Part of the difficulty governments have in generating national advice is that they want simple common advice when perhaps diverse advice is needed to allow for different circumstances. Perhaps more attention is needed on how different audiences (demographic segments) might respond to common advice.

Faced with not dissimilar gaps between people’s real conditions and impending food emergency, in WWII, the UK Ministry of Food recruited many community-level advisors. It created hundreds of food advice centres across the country.¹²⁴ Today, the reflex of government would be to put it on a website. It would be standardised. But what if the website went down? That is why Sweden and Latvia have also delivered paper pamphlets and instructed citizens to keep them.

The UK so far has only the *Prepare* website. More attention to what would make an effective process of mass public education is again required. It is uncertain how a nation heavily reliant on ready-made food, UPF diets, and 24-hour / 364-day food availability will react and be helped to prepare for changed conditions.

Grow more in urban agriculture, gardens, allotments, and community settings

Historically, one avenue for civil food resilience has been the opportunity even for urban dwellers to grow food, whether in existing gardens or in more land made available. In WWII, allotments were created on UK public parks. Elsewhere in the Empire, they were termed Victory Gardens.⁷⁴²

Singapore, an island city state, in the early 2010s only produced about 7% of its food but became conscious of potential threats that this very high dependency might bring.⁷⁴³ With its *Singapore Green Plan 2030*, launched in 2021 after the first Covid-19 shock, it set out to diversify its supply and to increase home production both by ‘traditional’ ground-level growing and by ‘novel’ means such as hydroponics, aquaponics and aeroponics, and ‘stacked’ greenhouse production.^{744,745} This appealed to the city’s predilection for technical innovation, specifically to apply Artificial Intelligence (AI), robotics and the Internet of Things – all innovations which carry other threats, of course. And to date, there appears to be both investment and enthusiasm for this sector.ⁱ

Singapore’s innovation-as-security is in line with a strand of FAO city food policy. The FAO’s 2019 Framework for the Urban Food Agenda summarises how it thinks of such initiatives and what they entail:⁷⁴⁶

“This framework defines the Urban Food Agenda as the vast range of policies, programmes and initiatives developed and implemented by national and sub-national governments, jointly with different stakeholders from the public and private sectors, to enhance food security and nutrition and sustainable development in urban areas and in the rural areas under their influence.”

One policy specialist interviewed for the present report, although sympathetic to urban food growing, urged caution for the UK:

“I should be clear that urban food growing – vertical farms, allotments - isn’t going to feed towns and cities. It has symbolism but it’s not going to feed all people in a time of shock, I think. Gardening, land armies, WWII experience are all interesting and can be good for morale but need to be rethought for today’s circumstances. What’s going on in Singapore today is interesting. It is taking food security and resilience much more seriously than us.”

Others are more positive about the potential to engage the public in direct growing. An academic specialist in a department with research on urban growing said:

“There is a potential to produce more food in urban areas, where the mass of the population exists. [...] A food resilience focussed strategy on land use could surely include giving a wider access to food growing, addressing issues such as urban population’s access and addressing calls such as the Right to Grow.”

And a gardening body agreed, suggesting that for gardening to play this role, more concerted policy coherence would be needed:

“Gardening will not replace bought food, but it does have its place. More people can be encouraged to grow food (and our experience is that many who do not garden or

ⁱ see, for example: <https://sustainableurbandelta.com/singapores-urban-agriculture-and-city-planning-7-lessons-in-sustainability-and-green-innovation-from-local-experts/>

grow food currently would like to try it). There would be a need to provide education and training for those new to gardening on the basics plus more advanced for those that may have some experience.”

This organisation also saw the lack of diversity of seeds, not helped by Brexit border and biosecurity delays, as an issue:

“The lack of diversity of seed as well as a relatively narrow selection of crop types available mean that amateur growers cannot easily build their own robust and resilient systems to provide a range of fruit and vegetables for their own and their family's diet.”

It may seem blindingly obvious to encourage more urban food growing to help build civil food resilience, but food growing easily becomes submerged when profitability from and need for housing intervenes. The UK looks set to enter this political terrain, with the new government wanting to loosen planning restrictions in the National Planning Policy Framework to encourage housebuilding. The Rockefeller Foundation – funder of the ‘green revolution’ and agricultural intensification – is a perhaps surprising opponent. It argues that city level food growing is also a priority and likely to rise up the food security agenda.⁷⁴⁷ It argues that cities are key for transition to resilience and has founded and funded a 100 Cities network of major cities.

From that experience, during the Covid-19 pandemic, Rockefeller noted the Chennai Resilience Centre’s Urban Farming Initiative (CUFI) provided “community members with garden kits and training to care for their gardens”. The benefits were multiple: gardens act as ‘cooling centres’ amidst urban heat as well as being food sources, health givers, and points of biological carbon sequestration.

These arguments have long proposed by the urban farming movement.^{748,749} Historically, cities and towns often began and grew where they did because this gave proximal food growing to underpin their economies. Modern food distribution systems appeared to make that urban-rural proximity obsolete. But it is noticeable that a wide range of UN bodies each for different reasons, such as the WHO,⁷⁵⁰ FAO,⁷⁵¹ UNEP,⁷⁵² and UN Habitat,⁷⁵³ now supports closer urban-rural and intra-urban food growing. The EU Horizon 2020 and Horizon Europe research programmes have invested €183 m into aspects of urban agriculture ranging from controlled condition growing to vertical farming, communities and agroecology.⁷⁵⁴

This is an unfamiliar debate for Whitehall. But, using land modelling techniques, academics have shown that British cities and towns could be growing more food. Walsh and colleagues looked at 26 urban towns and cities and found that “urban green spaces, at their upper limit, have the capacity to support production that is 8 times greater than current domestic production of fruit and vegetables.”⁷⁵⁵ This was equivalent to 38% of current domestic production and imports combined. If the UK’s favourite fruit (bananas and other exotic fruits unable to grow here) were excluded, the urban potential rose to 400% of current consumption! They concluded that there was “substantial potential to meet the dietary needs of the local urban population”. The problem was lack of policy support rather than feasibility. They added that “making use of urban green spaces for food production could help to enhance the resilience of the national-scale food system to shocks in import pathways, or disruptions to domestic production and distribution”.

A SME horticulture business we interviewed agreed with this analysis and wanted policy makers to encourage investment in this scale of production and to:

“encourage more small scale growers to supply their immediate vicinity and collaborate. Some can grow crops on field scale such as potatoes with the efficiency of relatively big equipment. [This needs] more help for farmers transitioning from monocropping, chemical use and ties with big supermarkets.”

A farmers’ market in the North of England we interviewed thought regional support for small-scale production was visible across the country but patchy. It saw a positive future in more community growing immediately outside towns. In their area, there were allotments, a community café and people:

“...growing fresh food in their gardens/allotments to give to food banks. There is also a community grocery. However, no one is drawing these lines together or has an overview of what there is. [...] Land prices determine what happens around cities, and currently the land goes to people with the biggest pockets. It would need local and national planning. Food resilience would need to be part of planning policy and the support of infrastructure.”

Many SME growers and those interested in this sector as part of civil food resilience are aware of financial and other impediments to its expansion. They talked of a lack of coordination to pull a growth strategy together and a familiar refrain was of “an uphill battle”. One in South East England talked of:

“Inadequate scale [...] and produce ...not very accessible owing to lack of local markets, or in niche outlets.”

The British are said to be a nation of gardeners. In mid-2023 just over 162,000 people worked or were employed as professional gardeners. But the garden supplies industries sees its market as 23 million gardeners – the 4.9% of UK land down to residential gardens (see Chapter 3). The average UK garden is 12-15 square metres. Even if gardened meticulously and intensively all-year-round, this would not feed a household. Problems can be (lack of) light at ground level, shadow and competition from trees, proximity to buildings, and desire for other usage. These reduce the food potential.

The light issue is why some urban farmers (echoing Singapore) favour greenhouses on top of urban buildings, to maximise access to light in winter. Even for large gardens with considerable production capacity, the critical issue is often storage, which is why those horticulturalists who extend the seasons and grow winter-specific crops remind consumers that this means learning how to make the best from ‘old’ consumables such as root crops, cabbages and as a former Defra Secretary of State opined, turnips.⁷⁵⁶ Pleasure at their consumption is often a matter of cooking rather than growing.

It is not realistic to expect modern households with no knowledge of old-fashioned skills of pickling or bottling suddenly now to become Mrs Beeton – even though urban food tastes are making bottled foods fashionable again, and some medical evidence recommends fermented or pickled food as beneficial to gut microbiome.⁷⁵⁷⁻⁷⁵⁹ The point here is that skills that may be useful in a crisis cannot be quickly implanted into culinary culture. Which skills might come to the fore or be irrelevant in crises is context-specific.

Some argue that ‘grow your own’ gardening just needs to be encouraged. This certainly happened with Dig for Victory in WWII, so why not today? Interest is a function of what is available, which is why green space remains an urban consideration. The Ministry of Agriculture’s short 1941 film ‘Dig for Victory’ argued that shortage of land was no excuse for not trying to get some land and making the most of it. This, it said, was “just as important a weapon of war as guns” and one that all ages could take up.⁷⁶⁰ Advice was simple but gently

insistent. “Take a tip from the old gardeners”. “Isn’t an hour in the garden better than an hour in a queue?” It was effective but had the leverage of rationing and shortages to encourage people.⁷⁶¹

Trying to address that policy gap in today’s circumstances is the rationale for the Right to Grow campaign launched by the Incredible Edible group in 2022 with all-party support. This highlights that that parcels of public or common land are left unused which could be turned into plots for growing even if temporarily. The Right to Grow legislation it seeks would “require local authorities to maintain a free, accessible map of all public land that is suitable for community cultivation or wildlife projects” and “make it straightforward for community groups to secure free leases to cultivate the land, and allow those groups to bid for the land should the authority decide to sell it”.⁷⁶²

Though ambitious, this is not unrealistic, as the case of Granton Community Gardens in Edinburgh shows.

Granton Community Gardens, North Edinburgh

The Scottish Government has a Scottish Land Fund (SLF) to enable communities to buy assets with a value of up to £1m. The average is about £150,000. The SLF £10 million budget is rising to £20 million by 2026.⁷⁶³ The SLF was an outcome of the long political pressure to reclaim land and assets for communities, expressed in the Land Reform (Scotland) Act 2003, the Land Reform (Scotland) Act 2016 and the Community Empowerment (Scotland) Act 2015.

Granton Community Gardens in North Edinburgh began in 2010 in a very small way. Within a decade it had grown into a community group taking over and gardening on various sites, some small, some larger. In 2017 it became a Scottish Charitable Incorporated Organisation, a formal legal community interest entity (see website for aims).ⁱ This legal status enabled it in 2023 to bid for and win a £82,902 grant from the SLF to become the official owners of its main garden - 10 Wardieburn Road - for food growing.

It hosts weekly lunches and meetings, and supports community development through the gardens. It has spawned a community bakery. When Covid-19 lockdown occurred, this combination of skills and local knowledge was able to rally support and networks to deliver and think practically about meeting food needs.⁷⁶⁴ Its community goals had been co-created and were in place when resilience was required.

So far, Granton’s experience suggests that, with a combination of good people with energy, backing from local bodies, a dedicated pool of funding available with Government support, and an ethos to act with and for the community, there can be multiple benefits: health, pleasure, life outdoors, community, all wrapped around community food provision.

Edinburgh offers other community food projects such as Lauriston Farm, a 100-acre workers’ co-operative urban farm in north west Edinburgh,ⁱⁱ and Earth in Common in Leith aspiring to be an ‘urban croft’.ⁱⁱⁱ Maintaining the mix of social value and energy in such projects is the challenge and is partly why being able to secure ownership of one key plot of land in Granton’s case was important.

ⁱ see Granton Community Gardens: <https://www.grantoncommunitygardeners.org/>

ⁱⁱ Lauriston Farm, Edinburgh: <https://www.lauristonfarm.scot/>

ⁱⁱⁱ Earth in Common, Leith: <https://www.earth-in-common.org/>

In England there is not yet the same level of legal rights or central state interest in fostering localised civil food resilience. Civil society organisations have long complained of ‘projectitis’: short-term funding that dooms projects to come and go rather than build long-term resilience (a problem considered in the next chapter). Allotments are too easily disposed of under planning laws to be turned to other use. Food is not seen as a prime function or duty.

Pressure to increase urban housing density is a current political priority. It can easily override community food production under the National Planning Policy Framework, we were advised. One national body we interviewed foresaw a spiral away from allotments just when a ramping up might be needed.

“The continuation of low provision of allotments; continuation of private and hereditary land ownership patterns; difficulty in accessing land for allotment food growing; [worsening economy] leading to further lowering of central government budget allocation to local government (which remains the responsible body at a local level for allotments and continues to be the majority provider of allotments); climate change impacts e.g. on what can be cultivated and where it can be grown along with the potential loss of some allotment sites depending upon location.”

What options for growing do citizens have?

There are a number of routes open to citizens to grow more of their own food. These are summarised in Table 8.3, based on a Welsh Government paper. The most common is to grow something on the space in front, behind or at the sides of an existing home, or in an allotment away from the house. These all imply different relationship between the consumer and grower. Some, such as community gardens and garden-sharing, fuse the roles. The consumer becomes a producer, what sociologists call the ‘prosumer’ - the consumer as worker.^{765,766}

A few years ago, there was a flurry of interest (or publicity) in **garden sharing** – this is where people with large gardens that they neither want to garden nor sell nor leave - might increase access for those without gardens. We could find no evidence it has taken root or contributed to civil food resilience but we note the Welsh Government inclusion. Under some circumstances, it might extend.

Small-holding production has at times been encouraged by Governments. The Land Settlement Acts after WWI were intended to start a new generation of small farmers by making available an acre or more with a plot of land for housing. They dwindled in the dire economic conditions.

The citizen’s capacity to grow and not just consume food, even in towns, does tend to be promoted only in wars, and can be an act of desperation when gardening like all food growing requires time and a build-up of experience to be really effective. In civil food resilience terms, the case is to prepare before not in conflict or crisis. Gaining sufficient numbers to practice gardening as part of the domestic food economy becomes a cultural not just crisis matter, therefore. This mass psychology element to home growing featured in both WWI and II public propaganda, appealing to a mix of national and self-interest. This can be illustrated by Abram Games’ visually brilliant and clear message in the WWII poster ‘Use spades not ships: grow your own food and supply your own cookhouse’ (see Figure 8.2).

Table 8.3: Types of growing available to citizens

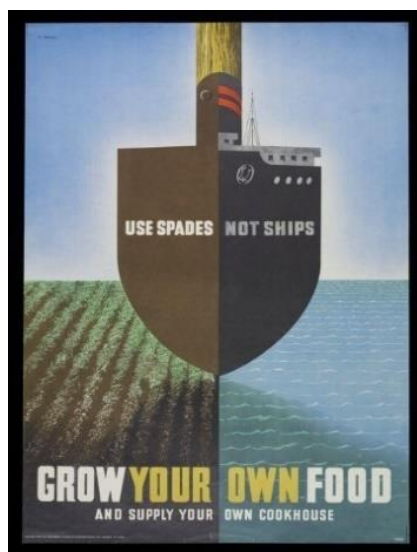
Form	What it is	Land
<i>Allotments</i>	Plots of land for gardening in a large space	Can be statutory or temporary sites, public or private land
<i>Community farms</i>	Usually keeping animals as well as growing; often educational as well as producing	Larger holding than gardens; sometimes even in towns
<i>Community gardens</i>	People collaborating to grow food for themselves	Public or private
<i>Community Supported Agriculture</i>	Partnerships between farmers (or a growing project) and the local community	Usually a grower in countryside but linked to town
<i>Community Orchards</i>	Combining the aesthetics of trees in towns with production	Anywhere
<i>Incredible Edible schemes</i>	Towns or localities agreeing to grow food in or near buildings and unused spots	Urban space
<i>Abundance or fruit harvesting schemes</i>	People coming together to make use of existing sometimes neglected production	Anywhere
<i>Forest gardening</i>	Schemes created to emulate forests by having permanent planting	Anywhere
<i>Garden sharing</i>	People with gardens not fully used allowing others without to grow food, giving a % to the owner	Urban
<i>'Meanwhile' garden</i>	Temporary use of land awaiting development or other purpose	Anywhere
<i>Household garden</i>	Growing food on householder's land in front, behind or around the house	Anywhere
<i>Small holding</i>	These tend to be larger plots either attached to where the grower lives or at a distance; an opportunity to grow at a more significant scale	Mostly now private land; at times, Government has encouraged this e.g. post WW1

Source: adapted from Wales Government⁷⁶⁷

Allotments are the most established form of access to land for the landless in the UK. One gardening body interviewed for the report summarised their value thus:

“Allotments provide access to locally produced food; are part of networks of local food producers; they provide education about food provenance both on-site and to local communities and wider society; provide a continuation of deeply skilled local food production practices that are by-hand tilling of the soil and part of the heritage of skills and food production, and allotments contribute to food security and sovereignty. Alongside, allotments perform physical and cultural ecosystem services (e.g. as carbon sinks, biodiversity, direct human contact with nature) and are part of green corridors and interconnected networks of green spaces. Additionally, allotments have amenity value and contribute to health and wellbeing of individuals and to resilient communities that are incumbent to food production locally and by-hand.”

Figure 8.2: UK War Office poster designed by Abram Games, used 1941-45



Source: Victoria & Albert Museum

The value of allotments is that they give ordinary citizens an opportunity for resilience, another mode of preparedness. The interviewee continued:

“Many people tell us that wider social, environmental and economic issues around food resilience in the UK are part of the reasons why they want or have an allotment. Whilst we would not argue that every allotment gardener is an activist, renting an allotment is clearly a response (in part) to issues around the food chain, food supply and food resilience.”

The history of British allotments has been long and at times tormented, indicative of the tensions there can be over democratising land ownership and managing land for the common good.⁷⁶⁸ It is not surprising access to allotments came up in our research.

“At present there is low provision of allotments compared to demand and, hence, allotments are unable to operate to their fullest potential within the UK’s food resilience structures. For example, waiting lists for allotments continue to be long and have been so since the mid-2000s with little abatement; this is not just about the Covid pandemic. [...] Waiting lists may be unreliable [but] do however give a broad and general indication that demand for allotments [...] far outweighs supply.”

One response has been to halve the conventional allotment size which the law allows to be up to a maximum of 1210 m². The intention of the 1922 Act was that the food produced on an allotment should not enter the cash economy and should be wholly or mainly for the plot holder and family. Halving plots makes land available to more people but restricts those who could manage a large plot from having one. In England, the basic impediment is the restricted supply of plots. One interviewee from a gardening organisation explained that:

“[t]his is due to the price of land to lease or buy for allotment use; restrictions in planning regulations relating to the growing of food on allotments; and additional restrictions in place on some allotment sites by some local councils; and (in some locales) an unwillingness by local councils to provide further allotments.”

In 2023 the Right to Grow argument was boosted when the City of Hull became the first city to back it for neglected land.⁷⁶⁹ This decision owed much to the city being both a member of the Sustainable Food Places network and home to an active Food Partnership linking civil society, businesses and local authority, built up over a decade.⁷⁷⁰ One of Hull Food Partnership's commitments is to "build community food knowledge, skills, resources and projects". The value of this kind of collective purpose was recognised by most of the organisations we have engaged, interviewed or researched for this report.

Community Gardens can be an example of collective purpose. As the name implies, community gardens are more than individual plots. The intention is to garden with and for the community. It is a social collaboration. **FlintShare** in North East Wales, for example, began with a desire to create a community supported agriculture (CSA) scheme. CSAs emerged in the 1990s to create short supply routes for designated households who contributed either labour or finance (e.g. by a commitment to purchase a regular box of fruit and vegetables) or both. Some CSAs can become almost commercial in scope; others are decidedly community- rather than produce-oriented.

FlintShare: a social enterprise for community growing

FlintShare describes itself as "a community run social enterprise based in Flintshire, North Wales, which provides members with the opportunity to help produce their own food".⁷⁷¹

It began in April 2010 when its founder Nikki Giles received a small grant of £7,000 from the local Rural Development Agency to employ her to create the project. FlintShare was incorporated as a body in December the same year, but it took off when two meetings were called, one at the Rugby Club in Mold and the other at the Village Hall, Holywell. 150 people came to one or other of those meetings, from which four offers of land emerged.

It has grown to include three sites all in Flintshire, a county with a population of just over 150,000, the smallest county and one of the most ancient in Wales. Cilcain Garden is 3.5 acres set in the beautiful Clywidian range of hills, an area of outstanding natural beauty; it is partly laid down to a large vegetable garden, and has some woods and a stream. The Northop College site is 0.5 acre with six substantial polytunnels and a long-established orchard. The third site is just over a quarter of an acre on the Hawarden estate, Deeside, and is a mixture of raised and flat beds with a small greenhouse, a potting shed and colourful flower beds.⁷⁷¹

No site can be sold off, so there is no incentive to over-commercialise. All are run to organic gardening principles without agrichemicals. The different locations offer a variety of growing opportunities and facilities for members across the county.

FlintShare today has about 120 members who pay £25 per year. They share the 1.8 to 2 tonnes of vegetables produced annually. No-one is paid; it is all voluntary labour and time. Produce from the plots is brought to one site for members to collect. That 'hub' meeting, this report was assured, was "cemented by cake". FlintShare found, as others find, that "meetings work if labelled as social".

The not inconsiderable management tasks are conducted by a core group of 6-10 people at any one time. It has found, as other such projects have found, that it is important to have a diversity of people and skills on board. It holds regular meetings throughout the year, has a website, and epitomises community values.

The UK has many national gardening organisations such as the Royal Horticultural Society (RHS), Garden Organic, the National Society of Allotment and Leisure Gardeners (NSALG) and Social Farms and Gardens (SFG), all with membership dispersed throughout the country. There are also many local garden clubs and associations. The RHS has 2,500 affiliated local societies (some abroad).

The SFG helps community groups with the potentially difficult task of gaining planning permission for community gardens and orchards. SFG was created by the merger of Care Farms UK, an association of farms caring for people with special needs, and the Federation of City Farms and Gardens. It advises, runs or contributes to 200 city and school farms, a thousand community gardens and all the UK care farms.⁷⁷²

To accelerate gardening as a tool for civil food resilience, Government ought to ask public-facing organisations such as those above to produce advice and programmes with Defra. The lessons from those who have successfully run school gardens is another strand of civil experience that should be harnessed. If the Welsh Government can provide specific support and advice for community growing,⁷⁶⁷ a re-invigorated Defra and MHCLG could too.

Providing a sound legal basis would help. Government has underpinned allotments and community gardens legally for a long time. Key Acts include the Small Holdings Act 1908, the Allotments Act 1922, 1925 and 1950. Land management is generally circumscribed by a welter of do's and don'ts, simply because what happens in one plot can affect others. Issues such as biosecurity loom large, whatever the community sets out to do. The general advice to community groups setting out to create some kind of collective growing is not to have private signatures on land agreements or commitments to rents, leases or purchases but to create a Community Interest Company (CIC) or community benefit society or some such legal organisation. This enables an organisation to take on public liability insurance and to draw up clear and appropriate memorandums of association. It means operating within the law.

Growing food away from the immediate vicinity of home carries particular risks, such as from vandalism, theft and poor security.⁷⁷³ But it also has positive aspects. One study of garden and allotment growing and other spaces suggested that current production was sufficient to supply the urban population with fruit and vegetables for about 30 days per year, while more optimistic modelling suggests that existing land cultivated for food could supply over half of annual demand.⁷⁷⁴ There would be variations, too - good years and bad years.

The UK's poor rate of fruit and vegetable consumption is a source of concern for public health specialists. Dr John Middleton, Director of Public Health for Sandwell - a deprived post-industrial area in the West Midlands - created a horticultural social enterprise arguing it was both a gateway to self-respect and a public health dietary intervention.⁷⁷⁵ Back in 2016, the King's Fund presented the case for gardening as a 'double gain' - tackling poor physical health such as obesity and mental health by helping reconnect people to others and nature.⁷⁷⁶ Both could prevent NHS costs as well as contribute to civil food resilience. Unfortunately, such initiatives are too easily closed down with local authority budget cuts. Public health functions were transferred from the NHS to local authorities in 2013 under the 2012 Health and Social Care Act, with supposedly ring-fenced funds. In fact, public health grant allocations in England were cut by 24% in real terms per capita between 2015–16 and 2021–22.⁷⁷⁷

Orchards have a resilience and health role. There has been a rebirth of interest in them, partly in belated reaction to the senseless grubbing up of English orchards in the name of the Common Agricultural Policy – it should be noted France did not do this – and partly

celebrating how orchards have a direct value for health. A 2024 Faculty of Public Health position paper especially valued the role of fruit-bearing trees in urban areas.⁷⁷⁸ Orchards can be particularly beautiful. They do not necessarily require tilling of soil; activity and leisure can both occur under them. They do require skills and patience if starting from scratch, however. Fruiterer skills such as grafting and pruning particularly have long been in short supply in the UK for large scale orchard work.

A final option for civil food growing has been opened up by architects and people's experience of living in high-rise buildings. This is to grow on roofs. The tops of buildings have long been recognised as opportunities to harvest rain, sun and domestic labour. Some roof-level urban gardens are surprisingly large. Bold architecture is required to retrofit buildings designed to shed rather than retain water for food growing but it is possible. It tends to be costed into buildings such as offices or hotels as display rather than food-growing utility but its contribution to urban food production is probably minor and symbolic unless commercially driven and funded.⁷⁷⁹ Academic studies suggest it is mostly not commercial and functions simply as high-level open air space.⁷⁸⁰ LED lighting makes urban indoor growing a possibility – and illicit drug production shows it is possible for high value products – but it is dependent on electricity and thus subject to energy outages.

Gardening and growing provide multiple benefits for sustainability as long as the gardening does not undermine itself by unnecessary agrichemical use (see the recent review of gardening in relation to the UN Sustainable Development Goals).⁷⁸¹ UK gardeners currently buy and use tonnes of pesticides, whereas in France a ban on use of synthetic pesticides in gardens came into force in 2019. A 2023 study found that house sparrow presence was 12.1 % lower in gardens applying any pesticide, 24.9 % lower with glyphosate, and 38.6 % lower with metaldehyde (found in slug pellets).⁷⁸²

Peri-urban horticulture

Interest in urban and peri-urban conditions grows when economic conditions worsen. When the Soviet Union collapsed, for instance, and with it, Cuba's role to provide sugar for the Soviet economy, a remarkable period of civil food resilience ensued. Cuba had unwisely harnessed its climatic, soil and growing opportunities to a form of colonial relationship. Soon after the Cuban revolution, initial supporters warned Cuba of the food risks stemming from that political dependency.⁷⁸³ When the Soviet Union collapsed in the early 1990s, Cuba was forced to begin what became a remarkable period of experimentation in urban farming and horticulture. It had little option if it wanted to feed the people.⁷⁸⁴

International organisations promoting urban and peri-urban food production such as RUAF (originally the Resource Centers on Urban Agriculture and Forestry but now branded as Urban Agriculture and Food Systems but still operating as RUAF) point to that and other examples of where civil food resilience depended on access to land, and skills to make the best of it. This is often in developing rather than affluent economies.⁷⁵¹

A farmer interviewed for this report was rare in acknowledging the possibility of landowners making available land for small scale urban and peri-urban production. He saw this as a priority for civil food resilience and put the politics pithily:

“Farmers need to give land over to people to develop horticulture. I understand the reluctance but we must allow new entrants in. There is a cultural resistance and land sharing needs to be de-risked somehow.”

FlintShare proves that some landowners will come forward (as the Hawarden estate did). To become significant, this would need government encouragement. The incentive is that small-scale production can be highly productive. One study of Brighton and Hove showed that it had both the potential to increase food production and that such cropping is “usually produced using few synthetic inputs and [is] destined for local consumption”.⁷⁸¹ It creates co-benefits for environment, health and social well-being.

Since WWII, UK agricultural policy has generally encouraged a conventional economic approach to efficiency centred on productivity measured in financial rather than ecological terms. For Defra to begin to support decentralised peri-urban food production would require a mindset change. In European terms, UK land use is dominated by large landholdings whereas globally, small farming accounts for about a third of global food production. There are an estimated 410 million small farms in the world of less than 1 hectare (ha).⁷⁸⁵ In England, a little over 10% of farm holdings are of less than 5 ha.¹⁷⁶ Their financial viability is dependent on post-farm structures such as markets and distribution channels.^{786 787} Nevertheless, community-oriented smaller-scale growing offers a route for civil food resilience.⁷⁸⁸

To ensure to include views from the small-scale end of production, open to citizens, we conducted interviews with some relatively small-scale and community-oriented growers. Some were economically successful; others struggling. Although these interviewees tended to be local providers, their views are included in this citizen-oriented chapter because they represent an argument that local provision is the answer to civil food security, and these are the kinds of entry points where consumer / citizens can become producers. Academics have termed this general sector: ‘alternative food networks’.⁷⁸⁸

We interviewed a nursery running a box scheme in southern England, a box scheme serving a Midlands city, two farmers’ markets, two local food hubs, two ‘hyperlocal’ food suppliers, and one national body. All were committed to local food production and community resilience. They viewed the current mainstream food system as intrinsically risky:

“[There is] continuing over-reliance on imported items, especially commodity foodstuffs, animal feed and fertilisers. [...] We are over-dependent on international and to some extent intra-national food supply, where there is very little flexible, local supply to compensate if a failure in the chain occurs.” (Wales activist)

“Ahead, I see trade wars and actual wars impacting supply chains of commodity foodstuffs, animal feed and fertilisers. [...] Too many people cannot afford the right food, and many producers cannot afford to carry on because the prices paid to them are at or below the cost of production. This is leading to producers having to scale-up or give-up at a time when we need many more smaller scale producers.” (A local food hub spokesperson)

None of them felt they could scale up in a time of mass shock sufficiently to fill any vacuum created by shocks to currently dominant food supply chains. They felt central government did not recognise them as important in the first place, and local government did not have the resources.

“Small scale organic farmers are struggling to survive, the cost of living means people can’t afford local food, supermarkets are dishonest and manipulative. The average person does not eat seasonally and is unwilling to have to spend a significant amount of their income on food.” (A nursery and veg box supplier in South England)

“[...] it gets nods but no serious investment. Our food system removes money from communities and puts nothing back. We need our citizens to rebel against their food.”
(A local food hub spokesperson)

Covid-19 also showed how fragile some of their own livelihoods were:

“We don’t get any support from government as farmers’ market managers. During Covid I did manage to obtain a small amount of financial support via a County Councillor for one of the farmers’ markets, and the local authority also provided a small amount of financial support by paying for barriers that were needed at a market during COVID. There is no levelling up money either – a lot of the funding does not trickle down.” (A farmers’ market manager)

Covid-19 did, however, bring new customers as consumers saw the value of local produce. Some ‘box’ schemes expanded rapidly. They noted the value of receiving acknowledgement and rhetorical support from their local councils. As one market said:

“People want to be shopping and supporting local farmers. Things like the Jeremy Clarkson farm show had an effect, [and so did] for instance foot and mouth disease. It goes in ebbs and flows. Even now during the cost-of-living crisis, people still want to buy and support local food. But an issue is that farmers’ markets don’t always have what they want and can’t sustain the demand by for instance only offering two kinds of cheese. There is a mismatch there.” (A farmers’ market manager)

There are tensions over prices, with hard-pressed consumers anxious not to over-spend, while hard-pressed community-oriented growers receive insufficient returns.

They are acutely aware, too, of how large numbers of consumers have very restricted or declining budgets for food:

“[...] We have a poverty problem in the UK, dressed up as a cost-of-living crisis. Too many people cannot afford the right food, and many producers cannot afford to carry on because the prices paid to them are at or below the cost of production. This is leading to producers having to scale-up or give-up at a time when we need many more smaller scale producers. “Cheap” food is the target of most governments as low inflation leads to general election success, (and the reverse is hopefully true too). Our citizens should aspire to spend as much on food as they can afford, know where it’s from and share the spoils with people. Changing the mentality will not be easy but the last 40 years that have hollowed out civic society and high streets are at an end and we will return to a more localised life, food included.” (A local food hub spokesperson)

Interviewees see the geopolitics that have taken society to where it is in relation to resilience and conflicts of interest:

“We have witnessed (in Ukraine) for the first time in a long time what can happen if a major part of the World’s food system clams up because of a change in World politics. In recent days the Black Sea Grain Export agreement has broken down again. There are many more potentially serious events lurking out there – Chinese soya export ban, Egyptian wheat export ban etc.” (A local food hub spokesperson)

Asked if they were realistically able to help prevent large-scale food crises, the interviewees were agreed:

“Not alone, at most we could help feed 800 families per week but this is with fruit and vegetables, not other staples like grains and pulses, and at least half of this is produce we buy in from wholesalers.” (A Southern England nursery)

“No, we are not able to prevent large-scale food crisis, is the short answer.” (A Northern farmers’ market)

“Of course not!” (A small farming organisation)

“No – we need agricultural policies to change soon!!” (A local food activist)

There is a long-held view among academics and British farm analysts that small and community-oriented producers in the UK are too fragmented and lack sufficient voice to promote the SME sector to grow and receive funding. Policy decision-making has long favoured large holdings compared to France and across Europe, where there is a solid tradition of political attention to and support of small-scale producers and a history of welding SMEs into larger units through post-production cooperatives, for example. In the UK, grants are not even available to small-scale producers, let alone encouraging them to co-operate and scale up. As one national organisation supporting small-scale and agroecological land use said:

“There is plenty of interest and concern – but deep levels of disempowerment and lack of access to decisions and resources. I know private trusts and funds have given more money to food and land issues since Covid – but that may be waning now. Others, however, are apparently spending their assets because of the critical place we are at. But we are still badly lacking a cohesive, wider agroecological response and programme that all member parts can get behind. That means a lack of political clarity and leads to the current disastrous political situation.” (A small farming organisation)

Interviewees were asked what would increase their contribution to civil food resilience:

“Access to more land without huge rent. More UK wholesalers to choose from. Grants to be able to offer subsidised boxes to people who wouldn’t normally be able to access them.” (A Southern England nursery)

“More national and government support (financial support included) to help make this happen. [...] A Food Partnership structure in my county.” (A Northern farmers’ market)

Asked what would build civil food resilience more generally, there was general agreement that this is not happening at present but that it could:

“It would take coordinated effort. Getting people around the table and thinking about what we need to do to ensure we have civil food resilience. [...] This requires food resilience to be a priority for society. [...] We could be debating local food zones (round towns) as originally suggested by Growing Communities. [...] It might need adapting a little for very rural towns and probably for other locations too, but it could definitely be used as a start point for local conversations about a local community resilience plans.” (A Northern farmers’ market)

“It is totally feasible but would require an actual plan – not being left to the market. [...] The plan would require producers, distributors and retailers to work together. It would require a land commission of some sort that could ensure various land uses in relevant places. It would have to be well funded and involve a lot of people to

maintain credibility. We are a long way from that currently...” (A small farming organisation)

These small-scale growers echo what supporters of allotments gardeners think, too, that access to land and security of land use are critical blocks to consumers who want to become growers. Asked what could be done about this, one organisation replied:

“We also hear from local councils about their desire to set up new allotment sites, however, they too have difficulty finding and affording to purchase/lease land for allotments. Compulsory purchase or leasing of land for the provision of allotments by local councils is permitted, however, the process is complex and time consuming and there has never been a successful case as far as we are aware.” (A national gardening organisation)

Lessons and Recommendations

This chapter has explored some food resilience routes available to the public. They are summarised in Table 8.4. This provides a working checklist of what can be done at different levels (household to community), and that requires support from the regional and national level.

Lesson 1: Stockpiling is an understandable civil action. Managed well and with forethought, it could contribute to household and community resilience. It could also be socially divisive. Allowed to happen in panics, it becomes an accelerator, rather than a preventor, of disruption. Just-in-Time logistics has meant the demise of (and certainly a revolution in) the possibility of extensive national and commercial storage. Storage exists but it is based on very fast through-put. Nevertheless, some foods can still be easily stored (tins, grains, dried goods) while others are more risky (perishable foods, frozen or chilled food at risk of power cuts). The UK urgently needs to clarify policy on stockpiling at national, community and household levels.

Way forward: The Government should conduct a review of stocks to explore: (a) the feasibility of industry moving to a more decentralised system of storage and distribution; and (b) how best to use existing facilities within towns, cities and communities to give all people confidence that there will be basic food infrastructure in each region in the event of crisis.

Way forward: HM Government should create a special Food Emergencies Advisory Committee (FEAC) under the DHSC, drawing on relevant advisory committees such as SACN, the FSA and OHID. This new FEAC should create food emergency guidelines for different circumstances and populations. These Guidelines should be drawn up in consultation with the British Red Cross, British Dietetic Association, British Medical Association and Faculty of Public Health, and take note of diverse community specialists. The Guidelines should be laid before Parliament.

Way forward: A new Citizens Catering Resilience Advisory Group should be created to include chefs, dietitians, social researchers, citizen representatives and domestic science specialists to formulate practical advice on domestic stockpiling and cooking or food preparation with and without cooking. This should take account of the need to prevent / reduce food waste, and of the experience of different civil interests, such as those who now routinely provide emergency food parcels, as well as critically assessing what happened with special emergency food parcels in Covid-19.

Table 8.4: What the public could do and the facilitation that would help: a working checklist

<i>Type of action</i>	<i>Citizen action</i>		<i>What this requires from 'above'</i>	
	<i>Individual/household</i>	<i>Community</i>	<i>Regional</i>	<i>National</i>
Stockpile	Is there are storage place? Is it affordable. What food is absolutely necessary?	Is there somewhere which can act as a hub?	Steady supplies to enable turnover of stock	Security, funding, policy support
Skill development	Develop key skills for basic food (e.g. can it be prepared without power?)	Conduct community food audits of skills and resources already present or feasible	Skills exchange and regional learning partnerships	Clear direction about diversity of consumer skills, and skills needed for crisis food management at different levels
Grow (some) food	Depends on scale so may be symbolic but can diversify main sources and create awareness	Join or campaign for allotments and extension of other forms of access to land	Encourage diverse local sources and skills sharing	A national food policy; planning flexibility to make unused or near urban land available e.g. by a 'right to grow'
Crisis catering	Skills, knowledge, resources to offer in a food crisis	Create community field kitchens for mass provision	Pooled resources e.g. mass catering equipment available at short notice across the region and where needed	A specialist industry and public sector review to assess current preparedness, potential and requirements
Ration food	Prepare to eat differently; follow baseline food appropriate for the household (how long would it last?)	Food swaps; food banks and community buildings become community storage;	NHS regional structures to be alert to public health requirements	Clear leadership from Defra, DHSC, MoD; highly sensitive but clear public messaging
Draw on food specialist advice	Members of food-relevant professional bodies offer services to community food schemes	Community list of relevant expertise, kept and reviewed by proposed Food Resilience Committees or other body designated with that function	Consistent regional level coordination e.g. by public health, community dietitians, food professions, emergency planning	Legal basis to spread trustworthy expert advice; national coordination of food advice and food warning systems
Democracy	Involvement in decision-making; possibilities for feedback	Community networks, participation in awareness building of local food capacities	Clarity about regional leadership in England (Mayors etc); clear multi-level flows of information and warning	Good working relations between UK Prime Minister, Wales First Minister, Scotland First Minister, and relevant Cabinet members
Warning and communication	each household to have a plan e.g. know where people are, where the food is and what to do in crises	A community checklist e.g. of vulnerable at-risk groups. Clear leadership and wider networking	Simple intelligence, education and communication systems with options not just reliance on websites	A different grade of food warnings, akin to Security Alert system; all designed to provide a Total Food Defence approach where feeding all people is a legal duty
Social networks	ensure everyone knows their part in household food crisis plan and what to do for the neighbourhood	Develop, maintain and contribute to neighbourhood links	Clarification of local government duties, roles and requirements	Delivery of 'whole of society approach'; taking it beyond a principle into societal reality
Food-belts	Access to larger land plots inside or outside towns for food growing	Community pressure to release unused public land for food growing	Reinvigoration of regional structures, particularly for England, with commitment to diversity supply routes	National commitment to protect food-growing land around urban areas, and enhance food growing diversity

Source: authors

Lesson 2: The role of the hospitality sector was poorly considered in Covid-19. Its potential to contribute to civil food resilience should be reviewed and its civil food resilience potential taken seriously. There are hospitality sectors with direct transferability to civil emergencies.

Way forward: Research is required into how the UK's diverse and extensive experience of mass civil as well as military catering could be incorporated into civil food resilience planning and preparation. A civil food defence catering strategy is required, and should involve MoD and civilian enterprise experience.

Lesson 3: SMEs and AFNs in the UK struggle to become mainstream and often experience low financial returns but have considerable positive community resonance. They expanded in Covid-19 but official support for the sector is required before the sector can scale up sufficiently to be a mainstay of national civil food resilience. Lack of secure access to land can be a block. So too is the lack of powers available to UK local authorities compared to other Western European countries.

Way forward: Powers for Local Authorities, in particular planning departments, to facilitate availability of food-growing land for community food growing should be reviewed. A Right to Grow should be given legislative backing.

Way forward: Government should produce national advice for food retailing other than the giant supermarket chains on how in times of emergency they could contribute to civil food resilience, taking account of local conditions and available public and private space.

Lesson 4: During Covid-19, SMEs tried and some were able, to adapt quickly to restrictions and to increased and changed demand. Demand also rose for allotments. This has historical resonance. However, food policymaking has tended to marginalise this community approach to civil food resilience. England's lack of a food policy does not help. This gap must be addressed by the new Government. The Agriculture Act 2020 has spawned new subsidy systems centred on the Sustainable Food Incentive and the Countryside Stewardship with little strategic understanding of 'hard' security considerations. Neither create the urban-rural reconnection that is needed for civil food resilience.

Way forward: The (English) Agriculture Act 2020 should be amended to facilitate tighter urban-rural food links. SMEs and AFNs should receive help to transition to better food production as a public good.

Way forward: Government should commit to the creation of more allotment sites as a contribution to UK civil food resilience.

Lesson 5: Creating a mix of regional informal and institutional links between universities, colleges and growers, and gaining support such as both the Scottish and Welsh Government support, would be a positive encouragement for diverse and regional commercial growing. Its role as a service to community food resilience should be highlighted. The findings from the UKRI resilience research programme *Strengthening the resilience of the UK food system* should be synthesised for civil food resilience.¹

¹ UKRI <https://www.ukri.org/opportunity/strengthening-the-resilience-of-the-uk-food-system/>

Way forward: Academics should be encouraged to research the range and possibilities for community support schemes and community-based food storage (and waste reduction) in any further round of the UKRI resilience research call *Strengthening the resilience of the UK food system*.

Lesson 6: If shortages loom, more decentralised food growing would be seen as having been a wise strategy. It is also already appropriate under the principles of the UK Government Resilience Framework. The case for increasing access to food growing spaces, proposed by the Right to Grow campaign and allotment organisations, should be supported and included in any forthcoming revision of national planning frameworks. Note should be taken of the supportive Scottish Land Fund and equivalents be considered for Wales and England as contributions to civil food resilience.

Way forward: The English and Wales Governments should create Land Support Funds drawing on the experience of the Scottish Land Fund.

Lesson 7: Direct food growing in many of the forms considered in this chapter are routes for people to step mostly away from the conventions of the cash economy to where they use their own uncosted labour. Unwaged (food) labour can generate direct and community benefits for nutrition, well-being, friendship, solidarities, environmental improvement, and civic participation. In this respect, gardening can be seen as a social as well as nutritional service and a contribution to civil food resilience.

Way forward: The Allotments Act 1950 should be amended to give local authorities the power to enable local authorities a Right to Grow on temporarily or permanently unused land to enable local communities, particularly children through schools, to consolidate food growing and handling skills.

Way forward: Defra and DfE, together with gardening and growing civil society organisations should produce national (England) guidelines on school and community opportunities for growing food akin to those provided by the Welsh Government. This advice should take account of conditions in diverse parts of the country and of urban - rural differences.

Lesson 8: Most consumers buy food from shops. Decades of investment have created a hypermarket economy in which a handful of very large enterprises dominate food retail. Other forms of shopping exist and deserve more attention from public policy. Traditional markets and modern variants were allowed to continue in Covid-19 but, like the hospitality sector, received minimal attention. The possibility exists that markets – in all their forms – together with other forms of access to food offer opportunities for resilience. They deserve better consideration in public resilience policy.

Way forward: The Local Government Association and National Association of British Market Authorities, taking expert advice, should be asked to consider options for improved use of markets in times of food crisis and to make recommendations for how they could liaise effectively with Local Resilience Forums and contribute to the proposed Local Food Resilience Committees.

Chapter 9: Cities and Regions: new civil food structures, their potential and limitations

This chapter addresses a thorny problem for civil food resilience in the UK: its local presence.

Whereas other countries have well-established systems of multi-level government – national, regional, city/town, local – the UK is well-known for its centralised structures and domination by London-based power.⁷⁸⁹ It is by no measure a decentralised or distributed governance system in Baran's terms (see Chapter 2). There is also wide agreement that its local sector is severely held back by centralised financial control – a factor acknowledged by the recent election. This is not a new problem but remains politically 'live'.⁷⁹⁰⁻⁷⁹² Most local funding is in fact given from central government. Local tax raising is largely limited to property taxes based on decades-old valuations.

In recent decades, parts of existing Ministries and agencies have been relocated to other areas of the country over the years (e.g. vehicle licensing to Cardiff, tax to many places, DHSC to Leeds). It has also introduced some forms of devolution to Wales, Scotland and Northern Ireland, and latterly the role of Mayor to some cities and city regions. These are all important and have largely been welcomed. Yet the UK remains and is perceived as a highly centralised state.

Aware of localist pressure, Governments have offered some useful change but denied financial control on overall local government spending. The 2011 Localism Act for instance gave some new powers to define community assets,⁷⁹³ but by no means devolved what shapes the local conditions in which people live.

As well as the urban-rural divide, the marginality of the coastal areas does not receive sufficient policy attention in UK politics. This is less true for Wales and Scotland for whom the sea matters, while in England urban conurbations are mostly divorced from their rural hinterland and where coastal activities matter culturally. One specialist in this matter interviewed for this report saw food as an important opportunity for urban-rural reconnection and fundamental for civil food resilience:

"The word 'bio-regional' doesn't mean much to most people but is the perspective I think we need to pursue. But people do understand and identify with landscape, their region's landscape and feel. It has meaning. Institutionally, I think we could do more with that landscape as regional food perspective. The new system of [Metro] Mayors gives powers over some aspects of this but [Mayors] are often urban-centric. [With its history] it's not surprising perhaps that the UK lacks this sub-national, bio-regional perspective on food strategy."

The manner of devolution of powers can be divisive. Different powers have been given to Wales, Scotland and Northern Ireland. Not all Mayors have either the same powers or cover the same issues. There is no commitment to give equal powers to all regions, the argument being that they have different sizes, capacities and histories. Other countries – Germany, Italy, France for example – have more consistent and more evenly-distributed possibilities, often with tax-raising powers giving local people and bodies more autonomy and room to act in response to their understanding of the conditions they face.

This situation is not helped by UK local government being in a frayed financial condition. British local authorities have received seriously reduced budgets since 2010, down by 31% between 2009/10 and 2021/22.⁷⁹⁴ City-regions we explored for this report reinforced the importance of local capacity for estimating and building civil food resilience. In the UK, local authority room for manoeuvre is restricted, whereas as in other countries, local identity, pride and space (both political and territorial) have more space for expression. As we saw in France (see Chapter 6), this has contributed to food resilience and security preparedness.

Step Four: Engaging local authorities, officials and agencies can build civil food resilience

Despite having to be realistic about local government realities – shared across political party lines by local government - a central message of this report is that, if the UK wants to build civil food resilience, giving policy support to local government must be more than a slogan or aspiration. Civil society cannot build total food defence or deep civil food resilience on its own. It matters whether local governance is controlled from higher up, decentralised or more distributed.

It matters if communities are actually engaged in Community Risk Registers or if CRRs ‘emerge’ with little consultation or note of the real local conditions. Even from a control perspective, the encouragement of decentralisation makes sense. It would be a mistake to leave national food resilience solely to national ‘command’. We need more attention to the sub-national and the local. One interviewee with a Forces background recognised this:

“I’d have a very good look at how to improve these regional structures. There is, or was in my time, a defence regional structure which could be learned from. It might be best to build on a county or regional battalion (type of) structure. We need effective command at the regional level.”

Interviewees agreed civil society cannot deliver civil food resilience on its own. Social movements, community enterprises and initiatives such as were considered in Chapter 8 can develop so far on their own, but at some stage have to forge some kind of relationship with and support from existing official structures to become more effective at scale or for crises. Their development is constrained. Some initiatives choose to stay hyper-local and ‘loose’. Others have or would welcome official liaison. And some do not. But for resilience from shock – particularly deep shocks – the linkage between civil society and officialdom cannot be ignored. This is not just a philosophical point but one of organisation importance. Civil food resilience requires an institutional framework.

There are different routes through which civil engagement with the locality could flourish. As noted in previous chapters, the UK has experimented with citizens’ juries, assemblies, polls, consultations, and in particular plebiscites. All are means through which localities can express their wishes. Elected local government, if alive to its public mood, will understand the importance of accountability and responsiveness. In theory, local government is that medium; and voting for local councillors is the textbook way to shape the locality democratically.

Across the country, civil society groups and actions have sprung up partly in response to a perceived or real loss of responsiveness from official channels. Food actions have often played a part in that changing dynamic: campaigns to stop farm or river or water pollution, to tackle food poverty, to save the high street shopping, to save buildings and other community

assets such as markets or swimming pools or youth clubs. The mushrooming of food policy work by NGOs over the last half century is a remarkable addition to civil vibrancy. People who in the past might have participated in local government instead are NGO members. NGO activism and lobbying is one expression of food politics.

This raises a challenge for civil food resilience strategy: what happens if there is *not* an enlightened reform of local government that puts more trust in people, genuinely invests long-term in resilient food infrastructure away from the capital and begins a genuine transfer of powers with suitable depth of resources or fund-raising? If this does *not* happen, how can genuine civil food resilience be enhanced sub-nationally? The rest of this chapter considers the role of civil food resilience in that context. It suggests that positive action is possible. The case for civil food resilience can draw on important sources of democratic experimentation. The examples rehearsed below – international and UK - are a fraction of what is available. They suggest that there is no one blueprint or keystone action but there are pointers.

New forms of city regional engagement and involvement: international and UK

Throughout the world, the most active engagement with food security and resilience has found expression at the city or regional level. In the UK, however, one academic told us that too often:

“[t]here’s no consultation by central government with the regions or the devolved nations or indeed learning. There are no real structures addressing real or potential food shocks for ordinary people. Or none that are made public. The mantra is that the food industry and retail will deliver.”

Another researcher stressed the significance of building this more local element into food resilience:

“by coming together, by building trust and personal contact and thinking collectively about how to use existing capacities and resources in more joined-up ways. [...] The UK needs to catalyse and facilitate this coming together, this convening. This need not necessarily be expensive; it can be done on a shoestring. What’s needed is someone to organise and keep it going. Sustainable Food Places and the network of local food partnerships do incredible work in local food systems, but they often lack the resources to drive these things forward quickly.”

In the last decade, coinciding with the period of upheaval in UK politics, there has been a remarkable surge of inter-city and inter-regional sharing and learning and international exchange. For the 2015 World Expo held in Milan, the city of Milan chose food as one of its major themes. It hosted and launched a declaration signed by 100 world cities on food - the Milan Urban Food Policy Pact (MUFPP). A smaller group of 46 cities set commitments that cities knew they would have to address to ensure the future interests of their citizens are met. These include good, safe food supply, sustainably sourced, shorter-supply chains, managing the competing interests over land so as not to forget food, and ensuring good health for all.

These remain sensible aspirations but the challenge is how to negotiate them in reality. Some cities have been able to do more than others. The room for manoeuvre for a city in China or India differs to what a Western European city can do. But MUFPP clearly resonated by appealing for solidarity across rather than up the governance levels. Today over 200 cities

are signatories of the MUFPP and its secretariat provides an umbrella for diverse city and regional coordination and shared learning from attempts to improve civil food resilience. A study of how city and local government responded to MUFPP found 66 policy actions were being tried and had recognised its positive role in “localising global sustainable development targets”.⁷⁹⁵

At the same time, social researchers have become interested in monitoring cities’ food vulnerabilities and advising on their routes to adaptability. It has become more common to recognise how big modern cities are highly dependent on maintenance of complex logistics and food flows. Few are fed from their immediate hinterland. The issue has been much discussed at UN Habitat.⁷⁹⁶

New York City, for instance, estimates that it imports 90% of its supply across the year from thousands of places. During Covid-19, cities where specialist analysts were already engaged had a head-start in helping ensure supplies were maintained.⁷⁹⁷ Having good information on the state of a city’s food is enhanced if the city already had an in-house body such as a food council or advisory group. They already monitor such matters. Greater London’s Mayoral Assembly, for example, benefited from having a Boroughs group already up and running under the auspices of its London Food Board already before Covid-19 (see more below). This had intelligence networks to monitor where there were difficulties, and fed that information to relevant authorities early. Crisis reaction is helped if a city is already considering how its supply could be made more resilient.

In the USA, the Feeding Cities Group, a consultancy, advises cities on appropriate emergency planning. Although this group finds broadly similar challenges across diverse cities, it still advises that individual city to base their plans on their urban specifics. “Yesterday’s solutions are not the answer to today’s food crises”, it states.⁷⁹⁸

A common problem met by resilience planners is that food systems are already characterised by chronic, persistent and widescale difficulties. Elected politicians sometimes feel they have enough on their plates already and cannot deal with the complexity of food matters. This is an understandable but mistaken position. The MUFPP in part represented recognition that there is little point delaying tackling long-term chronic problems if inaction now worsens the room for response later. More cities and towns know this. Australia is a good example of a nation that is facing an existential crisis in food resilience, and is already experiencing harsh effects of climate heating. In Melbourne, for example, a collaboration between the ‘local state’, academics and civil society is trying to chart a way through these difficulties, with resilience preparedness as a central goal.

Melbourne: collaboration between academics, the city and civil society maps the challenge

Melbourne is one of two Australian signatories to the MUFPP, the other being Sydney. Reviewing Covid-19’s lessons, Dr Rachel Carey and colleagues at the Foodprint Lab team at the University of Melbourne, Australia, generated short- and long-term lessons for food system shock analysis. One lesson is the value of having an organisation dedicated to preparing for such shocks. Another is recognising in advance how food resilience requires a sound infrastructure and preparedness that extends well beyond the city’s food system itself. For example, there is a need for flexibility in the welfare system to ensure that those without cash can still get food in a crisis.^{103,799} ‘No food if no cash’ is a well-understood reality by those experiencing any food crisis. It is why UN organisations developed the Integrated Food Security Phase Classification (see Chapter 2).

Affluent economies are mistaken if they think such indicators are irrelevant to them. Melbourne's Foodprint Lab argues that liaison between the local and central (state) authorities for civil food resilience can be held back if there are political differences, rivalries or competition for funds (as in the UK). Civil food resilience requires smooth, multi-level governance coordination. Building collaboration around food planning takes time, a view confirmed by others.⁸⁰⁰

These findings were the result of a long collaboration between the Melbourne academics and city authorities. This built up long before Covid-19 but paid off during it. Back in 2015 the city and the Foodprint Lab team had jointly worked on and published a map of the city's food system.⁸⁰¹ Aware of imminent climate change affecting all of Australia, they investigated the risks and potential impact of increasing bush fires and other pressures on food resilience.⁸⁰²

Risks to the city loomed from a number of directions. One was the city's food supply's geographic and corporate concentration. The collaboration realised risks could rise from such dependency if certain companies were affected. They saw too the shock potential of long JiT supply chains, telecommunications and energy infrastructure. Melbourne judged it was vulnerable to logistics and transportation disruption, to the social impact of insecure employment (not least in food-related work), and to the ever-present challenge of food loss and waste. The city concluded it was not immune to general problems of food insecurity within the region. On the contrary, its food system posed a mix of economic, societal, environmental and infrastructural risks.

This work led to the creation of a roadmap to chart how the city food system could become more resilient. Teamwork emerged from engaging as widely as they could with stakeholders via co-design workshops.⁸⁰³ To encourage public take-up and engagement, the team developed and published a GIS interactive map to help identify where particular vulnerabilities lay.⁸⁰⁴ This mapped food production around the city, its major food transportation routes, the location of food distribution warehouses, and data on food insecurity and disadvantage across the State of Victoria. The maps depict areas particularly vulnerable to climate hazards such as fire and flood, and to long term climate trends on temperature, rainfall and forest fire danger.ⁱ

For the general public, the team produced two readily-understood infographics to share what had emerged. One sketched what a resilient food system might be,ⁱⁱ and the other where all Australia's (not just Melbourne's) food security problems lay.ⁱⁱⁱ Through such work, the city hoped to contribute to a more detailed national discussion about how Australia must face impending severe climate change. This collaboration also expanded beyond the city into analysing how the State of Victoria's and city government co-exist and must co-operate. Again using co-design methods, they now intend to produce practical 'how to' guides in 2025, while building up an active community of practice committed to this improvement process. Progress reports are published.

Liège, Belgium – a food-belt

The City of Liège, Belgium, is seen by some city analysts as a pioneer of a particular strand of city approaches to civil food resilience. Like Melbourne and others, its progress has been

ⁱ see the 2022 GIS map by the University of Melbourne: <https://science.unimelb.edu.au/foodprint-melbourne/resources/home-tab/building-the-resilience-of-melbournes-food-system>

ⁱⁱ Infographic: Melbourne resilience advice: <https://science.unimelb.edu.au/foodprint-melbourne/publications/infographic-resilient-food-supply-chain>

ⁱⁱⁱ Infographic: Australia's food security problem: <https://science.unimelb.edu.au/foodprint-melbourne/publications/infographic-food-security-problem>

dependent on building an alliance between the city authority and what was initially (years ago) seen as a minority interest in food. Both groups of policy actors – the elected authority and a citizens' group concerned about risks from the existing unsustainable food system - realised they had mutual benefit from working together. This process grew to involve many people and multiple layers inside and outside the formal city authority including public administration officers, elected representatives, aldermen and civil society groups.

It began in 2013, when a group of citizens in *Liège en Transition* - the local group of the wider international Transition movement dedicated to improving resilient towns and communities. Liège was a deindustrialised, somewhat depressed city but this group of citizens formed an association to create a 'food belt' around the city, the *Ceinture Aliment-Terre Liégeoise* (CATL).ⁱ And this food-belt concept is what it is now known for. But it has grown into much more.

CATL was created formally at a two-day meeting of nearly 600 people in the city in November that year.⁸⁰⁵ They explored how their city might address challenges known to lie ahead for agri-food; they agreed a transition benefiting the city and citizens would not simply happen. It needed help. Their baseline assessment was familiar to many towns and cities across Europe (and the world). Farmers in their region of Wallonia were declining in numbers – with nearly 80% having no successor for their holding – while consumers were experiencing food and health problems, and scientists were identifying the importance of food to the environment and economy. And the economy was contracting, notably its industrial base.

They came up with the idea of trying to promote sustainable food amongst the general public and to foster local food production and distribution in the Liège region, with a special focus on vegetable growers around the city to provide food via short supply chains. When CATL started, there were four co-operatives in Liège. By 2018 there were 14 food co-operatives, some with multiple outlets. By 2020, they were up to about 20 co-ops,ⁱⁱ and by 2023, "there are now more than 25, each owned and supported by tens or, more often, hundreds of co-operative members."⁸⁰⁵

Support for this food approach in Liège deepened when the Mayor Willy Demeyer and colleagues saw the positive effects, not least when a food festival *Nourrir Liège* ('Feeding Liège') was launched with partners from the cultural and academic worlds in 2017 and attracted many visitors. Today the festival runs for ten days, engages thousands of citizens, and brings in visitors from beyond.ⁱⁱⁱ This combination of:⁸⁰⁵

"the enthusiasm, . the creation of a growing number of jobs... contributed to convincing political authorities of the seriousness and importance of the movement. [...] Nourrir Liège [...] has also helped strengthen the credibility and legitimacy of the movement."

Thus an idea generated by people in the city and its administration – particularly one alderman - and food activists already committed to the need for more local and health-oriented food supply, turned within a few years into a political phenomenon. The Mayor's backing was recognised by interviewees. One said:

"He helped remove difficulties people had met seeking access to land for food growing, for example. As a deindustrialised city, Liège had more than its fair share of

ⁱ Liège food-belt: <https://communitiesforfuture.org/liege-food-belt-belgium/>

ⁱⁱ see interview with Elisabeth Gruie, communications officer with the CATL and Nourrir Liège: <https://communitiesforfuture.org/liege-food-belt-belgium/>

ⁱⁱⁱ Nourrir Liège is the city's food festival: <https://nourrirliege.be/>

contaminated land, so they mapped where that was, and made only safe land available.”

Mayor Demeyer had been in post since 1999, and was dedicated to economic revitalisation, but was not the author of the food-belt idea.ⁱ The longevity of his mayoralty nonetheless is seen as having helped this partnership. It built on one of his long-term political goals: to make the city a good place to live in (see photo/Figure 9.1). Growing food could happen near where people live and work not far away. More importantly perhaps, food has been part of a cultural approach to local politics. growing more food locally offered some hope to a deindustrialising city region.

Figure 9.1: A good place to live (and grow food)



Source: CATL / Liège

Liège’s focus on food has offered a combination of employment and cultural engagement, linking different dimensions of resilience. CATL, in the words of one interviewee, has:

“tapped into people’s creativity; they raised money; they spread the risks.”

“This has put what many in Belgium thought of as a depressed untrendy city on the political map. It’s changed the local culture. The University, for instance, now has a growing garden. The City Council uses this movement to provide food for schools.”

Liège benefits from having a pioneer of sustainable community cooking (in the intercommunal association ISoSL), chaired by the first alderman of the City of Liège, Maggy Yerna. In 2024, this was producing 3,500 meals every day for schools and nurseries in the Liège region and aims to be making 11,000 meals a day for hospitals, schools, crèches and nursing homes by 2030. Already 26 elementary schools in the district provide 7,000 school

ⁱ Mayor Willy Demeyer: <https://www.liege.be/fr/vie-communale/vie-politique/conseil-communal/demeyer-willy>

children with a soup based on local vegetables, thanks to funding from the government of the Wallonia-Brussels Federation.

Such developments exposed the need for new infrastructure for logistics and the processing of quality local products. So in 2022, the City of Liège acquired a €2 million building to house the logistics activities of the distribution cooperatives in the CATL network. Thanks to the support of the Walloon and European recovery plans, another 3,000 square metre building, representing an investment of €7 million, is being built to house workshops for processing the sustainable products of local agriculture including a vegetable cannery and conservation unit.

As one interviewee said, this model of a local-regional food hub, acting as a gateway and support for small enterprises:

“[...] is different to the motorway and big wagon approach to food logistics.”

In 2022, a Food Policy Council for the Liège metropolitan area was created jointly by its conference of district mayors, CATL and the University of Liège. This FPC has 120 members representing local stakeholders. They have been set the task of accelerating the transition to a more inclusive, resilient and sustainable food system. Among them are all major institutions in the Liège region that prepare meals for hospitals, school, nurseries and rest homes (through the intercommunal health care organisation ISoSL).ⁱ

The people interviewed about Liège’s initiative express pride in what has been built, but are aware it has not completely transformed the local food system. What it has done, they agreed, is to exemplify a different approach for the public sector and the public sphere. It has also been a process of development over a decade. This is more than a one-off fixed-term project such as civil society initiatives often suffer from. It has been able to broaden and diversify what it does and has shown how food can be a vector and voice for social resilience.

Asked about the lessons from Liège for the UK, an interviewee said:

“I think the key is to put in place an infrastructure to enable food growing. The idea that a modern city or town can build a food belt around itself is getting bedded down. It’s being picked up particularly by enterprising Mayors who see it as a way of revitalising their district.

“A big lesson is the need to dare to have and create a joined-up food system. This requires a new combination of legal support, infrastructure, popular education, and experimentation to create a buzz around building civil food resilience.

“A more resilient food system can and should save money. A joined-up approach to policy-making that puts a food belt round cities and towns could be the new Prozac – saving the NHS costs and improving lives.”

Other Belgian cities: Ghent and Leuven

Liège is not alone in identifying and experimenting with food change for resilience. Worldwide there is much interest in this sub-national level of governance. But the proximity of cities in Wallonia (55% of the total area of Belgium) has already spawned six other cities or territories moving in related directions. The sharing and learning between them is

ⁱ ISoSL: <https://www.isosl.be/>

continual, with city Universities playing significant roles, as in Liège.ⁱ Compared to large British cities, some of these cities are small, and their historic land ownership has been a helpful resource today. But it is not all plain sailing. As noted, Liège authorities have had to be careful about contamination from past industrial use. Careful soil contamination testing was necessary to identify land unsuitable for food growing.

Ghent (or Gent), another ancient city, started work on its food policy in 2013, now *Gent en garde*.ⁱⁱ It sees ‘co-creative governance’ as its ‘secret ingredient’, building on the city’s thriving civil society. The city authorities engage with citizenry to forge a common framework and they now describe their approach as “born out of a combination of top-down and bottom-up impetus”.ⁱⁱⁱ Like Liège, Ghent set out to improve sustainability, improve availability of sustainable food and cut waste. Its 1,800 ha of agricultural land around the city (its green belt) is seen as a resilience resource. Ghent’s Food Policy Council of 30 members is now written into local legislation.

Leuven is one of the EU’s 100 Mission Cities committed to being climate neutral by 2050. Leuven’s *Food Connects* strategy began in 2018.^{iv} It put a block on sale of land it owned and instead opened up the equivalent to 40+ football fields for citizens to grow food. Some of this is for slightly larger community-supported agricultural enterprises (CSAs), some for individual allotments. Leuven has recently created a business-to-business platform for food enterprises operating within 40 km of the city, with the city authority a shareholder in that platform. The city has also produced an eco-food-map, an interactive website (in Dutch and English) identifying key food pathways, policy actors, sources and indicators.^v

France: Mouans-Sartoux and Grande-Synthe

The city-region collaborative approach is not confined to Belgium. We have been made aware of many. One is Mouans-Sartoux in south east France, a small town of ten thousand people that sits in the Alpes-Maritime above Cannes. In the 2000s, the town’s initial concern for food was public health – how to change conditions, tackle worsening diets, and improve population health. Addressing that, the town’s political agenda began to focus on food as a way to improve both its nutrition and to improve its performance on sustainability indicators.^{vi}

This led to a local campaign to improve the town’s negative impacts on water consumption, land use, climate change gas emissions, and to make its food system more circular and sustainable.⁸⁰⁶ On the back of this intent, it created an agricultural enterprise to produce food for the towns canteens and restaurants.

After five years of engaging with citizens to change their behaviour, including shifting to lower-impact diets, the indicators improved. As Liège and other cities have found, changing food culture in a small town wrapped around a larger region and with limited powers is not easy. Like them it finds itself having to face the enormity of the cultural challenge. Culture is messy and woven by many sometimes contradictory forces shaping choice whether at the individual or public level. Mainstream consumerist values can be resistant to change.⁸⁰⁷ But the town authorities feel they have begun.

ⁱ This was clear at the 3-day *Open Food* Conference in Leuven, the Flanders Government’s contribution to the Belgian 2024 EU Presidency where what cities can do was a theme of discussion: <https://belgian-presidency.consilium.europa.eu/en/events/open-food-conference-1/>

ⁱⁱ on Ghent: <https://stad.gent/en/city-governance-organisation/city-policy/ghents-climate-actions/sustainable-food>

ⁱⁱⁱ Ghent Food Policy Council: <https://foodactioncities.org/case-studies/ghent-en-garde-food-policy-council/>

^{iv} on Leuven see : <https://www.leuven2030.be/english> and <https://eurocities.eu/latest/everybody-needs-to-eat/>

^v Leuven’s Eco-Food interactive map: <https://dashboard.voedingverbindt.be/>

^{vi} On Mouans-Sartoux origins, see: https://www.milanurbanfoodpolicycompact.org/wp-content/uploads/2020/12/SDN-Mouans-Sartoux_2019.pdf For more recent overview, see: https://www.milanurbanfoodpolicycompact.org/wp-content/uploads/2020/12/GOV-Mouans-Sartoux-1_2019.pdf

Grande-Synthe, near Dunkirk, is a town better known in the UK, if at all, as from where some migrants try illegally to cross the Channel. It is also where another kind of experiment has been taking place. Again, the role of a Mayor - Damien Carême - has been important, and again it is trying to bring hope to a place affected by de-industrialisation and employment insecurity.⁸⁰⁸

The municipality, once part of neighbouring Dunkirk, began to 'green' its town space. Around some tower blocks, concrete paving stones were taken up and replaced by raised beds for growing vegetables (see Figure 9.2). 200 acres of surrounding agricultural land was leased (at reasonable rates) to growers. Like the Belgian examples above, food from local horticultural enterprises is now served in school meals.

Figure 9.2: Horticulture amidst housing in Grande-Synthe, near Calais



Credit: Rob Hopkins

Some UK city and regional food strategies: green belt politics and cities

British local government lacks the relative autonomy and room for manoeuvre that one can find on mainland Europe such as the few introduced above. In the 19th century, as small villages and towns grew into modern industrial and commercial centres, our local government was radically reorganised from its mediaeval legacy to enable boroughs to act commercially and as civic entities to respond to conditions affected by rapid industrialisation. Food, water, energy, waste, were all given new local intervention points and new financial and legal powers. Today, local government is too often unable to act on drivers that affect local people such as food, climate, and the local built and natural environment. As we saw

above (see Chapter 3), local government funding and powers are severely constrained. British cities cannot operate to the scale that others internationally do – even when larger cities - but pressure to enable appropriate local intervention on what shapes the lived experience of people living there is building up.

Local government knows where need exists. It is local councillors who are lobbied when waste systems do not work. They want urban revitalisation and housing fit for climate change. They are aware the public does not feel prepared for coming shocks.⁸⁰ As one senior elected councillor and office-bearer for a major city told this report:

“The capacity of local authorities across the whole country and even within London is severely limited by resource shortage and financial restriction. [...] Big cities struggle with this, let alone small authorities. And food is by no means the only supply chain system which is delicate in relation to resilience. Pharma[ceuticals] is too.”

In a statement that has resonated across this report, this same person pointed to the lack of legal obligations on food in or for crisis preparation:

“You must remember that there is no legal requirement on Government or Local Governments to ensure that all people are fed in crises or any time.”

One legal area, literally and metaphorically, where these tensions have been and continue to matter is the green belt system that was created under the Town and Country Planning Act 1947.⁸⁰⁹ London and some areas won powers in the 1930s with the Green Belt (London and Home Counties) Act 1938,⁸¹⁰ but it was only in 1955 that London’s green belt was finally in place.⁸¹⁰

The term ‘green belt’ was first used in 1875 by Octavia Hill, co-founder of the National Trust. It took 70 years before national legislation in 1947 gave local authorities powers to buy and protect green belt land. This represented a settlement between long-conflicting interests. The rural interest had been determined to prevent food land being put under concrete. A UK aesthetic also feared US-style unrestricted urban sprawl. And public health voices pushed for ‘green lungs’ for polluted cities. Civic societies wanted rural amenities available to crowded towns. And the post WWII Government was strongly committed to rebuilding UK agriculture and food security for the long term, mindful of the risks exposed in WWII.

Today, political interests are again arguing over green belt as a place where sorely-needed houses can be built. 13% of England is currently designated as green belt and there are well-organised movements to defend it. Natural England polling suggests Covid-19 reminded most people how much they value connection and access to nature.⁸¹¹ Food’s role is currently muted. It should not be. In the English green belt debate, the possibility and relevance of Liège-style peri-urban food growing has been submerged by other interests.

Should not civil food resilience be a significant factor in any revision to the National Planning Policy Framework (NPPF),³¹³ not least since food is classed as a Critical National Infrastructure (see Chapter 4)? Currently it is not, simply for lack of champions.

Bristol and region

In Bristol and Bath’s existing green belt, only one farm currently remains. There is more golf than food growing. A small but active NGO, the Urban Agriculture Coalition, argues this ought to be designated for civil food resilience. Belgian-style, it seeks closer urban-rural

connections rather than division.ⁱ This view now competes with interests such as the need for a new cemetery and for urban housing expansion. A common position had not yet appeared yet the City of Bristol is known for its vibrant and progressive food culture and active civil society organisations. Bristol Good Food 2030 (BGF2030) is an organisation initiated by the Bristol Food Network. This has generated a project on a disaster risk plan in collaboration with Feeding Bristol and with academic support from the City's Universities and City authorities.

BGF2030 includes people who were centrally involved in emergency food provision in Covid-19, building the kind of trust and working relations we have seen in Liège or Melbourne. In the words of one document, there is “local expertise, already embedded within key networks, from Bristol City Council to local food banks.” It has many people and organisations willing to engage in food matters. It recognises that food is not just a material issue but also about social structures. In 2022 Bristol City Council and BGF 2030 produced a ten-year Food Equality Strategy and Action Plan (FESAP) created with around 60 bodies in the city.⁸¹² The collaboration was the outcome of years, even decades, of patient work and evidence building.⁸¹³

Despite its active food economy and culture, Bristol like other cities and towns was stretched by the Covid-19 emergency. As one interviewee said:

“In Covid, we noted how the small suppliers did their best to upscale. Some did quite rapidly. We need to know why others didn’t and whether we can strengthen local food networks to be part of the resilience framework. Bristol is in the South West [of England] and has many more small producers near it than some, say, northern cities where climate is harder. A key principle is that diversity of supply supports resilience. We know that. The challenge is how to deliver that before crises rather than too late.”

In Bristol, as nationally, there has been much reflection about how the food element of the pandemic was dealt with:

“There was a lot of muddling through in the face of adversity. And part of the problem was that there wasn’t a shared understanding between the national and local levels. There wasn’t adequate food communication from government to the local level, just silence. Local communities felt almost abandoned.”

Asked whether the ‘whole of society approach’ in the 2022 UK Government Resilience Framework resonates today, the interviewee continued:

“This is not what happened or exists yet. But it is exactly what we need. A framework must cover the range of realities from communities to the national and must cover all types of human experience, and people in different situations. It is simple to say ‘build good connections between local, regional and national food resilience’ but it’s hard to deliver and needs much more co-ordinated effort than we’ve had so far.”

The City’s Disaster Risk Planning for Food Security project intends to take stock of lessons from Covid-19 for improved food emergency planning. Bristol is a signatory to the MUFPP. It is aware of MUFPP’s recommendation cities ensure disaster risk reduction is robust and plan for specific shocks and sudden changes to the food system.

The Avon and Somerset Community Risk Register notes that disruptions to water utilities, for example, could have “a serious impact on health and food provision”, and that ‘adverse

ⁱ Urban Agriculture Coalition (2023). <https://www.youtube.com/watch?v=thxLbrYv7D0>

weather' could cause "disruption to food production", yet states overall in the small section on food as a critical infrastructure (p25):⁸¹⁴

"[t]here are no current realistic scenarios within the UK which would lead to a shortage of food supplies."

The civil coalition is not so confident, arguing that realistic scenarios do exist such as the likelihood of extreme weather events (global or local); another pandemic; a rapid rise in energy, fuel, fertiliser and/or feed prices; and the impact of war on global food supply. One informant consulted for this report made a distinction between:

"[...] the resilience of the food system and the people who eat, [whereas] the Disaster Risk Management plan is about planning for what we will do, come a disaster, with things being as resilient as they are."

Another person said:

"I think we are developing something that should help. We are already aware of the dangers of burn-out, and gaps exposed by events. We want to help other cities and regions in this process. An issue ahead is undoubtedly the national picture and how that affects Bristol. Bristol does not feed itself but it does have a thriving local food system. Can this be built up as part of preparation for shock? The reality is that most people are dependent on supermarkets. [Our] project hasn't got to the point of analysing the mainstream food system yet but will. We must see how these different supply chains – the mainstream and the smaller - co-exist."

This all has important lessons for local governance. Back in 2012 using the chances given for some devolution under the Localism Act, Bristol voted to create a new office of Mayor (on a turnout of 24%) but in May 2022 it voted to abolish the Office (on a turnout of 28.6%). This puts even more emphasis on the City Council and officers to be the official link and a key vehicle for food resilience and disaster preparation.

Birmingham

Birmingham, the UK's second city, has a population of 1.2 million and is the central conurbation within the West Midlands region, which itself has a population of just under 3 million. It has an active civil society sector on food. In 2022, the City Council launched its *Birmingham Food System Strategy (2022-30)* (BFSS).⁸¹⁵ This was at a time when the city's finances were already stretched; they have worsened since. The BFSS was considered sufficiently important for the strategy to be launched and maintained despite straitened times. It was organised and is administratively based with a team of five under the leadership of the City's Health and Wellbeing Board, part of the NHS, and championed in the city by the Director of Public Health.⁸¹⁵

This leadership by public health is noteworthy. Modern regional food coalitions and strategies have started from diverse interests: civil society, academics and economic development. Birmingham's public health leadership sees the restatement of the public health function as having intrinsic value for a good society. The Birmingham Strategy set out an ambitious vision to:

"[c]reate a fair, sustainable and prosperous food system and economy, where food options are nutritious, affordable and desirable so everyone can thrive."

The BFSS has three principles addressing four themes that translate into six workstreams. The **three principles** are to:

- *collaborate*: strengthen partnerships and build on existing good practice;
- *empower*: remove barriers and facilitate solutions; and
- *equalise*: focus actions where they are needed most to reduce inequalities.

These raise **four themes**:

- *Food Skills & Knowledge*: empowering citizens with knowledge and skills in relation to the food system.
- *Food Behaviour Change*: developing the capability, opportunity and motivation for key behaviours that will enable long term change.
- *Food Security & Resilience*: increasing access to sufficient affordable, nutritious and safe food for all citizens, all the time, in every community, and at every age.
- *Food Innovation, Data & Research*: gathering insights and data and facilitating innovation, collaboration, learning and research across the food system.

In practice, the BFSS resolves into **six workstreams** (see Table 9.1).

Table 9.1: The Birmingham Food System Strategy six workstreams

Workstream	Task
<i>Food Production</i>	Empowering and enabling citizens and local producers to grow food throughout the year and connect to the city's food system
<i>Food Sourcing</i>	Increasing both supply and demand for local, environmentally sustainable, ethical and nutritious foods in the food system
<i>Food Transformation</i>	Transforming the food offer and diets to contain more diverse, nutritious and sustainable ingredients, and less fat, salt and sugar
<i>Food Waste and Recycling</i>	Minimising food waste and unsustainable packaging throughout the food system and maximising the repurposing and redistribution of surplus
<i>Food Economy and Employment</i>	Facilitating a thriving local food economy for all and maximising training and employment opportunities
<i>Food Safety and Standards</i>	Improving food safety and standards for Birmingham's citizens and businesses

Source: Birmingham City Council, 2022⁸¹⁵

This matrix approach has been the basis for citizen engagement. This included hearings, polling, focus groups and workshops that created a wide-ranging coalition of existing civil society organisations, business, academics, colleges, schools and single-issue groups. In Birmingham, there is not yet the kind of coalition seen in Bristol that focusses on the dynamics and possibility of extensive food disasters or need for post-shock larger-scale food resilience. That case has tended to be championed by a small and unofficial Birmingham

Food Council (BFC), a Community Interest Company (CIC) founded a decade ago that has worked with academics at the University of Warwick to run and report on a number of scenarios about possible food shocks.⁸¹⁶ The gap is perhaps to the city's detriment and it may be understandable but it means discourses do not overlap. This is despite there being in Birmingham a variety of positions and perspectives.

The value of having policy spaces where diverse civil interests can debate and pool thoughts at the city-region level has been highlighted in a recent compendium of international food mapping studies coordinated by Katrin Bohn and Mikey Tomkins - two UK academics at the University of Brighton's architecture school.⁸⁰⁰ It is key, they argue, to make what underpins a city's food system visible. Not one position of perspective owns it. There are multiple methods for assessing what food assets and possibilities for resilience exist at different scales—localities, communities, towns, cities, city-regions.

This is a practical challenge that faces any UK resilience planners. As the next example, London, shows, when the London Food Board and London Resilience set out to map London's food system in 2019, no such advice was available and the task was enormous. Pooling not dividing efforts is a *sine qua non* key to unlocking quite what a local food system is.

London: community resilience planning and food

London is Europe's and the UK's largest city with a population of around 9 million. Following a referendum in 1998 by Londoners, a new office of Mayor of Greater London was created.ⁱ London's regional governance is actually much older and, if one ignored the hiatus of 1986-1999 when the regional body was abolished by the Government of the day, London could claim to have had a city-regional authority since 1895 when a regional body was first created as the London County Council (LCC), and based in a fine municipal building opposite the Houses of Parliament now a mix of commercial enterprises and a hotel not the seat of local democracy.ⁱⁱ

The LCC sat over and above the many small London Boroughs, many dating back centuries as autonomous towns or villages, simply to improve coordination and coherence. In 1965 the LCC was given more powers and renamed the Greater London Council (GLC) only to be completely abolished in 1985 during tensions between national and regional bodies, then resurrected 15 years later as the Greater London Authority (GLA). Since 2000, there has been an elected Mayor and an elected Greater London Assembly (which was revamped in 2007).⁸¹⁷ This too has the task of coordinating the 32 Boroughs plus the old City of London (i.e. 33 authorities) across Greater London. But unlike Birmingham or Bristol, the region and governance of London has a common boundary. In formal terminology, they are 'co-terminus'.

When the first post-2000 Mayor of Greater London was elected, he created a non-statutory London Food committee later renamed the London Food Board (LFdB) in the mid-2000s to advise on food matters.⁸¹⁸ Over two decades and through three Mayors, adapting to different mayoral styles, the LFdB has been refined to 13 people directly linked into GLA and wider

ⁱ The ancient City of London has its own annually elected Mayor, always a City alder(wo)man, and the City is but one of the 33 authorities within the Greater London region, albeit its City Corporation benefitting from the considerable resources as the capital of finance.

ⁱⁱ sold off by Government and now a mix of tourist attractions, fast food and hotel leaving London still without a permanent central civic base unlike any other major world city. The room in which the London Food Commission began in 1984 (facing Parliament nearest Westminster bridge) was at one point a fast food outlet, now a sandwich bar!

structures, with a particularly significant Boroughs Food Group that filters actions and information across wider London into the GLA and LFdB. Board members are appointed by the Mayor for a fixed term. It has targets and roles with the GLA on a London Food Strategy, agreed and published in 2020 after extensive internal and external consultation.⁸¹⁹ This specifies tasks under each section of the overall London Plan set out by the Mayor with a Deputy Mayor assigned responsibility for each section. Food matters are woven across the London Plan.⁸²⁰

This creation of an advisory body such as the LFdB owed more than a little to the experience of its predecessor GLC. This had created an advisory London Food Commission (LFC) in 1984 to provide independent advice on food matters. Set up as an arms-length civil society body, it reported to the GLC until abolished and thereafter to London Boroughs. In the 1980s food had become a febrile policy issue, with public concerns over *bovine spongiform encephalopathy* (BSE or ‘mad cow disease’), diet-related ill-health (heart disease and strokes), incidence of food poverty, food industry restructuring, new forms of food adulteration, and arguments over regulatory structures. With the abolition of the GLC, the LFC was given independence as an autonomous charity for six further years and continued as a magazine and consultancy for even longer.ⁱ

The point is that four decades ago London, as other cities, was noting the significance of food for environment, health, security and supply. The post-WWII food strategy was unravelling. And a period of experimentation with sub-national food democratic structures to address the new mix of challenges – partly due to the overproduction and ubiquity of new foods and options and their impacts (see Chapter 5).⁸²¹ As the MUFPP signatories noted in 2015, cities and towns need to engage fully with this agenda if they are to shape modern conditions for the better.

Food resilience as a specific issue joined this agenda for the Mayor of London in the 2010s and accelerated in the 2020s. Under the Civil Contingencies Act 2004, the Mayor was already directly responsible for general resilience through London’s LRF, the country’s largest. Concern about food resilience grew with Brexit. The Great Recession of 2009-11 had increased food poverty and in the 2-2020s food inflation raised prices by 27% and featured as ‘cost-of-living’ politics.

Faced with this, the Greater London Authority and LFdB were acutely aware of limitations on what the city could do. London was a founding member of the C40 group of international cities concerned about climate change (now based in the global organisation of local authorities ICLEI) and had co-created MUFPP, the Milan Pact. Internally, the LFdB and London Resilience (London’s LRF), realised mutual interest in considering food resilience and improving preparedness for food shock and food in disasters but, like other British cities lacked powers to do much about it.

The LRF is chaired by the Deputy Mayor for Fire and Resilience, one of London’s seven deputy Mayors. She asked for reports on the city’s state of food resilience from two bodies other than the LFdB to triangulate evidence and thinking. One was ReLondon, London’s partnership on commercial and domestic waste,ⁱⁱ and the other the University of Oxford’s Food Systems Transformation Group.^{67,191} The latter summarised their joint analysis of London:

“London’s food system is complex, diverse, dynamic, and potentially fragile. It draws on fresh and processed foods from across the globe and every day, over 30 million

ⁱ An archive is held at the Wellcome Collection: <https://wellcomecollection.org/works/x4pzmgzx>

ⁱⁱ ReLondon: <https://relondon.gov.uk/about-us>

meals are eaten in London. 'London's food footprint', a material flow analysis conducted in 2021, established that 6,347,000 tonnes of food are produced to supply London's food system each year whilst 99% of London's food is brought in from outside the city. This means the capital relies upon complex 'just-in-time' supply chains and at any one time, there is only 72 hours' worth of food in the city."

The waste is considerable and a risk to resilience. 78% of the 6.3 mt of food produced for London is imported into the region, of which 0.84 mt is wasted. Londoners' food consumption is equal to 15,483 kt of CO₂e each year. London's resilience potential is hampered by waste, maldistribution, unequal consumption and diet-related ill-health.

Faced with this, what can an under-resourced and insufficiently empowered elected body do even in Europe's largest city? And what can be done about the drivers of such a situation? The Oxford report on London's food resilience made three main recommendations, mostly about the process of addressing the challenge.⁶⁷ London needed:

- participatory processes if it was to develop food system resilience strategies; this requires leadership and joint working with relevant stakeholders.
- leadership and coordination by the GLA to create an implementable strategy.
- to recognise how food overlaps with other policy sectors such as environment, health, and wellbeing.

As we have noted, London had already begun to identify the food resilience challenge as being about more than supply. In the late 2010s, before Covid-19, at the LFdB's suggestion, joint meetings with a wide group of stakeholders set out to map London's food system and identify where food resilience was needed. It quickly found that no simple map of exactly where and how London was fed existed. Melbourne (see above) had been able to construct something and this was sorely needed in London. Even a high-level meeting with senior food industry executives could not point to exactly how London's food system distributed and where potential chokepoints or disruption risks lay. The joint LR and LFdB working group meeting in 2019 had noted the limitations of the 'blue light' resilience agenda in relation to food. It needed new powers, new methods, new responsibilities to be able to map how the system worked normally and to identify risk and control points (as Bohn, Tomkins and colleagues have since recommended).⁸⁰⁰

A distinction can be made between two issues - the supply of food and the ability of Londoners to eat. The former was proving to be fiercely complex and lacking levers through which the Mayor could act if needed. The latter raised social resilience where the Mayor in fact has some leverage to support Londoners who will be disproportionately affected by food shocks. The Mayor could at least champion action on welfare issues such as cost-of-living support, community resilience, and free school meals. On these, the Mayor had also for some years contracted annual reports on how different Boroughs were performing on a number of food indicators – the 'Good Food for Londoners' report and 'Beyond the Food Bank' review of food poverty, building up awareness across both the GLA and the London region itself.⁸²²

These reports showed where Borough Councils were active on food matters and doing something to ameliorate social divisions through food. Borough performance was assessed on issues such as: children's food poverty; the response to the cost-of-living crisis; whether it worked with others; how it improved access to food and helped cash-poor households; actions to make food environments healthier in schools, workplaces and communities; seeing food as an opportunity to improve the local economy and food retail offer; opportunities to increase food growing in the borough, as well as the amount of land

available for food production; and its contribution to addressing the climate and nature emergency in food. Over time, the majority of Boroughs came to see performance on these indicators as valuable. If initially they could be criticised as party politics, gradually they were seen as signifying the degree of social cohesion.

Winning this respect across party political divides was in part due to patient work in and by the then well-established LFdB Boroughs food sub-committee. This built trust between London's 33 boroughs and the LFdB and became an essential point of intelligence gathering on food matters throughout Covid-19. The Boroughs Food Sub-Committee in effect became a food resilience committee, funnelling data and issues to the Mayor and Assembly, pointing to disruptions, misallocation, and potential actions the Mayor could take.

The LFdB had also championed with public health teams an intervention in the complex issue of food advertising, determined to see if the Mayor could intervene to improve diet-related ill-health. It wanted to 'prevent and protect' (without then knowing this would be one of the three Government Resilience Framework principles). The Mayor of London, unlike some, has health powers, and the NHS Regional Director for Health was represented on the LFdB by public health officials. After consultation, the Mayor and Assembly agreed to trial restrictions on 'junk' food advertising across the entire London transport system from February 2019. It gained high (82%) public support. An academic time series study using Kantar purchase data found a 7% drop in purchase of food products high in fat, sugar and salt (HFSS) across 44 weeks after the ban, compared to 36 weeks before.⁸²³

Reflecting post Covid-19, the Mayor and deputy Mayors, LR and LFdB agreed the importance of food resilience planning. The Mayor and Assembly approved a budget to increase public advice on welfare uptake,ⁱ and to help people in financial hardship tackle debt reduction and take up direct aid such as food vouchers.ⁱⁱ The GLA environment and energy team had also resumed work to improve London's food supply chain to reduce food waste, cut greenhouse gas emissions, increase uptake of welfare and school meals among vulnerable Londoners, and to encourage commercial innovation.

Being realistic, the scale of London's attention to civil food resilience is small in relation to the scale of the overall challenge. But that the **civil food resilience gap can be now acknowledged by the GLA is a kind of progress**. The 2024 preliminary report from the climate review of London, for example, conducted by Emma Howard Boyd (former chair of the Environment Agency) at the Mayor of London's request stated starkly:⁸²⁴

"London is currently underprepared for climate shocks [...] but nowhere in the world is adapting fast enough."

The final Climate Resilience Review report was still due as this report was being finalised and it is hoped that it will address food. Meanwhile pressure on London's food system and thus its people and visitors continues. They include cost pressures, likelihood of floods, the impact of social inequalities in cost of living, and the health effects of temperature variations affecting both food supply and public health. And above all, the food flows that feed the many millions of meals weekly will be disrupted across the range identified in Chapters 2-5. The enormity of the challenge could be daunting but it can be addressed in steps. To take one simple suggestion for the planting of more trees to lower temperatures and provide shade protection across cities. What is to stop these being be fruit trees?

ⁱ GLA advice services: <https://www.london.gov.uk/media-centre/mayors-press-release/mayor-boosts-funding-advice-services>

ⁱⁱ GLA community settings: <https://www.mimeconsulting.co.uk/report-launch-mayor-of-londons-advice-in-community-settings-year-1-evaluation-report/>

Taking stock, London does now have a Resilience Manager and team, working to one Deputy Mayor. It is addressing community resilience within its powers.¹ It is aware of the need to do more on food resilience. The Mayor now co-funds the London Communities Emergencies Partnership. This is designed to enable capacity building and coordination so that voluntary, communities, faith, and equalities sectors can engage effectively with formal resilience structures such as London Borough Resilience Forums and London Resilience. It has launched two rounds of a Community Resilience Fund providing seed funding grants to voluntary sector organisations working in partnership at Borough level to improve partnership working on community resilience planning.

By early 2024, there were 22 projects in 22 boroughs with the London Boroughs Faiths Network to train two cohorts of faith leaders (in Kensington & Chelsea and Tower Hamlets) in resilience and preparedness, looking at their roles in response and recovery. Resilience training for voluntary and community sector organisations, Borough resilience forums, and Borough officers (emergency planners as well as climate officers) is being delivered, covering issues such as climate, first aid, rest centres and volunteering and done for borough officers including emergency planners and climate adaptation officers as well as voluntary and community sector groups and faith leaders. A community resilience toolkit for voluntary sector groups is in preparation.

The goals guiding this work are to build capacity; to identify neighbourhood 'hubs' that could support people in emergencies; to support community-level resilience planning, for which some 'insights' research is being conducted, including on neighbourhood networks and equalities organisations in resilience; and to identify and help neighbourhood spaces or 'hubs' to support local people in emergencies.

All these could and should be an avenue through which to support food resilience, but that has not happened in earnest yet. The foundations may be there but even the UK's and Europe's largest city has not the resources or legal duty to address it as urgently as the present report believes should now unfold. As a senior elected official told this report echoing judgements voiced by others:

“No English local authority has the legal basis for action on the lack of civil food resilience. There is no legal duty to ensure people are fed in crises let alone normal times. There is no mandatory budget.”

Beyond the single city: different types of coalitions emerge

The analysis emerging from cities so far is that enhancement of food resilience is neither quick nor simple. It requires coalitions of interests, concerted effort and support from a variety of official bodies such as health, planning, education, environmental health and transport. Such coalitions take time to pull together but this report echoes what academic papers have found - that such coalitions *are* emerging in UK cities as elsewhere. A matter raised by interviewees is how to balance the legitimisation of official approval and support with the need to retain a degree of autonomy and flexibility to be effective and to retain energy and innovation. Localism can be damped down by financial strictures. If it relies, as it often does, on voluntary and professional energy, this can be dissipated. Key policy actors move on, become exhausted. But crises can bring such coalitions together, of course, in

¹ London resilience on community emergency preparation: <https://www.london.gov.uk/programmes-strategies/fire-and-city-resilience/london-resilience-partnership/preparing-your-community-emergencies>

shared purpose. The task of resilience planning is to get structures and coalitions in place before the urgency of crisis and to maintain continuity and shared learning.

The wide range of interviewees and institutions consulted for this study saw the delicacy and sensitivity of this balancing act. There might be a broad consensus that civil food resilience requires sensible cooperation across multi-level devolution and decentralisation, but how to be allowed to act on the mix when so much depends on a centralised state is not an easy matter to resolve.⁸²⁵ Civil society and academics tend to agree on the need to protect the vibrancy and experimentation in local food work.⁸²⁶ And local authorities aspire to more financial heft – thus more devolved finances - to be able to undertake food work to redress uneven food-related ill-health, for example.⁸²⁷ The possibility of taking food resilience seriously can thus be hamstrung by resource shortages.

Our research found different types of food coalitions extant in the UK. Some are within cities; others between them. As noted already, their leverage is affected by whether they are co-terminus with wider geographical boundaries. It does not help if multi-level local governance barely gives any attention to food in the first place. Food work for many local authorities is entirely voluntary. Yet for resilience it ought to be mandatory. In this section, we consider these different forms of food action at the local level in more detail.

Inter-city coalitions

In the 1980s the UK was known across Europe and internationally for its active and well-organised civil society food networks and coalitions. They were given political space by the then government being led by a Prime Minister often quoted as stating “there is no such thing as society”. Civil society could appeal directly to the public for change. It could grow because it went under the official policy ‘radar’. But as they became more effective, more recently restrictions were put on charities’ campaigning.⁸²⁸ They can deliver charitable works but not be ‘noisy’ about it. Nevertheless, today, strong single-issue food coalitions and broader umbrella groups exist such as Sustain, the Sustainable Food Places, IFAN, poverty alliances, Children’s Food Campaign, and food waste networks. These all work with local government. They include a mix of some relatively new and some long-established organisations working across the environment, public health, animal welfare and civic life. Scotland, Wales, Northern Ireland and England presently all have their own national charities and civil society organisations promoting food matters.

So far, however, there is no specific food resilience or food defence movement focussed on potential shocks to the food system and impacts on the public. If from anywhere, the interest might come from established professions such as public health (the Faculty of Public Health, Royal Society for Public Health) and environmental health (Chartered Institute of Environmental Health) with long histories of championing the infrastructure for better conditions of living.

Our understanding from discussions held across the voluntary sector is that awareness of the possibility of food shocks is growing. Nourish, Scotland’s food network, for instance, has been part of the wide movement pressing the Scottish Government to create a coherent agri-food legal framework.^{829,830} The Good Food Nation (Scotland) Act passed in 2022 represented a significant step forward.⁸³¹ Now, as was shown in the previous chapter, Nourish Scotland and a wider coalition are calling for a new form of public catering for civic resilience.^{719,830} In Wales, a cross-party coalition calling for food legislation for Wales, although initially rebuffed,⁸³² is again organising for that, linking it to the 22 food partnerships across the entire principality.⁸³³

Sustainable Food Places (SFP) is seen as a significant coalition. It began, and is still headquartered, within a civil society organisation in the sustainable farming movement. It set out to be a civil society force focussed on encouraging local authorities to play a part in shifting the food systems in their localities to be more sustainable. SFP now has over 60 English local authority members - some large, such as Greater London (with some individual Borough members), and some smaller such as Blackburn with Darwen. It has 15 local authority members in Scotland, 9 in Wales and 5 in Northern Ireland. The SFP provides members with encouragement and opportunities to share learning around six bodies of practical advice with guides, evidence, toolkits, case studies and regular gatherings virtual and in person.

An interviewee from within that movement informed the present study:

“[Sustainable Food Places] has evolved to cover not just towns and cities but to include counties and areas too. We see ourselves as charting a way of working on resilience. If the UK did want to improve food resilience, it has to work in and on partnerships: public, private and society generally. Our view is that those places with such food partnerships will be better prepared to respond when and if crises come. We see partnerships as very broad, a process of linking different interest groups to a shared purpose of better food systems. [...]”

“It’s the principle of working together that matters. This partnership working doesn’t need to be under the SFP umbrella, but something that links people before crises is what’s needed for resilience.”

The SFP has set up leadership courses under the banner of *My Food Communities*,⁸³⁴ an eight week development programme for leadership skills. By 2023 it had taken three cohorts through the programme, recruited from across the UK.ⁱ

An academic studying the emergence of regional activity stressed the diversity of such partnerships and coalitions. The lack of national coherence was recognised but so too are:

“[...] different types of local food partnerships, some embedded in their local authority, others independent. It would be wrong simply to say they can be scaled up as they are, and that this would deliver resilience, yet there is something very important and interesting happening at this local level. Different configurations on resilience are developing including different ways of thinking about ‘scaling up’, ‘scaling out’ and ‘deep scaling’.

“We know that many food projects – often small - are purely voluntary. That voluntary status means that key staff are often in danger of burning out and being reliant on a few key people. They lack resources. Some local food partnerships are embedded in local authorities. This gives them a statutory basis and some powers, but then it’s hard for such partnerships to speak out or to campaign for change.”

Regional and larger-scale coalitions

There is a strong feeling that, away from Whitehall, there is much dynamism and momentum to act on food matters, with cities and Mayors increasingly voicing a desire to deliver what they see as their resilience responsibilities. What starts as a civil society coalition or an academic project can combine into a regional network. This has happened in Yorkshire with an alliance emerging between multiple Mayor-backed city alliances (Leeds, York, Sheffield,

ⁱ My Food Communities programme: <https://www.sustainweb.org/news/jul23-my-food-community-open/>

Bradford) then collaborating into or pointing towards what is in effect a larger configuration. This is reminiscent of the cross-regional learning and support that emerged in Belgium and France.

One interviewee from Wales pointed to the innovation at the local-regional level in Covid-19:

“Hotels, pubs, producers and wholesalers started becoming retailers and food hubs. This drew on elements of social cohesion and local identities. But that wasn’t the normal food system and things reverted once the convenience of supermarkets was perceived safe again.”

Sub-national alliances can put pressure on capitals and higher authorities to act and to take note of the importance of food. A senior person involved in this kind of regional coalition – a partnership of more local partnerships – expressed what others also told this report:

“[...] something interesting is emerging in the UK in places like West Yorkshire and across the north of England where local food strategies are emerging, based on realisation that potential food problems are growing, and that we cannot ignore them. Thinkers and innovators are emerging. In Yorkshire, for example, a FixOurFood Commission has emerged, catalysed by the FixOurFood project.ⁱ This is now a regional coalition linking existing and emerging local groupings such as the Bradford Food Partnership, Sheffield’s SheffFood, and others.

“The energy and the realisation is growing that this [combination of] regional and local level of food organisations is what’s needed. And this is where the hope lies for improving food resilience.

“In cities and towns up and down the country like Bristol, Liverpool, York, Bradford there is civil innovation going on in the name of and around food. These processes of civil innovation are linking social demands with health, provision and control issues. They are becoming a civil food leadership. Groups like Future Farmers, Innovative Farmers, etc, are working alongside more traditional farmers and are now in transition to more regenerative farming.

“I see lots of ideas bubbling up on the ground in food businesses and civil society. There’s real hope in that. SME food providers doing exciting things. But whether they could rapidly expand to fill the gaps in crisis, I’m not sure. If the scale of the shock was massive, we’d still need to think more structurally and to address the different scales and levels. While government largely ignores this bottom-up energy, and relies on the well-known big food players, resilience needs to include all the levels.”

Our interviewees saw such coalitions as significant contributions to civil food resilience development. Instead, they meet benign indifference from Whitehall. As one interviewee put it:

“This insight and the importance and relevance of such ‘sub-national’ food organisations is not captured by Defra yet, but it should be. Why is this? One factor in my view is that there is not enough continuity in Ministries. People – ministers, advisors, specialist committees, civil servants – all keep moving on and thus ideas and institutional memories get lost.”

An interviewee from local government was more blunt:

ⁱ Yorkshire FixOurFood coalition: <https://fixourfood.org/>

“The main issue for [local government] is funding. That is so squeezed at present. Local Authorities are beyond juggling budgets internally. Another issue is powers. As devolution continues, e.g. with more combined authorities, they have growing powers and interests. We ought to have better coordination with Defra when there is currently not much.”

It's not that the English central Government does not see the need for partnerships either. It does - but only of a particular kind. The most recent devolution deal in England, for example, is for Greater Lincolnshire, signed in February 2024 by the three Councils and the then Department for Levelling Up, Housing and Communities (not Defra, although it was consulted).¹⁵⁸ Food is one page of the devolution deal's 55 pages. Lincolnshire's role as a major food producing area for national food security is acknowledged but in relation to primary production and processing rather than consumption. There is no attention to the public.

What about the big national devolved administrations?

Our study did not look at either Scotland or Northern Ireland in detail, though we believe much that we say about the situation in England and Wales resonates with policy actors there. Northern Ireland has only recently got back a functioning government in Stormont. And since the Windsor Agreement, Northern Ireland has the most idiosyncratic among the UK's idiosyncratic circumstances given that its food system now faces off both to Europe, via the Republic and to Great Britain.

The Scottish Government also has different powers to those of the other two devolved administrations. Its Food Standards Agency is split from the rest of the FSA, for example. And with the passing of the Good Food Nation (Scotland) Act in 2022,⁸³⁵ after years of consultation, lobbies and active civil society engagement,⁸³⁶ a process of food security policy adjustment is underway that warrants its own resilience analysis. From discussions with people in Scotland, we believe that some of the recommendations made in this report are of relevance.

Wales and agri-food politics

Like all countries or even regions, Wales has its particular food and farming history. Its rural and small farming identity is held dear and close, but there are tensions about their future. Some of this came to a head in the 2022-24 long consultation about what would replace the EU CAP subsidy scheme. At the same time, the Welsh Government and civil society are painfully aware of particularly acute challenges to its agri-food system from diet-related ill-health and the continuing impact of de-industrialisation causing poverty and cost-of-living difficulties to both urban and rural communities.

One interviewee active in the mid-Wales agri-food coalition noted a reluctance to engage with food resilience politics. The Cardiff government had not supported cross-party calls for a new framework and Act akin to Scotland's.

“The Welsh Government today seems to be in limbo on the resilience challenges, however. This is symbolised by how the Food Bill failed despite cross party support.”

In Wales, something looser than a new Act is widely seen as emerging, however:

“Wales hasn’t yet got a full parallel to what’s happening in Scotland via Nourish Scotland or in some regions of England where local projects and movements supported by political leaders (e.g. Mayors) are getting organised to be voices and partnerships on food with good intelligence and good will. That kind of working alliance is not yet happening in Wales but it could. There are gate-keepers here with small coalitions but there’s not yet a move to build and coordinate wider than that yet. [...] Perhaps it’s on its way but it’s not yet an active force reshaping what actually happens either on the land or connecting the land to consumers.”

Another interviewee was sober about the current state of food security in Wales, citing a mixture of reports:

“We grow only about a quarter of a portion of fruit and vegetables per head of population in Wales on 0.1% of available farm land.⁸³⁷ It would only take 2% of land in Wales to grow 5 a day for everyone in Wales.⁸³⁸ According to Government Statistics,^{839,840} we are producing veg on less land than at any time in the last 20 years. Only 6% of horticultural produce used in the Welsh public sector is produced here.⁸⁴¹

“At one level, the food world didn’t implode in Covid so one can argue it all still worked, but has it been deeply tested? When you look at Covid, Ukraine, emerging climate stresses and Brexit, it’s clear there have been stresses and the food system has adapted but there have been social costs – particularly the rise of numbers not affording a decent diet. And the impacts of these shocks are still playing out – closing of businesses, further corporate concentration of power, less funding for Government, rising health inequalities (mental and physical).

“At the household level the matter of resilience and security takes different shape. The 2019 FSA/NatCen survey estimated that 80% of people in Wales lived in households classified as food secure, 10% as marginally insecure and 10% as with low or very low food security.⁸⁴² Since then poverty has become more of a threat. More people cannot afford food and are not eating. That’s not a resilient food system.”

These two interviewees reflect the diversity of positions on civil food resilience expressed more widely in Wales policy discourse, and from others cited in this chapter. They reinforce the importance of having structures and organisations that pull diverse positions together to formulate the big picture for resilience planning. This needs to act on risks and threats shaping both ‘ends’ of the food system: consumption and supply. Both pose challenges for current economics and policy but the risks they manifest vary. Wales’ consumption patterns are generally assumed to be similar to the rest of the UK. But the vulnerabilities are already high if one in five people in Wales report fears about running out of food due to lack of funds, as they do.³³⁶

Wales does not have a distinct food system. It is dominated by the same commerce and companies as England. But woven across that is a desire to do something appropriate for the people of Wales. But would civil food resilience in Wales differ from that for London or the North of England? Interviewees judged yes and no. Local characteristics and resources but the common goal of protection and preventing food harm to all.

Interviewees detected a rising interest in agri-food politics across Wales. The old central focus on hill- and sheep-farming as the heartland of identity is still there but an interest in meeting the new challenges of climate and cost of living are also strong. As one said:

“What’s emerging in Wales is a new focus on food matters, shaped by various policy actors realizing that food requires more attention, whether as part of the climate emergency or for health concerns (poor diets and NHS impacts) or as vehicles for economic and civic regeneration. Wales has great advantage of having a multi-level framework in place which runs from the First Minister and Wales Government, through local authorities and cross-sector working such as food partnerships”.

72% of agricultural land in Wales is used for livestock grazing and only 6% for crops and horticulture. Only 3% of farm holdings in Wales are dedicated to crops and horticulture. As a Wales Centre for Public Policy report notes, for Wales to meet its zero carbon commitments by 2050, let alone the more ambitious 2035, more attention is necessary on reducing consumption emissions than just supply.⁸⁴³

Perhaps the most encouraging lesson from Wales for consideration of civil food resilience is that quietly over the last decade it has been organising food partnerships. There are now nine Sustainable Food Partnerships across Wales, all members of the UK-wide Sustainable Food Places network discussed earlier.ⁱ In summer 2022, the Welsh Government allocated £2.5m to develop these existing cross-sectoral partnerships and to create more.⁸³³ The idea is for them all to have a cross-sector steering group that includes the local authority itself, the Health Board, civil society organisations and third sector businesses such as farmers and growers, and that these steering groups develop local food action plans and strategies, and that this builds food resilience.

Such cross-sector and multi-level coherence is pioneering and strongly welcomed by the present report. It is a testament to the hard work across Wales by bodies such as Food Sense Wales and the Food Policy Alliance Cymru (FPAC),^{844,845} and others drawing on expertise and support from the NHS, public health bodies, civil society, progressive actors in the food system and academia. If consolidated, this would represent the first multi-level coordination between the local and national state (Welsh Government), civil society, local and national business and academics. It echoes Yorkshire’s ‘multi-level’ regional FixOurFood coalition linking different cities. The next chapter returns to how these coalitions can and should be included in national resilience architecture. But first, some other lessons from Wales are considered for the UK’s general problem of horticulture.

Lessons for resilience from the decline and renaissance of horticulture in Wales

The Wales Government has long known its people’s diet and ill-health are poor. In 2014 58% of Wales was obese or overweight.⁸⁴⁶ The politics of that burden is mostly translated into concerns about NHS funding rather than prevention. It easily becomes a political and fiscal argument between Cardiff and London governments.⁸⁴⁷ Interviewees in Wales were aware that the resilience challenge goes deeper than just funding. Some interviewees and discussions we held pointed to the possibility of building civil food resilience around a mix of appeal to identity and economy. As one person put it:

“if more and newer jobs in horticulture are possible even in wet Wales, would that contribute to civil food resilience?”

Dr Amber Wheeler, a specialist on Wales’ horticulture, suggests that neither production nor consumption are anywhere near the amount of fruit and vegetables they should be for health. She calculates that 2% of land in Wales could grow enough for 5-a-day for the whole

ⁱ in Food Cardiff, Food Vale, the Monmouthshire Food Partnership, RCT Food, Blaenau Gwent Food Partnership, Bwyd Powys Food, Bwyd Sir Gâr Food in Carmarthenshire, the Torfaen Food Partnership and Bwyd Abertawe in Swansea.

population, and that the creation of this market gardening sector could result in 83,392 more jobs in the countryside and generate £1.4 billion turnover across Wales.

In food terms, Wales today is commonly associated not with horticulture and direct feeding of people, but with sheep and cattle; meat and dairy. These still dominate Wales' food output but are perhaps in a slow decline.⁸⁴⁸ Although never of the scale of, say, Middlesex, horticulture was a part of Wales' agriculture from the 17th century, and in the fairly recent past, parts of Wales had significant commercial fruit and vegetable growing.^{849,850} This reduced for three main reasons.

Firstly, there was a decline of mixed farming in which the growing of field crops – potatoes, root crops, some brassicas – had played a part in crop rotation and provided affordable fresh vegetables locally. Secondly, Wales' food markets fell under control of UK national food supermarket oligopolies uninterested in small producers and limited supplies. Their logistics were not tuned to small or seasonal suppliers. And thirdly, crops were tacitly discouraged by the assumption that being in the wet west of the UK, Wales should not concern itself with growing horticultural or field crops. It should stick to meat and dairy.

In fact, our research encountered signs of what might be seen as a horticultural renaissance in Wales. This has not come about by accident but by many formal and informal partnerships for growing food that both received organised and gained political support from the Wales government and other bodies.⁸⁵¹ One interviewee, speaking about this process, indicated the kind of organisations (civil and government) and the sheer number that have created this new momentum in Wales, and that have gained a political ear:

*“It has involved, among other things, **Social Farms and Gardens** and the **Community Land Advisory Service** working on procurement, food hubs, community supported agriculture, planning and more. **Farming Connect Horticulture** and previously **Tyfu Cymru** providing direction and training for the sector. The **Landworkers' Alliance** supporting new entrants and horticultural development. **Horticulture Wales** in the North supporting orchard development and other things, **Food Sense Wales** working on **Peas Please** and procurement of local organic veg, **Our Food 1200** working on supporting the expansion of growers in Monmouthshire, the **National Botanic Garden of Wales**, academics, growers and others doing their bit. And in addition, all of the above coming together as a **Wales Horticulture Alliance** with the **Welsh Government** to advocate and co-work for a vision and the development of the sector.”*

Many actors and sectors have come together in this mix of formal and informal cooperation. Interviewees offered this as an example of civil society organising for food resilience with and sometimes pressurising government. Despite horticulture being in some trouble economically, Wales appears to be witnessing a rebirth of activity.

A 2020 study found 204 commercial fruit and vegetable producers in Wales, of which 120 were small-scale; most (117) were under 5 ha and just three cultivated 5-10 ha. Between 25 and 65 varieties of fruit and vegetables were being grown.⁸³⁷

The renewed interest in more diversified food growing is being driven partly by a community and resilience focus and partly by interest in localness and the organoleptic qualities of freshly harvested crops. All this has been supported by the Wales Government. As a result, the number of horticultural growers in Wales registered with Tyfu Cymru (the 'Grow Wales' body run by Lantra, the UK-wide agricultural training body) had grown to 312 due to new entrants.

Interviewees were clear that this expansion owed much to two pioneering Welsh Government political initiatives:

- the **2015 Well-being of Future Generations Act** by which legislation has to address long-term implications of any policy; and
- the **2011 One Planet Development** policy, a planning policy which enables some growers to live on the land if they are producing from it.⁸⁵²

Both provided clear signals from the Welsh Government for the expansion of horticulture and gave small but significant funding to support its development, and in 2020 bespoke horticulture development grants.^{767,853}

A not dissimilar policy reorientation should have taken place in England after a new Fruit and Vegetable Alliance created a consensus picture for a horticultural expansion in the name of health, jobs, balance of trade, environment and poverty reduction.⁸⁵⁴ This occurred with consultation and initial encouragement from the (English) government and Defra, only for them to renege on the promise to create a horticultural strategy. This led to a mix of anger and despair across the English horticultural sector, already hit by labour and energy costs.⁸⁵⁵

In Wales, part of the political appeal has been to culture – a ‘rediscovering’ of regional heritage but also repurposing it *and* experimenting with new ways and varieties alongside the old. In Powys and Bannau Brycheiniog National Park (formerly the Black Mountains), the *Our Food 1200* project came together with the self-derived the target for Monmouthshire of trying to have 1200 acres back working in horticulture. The 1200 acres was set nominally to be able to feed Monmouthshire and local communities with fresh vegetables,⁸⁵⁶ and to rebuild a more stable regional supply.⁸⁵⁷ In fact, the goal is not for local autarchy but to incentivise production. In Flintshire and Clwyd, we learned of a renaissance of interest in orchards and fruit, mostly from a new generation of small farmers drawing on some older pioneers.

Back in 1954, North Wales still had sufficient horticulture to warrant the creation of a Flintshire Institute of Horticulture. This in a supposedly wet region. Over decades – with the decline of diverse farming – the Institute merged first with neighbouring Deeside College and ultimately transferred its Further Education (FE) and Higher Education (HE) provision, then billed as Northop College, to the newly formed Glyndwr University based mostly around Wrexham in 2009, with Coleg Cambria being the immediate umbrella institution.⁸⁵⁸ This history is typical of what happened to autonomous, specialist and more local further and higher education colleges committed to the agri-food sector. There has been a process of continual FE and HE reorganisation that shed functions (and often jobs) and local focus. But in NE Wales there was tenacity about the case to retain the horticulture and regional focus. Now what is left looks set to become important again for strategic and resilience functions, with the national Welsh Government’s imprimatur.

It is not accidental that in most parts of the UK there are improving links between supportive further and higher education sectors and a new generation of primary food growing that sees horticulture and field crops as part of the function of land use for food resilience. This re-emerging Wales horticulture sector is also able to draw on training support from a mix of new infrastructure support such as Farming Connect Horticulture, peer-to-peer farmer-led training and longer-term practical and scientific research and breeding expertise in places such as Aberystwyth University’s Institute of Biological, Environmental and Rural Sciences (IBERS) with its interest in greater crop diversity and local adaptiveness.

The new context and enthusiasms are able partly to draw upon efforts and traditions in Wales of academia working with and for the community. The ‘churn’ of institutional branding, leadership and focus did not completely extinguish support for land-based skills at community level. This coalition of interest and governmental support owes much to the new generation of orchardists and growers all over Wales arguing and showing what was possible. Meetings attended for this report suggested the number of small-scale growers is rapidly expanding with a 50% increase between 2022 and when the earlier 2020 study was conducted. Most are small and localised enterprises but they provide commercial diversity as well as building and spreading skills and experimentation in food resilience. Some SMEs run their own practical courses spreading food skills.

It may be too grandiose to talk of a Wales horticultural renaissance and it may be at a small scale by past criteria or compared to the massive Netherlands industry, for example, but what was impressed on us was that it is expanding, is diversified not concentrated, and has governmental multi-level support. People interviewed (and others) impressed on this report the opportunities this gives for more direct, short-chain supply systems such as for public food provision.¹

Food Sense Wales and Wales’ 22 Food Partnerships, for example, are beginning a drive, together with Health Boards in Wales, to increase supply of organic produce from local growers into primary schools across many local authorities, through the Welsh Veg in Schools pilot scheme.⁸⁵⁹ This intends both to consolidate what already exists and to expand local horticulture. It hopes for a doubling of growers within the scheme year on year over a three-year period. It also reflects the preparedness of a new generation of growers to work with resilience-oriented food public sector in line with analyses produced internationally as well as in the UK.^{220,860,861} This new kind of public market-orientation could be expanded on a bio-regional basis via the system of Local Food Resilience Committees proposed by this report (see next chapter and Conclusions).

A feature of the Wales growing renaissance is an awareness of biodiversity, a thread reinforced by the links with higher education. Society may favour the protection and enhancement of genetic diversity to face climate change in theory, but it requires good knowledge and advice on how food is produced and for this to be translated by contracts and specifications into support for growing varieties and landraces suitable for low input production on more diverse lower quality land.

The Welsh Government notes the biodiversity significance for resilience of its Farming Connect scheme,⁸⁶² and specifically a channel set up in 2017 to encourage horticulture.⁸⁶³ One person consulted for this report stated that:

“[w]idening the number of clones we use is vital because clones by their very nature will ultimately succumb to disease.”

Another, talking specifically of orchards, said resilience depended on orchards having three types of tree: (i) ancient or supposed old foundlings, (ii) varieties adopted and climatised long ago, and (iii) new varieties. To individual gardeners, at the micro scale, the advice was if they can to:

“avoid ones you can buy or see in big supermarkets; plant the exceptional and less known. We need to experiment at community level!”

¹ An example beginning as this report was finalized is Cegin y Bobl, a project to connect cooking for young people with food production in Carmarthenshire with a now familiar mix of county government and social enterprise: www.ceginybobl.co.uk

This report learned that a Wales list of fruit varieties is in preparation, drawing on pioneers such as Ian Sturrock, a nurseryman outside Bangor, North West Wales, whose long-established weblight of varieties for sale and discovery of old varieties captured Welsh gardeners' and media interest.⁸⁶⁴ Paul Davies is another who has collected and propagated many regional varieties and in particular many Welsh Perry pears. Regaining and sharing skills such as grafting to ensure purity underpins the kind of interest noted in Powys for orchards suitable to local conditions.⁸⁶⁵ This is by no means feeding Wales but indicates a slowly expanding pool of interest and expertise that now includes the National Botanic Garden of Wales, and led to the founding of a new joint Wales Heritage Orchards Community Interest Company (CIC) and regular gathering of growers with widening University support including the University of Aberystwyth's Institute of Biological, Environmental and Rural Sciences (IBERS).⁸⁶⁶

If the UK is to enhance civil food resilience across the 'whole of society', the theme of weaving together *diversity* whether of engagement, levels, actors or science should be kept in mind.

The emergence of a 'grounded civil food resilience'

The cases above – cities, towns, regions - exemplify a form of what we might call a 'grounded' food resilience. An expanding web of scientific and practical support is engaging with a new generation of would-be and actual growers, both commercial and domestic, and engaging with citizens appealed to for identity, locality and decentralised economics. Networks and relationships both cultural and economic are being supported by a new strand of public policy and a mix of further and higher education recognising their role in amplifying local hubs of agri-food knowledge and skills. These connections, interviewees impressed on this report, are essential for civil food resilience. Food as trust.

The replenishment of food skills was, say some, weakened by the merging of old regional colleges of agriculture into universities; their practical skills were quietly side-lined as less important for research aspirations. But today in more sober times, the need for place-specific and place-attuned practical skills is back.

A rethink is needed for what is sought from Further and Higher Education for agri-food systems and their public role. A new generation of regional agri-food colleges modelled on the US system of land-grant universities would be one possibility. Food Resilience requires distributed not just centralised expertise.

Several interviewees pointed to the need to build better urban-rural connections in the way France has begun (see Chapter 6). One regionally-based analyst told us:

"We need to think about how to put town and country together better through food. I see this in where I live in NW England. We have a string of post-industrial towns in rural-urban areas crying for investment and development. The potential is enormous. We need to ask: what would pump-prime this transition? How can we build on the various experiments, the new local food co-ops? A co-design process must include the farmers and potential end consumers. [...] We must stop short-termism and put requirements on Local Authorities, Town and Regions to have at least 10-15 year resilience transition plans."

Another analyst stressed the importance of managing which levels of government can most appropriately do what:

“We need to de-emphasise the role of central government as sole actor. Instead, we should aim for a polycentric food governance landscape. More devolution, more cross-sector engagement, more diversity in decision-making. We need a recognition of the limits to what the central state can do to protect us. There are things it can do (as the furlough scheme showed) and things it cannot do. We need realism about what can be done to improve civil food resilience from Whitehall. The state is vital – it is a necessary but insufficient actor in food systems transformation. We need the state, but the state cannot do it alone. We need to ensure the conditions for food resilience are embedded across society and across the food system.”

An interviewee from local government said:

“There is a system of resilience support but it’s subject to some tension between Local Authorities (LAs) and central government about how much and what it can be spent on. [...] Within this tension, generally, the issue of food is definitely rising up the LA and Local Government Association agenda, as food insecurity rises and problems emerge in food supply.”

Lessons and ways forward

Lesson 9.1: Local authorities should be encouraged to develop local food resilience plans and action. This needs to be put on a proper footing, backed by legislation and funds. The process must start.

Way forward: Defra, the Resilience Directorate, the devolved nations and representatives of local authorities and Mayors should begin a process of discussion about how the sub-national level of food resilience can be put onto a stronger footing that supports and encourages local actions and organisation. The Secretary of State and Minister of State at Defra and MHCLG could lead this.

Lesson 9.2: The capacity of local authorities, whatever the size, across the whole country and within London is severely limited by resource shortage and financial constraints. In an ideal world where primary producers were paid a proper and full-cost price for food and where the farm subsidy budget of over £2bn was not needed to stave off farm collapse, that might become the food resilience budget. In reality, it would be wrong to set farm subsidies in competition with food resilience. The funding of a regional and local transition to food resilience must be better identified and monitored within HM Treasury budgets (see discussion in Chapter 4’s section ‘Three types of Food Defence’).

Way forward: MHCLG and HMT should begin to include a budget heading for food resilience preparation in the national accounts for both national and local levels.

Lesson 9.3: Local Authorities (even big cities) lack legal powers to solve the deep challenge of civil food resilience sufficiently at scale. There is no formal duty to ensure all citizens are fed. Public discourse is fractured by a mix of denial (‘what problem?’), blame (‘it’s their fault’) or insufficient welfare (‘leave it to charity’) when there is room to create responsibilities, budgets and plans. Food is all too easily left to fall between existing duties and responsibilities. The new government should consult with Metro Mayors, devolved nations and local authorities as to how this could be addressed.

Way forward: the UK should prepare a legally binding requirement for central and local government to ensure all people are fed in crises and to ensure better balance between incomes and food costs.

Lesson 9.4: Cities and regions recognise food resilience must be built at the micro neighbourhood right through to the regional and national levels. Community-oriented programmes and experience are emerging. A pooling of that experience as to which model of public engagement works best for which circumstances is needed. In Covid-19, neighbourhood networks using new media (WhatsApp groups etc) emerged, but these can leave gaps in low-income areas. If society's goal is to bring all neighbourhoods up to a decent level of preparedness, DWP and welfare organisation together with local authorities need to consider what interventions would have most beneficial effect for those with high deprivation.

Way forward: Food partnerships, technology analysts and academics, working to the Resilience Directorate and Defra, DHSC, MHCLG, DWP and the Welsh and Scottish Governments administrations should consider what mechanisms might accelerate community and neighbourhood networks to function well in times of emergency or shock.

Lesson 9.5: Decentralised urban-rural alliances and coalitions are emerging across the UK and deserve central government recognition and support. They are (re)creating institutional links between universities, colleges, growers, markets and consumers. This is being supported by the Welsh and Scottish governments more than the English but perhaps the new Government's interest in promoting more devolution of powers offers an avenue for the future. It offers a promising mix both for future regional commercial growing and community food resilience. Mapping local food systems and their potential is a key policy requirement ahead.

Way forward: All regions (cities, towns, counties) should aspire to having an up-to-date map of their food system. Local food system maps should be revised regularly to provide LRFs, local authorities, business and civil society with a good understanding of what and where food comes from, what community resources exist and where improvement is desirable. Expertise can be drawn from Planning Departments, academics and stakeholders. UKRI, DES and academics should be asked to advice on methods.

Lesson 9.6: More diverse and decentralised primary food production is desirable for many reasons yet central government has been reluctant to grasp this, despite two major inputs recommending new directions (in 2008-10 and 2020-22). We heard strong arguments that the UK should be more flexible about creating pathways for resilience at different levels. A country with as diverse and rich terrain as the UK could and should use its land sustainably for food, among other functions. That a country with as benign a climate, access to capital, and huge resources such as the UK is only producing just over half what it eats is a risky economic and defence strategy. The weak state of UK horticulture is a test case for how seriously the government takes food security.

Way forward: The UK Government should recommit to producing a Horticulture Strategy for England (reversing the past government's dropping of the commitment in 2023). HMG should liaise with Scottish and Wales Governments to coordinate matters such as training, research, infrastructure and recruitment to build labour resilience. A review of the regional

role of Further and Higher Education in supporting civil food resilience is overdue. In combination, the overall UK strategy should be appropriate for rural, peri-urban and urban conditions, and take account of (a) the need to promote UK-wide and more decentralised horticultural industries; (b) close access to urban areas and for urban workers to join; and (c) take into account the need for long-term shift to higher-lying land than today's preponderance of low-lying and below sea-level land.

Chapter 10: Rethinking the architecture and policy framework for civil food resilience

This chapter returns to the issues of institutional architecture and direction raised at the start of the report. It begins by presenting the survey conducted for this report into whether food featured for Local Resilience Forums (LRFs). It then considers whether the current conceptual basis of resilience thinking is sufficiently broad to capture what matters about food systems and potential civil food resilience, and sufficiently precise to address the interconnectedness of the risks.

What the LRFs think: the time to recognise civil food resilience

Few people are aware of the existence or role of the LRFs. In meetings around the country to present and discuss preliminary findings for this report, it was rare that participants had heard of them, unless the meeting was for specialist resilience professionals. Even food industry organisations could not be assumed to be aware of them. The term resilience was, if anything, applied to the corporate sphere – the resilience of one’s own company. This is perhaps a reflection, as was noted in Chapter 2, that the corporate sector has received more regular focus than the public.

The Defra, BSI, FSA publication PAS 96 – a publicly available specification providing company guidance on food defence - was first given in 2008, the second edition in 2010, the third in 2014 and the fourth edition in 2017, with no revision since.³⁴⁸ As noted earlier, scanty national public advice was hurriedly given in May 2024, decades after the modern UK approach to civil resilience began.

One national association of growers and distributors told us frankly:

“I have not heard of Local Resilience Forums. Yes, someone should be thinking about this.”

Yet LRFs are the key local basis for resilience.

It is not that LRFs have received no government attention. Their performance has rightly been the subject of internal and external reviews.^{307,343,867} In reality, they are a coordination base for first responders – Category 1 under the CCA 2004. They are well trained for instant reaction to localised major disruptions and crises – ‘blue light events’. But they do not address food resilience, nor have they resources to cope, for example, if there were a national crisis of contaminated food supply. That is not what they do. This leaves a gap.

A major farm sector organisation leader saw opportunities for local farm bodies with others to build better food preparedness, and that farm unions could contribute precisely the kind of local organisation and regional structures (and knowledge) that matter:

“These are immediate links which could be tapped into by LRFs. Yet the relationship with LRFs is patchy. There is too little liaison when what’s needed is a broader food presence on resilience planning. That is needed even when a crisis snowfall occurs or there’s a significant flood event. Food resilience planning could be so much more

than it is. But that local resilience thinking would require a shift in attention matched in Whitehall, with more cross-ministerial collaboration.”

We wrote to all LRFs in England and Wales posing them the same set of questions. We made it clear we know LRFs do not include specialist knowledge of food matters. The questions were designed to give space for them to communicate to this research what they knew and considered relevant. Were food shocks on the LRF radar? What ‘signals’ do they receive? What thoughts about what might be needed ahead do they already have? The survey letter was sent to every LRF listed address. Their replies are presented below.

Survey findings

When asked how significant food shocks might be in the future, LRF respondents raised three critical areas which could negatively impact food production, supply chains and/or delivery, or could result in food contamination. These were:

- sudden lack of energy or national power outage;
- pandemics or infectious diseases;
- civil unrest such as looting.

Asked whether they had a food element in their local resilience strategy, most simply answered ‘No’. One saw this as a matter of resources:

“The LRF have to prioritise resources and the evidence does not suggest food system shocks to be a high priority at this time.”

This refers to the NRR which, it is true, sees only food supply contamination as one of its 89 risks. But some Community Risk Registers do refer to food, only to downplay possible serious disruption, as we saw for Avon and Somerset (see Bristol case study in Chapter 9).⁸¹⁴ Meanwhile food industry analysts take threats and the possibility of major shocks much more seriously.

Another respondent gave a more positive view, and indicated that food is beginning to play a part in its planning, stating:

“We have a generic emergency response plan that includes consideration of a range of issues, including welfare of emergency responders and the public impacted by major incidents. Part of these considerations would include food and water for individuals, during normal scenarios this would be easy to manage through procurement at supermarkets etc (some organisations have MoUs [memoranda of understanding] with supermarkets to access quickly). During power outage or telecoms outage scenarios this would be more difficult.”

One North of England LRF was in the process of developing a Capabilities Review concerning the maintenance of essential services. This includes food and water.

Several LRFs indicated that a national approach (or more central guidance) on food resilience would be useful. One route might be Exercise Mighty Oak - the regular review of Emergency Preparedness, Resilience and Response (EPRR) statutory requirements under the Civil Contingencies Act 2004. (This was last held 28-30 March 2023). One LRF told us:

“We are awaiting a national steer following Exercise Mighty Oak during which food resilience was identified as a theme across the country.”

Others wrote that it would be an improvement to have:

“National campaigns with advice to encourage the storing of 3 days’ of preserved food and water in response to risks on the National Risk Register (such as national power outage, flooding, snow) where budgets allow. [...] and] National coordination of the capabilities of the supermarkets to support priority access to available delivery slots and to food for the most vulnerable.”

“UK Government setting national direction on access to food supplies and mechanisms to maintain / prioritise access to those supplies if there was a need to do so.”

They were aware that:

“National food security does not currently sit as a local risk since there is little that can be done at local level to assure supply chain from abroad and via a national network. [...] LRFs are increasingly seen as a solution to issues that should be driven centrally with one national direction, but without the statutory duty or powers to actually influence.”

Or, as another said, they would welcome:

“Information from government provided to outline the role of LRFs in regard to food resilience, with guidance and best practice”

And it would require *“a steer from National Government and national arrangements to be made to add value.”* But some were conscious that they had little influence on central government in that respect but the issues seem to be coming into their ‘zone’. In the words of one:

“Whilst we recognise that food is an identified national risk, we do not feel that the LRF can influence the issue of food resilience which we see as a national matter for consideration by Government.

“We would expect national dialogue to be taking place now between Government and food distributors (e.g. supermarkets) to ensure that all appropriate planning has taken place prior to any emergency. This will provide reassurance to LRFs and enable us to put in place arrangements for local food distribution as appropriate during an emergency.

“This is a national risk and should be led by Government. National work may identify gaps at a local level but these must be informed by a national evidence base. There needs to be consistency at a local level across the country and it is not for LRFs to take action without national evidenced-based direction. The ask of LRFs at this time around food resilience is unclear. Do we yet understand the full extent of food resilience following Brexit?”

Obviously, “some consideration” of food is emerging within the LRF processes:

“[...] following some recent large scale / impact exercises. In all honesty [we are] awaiting further guidance / direction from HM Government.”

Another added:

“The ‘whole of society approach’ is an interesting concept and one which LRFs in England still await a definition from government and the remit for the role of an LRF.”

These replies suggest recognition that food could become a matter for local resilience. Although unspecific, replies also pointed to a lack of central government guidance, and some uncertainty about issues of scale.

Generally, LRFs were sober about whether this was yet a priority and ‘acute’ issue for them. They were aware of large-scale threats such as climate change creating new risks for them. One in the south of England said:

“[Our] Chronic Risk Group has been established recently with a key workstream of climate change as this will have an impact on the type of food we have access to in the future.”

Two others said:

“At present there isn’t really a recognition of food supply in the community risk register (focus on acute issues such as contamination rather than supply disruption) and therefore limited planning assumptions. It was only through this questionnaire that I came across the Government Food Strategy.”ⁱ

“It seems unlikely food resilience will become a critical part of any local resilience strategy – it will be about preparedness and prevention related to major incidents.”

Asked if food resilience raised the need to broaden with whom they liaised, such as the non-governmental, civil society sector, seven LRFs reported that they were already doing this in different ways and to different scales, as the following excerpts suggest:

“There are existing agendas and networks already established and working in communities (e.g. Poverty Action Steering Group, Advice in [our] County Partnership and Area Action Partnerships) that allowed the Civil Contingencies Unit to join up and mobilise quickly in the absence of an LRF food element in its local resilience strategy. [...] The local Trussell Trust is a member of the LRF Voluntary Emergency Liaison Group and they are an external civil society organisation.”

“Our community resilience work involves communities, voluntary sector (e.g. the Scouts). [...] And we have] potentially some interaction with supermarkets but [this] is more ad hoc.”

“The British Red Cross attends our strategic and tactical level group to represent our voluntary agencies sub-group. This includes organisations such as Cruse Bereavement Care, the Salvation Army, RSPCA, RAYNET, faith representatives and more. [...] Relationships with commercial organisations, well established volunteer agencies and the flood of new individual volunteers that came forward, were harnessed and have been sustained since the Covid response by individual agencies.”

One was aware that including food in its work would represent ‘mission creep’, an extension from their original and primary role as immediate short-term ‘blue light’ responders. Their capacity was:

ⁱ Our covering letter had explained the policy context in which the present report was being conducted and referenced the Government Resilience Strategy.

“Limited input in all honesty – this is an area that we are trying to develop.... Our LRF [is] recognising that there is a need to form better links / networks and acknowledge that the same civil society organisations operating day in / day out will be best placed in the event of an incident – however [there is a] concern reference mission creep into chronic challenges as an LRF when the original concept was acute emergencies.”

As bodies with a very specific remit and role, LRFs were aware that their public outreach was task-oriented. The kinds of civil society bodies they liaise with includes those who are more conventionally ‘emergency’ focussed. But responses to our survey suggested the existence of a food dimension to emergencies was already widening the kind of bodies with which they might want to work. LRFs told us they were liaising not just the Red Cross but also food banks and voluntary organisations that already have “arrangements in place with supermarkets.” This raised issues such as the inefficiency of each area having to work out such local arrangements when it might make sense for this to be at least clarified nationally, or for an exchange of what works amongst them. One wrote:

“National arrangements (through national government) need to be made with supermarkets (for instance) to support local response. Having 38 different approaches (for each LRF) to this with national suppliers will not work. An understanding of resilience arrangements of suppliers and national chains would help further local planning.”

Another saw this being addressed by widening who contributes to their management structure:

“We have a [county] LRF Voluntary Community & Faith Group comprised of local, regional, and national groups and co-chaired by two representatives from the Voluntary Community & Faith who also sit on our LRF Strategic Meeting and Business Management Group.”

While, on food, other LRFs saw the need to include food sector interests:

“LRFs could be encouraged to increase their collaboration with existing corporate networks and agendas to have a clear and up to date picture at any one time.”

“Joined up working with food manufacturers, distributors and retailers in the Local Authority area to use their expertise and get local commitments and agreements in place for them to lead on emergency food provision - which would be more efficiently, timely and cost effective.”

“From a local level we don’t have the links / dialogue with producers / retailers so are often left feeling isolated. Longer term UK needs to consider food through the lens of resilience as outlined in UK GRF and the food strategy – the linkages haven’t necessarily been linked down to the local level.”

Many lessons had been learned from Covid-19, during which food was a feature. One cited the importance of data gathering about needs:

“One of the main lessons the [...] LRF learned was to collate accurate data on both those that needed support and volunteers, so they could be matched quickly and efficiently.”

One of the LRFs wrote that the food provision schemes in Covid had a mixed record:

“Local emergency food provision coordinated by local authorities through their Community Hubs in partnership with the Voluntary / Community / Faith sector and local food suppliers worked well. [...but...] The national provision of meal boxes, cascaded via local authorities as logistic intermediaries, worked less well, with the boxes sometimes having spoiled food in them. [...] and...] The allocation of priority slots by supermarkets to the most vulnerable was a very helpful action and it would be beneficial to formalise this approach nationally.”

Another in the north of England, an area of some deprivation, shared that mixed view but was concerned about gaps and missed needs in Covid-19:

“I think it worked well for some but fear that we may have assumed that all needs were being met when in actual fact there are likely to have been pockets where there was need but was no real support. [...] Some areas / populations benefitted from existing networks / communities [but] in more fragmented communities, I doubt that there was the same level of coverage or support and that this is likely to have remained hidden. [...] Initial [food] distribution was inadequate for the service users to the point of councils procuring food to distribute rather than the offering arranged by HM Government.”

Another drew more stark lessons from how emergency food parcels and provision worked in Covid-19:

“Emergency provision provided by central government experienced severe delays, inadequate food types or volumes etc. The LA was therefore required to deliver its own food service and to 'commission' food services via the voluntary sector to meet the shortfall of the national scheme.”

LRFs were clearly realising the issue of storage (if not stockpiling). One was drawn to community hubs and two others acknowledged that there were hiccups in supply:

“The community hubs is a model that is being noted as good practice and we are looking to replicate something similar for other responses.”

“We have learned a number of lessons from COVID, especially regarding the provision of food and essential items for those deemed most in need – mainly around whether we should bulk store items as a County. This is still a work in progress.”

“Initially, especially when food parcels from central government were first provided, it was a rapid but somewhat scattergun approach. This needed careful organisation so food reached those deemed the most vulnerable and over time the food provision worked very well. [...] We established a system whereby we could match those with needs, for example a mobility issue that meant they could not food shop for themselves, with a vetted volunteer or volunteer agency. This system became almost a virtual Humanitarian Assistance Centre, where those in need, for whatever reason, were able to be given assistance or signposted to other agencies that could help. For requests for food made out of hours, we enlisted the help of the fire service, and kept emergency food parcels at fire stations that were open 24hrs. A system which I believe our social care colleagues still use today.”

Again, the matter of liaison between national and local authorities was a matter of some concern. For one LRF, it was a matter of the contracts for food purchasing:

“The emergency food provision for Covid was not particularly effective and local experience indicated that national intervention undermined the build of local capability and response. For example, plans with local suppliers to supply local authority delivery of emergency food provision were halted due to national contracts overtaking local contracts.”

Lessons from the LRF survey

Lesson 10.1: While local experiences varied, LRFs are currently being left to their own devices on food. They are aware of this and it seems clear that a better position on civil food resilience is needed, and that much better national coordination and guidance would be welcomed.

Lesson 10.2: There was no unified call from the LRFs about food, but they note food coming onto their agenda even as acute crisis / emergency responders. Some also recognised the significance of social determinants of food problems such as poverty, unmet need, gaps in society.

“(During the Covid pandemic) initial distribution was inadequate for the service users to the point of councils procuring food to distribute rather than the offering arranged by HM Government.”

“Emergency provision provided by central government experienced severe delays, inadequate food types or volumes, etc. The LA was therefore required to deliver its own food service and to 'commission' food services via the voluntary sector to meet the shortfall of the national scheme.”

“Initially, especially when food parcels from central government were first provided, it was a rapid but somewhat scattergun approach.”

“Local emergency food provision coordinated by local authorities through their Community Hubs in partnership with the Voluntary / Community / Faith sector and local food suppliers worked well. The national provision of meal boxes, cascaded via local authorities as logistic intermediaries, worked less well, with the boxes sometimes having spoiled food in them.”

“The emergency food provision for Covid was not particularly effective and local experience indicated that national intervention undermined the build of local capability and response. For example, plans with local suppliers to supply local authority delivery of emergency food provision were halted due to national contracts overtaking local contracts.”

Lesson 10.3: None of the Local Resilience Forums currently yet had a specific food element in their local resilience strategy. They do, however, see that the risks specified on the National Risk Register could apply to and disrupt food supplies. One informed us that it is developing a food strategy with the help of external consultants, but they were the exception. Some expressed an interest in doing so in the future, having recognised the importance of food during Brexit preparations and during the Covid-19 pandemic. Similarly, no LRFs with whom we made contact yet had a specific sub-committee to deal with food-related issues. One LRF stated:

"It is highly unlikely that we could resource and operate an effective (sub-committee on food) and (there is) no real understanding of what one would aim to achieve."

But they see this as an issue determined by central government more than the local:

"Whilst we recognise that food is an identified national risk, we do not feel that the LRF can influence the issue of food resilience which we see as a national matter for consideration by Government."

Lesson 10.4: There is a clear sense from LRF responses that guidance from a centralised or national authority would be useful when it comes to planning civil food resilience. While LRFs recognise that a centralised/national body would not be able to undertake practical work to feed people in an emergency and that this would have to be a highly localised activity, most LRFs indicated that some national guidance would be useful:

"(Food resilience preparations) require a steer from National Government and national arrangements to be made to add value."

"(The LRF is) awaiting further guidance / direction from HM Government."

"Leadership - UK Government setting national direction on access to food supplies and mechanisms to maintain / prioritise access to those supplies if there was a need to do so"

"A national response plan / outlining the risks and options for intervention is required in a similar way to the plans for fuel / downstream energy etc."

Lesson 10.5: Some LRFs indicated an understanding that they will or already do need to work with external partners and to think about food in a systematic and interconnected way in order to be effective. Once again, a desire for a national approach seems to emerge here.

"Food resilience is affected by deprivation, because lower income households may not be able to stockpile non-perishable food for an emergency and may rely more heavily on food banks. National levelling up could potentially support lower income households to become more food resilient."

"We would expect national dialogue to be taking place now between Government and food distributors (e.g.: supermarkets) to ensure that all appropriate planning has taken place prior to any emergency. This will provide reassurance to LRFs and enable us to put in place arrangements for local food distribution as appropriate during an emergency."

"From a local level we don't have the links / dialogue with producers / retailers so are often left feeling isolated."

"LRFs could be encouraged to increase their collaboration with existing corporate networks and agendas to have a clear and up to date picture at any one time."

"More understanding of supply chains" [would improve civil food resilience in the local area.]

"Information from government provided to outline the role of LRFs in regard to food resilience, with guidance and best practice" [would improve civil food resilience in the local area.]

"Closer national, regional and local connectivity with food production, supply and distribution networks" [would improve civil food resilience in the local area.]

"Sourcing of food does not fall within the remit of LRFs but we do understand that distribution could fall in the remit of a multi-agency response."

"Through our new Community Resilience Project Officer we are seeking to develop stronger links with business which, currently, tend to be only through local authorities albeit they are key members of the LRF."

"Relationships with commercial organisations, well established volunteer agencies and the flood of new individual volunteers that came forward, were harnessed and have been sustained since the Covid response by individual agencies."

Lesson 10.6: Food difficulties are seen by LRFs as consequences of incidents rather than as standalone crises so far. This raises whether LRFs are bodies that can respond to both long term (chronic) and immediate (acute) food threats. Some specialists argue that 'blue light' services cannot be expected to resolve food resilience. Yet it is they who currently provide the public's LRF. It is not that LRFs are disinterested in food threats but that LRFs are made up of people and organisations with particular professional perspectives and training.

In short, food requires a **multi-agency response**, as one LRF below identifies.

"Food might be looked at as part of the response or recovery for another incident, but in this case it would be dynamic and covered by our generic response guidance (which covers anything outside of our highest risks)."

"We have a generic emergency response plan that includes consideration of a range of issues, including welfare of emergency responders and the public impacted by major incidents. Part of these considerations would include food and water for individuals."

"We have assessed that water resilience is a more pressing issue than food resilience."

"Depending on any specific emergency faced at the time, we would have to consider our local response and what arrangements would be appropriate to put in place. We do not have a specific multi-agency food resilience plan."

"It would be useful to know if there are such groups operating as Business as Usual in some areas (i.e. tackling cost of living / coordination / support for foodbanks etc) as opposed to LRF supported sudden onset incidents – if so, I could see a better linkage / ownership where the LRF builds / supports these groups to do what they already do rather than starting from scratch."

"In our patch the importance of a by-product of high energy demand fertiliser production (CO₂) wasn't recognised until the energy prices rose to a point at which production of fertiliser was halted impacting the supply chain reference access to CO₂ which is used in food preservation."

Lesson 10.7: That many simply saw Defra as the responsible body and deferred tricky questions to Defra indicates how Defra and central government are not communicating either their own evidence (such as the advice of the Committee on Climate Change or UKRI) or the importance of food as a Critical National Infrastructure. This communication failure means that people charged with protecting the public on food matters and for when and if that infrastructure is attacked, disrupted or damaged are themselves under-informed. This suggests that, as local institutions charged to respond for the public, the potential for LRFs to contribute to civil food resilience is being under-delivered. Improved training and education would benefit from including public health, social policy and civil society expertise, and all who work in and on the social determinants of (lack of) cohesion and preparedness.

Way forward: The Resilience Directorate should consider how LRFs can improve training and preparation for food crises. At the very least, the Resilience Academy (including the former Emergency Planning College) should prepare a module for planning for civil food resilience and should consult with food specialists on its content.

Way forward: LRFs' preparation for supporting civil food resilience would be considerably helped by expanding local liaison through our proposed new system of Food Resilience Committees (see below).

Bridging the institutional gaps: structures for a multi-level food resilience strategy

Various policy and strategy gaps have emerged from the analysis in this report. A need has been expressed by many interviewees for clearer and more consistent leadership on food resilience and security. One former military advisor put it firmly to this report:

“When I was in MoD planning, the classic understanding was ‘civil servants advise, ministers decide’. In fact, government isn’t doing this. Here’s where MoD can be important and useful. It should take more interest in food. Defra was ‘frozen’ in foot and mouth, and MoD stepped in to act. Its people are trained to get stuff done and make decisions quickly. Defra and MoD again should look at food threats today.”

A former government advisor emphasised the local state as resilience facilitator:

“to kick start a food system which has the backing of local experienced people to champion it. We should get Local Authorities (LAs) to have local food plans and be obliged to do that and to deal with health, hunger, biodiversity and climate.

“This local process needs to be set up under the LA but with community and key institutions locally represented to gain buy-in. It’s the LA who can bring them together initially, and which has convening power. Then let the process grow from there. Let local interests drive it. It’s the LAs who can and should bring in local companies into this process.”

Again, from the LRF survey, it should be noted that despite being one of 14 CNIs, food lacks national resilience thinking and preparation. LRF's deference to Defra was understandable but it suggests a food resilience confidence gap. That the LRFs' primary link is to MHCLG (formerly DLUHC) might lead to a restriction of their view of what is needed to address resilience beyond their current remit. This would come and surely requires interaction with

and via other lead departments – which is why the present report recommends the creation, in the case of food resilience, of a new system (see Step 5 below).

Some LRFs knew food had not emerged as unblemished from the experience of Covid-19 as optimists like to think. Nor is it as secure as official position of the 2021 Food Security Report implied.³² The last publicly available Cabinet Office summary of food resilience (one page in 2018) was thin; it is reproduced in full in Appendix 3.³⁵⁰

This report started with a recognition that there is a national resilience structure with sound principles (the 'whole of society' approach and a 'prevent and protect' focus).²⁴ This is all appropriate for the food system's civil resilience, but the resilience framework:

- gives insufficient attention to food resilience as a whole; nor does the National Risk Register.³⁹
- gives barely any attention to the public's role in its own resilience – the 'civil' dimension.
- underestimates the scale of shocks widely agreed already to be altering food security; these include ecosystems, geopolitics, economic, social and political threats.

At the same time,

- there is wide agreement among analysts, different sectors, and even government advisors that a tighter food security and resilience approach is needed and could be charted.
- resistance from government for the last 15 years to having a food security policy is regrettable and must be altered as quickly as possible.
- people within local government and local resilience forums (LRFs) see food matters as being inadequately addressed, partly due to funding and resource shortage.
- many lessons can be drawn from international experience at national and city-regional levels for public engagement in building a more resilient food system.

What can be done to rectify this situation? As a first and overarching step, this report proposes the creation of new Local Food Resilience Committees.

Step Five: Create local Food Resilience Committees to co-ordinate resilience preparation

The priority of LRFs is their 'blue light' role yet they see food entering their terrain. This gap needs to be narrowed, ideally bridged. The official Resilience Framework deserves a link to existing local bodies, movements and civil society organisations who are already working on food resilience and who would bring essential understanding of the existing situation. The UK has a wealth of active work on civil food security and resilience at city, regional and local levels. These are not joined up in any extensive organisational manner yet, but they could be.

Some Mayors, local authorities and professions with an interest in food matters do have food committees which operate either at arms-length but with official 'blessing' or directly under local authority or public health auspices. This diversity of form is cherished by some in civil society. They do not want to be taken over by the local let alone the central state. Others see the benefits of close liaison.

An interviewee from a large civil co-ordination body agreed there are:

“pockets of interest and development but not yet a common framework. Politicians don’t yet ‘get it’ entirely although some do. We are aware that [some leading parties are] hovering on taking it seriously but we gather it’s being hard to ‘sell’ across the leadership. This situation has to be worked on. There are good people in some local authorities, some Mayors, some regions, taking food and the people seriously already but it has not yet got national acceptance.”

The same interviewee echoed what many others informed us, namely that multi-level coordination is essential:

“Resilience at a local level whether through local government or active communities can only last so long. The idea of not having a national food strategy with the resources to implement it during these times is baffling to most ordinary citizens. [...] We need a clearer strategy for food, based on statutory responsibilities, in law. There ought to be local food partnerships everywhere.”

The country would benefit from coordination of the various bodies which have come into existence, some under local state umbrellas, some arms-length and some totally independent. This range provides the UK with a head start of experience and ideas about how to get civil food resilience structures into a resilience-oriented order. It is therefore recommended that a new system of local Food Resilience Committees be created, co-terminus with LRFs, building on local knowledge, both civil and commercial.

Why do this? The key answer is to involve the public and those close to it or in it. The second answer is to ensure focus and coordination.

One LRF interviewee told us how they saw the value of using:

“existing expertise rather than create a parallel crisis version.”

Many interviewees wanted to see Defra play a more active role in resilience preparation. One told us:

“We now ought to be talking more with Defra. We lack proper liaison at present. Defra has the jigsaw pieces which could help us all put it together. We need to get all the interested parties together. Defra could be convenor for that.”

One LRF expressed some nervousness about whether they could take on responsibility for food resilience on top of what they already do in stretched resources. We take that point, which is why the proposal here is to create a different committee that is able to work back-to-back with LRFs when needed rather than folding the responsibility into the LRFs under Civil Contingencies Act. In an ideal world, this would be a duty under local government legislation.

What the new Local Food Resilience Committees could do

Could current resilience structures be modified to address civil food resilience? This report is clear that there is a fundamental civil food resilience gap. The public’s food resilience is not being sufficiently enhanced. This requires many changes (see our Conclusions). How would the proposal for a new system of local Food Resilience Committees help? What would they actually do?

The Committees' functions would be to:

- be a voice and source of information flow 'up' the official resilience structures, and to receive and amplify national action and advice, tailoring it appropriately to the local context;
- map local food supply chains (very few localities actually know where their food comes from or where vulnerabilities lie);
- conduct local audits of food capacities and (community) assets to know what resources are or could be available;
- re-assess existing and contribute to new Community Risk Registers on food risks and threats; and to assess and represent where civil vulnerabilities lie;
- build networks of expertise and trust across their districts and to know where help might be relied upon;
- be an early-warning system for civil society on food matters;
- encourage place-specific resilience building and the encouragement of civic resilience taking account of differences across rural, peri-urban and urban contexts.

Membership should be representative of the 'whole of society'. It should include food industries but not be dominated by those sectors. It is essential to include civil society, relevant professions (public health, specialist food environmental health practitioners, trading standards, social services, planners). The Committees' membership should include:

- specialists on Public Health and Environment Health from within local government;
- food trade expertise such as Trading Standards, and food quality control professions;
- representatives of local food businesses both large and SME, across the food system from primary production, retail, food service, markets and cultural industries (used to providing food);
- local civic organisations knowledgeable of at-risk groups such as food banks, Citizens Advice (CA), and Neighbourhood Watch;
- social services and organisations such as faith groups knowledgeable of particular children and parental considerations;
- local amenity and existing food coordination bodies such as Sustainable Food Places and local civil society;
- teaching, training and research institutions including schools, further and higher education.

The new Committees would build on, rather than replace, the existing experience of UK food policy councils and boards illustrated in case studies in Chapter 9. They would provide bridges across the civil resilience gap. In localities with existing agri-food organisations – such as farming, land and citizens bodies - these should be invited to propose members to the new Food Resilience Committees. The idea is to build on work and relationships already in place but, in so doing, to get a grip of the current vagueness about civil food resilience.

Noting the importance of trust in governance (see Chapter 7). we recommend the Food Resilience Committees should be co-chaired by people with local standing, such as the local Director of Public Health or Emergency Planning Committee. Membership and leadership require people who bring immediate and relevant local knowledge and who are aware of food system dynamics and of the need to address the delicacy of the food resilience gap with firmness.

Way forward: 42 new local Food Resilience Committees should be created. These should be ‘co-terminus’ i.e. boundary-aligned with existing LRFs to facilitate liaison. Their composition and membership should be representative of the locality. They must be accessible to and liaise with existing LRFs while being democratically accountable to the local/city/regional elected authority. This is to ensure the Committees achieve a high level of trust. Food Resilience Committee membership should be a consortium of food-related professional and civil society organisations and people.

Way forward: Defra, the Resilience Directorate and Cabinet Office should propose the terms of reference, membership, duties and functions of the proposed new Local Food Resilience Committees. Their report should be presented to the Prime Minister on the understanding that the Cabinet Office will draw extensively if not entirely from its advice when constituting the LFRCs.

There are organisations with relevant experience on which to draw for the proposed local Food Resilience Committees. One national observer, for example, pointed to organisations such as Neighbourhood Watch or Citizens Advice, as offering avenues for citizen engagement. The new Committee should, the interviewee said:

“be prepared, prior to and in the event of an emergency, to help encourage their members and other people to look out for neighbours and to check are people OK for issues such as food. Neighbourhood Watch has developed a network of local cyber-security trained ambassadors to increase cyber knowledge and protection and could do the same for food.”

A sequence of organograms in Appendix 4 indicates where the new local Food Resilience Committees could sit in the current UK Central Government (England) structure, and the difference they could make by injecting a civil infrastructure.

Figure 10.1 repeats the existing resilience structure. This is the structure that currently would be expected to apply to any food crisis. It presents key institutions at different levels of governance from national to local / community.

Figure 10.2 presents how the proposed local Food Resilience Committee would fit into existing multi-level national resilience structures. This shows where and to whom the new committee would report. Most importantly, it inserts the possibility of there being multiple crises not just an ‘event’. It also asserts the importance of the public / consumers / citizens as ‘recipients’ of crises. And it points to the involvement of the infrastructure in which those citizens live and exist.

Figure 10.3 pares the previous figure to its essentials and depicts how the proposed Food Resilience Committee could involve relevant food actors, knowledge and work at the local level.

Figure 10.4 depicts how a food crisis could be addressed by this new structure at the local level, and whom it would involve, and the coordinating role of the proposed Food Resilience Committee. Via the dotted line, it connects to the previous graphic. These are the local resources and actors that could make a difference for civil resilience over food.

Figure 10.5 the looks entirely through the eyes of the public / citizens in and for crises – how citizens rely on a food and socio-economic infrastructure in crises. it is these that could make a difference and that the current resilience structure cannot address coherently enough, yet which in some places has existing and emerging coordination.

England currently lacks a consistency of governance such as Wales' potentially. A semblance of regional policy coverage had begun to emerge under the Regional Development Agencies in the 2000s but with their abolition by the Public Bodies Act 2011,⁸⁶⁸ and their substitution by weaker Local Enterprise Partnerships (LEPs), there has been no coherent regional food leadership.

The previous Government was "minded" to cease funding the 36 LEPs from 2024 anyway and to give notional economic emphasis to local government⁸⁶⁹ but there was little decent funding to be attached. Regional Assemblies were abolished by the last Labour government in 2008-10 but the new Labour government is more interested in devolution of powers. A coherent position on sub-national food policy is urgently required with the relevance of creating a new strong identity forming 'state' structure. England's mix of Metro Mayors and other types of sub-national geographical democracy so far seem favourable to regional food interventions.

The value of having food resilience planning and action dovetailed with local administrative structures has been shown internationally (see Chapter 6) and in the long experience of London and more recently Birmingham, Manchester and the Yorkshire Mayors (see Chapter 9). As the new Government charts its position on new regionalism, it makes sense for local Food Resilience Committees to 'fit' each LRF. In the medium- to long-term, regional politics will have to be addressed by Government. In November 2024, the Labour Government created a new Mayoral Council of England.ⁱ

Way forward: The new Government through MHCLG and Defra should create Local Food Resilience Committees to suit existing English structures. This is likely to mean that members of the former M10 Mayors' Group could now operate through the Mayoral Council of England to create co-terminus LFRCs, and other LFRCs will be fitted to regionally-appropriate configurations.

Figure 10.6 (see Appendix 4) addresses the issue of devolved powers and enhanced food resilience still under the CCA 2004. Wales, a country of just over 3 million people, has a well-organised system of 22 food partnerships covering the whole of Wales. This gives an opportunity for multi-level food resilience planning coherence. As was suggested in the focus on Wales' horticulture (see Chapter 9), Wales also has a proportionately strong civil movement organising around food matters. The organogram shows where four Food Resilience Committees enhancing and harnessing this civil society could sit in Wales' existing resilience structure. Figure 10.6 retains the benefits of Wales' direct line of political accountability on resilience matters and links in civil society.

The First Minister chairs Wales' existing four LRFs, and there is growing liaison with 22 existing Food Partnerships across Wales (nine of which are active members of the Sustainable Food Places network, for example). The proposed system of local Food Resilience Committees would fit well into this. It would draw upon pre-existing bodies and provide at all levels – local (via the 22 partnerships), regional (via the new four Food Resilience Committees) and nationally (involving ministers etc).

Way forward: The Welsh Government should create four Local Food Resilience Committees to dovetail with its existing four LRFs, with the new LFRCs drawing upon Wales' 22 local food partnerships.

ⁱ MHCLG (2024) 10 October: <https://www.gov.uk/government/news/deputy-prime-minister-launches-first-ever-mayoral-council>

Step Six: The UK Central State must create and maintain a coherent food strategy

The efficacy and value of the proposed new local Food Resilience Committees requires an injection of coherence into the national structure, too. Or, to put that in reverse, as one person asked us:

“Can the new LFRCs be effective if local governance itself lacks consistency and coherence?”

Certainly, the proposed Food Resilience Committees need to report and liaise with official resilience structures to ensure full effectiveness. And ideally, UK local authorities would have the kind of coherence, powers and room to engage with food that other countries benefit from, but ‘we are where we are’. The need to ramp up civil food resilience planning is essential. It should not wait for a local government nirvana to emerge. And the signals from the new Government about the desire to devolve more to the sub-national level is welcome. It should improve coherence. Ensuring the people are fed and fed well cannot be assumed in a crisis. This is surely a duty of the State that needs to be clarified and incorporated into statute. One specialist food analyst spoke for others when saying:

“Defra has effectively become a farming and trade ministry. Food has been left off. It underestimates the risks to security. Because it’s weak, there is no leadership and the links with other ministries and issues get lost. Perhaps we need a Food Ministry; or at least a cross-ministerial governance structure that considers all of the issues through a security lens (in the short term, via potential for supply chain disruption, and in the longer term also layering on a public/nutritional health/productivity lens).”

A former civil servant now in industry amplified this:

“I think the lack of coherence in government food thinking is a sign that it isn’t currently taken seriously. Perhaps this is because it’s complex. It’s like transport. The Government wants us to drive less but the cost of public transport or the lack of public transport incentivises us to ignore the request. Government has to understand better what makes for effective and long-term governance. It is a very serious and rare government that thinks longer term than five years.”

On two occasions in the last fifty years, since joining what is now the European Union in 1973, the UK began to chart its own clearly-defined national food policy. Both times the process was thwarted. As summarised in Part One, the first time was when under Labour the *Food 2030* strategy was generated. At least that was signed off and launched by the Prime Minister of the day in early 2010, only to be jettisoned by the incoming government following an election a few months later.^{14,870} The second time was more recent, under the Conservatives, when the 2021 *National Food Strategy* was presented to the very government that had asked for it under Defra’s auspices only for it too to be side-lined, then partially eviscerated and ultimately ignored.^{6,21}

The UK cannot afford to fail to bridge this resilience gap a third time. Events are pressing; clouds are gathering; risks are becoming clearer.

Not one, but two wars have started to the east of Europe. These underline the evidence of potential shocks to the UK food system and to Europe’s on which the UK’s depends. The

UK's departure from the EU's policy umbrella means the UK lacks, for better or worse, the default policy framework provided by the CAP and newer directions such as the *Green Deal* and *Farm to Fork Strategy*, both of which are subject to considerable debate in the EU.

The EU's Strategic Dialogue on the Future of EU Agriculture chaired by Professor Peter Strohschneider, appointed by the President of the European Commission, reported in 2024.⁸⁷¹ This recommended the creation of a new European Board of Agriculture and Food to negotiate a way through the delicate politics raised by the supposed conflict between food production and environmental protection.⁸⁷² We, like Professor Strohschneider, consider this to be a false conflict, fanned by vested interests more than reality, but it becomes a political reality, nonetheless. A secure food system requires sustainability to be built in; we cannot expect resilience after a shock unless there has been preparation, planning and civic engagement. This requires some reality about defence and democratic involvement. The risks need to be shared. Only the naïve think business-as-usual will continue over the next decade, yet that was what the last Government's food strategy document espoused.²² No wonder it was greeted by the EFRA Committee with an understated verdict that the Government takes a "leisurely approach".⁸⁷³

A detailed table of responsibilities across the UK food system was given earlier (see Chapter 4), but Table 10.1 now provides a shortlist of key institutional responsibilities. We were asked: if there had to be an emergency COBR meeting for a food shock, which state bodies should be around the table representing state actors, whatever the crisis? Though they are not state bodies, the bottom row gives an indicative list of civil society organisations whose views and food experience would be relevant. If not in a state body such as COBR, a coordination into which COBR could tap would be needed alongside.

Table 10.1: Key UK State bodies with a role in delivering the conditions for civil food resilience

Level	Represented by	Why important
Government of the day	The Cabinet (elected key officers of state)	<ul style="list-style-type: none"> • Sets and is responsible for proposals and purpose of the food system, and thus its security and resilience. • Its policies can make civil food resilience weaker or stronger.
Central Government	<ul style="list-style-type: none"> • Cabinet Office • Resilience Directorate • Cabinet Office Briefing (COBR) Unit 	<ul style="list-style-type: none"> • Delivers practical 'command and control' secretariat to deliver overall strategic direction, and accountability to the Government. Specifically: Implements the Government Resilience Framework; is responsible for the National Risk Register (+ National Security Risk Assessment), CNI food review, etc.
Ministries	<ul style="list-style-type: none"> • Dept for Environment, Food & Rural Affairs • Dept of Health & Social Care • Ministry of Defence • Dept for Business & Trade • Dept of Energy and Net Zero • Department for Transport • Ministry of Housing, Communities and Local Government 	<ul style="list-style-type: none"> • These either lead or help deliver the conditions for food security and resilience • They translate overall strategic direction • They should anticipate barriers to positive outcomes, by ensuring consideration of practical supply issues, health impacts, defence of food infrastructure, trade dependency, climate change actions, transport and logistics, and socio-economic divisions.
Specialist Agencies	<ul style="list-style-type: none"> • Food Standards Agency • National Cyber Security Centre • Office for Health Improvement & Disparities • Environment Agency • National Infrastructure Commission • Border Force 	<ul style="list-style-type: none"> • Provide specialist intelligence, monitoring and advice to aid policy implementation and threat prevention
Local and regional government	<ul style="list-style-type: none"> • M10 group of Metro Mayors • Combined Authorities • All other Local Authority bodies e.g. County Councils • Resilience Forums 	<ul style="list-style-type: none"> • Provide the local accountability and service delivery e.g. public health, social services, environmental health, food protection, community support and resilience • Provide emergency support
Civil society (NB not a state sector but indicative, see text)	<ul style="list-style-type: none"> • Citizens Advice / Neighbourhood Watch • Which? • NCVO • Sustain • Disability Rights UK • IFAN/Trussell Trust 	<ul style="list-style-type: none"> • These organisations are not state bodies but their views are needed to tap into COBR) • They run public-oriented and engaged organisations of precisely the kind that need to be included in a deep food crisis • They provide 'bottom-up' views

Source: authors

Missing in this list is what a number of our interviewees suggested (and the lead author in this report has previously proposed),³⁴⁷ namely that there should be a standing body or Council of Food expertise. A proposal to that effect is discussed below and made in the recommendations in the Conclusions Chapter.

A senior civil servant we interviewed was clear:

“Co-ordination is the key role of government. A ministerial food committee, supported by the Cabinet Office, could be created as a structure that provides cohesion and co-ordination across the UK government.”

A high-level industry executive with good knowledge of the Whitehall system proposed a broad redirection and said this could be welcomed by industry:

“Firstly we need a plan on which we agree. A national food plan. Secondly, the structure of the government machine needs to be radically reformed to facilitate these changes. Thirdly, we need to have measures to judge this by. Industry could easily agree these among themselves but it would need to be approved by government.”

Another senior industry voice put a recommendation echoed by others:

“We need a properly run Cabinet Sub-Committee on Food and a properly run and resourced civil servant structure to underpin it. That combination is critical. One cannot help but look at Government thinking and action on energy resilience and compare it to food. Food won’t get the attention it needs without that underpinning.”

In 2008-10, during the process of creating the Food 2030 strategy a Cabinet Food Sub-Committee with parallel civil service coordination was created, only to be abolished in 2010 at the election. It should be reconvened and given a security and resilience focus. A defence analyst was not alone among experts interviewed here in calling for a mix of more governmental grip (attention) and preparedness to critically assess the unthinkable at domestic and international levels.

In an acute crisis or shock, bodies other than state functionaries would be highly relevant, as Covid-19 experience showed. In its first period, as noted in Chapter 4, a Food Resilience Industry Forum (FRIF) was created to give Government an exchange with industry, only for it to be disbanded when Government sensed the immediate crisis was ebbing. This was a mistake.

A year later, when Russia invaded Ukraine, and began targeting grain exporting ports such as Mariupol, the Government insisted a body such as FRIF was not needed and, if it was, it could be restarted.⁸⁷⁴

The focus here, however, is to build the presence and importance of civil society in food resilience. Local Food Resilience Forums could and should have supplier and trade interests, but they need to establish working relations now in before acute crises hit.

Way forward: A new Food Security and Resilience Act should be put through Parliament. This would fill the current legislative gap that there is no obligation on the state to feed its people. It would provide the UK with the broad thinking and tools that could provide sorely needed direction to put the UK’s food system onto a sound basis for the mid-century.

Such an Act would:

- create a new National Food Security and Resilience Council to advise and monitor government ensuring food production and consumption have clear obligations and are not drowned by ‘competing’ demands;
- create a statutory liaison across the four nations and devolved levels of authority such as the regions and Metro Mayors;
- commit Government to reducing negative impacts from agri-food systems alongside other land, sea and nature protection;
- enshrine the centrality of feeding all the people healthily and sustainably;
- give new powers to local authorities and Mayors to create Food Councils;
- create new Food Resilience Committees co-terminus with Local Resilience Forums;
- create an advisory system that provides targets for production and advice on critical issues such as chokepoints and baseline food necessities;
- give duties to statutory bodies (schools, health boards, government grant-aided bodies) to increase provision of locally sourced food to encourage the rebirth of local supply;
- give powers to allocate unused land in and around towns (green belt) for food growing;
- create powers for creation of a new ‘civil food defence’ system of mass provision of food in large-scale emergencies.

Way forward: A new National Food Security and Resilience Council should be created to provide coherent food systems-oriented policy advice and succinct summaries of evidence about where and how national food resilience and wellbeing could be enhanced.

Way forward: A Cabinet Sub-Committee on Food Security and Resilience should be created to provide oversight of the national state of food (in)security and the transition to a more resilient food system. This should give equal focus to supply and demand, taking account of food’s impact on health, environment, the economy and civil society.

Way forward: There should be a specially convened National Food Risk Register analysis of the food system as appropriate for all Critical National Infrastructures.

Way forward: The existing national food policy architecture should be reformed, revitalised and given clear guidance to help prepare the food system and the UK public for shock.

Way forward: Mayors and local authorities should be asked to convene a national rolling conference (a series of meetings across the UK) to identify what local government needs to improve its populations’ civil food resilience. This resulting report should be given to the new National Council of Food Security and Resilience and the Cabinet Office, together with key agencies.

Step Seven: Reset the UK Government Resilience Framework to take food seriously as a CNI

Concern about lack of food security and resilience has grown throughout the food system yet, despite laudable principles and overview and despite food being a CNI, the UK Government Resilience Framework barely features food. Nor is there confidence in the food thinking on Critical National Infrastructure. What might rectify this situation? For a framework today to address the issues and opportunities for civil food resilience raised in this report, it would have to:

- focus on *civil* food resilience not just supply resilience;

- recognise (not downplay or ignore) the significance and possibility of food disruptions, breakdowns and failings;
- refine the current national risk approach for food, noting that the era of reliance on European food system has been jolted;
- realise that a sizeable proportion of the UK population is already experiencing food insecurity;
- accept the need to address different types of threat (whether temporary or long-term), different intensities of threat (from war, terrorism, systems failures to occasional disruptions), and different scales of threats (global, continental (EU), national, regional, local or household level);
- accept that acute or short-term responses and emergencies over food will occur in a food system already exhibiting chronic and long-term stress;
- take note of the need to begin developing more diverse and dispersed food supply and consumption approaches;
- stop rationalising the need to build people's food skills as unnecessary 'nanny stateism' and instead realise the collective and personal advantages of committing to change the national diet towards one that is healthier and more sustainable with lower health, environmental and social impacts;
- develop structures and networks that support public resilience in relation to food at community, local and regional levels;
- build and maintain public trust with sound information, this requiring dedicated food security and resilience monitoring;
- support necessary civil skills that enhance public food resilience;
- note and learn from the experience of other countries recognition of the importance of civil food resilience;
- recognise and engage with existing civil society food organisations in a systematic and mutually supportive manner to create living food resilience.

A new Conceptual Framework for Food Security and Resilience

The existing 2022 UK Government Resilience Framework includes sound features and principles (the 'whole of society approach' and 'prevent and protect') and has generated respected institutions with civil contingency responsibilities. The approach to food, however, has been judged as too weak and is lacking sufficient attention and democratic accountability. The civil food resilience gap is real.

As one interviewee concerned about the possibilities of food system shock told us:

"[...] we seem to be much better at responding to difficulties over food than in preparing to prevent them. I would like politicians to get back to being able to talk about the need for grand visions about how to create food resilience; we tend just to dismiss the issue as unnecessary. People understand the need for food. We've got more room in policy to paint a bigger vision than we are doing at present. We need to be bold".

There has been no parliamentary debate or select committee inquiry into food resilience *per se*, yet feeding 67 million people is surely among the prime duties of any functioning state system. To its credit, the House of Lords has held two relevant inquiries, with which this report began. One considered extreme threats,² and the other the crises in food poverty, environment and health.¹ It is regrettable that no parliamentary process has yet addressed

the connections between those issues in relation to resilience. With the new Government stating that food security is one of its five key concerns, this should be rectified. The Labour Manifesto stressed that it “recognises that food security is national security”.⁸⁷⁵

Way forward: The UK Government Resilience Framework would be strengthened by clearer linkage of how the UK approaches Food Risks, Security, Sustainability, Democracy, Defence and Resilience (FRSSDR) as a coherent whole. This multi-criteria FRSSDR framework requires vertical integration and engagement at national, regional and local food policy levels.

Civil food resilience is about connections, and these key notions of risks, security, sustainability, democracy and defence are what fleshes out and enables resilience. In Chapter 2, the meaning of resilience was explored and the case made for exploring *civil* food resilience as providing both a purpose for resilience and seeing the ‘civil’ element as key to decentralisation and distributed networks (in Baran’s terms). Practically, this means using food as a vehicle for social cohesion: feeding all not just the loudest voices or wealthiest in shock situations.

The people civilise resilience. The state people are in – whether struggling and dragged down by vulnerabilities, or with capacities, networks, communities and being more prepared - determines whether and how they can be resilient. Food resilience requires active citizens, not passive consumers left defenceless in shock. Crises are shaped by the status of people, not a fantasy of where we wish they were or had been. That is why the pursuit of civil food resilience requires people to be engaged, to feel they have a stake in bouncing back. We have noted this in and about other countries’ strategies (see Chapter 6).

And it is why, in past mass crises, food resilience put resources and attention into engaging the public. Today, the possibility of deep food crises means more attention should also be put into food system’s transition to sustainability for the long term. Shorn of Empire and Europe, the UK has no option but to address the risks and threats to food, whether from climate change or geopolitical realignments or gross food inequalities within society affecting health and well-being.

Although staying firmly focussed on this public realm, not the secret or military world of conflicts this report has recognised the importance of food defence. Whether the state, specifically the new Government, acknowledges the delicacy of current food capacity is uncertain. Its 2024 election Manifesto noted the need to protect farmers. But food security is more than farming. In today’s geopolitics, naval resources would be considerably stretched if the country switched food sourcing from Europe to more distant sources at a mass scale. The risks facing food are not just about distance. Agencies such as the National Cyber Security Agency with its work on and advice about malware, ransomware and other logistics disruptors are already crucial bodies underpinning national food security.

The public has been mostly completely unaware of such matters, but consciousness appears to be growing. Anticipating this is why the public has been our central concern. We have explored how the public could engage in its own food defence and its own food resilience. Notionally, as the report process unfolded, it became increasingly clear that UK society needs to consider what it would want from a **civil food defence**.

Civil food defence, interviewees told us, almost certainly requires community, local and regional structures. It would be unwise to leave this entirely to central government or a few powerful food corporates with the ear of any government of the day. They are important of course, but senior people in those food industries (and no doubt many others) already know that there are limits to what they can do to combat what is unfolding in climate, water and

social inequalities. Even mighty transnational corporations had to reroute shipping when the Red Sea traffic was attacked by the Houthi. Giant multinationals could not avoid gas disruptions in 2022.

The last half century's investment requires a reset. Food sustainability, security, democracy, defence and resilience are linked and those linkages should be reflected in the Food Resilience Framework at all levels. This is why there must be a food framework reset.

We are reminded, too, that in and after WWII, equality and fairness in food consumption shaped much of the national food strategy. The 1940s saw the introduction of a system of international commitment to human rights. That food was part of this reset has sometimes been forgotten by the UK, one of its founding countries. If that seems harsh, how else can we conclude when, using government's own data,⁸⁷⁶ academics point to 17% of children living in food insecure households in 2022-23, and a charity tracking insecurity estimated 4 m children live in food insecure households?⁸⁷⁷

Both the UK and what became the Common Market, now the EU, took food security and food rights seriously in the post WWII reconstruction. Some states have the issue written into their constitutions. The UK has no written constitution but that is no barrier now to passing a Food Security and Resilience Act. The mid 21st century challenges are known. The EFRA Committee was right to subject the issues of fairness and equality in the UK food system to scrutiny in its recent inquiry.⁸⁷⁸ We know that food is once more being weaponised and that parts of the food system are visibly fraying in rich societies.

Theoreticians on food resilience rightly raise the importance of purpose and values in adaptation for resilience (see Chapter 2). Interviewees echoed that. This report set out to consider that question. To what new or existing state of the food system does any society want its food system to bounce back both in and after shock? The answer can be given simply and has been articulated by the 2024 Swedish Food Resilience report.

The purpose of resilience is to ensure a situation where all UK people are fed well in and after shocks. By 'well' we mean adequately and healthily. This in turn implies a food system that can do this, i.e. one which is sustainable, defended, democratic, risk cognisant, prepared and diverse sufficient to withstand shocks and to adapt to crises, and so on.

Figure 10.7 represents this graphically. It depicts resilience as a connection of policy functions and goals all centred on feeding people well before, in and after shock. This conceptual framework should inform the reset of the 2022 UK Government Resilience Framework. Around that central web to connect Food Risks, Sustainability, Security, Defence, Democracy and Resilience - the 'RSSDDR' cycle - are other functions that deliver the support and commitment to feed the people well before, in and after shock. These are not an exclusive list but indicative of themes raised by our interviewees and case studies.

Figure 10.7: Food resilience conceived as being within a web of Risks, Security, Sustainability, Defence, Democracy and Resilience (RSSDDR)



Source: authors / graphic G Wren

PART FOUR

RECOMMENDATIONS AND CONCLUSIONS

Chapter 11: Conclusions: Reorientations and Recommendations

Conclusions: bridging the gaps

In his 2023 book *How to survive a crisis*, Sir David Omand warns of a false ‘securitisation’ of everything. Resilience too can be overused. He also notes that slow burn crises are most difficult to pull back from. They are seen as too difficult, too expensive. This surely fits food. Food is rightly a Critical National Infrastructure – no-one argues it is unimportant - yet interviewees reiterated it lacks sufficient policy and strategic attention for the challenges that are already with us – the chronic problems already normalised – and ahead – the acute problems that could destabilise society deeply.

The pressure on policy-makers to face necessity is rising. Despite developing a strategy to begin food system change after the 2007-08 oil and commodity crisis with a pace-setting Food 2030 strategy in 2010, only to have that dismissed by a change of government, and despite once more looking set to re-engage via the 2021 National Food Strategy post-Brexit only for that too to be dismissed by those who had asked for it, **the UK now lacks a coherent food security and resilience strategy fit for its actual status in 21st century geopolitics.**

The research reported here set out to explore the state of civil food resilience. It has found that **the UK has not one civil food resilience gap but many.** There are gaps:

- between expert analysts and what policy-makers are so far prepared to do.
- between what is desirable – a low carbon, sustainable food system - and what exists – a food system and eating culture which contribute to climate heating risks.
- between different policy discourses where some interests see resilience as a matter mostly of supply, and others seeing it as a challenge to consumption, culture, citizen’s skills and capacities.
- between an official central state (Whitehall) view of resilience as protecting all 14 CNIs and the public that is barely aware of its role in reducing vulnerabilities or of what a proper infrastructure could provide.
- between the assumption of resilience as a return to and maintenance of business-as-usual and the prognoses that much will change.

- between a default policy that assumes (big) food businesses can resolve (most) problems and the reality that the scale of the resilience challenge evades even powerful corporate interests.
- between the central state ('Whitehall') and other levels of government.

These are gaps that themselves add to uncertainties for the public. Policies with appropriate principles are not translated to the civil local level. The further from Whitehall we explored, the more indistinct and loose the possibility of clear food resilience delivery became. This situation at the sub-national level was not for lack of people seeing what was needed but was a problem of resources, powers and lack of central direction of what is required of the food system: its sustainability, public-centredness, a goal to ensure conditions make good outcomes more likely.

The UK has a system for identifying and assessing risks, vulnerabilities and threats to food system yet the official published risk assessment shows surprisingly little concern about food. A wide range of experts and industry insiders fundamentally question this complacency or myopia. This gap must be narrowed. Food deserves more attention. We found a surprising but welcome degree of agreement across business, academia and science that the UK's political culture of assuming its food security is fine no longer fits the realities already impinging on food systems – crises of carbon, water, soil, biodiversity, unequal access, price, control and, *in extremis*, weaponisation. Without a focus on food security as sustainability, there is little chance of enhancing food protection or of creating nationally embedded civil food resilience.

The report provides a multi-level analysis of why this is so. Civil food resilience from national to community levels has been explored, drawing upon interviews, surveys, case studies and the formal literature. The report has focussed mainly on England simply because **what England does dominates what Scotland, Wales and Northern Ireland can do on food matters**. Northern Ireland is now in the particularly unusual situation of being in both the UK and EU food regulatory frameworks under the 2023 Windsor Agreement. Wales and Scotland have begun processes for readjusting their agri-food systems within their powers, with Scotland already adjusting to the new dictates of the 2022 Good Food Nation (Scotland) Act. Their divergence has limits but heralds possibilities of decentralisation that could enhance resilience.

Across the UK, whatever the variations, the food system is dominated by big economic actors. Their power is failing to alter diets sufficiently for health or ecosystem stability. The socio-economic determinants triumph. **The UK as a whole sorely needs more clarity and direction for devolved food powers.** The Government might well address the civil food resilience gaps identified by the present report but is unlikely to accelerate resilience capacity unless that bigger policy agenda is also addressed.

What is food for? Who champions it? **Defra should give more attention to the 'F for food' in its title. It might also think of the 'D' as for food defence, as in protecting the food system for the future.**

The report has pointed to illustrations of **good practice and the many 'democratic experiments'** that signal possible routes to civil food resilience, noting that often they are held back by lack of central support and attention.

A food system transition from Just-in-Time to Just-in-Case would increase diversity and preparedness for and response to shocks. Almost certainly, the building of more diverse food chains requires deeper engagement with the public than at present. This alters the old view

that efficiency is a matter of leanness. Resilience (see discussion in Chapter 2) requires more flexibility and redundancy. Storage and stocks are no longer anathema, as the 2024 Swedish Government *Food Preparedness in a New Era* report recognised. The high level of food sector concentration offers Ministers the dream of only needing a few people round the table to pull all the levers, but we have shown that the scale of challenges today daunts even giant corporations who know the limits of their capacity to prevent multiple big shocks too. Then what? Much better to engage more widely and across all levels of society.

The previous government's **sudden call on 22 May 2024 for people to hold 3-day food stocks symbolised poor food planning, weak understanding of the public and worse civil engagement**. The UK's food resilience communications strategy is deficient and needs an overhaul.

The 2022 UK **Government Resilience Framework has sound opening principles but should pay more attention to food**. As one of 14 Critical National Infrastructures, its effects are immediate on the public in a crisis. Wider public confidence in crisis might well depend on getting this right.

The three **existing resilience principles – ‘shared understanding’, ‘whole of society’ and ‘prevention better than cure’ - would be strengthened by the addition of a fourth – ‘engage with the public’**. The new fourth principle would operate as an ‘if shocks are likely, better to have engaged with recipients before rather during the shocks’ rule. **It is better to involve people before crises unfold than to do nothing for fear of frightening them.**

The report questions the current framework approach to risks and resilience. It identified clear **connections between food risks, security, sustainability, defence, democracy and resilience**. These are not single issues but require a coherent approach. National thinking should be based on this integrated FRSSDDR approach to food security and resilience.

People should be helped to develop their skills, capacity and confidence in their community's resilience potential, wherever they live. This should be a defining feature of sub-national, regional and local planning. Many possibilities to build civil food resilience exist. To enable them to flourish, a new framework is needed, proposed here to be laid out in a new **Food Resilience and Security Act**. The post-Brexit legislative framework identified environment and agriculture only. Food went missing.

Food security and resilience are too important to be lost in a vagary of electoral cycles. To ensure that the whims of national government politics do not disrupt the people of this country from being engaged in their own food resilience, new institutions are needed to take the long view and ride out the happenchance of politics. The two most recent attempts to begin building a more food secure and resilient Britain ended in failure. This should not happen again.

To that end, at the local level, a system of new **Local Food Resilience Committees** is recommended. The many pioneers of ‘food policy councils’ across the UK have shown how having simple structures builds the knowledge, identifies problems and points the way forward. It builds ‘coalitions of interest’ in the public interest. These pioneers should now be saluted, formalised within state structures and encouraged to continue with building and extending local engagement. They must not be left to the whim of history.

The proposed **Local Food Resilience Committees would act as links with the ‘blue light’ LRFs**, which the report found LRFs would welcome. They would help them prepare

appropriate resources for food action locally. They would channel and coordinate the local voice and democracy. They would build social cohesion on the food front.

This focus on the local would in some parts of the country build on what is already happening, such as local food partnerships, Sustainable Food Places, and local civil society movements. Pockets of such action exist. **A strong regional and local collaborative emphasis on food security and resilience is already emerging from ‘below’, away from Whitehall.** This should be embraced, as other countries are doing for their food systems (see Chapters 6, 8 and 9).

This now deserves to be put on a more even, integrated and UK-wide basis. Civil food resilience everywhere would benefit from this focus. Resilience depends on proper **liaison with local statutory bodies - Mayors, Directors of Public Health, Environmental Health and Planning - as well as relevant local food industry sectors and civil society.** Local pioneers already show the way (see Chapter 9), as do other countries (see Chapter 6).

At the national level, coherence would be helped by a permanent system of advice such as from a new **National Food Security and Resilience Council.** This should be constituted within the proposed Food Security and Sustainability Act and charged to conduct regular reviews of UK food supply, civil resilience and update on potential risks. In this, as noted earlier, this report concurs with recommendations made, for instance, by the EFRA Committee,⁴ the Agricultural Industries Confederation,³⁰ and others. Interviewees for this report shared the EFRA Committee’s frustration at the ‘leisurely’ pace of the last Government’s engagement with food matters. The proposed new National Food Security and Resilience Council would coalesce and refine advice for Ministers. It would be a liaison point for the proposed new LFRCs and draw upon existing bodies that could contribute to generating a food strategy more appropriate for the UK facing challenges. Such bodies include the FSA, UKHSA, Environment Agency and equivalent bodies in Wales and Scotland.

Public advice must be trustworthy. Information may be one of the weakest forms of policy intervention but becomes more important in crises. Building trustworthy sources before such crises takes time. **To act responsibly, the British public needs support and clarity of direction.** The advice must be realistic. There is little point telling people on low incomes to store food if they already lack funds to feed their families adequately.

We do not expect the British public to pore over the NRR but the system of local **Community Risk Register (CRR) should be a document of value to every locality and every household. The CRR system must be strengthened.** It should note community and demographic diversity. At present, too many CRRs are little more than a repeat of top-down NRR assessments, when they could be documents genuinely involving and of real use to local people. **The process of generating realistic CRRs would breathe democracy into local civil food resilience.**

We found LRFs interested in and aware of growing likelihood of food threats but understandably they wanted clarity and central government advice on how best to engage. Our proposals suggest, without being alarmist, a local redirection that taps into the case for **a modern civil food defence. We see value in drawing on insights of Total Defence thinking to aim for a UK Total Food Defence strategy.** Being clear about what the public can contribute to resilience would be an indicator for competent government.

Being a bridge between the local and national perspectives would be a major function of **the proposed National Food Resilience and Security Council.** At the same time, we see a case for the existing Scientific Advisory Group for Emergencies (**SAGE**) system of high-

level advice to government for crises being able to draw upon a standing sub-group of interdisciplinary experts to advise on food resilience matters. If created, this **SAGE Food sub-group** should also liaise with the new National Food Resilience and Security Council.

As with everything in politics, food resilience and security require a political balance between democracy and control. The reset of food resilience planning this report proposes should place public engagement at the heart of the process of change while retaining clarity about existing and coming risks and stresses to the food system. It should note lessons from co-creation models, citizens' juries and assemblies as an addition to existing forms of elected local authority democracy.

The people need to have confidence in access to food and the existence of resources and capacities to bolster resilience. **There is collective self-interest in ensuring a degree of civil food resilience.** People can and should be given the right tools and skills for resilience. **(Re)skilling consumers is not to 'nanny' them. On the contrary, it is to stop treating them as passive recipients.**

The focus in this report has been on civil food resilience. It has found that **civil food resilience requires more collaboration between commerce, civil society and local democracy** than the UK currently encourages. This has positive messages for food business. Britain's SME food sector could play a revitalised role in a more diverse, bio-regional resilience strategy. Giant cold-chill stores could become part of the **transition from a Just-in-Time food economy to the Just-in-Case economy.** The flexibility and capacity to transition from centralisation to decentralisation and 'distributed' logistics was impressed on the present research.

A core finding of this report reinforces what other reviews have concluded. **Government, society and industry all would benefit from a more coherent approach to food security and resilience.** These are not single issues. Food too easily falls between different ministries, sectors and interests.

The rising significance of food security and resilience is an opportunity to provide a clarity for the UK food system as a whole. There are multiple benefits from making the food system more sustainable and healthy. Food's transition to sustainability would be helped by, and help democratic involvement and scrutiny. Democracy has to be underpinned by defence. It is society that provides 'total (food) defence'. All modes of defence rely on sound risk assessment and preparation; they are essential for civil resilience. **These connections and mutual dependencies matter.**

Food resilience and security require good relations with neighbours. The UK has cut itself off from European neighbours just as geopolitics worsen. The new government creates an opportunity for forged better food working and strategic relations. **Food diplomacy offers a route to rebuild working and strategic relations at many levels, from local to regional to international.**

To enable the Government Resilience Framework to work for food, policy-makers can chart a virtuous circle out of what otherwise are seen as separate issues. **We propose the Government Resilience Framework should be revised for food as a *de facto* Food Resilience and Security Framework, one that addresses Food Risks, Security, Sustainability, Defence, Democracy and Resilience (FRSSDR) as a coherent whole.**

Matters of agreement

Through interviews, case studies and discussion, a broad agreement on civil food resilience has emerged:

- UK civil food resilience gaps should be narrowed;
- Policy mechanisms to do so exist or can be made;
- The lack of policy attention to food security and resilience is of national concern;
- The challenges are known but require multi-level, multi-sector, multi-actor coordination;
- action on civil food resilience is particularly weak at the local level but does not need to be so;
- There are avenues for civil food resilience;
- The public can and should be better engaged in the enhancement of civil food resilience.
- Other countries show ways forward;
- A better mix of multi-level leadership (government, regional and local) and public engagement is possible;
- Unless better engagement begins, it is more likely to be forced under crisis conditions later.
- The food world faces multiple crises and their coincidence raises a challenge of how to address resilience at scale.

Recommendations at a glance

Considerable change is needed to bring UK food policy into a fit state of preparedness. Enhancing civil food resilience requires collaboration across different levels of society and between different sectors - commerce, civil society, science, education and decision-makers. Throughout the main report, **Ways Forward** have been mooted and **Lessons** drawn. These have been distilled into eight policy **Reorientations**, each leading to particular, more specific **Recommendations**.

We propose:

- **A new coherent UK food system policy framework** should be developed to begin to put the food system on sustainable footing for 'normal' times; this would improve food security by increasing domestic production, diversifying sources and enhancing regional food systems.
- Ideally this would be a **new Food Security and Resilience Act**. Another option would be to include food in a Resilience Act, with food amendments to the Civil Contingencies Act 2004.
- Legislation should formalise **an obligation on the state to ensure the public is fed in crises**, and allocating responsibilities (and preparedness) on central and local government, and stipulating the principles for doing so.
- The current Just-in-Time approach to food distribution and logistics should be altered towards a **Just-in-Case approach**, planning for food shocks and the case for civil food resilience.
- Defra should conduct **a more realistic assessment of food as a Critical National Infrastructure**.
- **A new National Council of Food Security and Resilience** should provide clear, evidence-based advice and to provide continuity of such advice.

- **A rethink of National and Community Risk Registers** and risk assessment processes should take account of risks and consequences of shocks to the food system, taking public reactions more centrally in that process. This to include conducting of community audits of food assets, knowledge and local infrastructure.
- The **National Infrastructure Commission's terms of reference should include food** within its workplans and advice.
- **A review and update of the public communication and messaging on food shocks** should be conducted. Food should be addressed more appropriately by the Resilience Academy. Research should be conducted into the potential of stockpiling, rationing, incorporating local food service and other food providers into emergency food provision.
- **Civil society organisations should be involved** in improving civil food resilience and public advice for emergencies, leading to a revamped system of public advice for emergencies, replacing the 'Prepare' programme, building trust into how the process is run.
- **New Civil Food Resilience Committees** should be formed at local level (ideally co-terminus with Local Resilience Forums and such bodies). These should build on and incorporate existing local food policy 'councils', 'boards' and networks, where possible. They should be chaired by trusted local practitioners and interested parties such as Directors of Public Health, professions with local focus, knowledge and trusted public interest.
- Land use policy such as England's National Planning Policy Framework should give **higher priority to food production potential in and around urban areas**, and should accelerate the relocalisation and regionalisation of food production in a more decentralised manner, as appropriate and accounting for commitments on climate, ecosystems, social inequality reduction, and regional priorities, taking account of public access to land for food growing, where possible.
- **Metro Mayors, the new Mayoral Council, regional bodies and the governments of Scotland, Wales and N Ireland should exchange lessons** in development of regional food approaches, built on public interest criteria accounting for climate, ecosystems, social needs and regional priorities.
- **UK towns, cities and villages should initiate food resilience learning exchanges** city to city, region to region, institution to institution as part of a public interest focus on living within planetary limits as survival.
- **Academics, UKRI and foundations should be encouraged to research civil food resilience** and build the evidence base for different vulnerabilities, types of shocks and demographic groups.

Recommendations in detail, grouped under Eight Reorientations

Reorientation 1: Building civil food resilience should be underpinned by a coherent national food policy that centres on feeding people healthily and sustainably and builds public skills to that effect.

The problem: Civil food resilience cannot be bolted on to a food system which lacks direction. Currently there is no coherent UK food policy - only a mix of default policies or policies honed for purposes other than feeding people. Scotland and Wales are further ahead than England. New coherence should centre on a commitment to feed the people

through a system organised for health, reliability (security) and sustainability. This is a core government responsibility. One possibility would be to amend existing legislation such as the CCA 2004 or the Agriculture Act 2020. The difficulty is that this would spread food resilience and security across other legislation when the overwhelming advice from interviewees was for coherence, integration and 'whole of food system' approach. New legislation takes parliamentary time but is what is now needed. One option would be to have a new National Resilience Act that included food and other CNIs within it. Below we offer thoughts on standalone food legislation that could either be standalone or incorporated into a new Resilience Act.

Recommendations:

Recommendation: The UK Government should review and reset its overall food policy. This could be delivered in one of three ways (a) a new Food Resilience and Security Act that resets national direction and provides goals and mechanisms for the national food system. (b) similar goals under the existing Civil Contingencies Act 2004. Or (c) food duties and goals within a new overarching Resilience Act. (b) would be most restricted in terms. The latter would give more scope for the new duties widely agreed to be needed. But even that would omit the pressing need to provide post-Brexit coherence on food policy. It would be simpler to create a new food-specific Act that should:

- acknowledge the importance of maintenance of environmentally sound, healthy, and secure food system from production to consumption;
- note the need for vigilance on different levels of threat to and attack on the food system, and how these might affect public vulnerability;
- create a new National Council of Food Security and Resilience to provide continuity of independent advice and to review progress. The National Council should advise on demand and supply, and specific critical issues such as chokepoints and baseline food necessities;
- replace the current Eatwell Plate (dietary guidelines) with a new set of Sustainable Dietary Guidelines (involving DHSC, FSA, EA and relevant expert committees). The new guidelines would be used throughout the food system to inform the supply-demand interface e.g. on food and land use, planning, public and private sector contracts, and public information;
- address the lack of legal duty for authorities and households to ensure food support in crises;
- create a statutory liaison across the four nations and devolved levels of authority such as the regions and metro Mayors, the LGA, CCN and others:
- give new powers to local authorities and Mayors to create advisory Food Councils for their area, and to build closer urban-rural links through food;
- commit Government to reducing negative impacts throughout agri-food systems alongside other land, sea and nature protection;
- enshrine the centrality of feeding all the people healthily and sustainably in new legislation (whether by amending the Civil Contingencies Act 2004, having a new Food section in a new overarching Resilience Act, or in a food-specific Food Security and Resilience Act);
- create new Food Resilience Committees co-terminus with Local Resilience Forums (England and Wales), the Regional Resilience Partnerships in Scotland and the Emergency Preparedness Groups in N Ireland;

- give duties to statutory bodies (schools, health boards, government grant-aided bodies) to increase provision of locally-sourced food to encourage the sustainability of more diverse and decentralised supply;
- give powers to allocate underused land in and around towns (green belt) for food growing;
- create powers for creation of a new 'civil food defence' system of mass provision of food in large-scale emergencies.

Recommendation: a Cabinet Sub-Committee on Food Security and Resilience should be instituted to improve co-ordination with devolved nations, the regions and Metro Mayors for the transition to a more resilient food economy in line with the above Act.

Reorientation 2: Civil food resilience gaps must be narrowed; they run deep through state structures weakening the public's capacity to bounce back during and after food shocks.

The problem: Although food is one of 13 Critical National Infrastructures, the official UK risk and resilience operations barely address it. The National Infrastructure does not cover food. There is a wide fissure between resilience planning and what little there is of a food policy.

Recommendations:

Recommendation: The 2022 UK Government Resilience Framework should be adapted to include food resilience and security planning. This should link food risks, security, sustainability, democracy, defence and resilience (RSSDDR) in one coherent approach. The Food CNI should also be revised in keeping with this new Food Resilience and Security Framework.

Recommendation: Food risks to UK society must be taken more seriously, given careful consideration and analysis more than has been given by the National Risk Register to date. This matters because the NRR is usually simply repeated in Community Risk Registers, and thus food risks do not feature. Defra should also take its role more seriously as Department responsible for Food as a Critical National Infrastructure, and in the triennial UK Food Security report.

Recommendation: The terms of reference of the National Infrastructure Commission should be expanded to include food.

Recommendation: The existing national food policy architecture at all levels – national, devolved, regional, city and local - should be reformed, revitalised and given clear guidance to help prepare the food system and the UK public for food shocks.

Recommendation: HM Government should create a special Food Emergencies Advisory Committee (FEAC) under the DHSC, drawing on relevant advisory committees such as SACN, the FSA and OHID. This new FEAC should create food emergency guidelines for different circumstances and populations. These Guidelines should be drawn up in consultation with expert organisation such as the British Red Cross, British Dietetic Association, British Medical Association and Faculty of Public Health, and take note of diverse community specialists. The Guidelines should be laid before Parliament.

Recommendation: MHCLG and HMT should include a budget heading for food resilience preparation in the national accounts. This should be alongside the budget line for civil defence.

Reorientation 3: UK consumers are not helped by limited domestic production. The food system should be reset to produce food appropriate for public health, where this is both possible and sustainable, and on a more regional and geographically diverse basis.

The problem: The UK is neither food self-reliant nor food-sustainable. Home production is lower than it could be. The UK still appears to assume that others will feed it and does not take food security as seriously as it should. One vulnerability is that UK has severed links with the sources of most of its imported foods. Rebuilding good relations with European neighbours is a political priority for food security and resilience.

Recommendations:

Recommendation: The new Government should commit to rebuild and diversify sustainable home food production. The Government offers food security as one of its five Defra priorities. This would be enhanced if backed with more detail. To that end, it should:

- set up a national inquiry (of Royal Commission stature) to advise on the potential for domestic food production in the UK, taking account of different ‘disruptors’ such as threats to resource input, climate, land, labour, proximity to consumers, and access to labour. This should take note of where citizens could contribute. The findings of this inquiry should inform the National Planning Policy Framework.
- commit to producing a new Horticulture Strategy for England (reversing the 2023 dropping of such a commitment) and a pan-UK overview in consultation with devolved Welsh and Scottish governments. The new UK strategy should be appropriate for rural, peri-urban and urban conditions, and take account of: (a) the need to nurture more decentralised horticultural industries across the UK; (b) develop food production near to urban areas to enable an urban workforce to work in primary industries; and (c) begin to move horticultural production to higher land and reduce what reliance there is on low-lying or below sea-level land.
- develop a new Resilience Agricultural Land Classification to help policy-makers address the relevance of factors such as hardiness and future potential food growing when deciding land use.
- re-emphasise the ‘F’ in Defra’s name and encourage regional and local revitalisation of shorter food supply chains. This is an opportunity for better regional approaches to training, research, education, infrastructure and labour recruitment, as well as to improve pathways for consumer access to locally-sourced food, and reduced reliance on a handful of very large retailers.

Reorientation 4: The public should be helped to develop its skills, capacity and confidence in local and community food resilience.

The problem: The messaging about food resilience is generally weak, and about civil food resilience almost non-existent. Citizens are constrained in what they could do in food crises in a Just-in-Time world. Since WWII a consumerist culture has changed citizens' food skills (from cooking to assembly, from social learning to internet learning). Research is required into what crisis skills are needed with regard to food resilience and the best ways to build them.

Recommendations:

Recommendation: A new Civil Food Resilience Review should assess the state of consumer / civil food resilience. This should be conducted by an independent body such as the proposed new National Food Resilience and Security Council. It should be a standalone report but should be presented alongside Defra's triennial UKFSR (under the Agriculture Act 2020) for Parliamentary debate.

Recommendation: The Resilience Directorate, Defra and outside experts should review the full range of crisis actions available to citizens with regard to food.

Recommendation: The Scientific Advisory Groups for Emergencies (SAGE) system should have a standing food expert sub-group or committee to advise government during food crises.

Recommendation: The system of Community Risk Registers should be overhauled to become genuinely community-oriented documents based on a process of engagement, not least to tap into local knowledge and to help communities translate known risks into what they could do.

Recommendation: The Government's 'Prepare' website should be improved such that it engages the public on what risks exist (including to food), what kinds of emergencies and disasters could happen, how to prepare, and why this is important. The content of the website should be available offline, taking account of the likelihood that websites will not be available under some crisis conditions. Emulating Sweden and others (see Chapter 6), a printed booklet should be sent to every household in the country, and advice templates such as household emergency kit checklists made freely available in public places such as libraries, GP surgeries and supermarkets.

Recommendation: HM Government should consider carefully not just what messages are prepared for food crises but who generates and presents them. There is a wealth of research evidence on effective communications, which should be consulted and acted upon.

Recommendation: UKRI should be asked to fund and produce a critical analysis of public messaging on food matters, noting existing institutions, levels of trustworthiness and the need for independence (such as from the proposed new National Council).

Recommendation: The existing (top-down) 10 Steps Communication strategy should be replaced with a more appropriate public engagement that informs the public and listens to its views on risks to food. The experience of other countries' engagement with their publics should be noted.

Recommendation: The National Steering Committee for Warning and Informing the Public (NSCWIP) advice should be updated to include food-related advice.

Reorientation 5: A more coherent ‘public interest’ position on stockpiling is needed, one that understands the public reflex and applies a new principle of Just-in-Case in resilience planning to address public needs in food crises.

The problem: UK food stockpiles were phased out by the 1970s, replaced by a mix of market mechanisms (leaner supply chains and JiT) and EU intervention stores. The latter too were phased out, although the EU retained powers to have temporary stores to ‘adjust’ markets. The issue of stockpiling is a test case both for public messaging and confidence, and for national security. The current approach warrants considerable policy and practical clarification.

Recommendations:

Recommendation: Government should set up an inquiry into different aspects and levels of stockpiling, with at least two strands each with different lead departments, agencies and outside specialist members. These should be coordinated to produce a single national position on stockpiling:

- DHSC, the Office for Health Improvement and Disparities (OHID), the FSA, food social scientists, public health bodies and home economists should consider *household or domestic food stockpiling*, taking account of and exploring *options for household and community* financial and demographic realities.
- Defra, DBT, logistics specialists and food system analysts (drawing on the UKRI December 2023 research callⁱ) should consider the realities, possibilities, viabilities and options for *stockpiling at the national, regional, community and household levels*. This should consider (a) the feasibility of industry beginning to develop a more decentralised system of storage and distribution; and (b) how best to use existing facilities within towns, cities and communities to give all people confidence that there will be basic food infrastructure in each region in the event of crisis.

Recommendation: DHSC, SACN, the Faculty of Public Health and other relevant scientific organisations should review options for rationing, should a scheme be required *in extremis*. This should take into account modern nutritional knowledge, the means for applying rationing and the social skills and facilities consumers can be reasonably expected to have. It should recognise the existence of socio-economic divisions within society and the role of social and occupational status as determinants. To ensure the ‘whole of society approach’ is delivered, *an Essentials Guarantee should be developed* that identifies a nutritionally sound food costing for any future food rationing or other emergency food provision. This should be designed for use in calculation of minimum wages.

Recommendation: Defra, WRAP, MHCLG and food waste specialists should be convened to produce crisis-ready advice on types of food currently wasted, guidelines for waste prevention, and guidelines on how to leverage any future crisis to standardise national recycling and composting of waste.

Recommendation: MoD, the Resilience Directorate, DHSC, Red Cross and others with civil catering expertise should consider what lessons for mass catering could be applied in the

ⁱ UKRI <https://www.ukri.org/opportunity/strengthening-the-resilience-of-the-uk-food-system/>

event of large-scale civil food disruption; and consider how existing skills in the food service sector could be drawn upon at community, city and local level in food crises.

- In the medium-term, a new Citizens Catering Resilience Advisory Group (CCRAG) should be created to include chefs, dietitians, social researchers, citizen representatives and domestic science specialists to advise on citizens food resilience strategies in emergencies. This new CCRAG should contribute on-going practical advice on domestic stockpiling and cooking or food preparation with and without cooking. This advice should be fed into the proposed National Council.

Recommendation: The Local Government Association, National Association of British Market Authorities, and other specialists on different types of markets (traditional, street, pop-up etc) should review options for improved use of markets in times of food crisis. They should note the experience of markets during Covid-19 and make recommendations for how they could liaise more effectively with Local Resilience Forums and contribute to the proposed local Food Resilience Committees.

Reorientation 6: Across the UK, existing local organisations (civil and state) should be strengthened to help the public be more prepared for potential food threats. New Local Food Resilience Committees should be created in every area, sharing geographic boundaries with LRFs. Existing Food Boards and Councils should become or liaise with these new Committees.

The problem: Local Resilience Forums are aware of food as a both an acute (crisis) and chronic (on-going) problem but have no formal links to local civil organisations already working through food councils or partnerships. This is the local element of the civil food resilience gap.

Recommendations:

Recommendation: A new system of Local Food Resilience Committees should be created to build local resilience and to provide back-to-back (co-terminus) functions with LRFs where possible. These should be place-specific, thus different in rural, peri-urban and urban contexts. They would:

- be charged to map local food supply chains; assess community food assets; build networks of expertise and trust, and to be able to assess food risks in their districts and know where help is needed most; be an early-warning system for civil society; and encourage place-specific resilience building.
- have a membership that includes relevant civic and professional knowledge such as: public health (e.g. Directors of Public Health), environmental health and trading standards, representatives of local food businesses from production to post-consumption, local civil society organisations knowledgeable of at-risk groups such as food banks, CAB, Neighbourhood Watch, and local academic / education institutions, and local society.

Recommendation: The Welsh Government should create four Local Food Resilience Committees to dovetail with its existing four LRFs, with the new committees drawing upon Wales' existing 22 local food partnerships. Scotland and Northern Ireland should decide where their Committees would best sit.

Recommendation: The Resilience Directorate together with a consortium of Colleges and Universities should prepare a module for civil food resilience planning. This should be offered by the RD's Emergency Planning College jointly with further or higher education establishments and be widely available across the regions of the UK. The Cabinet Office should also produce a special issue of the RD / EPC's *Resilience Lessons Digest* specifically on civil food resilience.⁸⁷⁹ Resilience preparation should happen where the resilience is needed at the sub-national level. This module should help provide practical outcomes and processes for delivering the principles of the Government Resilience Framework through the proposed Local Food Resilience Committees, and wider society and industry.

Reorientation 7: Civil food resilience requires public engagement. There should be a national effort to build more community-based and localised food resilience, with a national strategy developed with citizens' engagement.

The problem: The public is currently not being helped to be more food-resilient. This deficit of engagement is partly due to the assumption that business-as-usual can and will continue, and partly an inappropriate assumption that food matters can safely be left to large food businesses. Currently there is little support for local and community place-based resilience action; it began to emerge in Covid-19 but subsided afterwards. Yet social solidarities are affected by food, and food is a major factor in building better societies. Policy-makers tiptoe around the public interest in food. In shock or crisis, this arms-length approach would be stretched, fray and perhaps disintegrate, so should be addressed now.

Recommendations:

Recommendation: Local authorities, academics and stakeholders should work with and through the new Local Food Resilience Committees to conduct Audits or Assessments of Community Food Assets. These would provide up to date information on what skills, facilities, infrastructure and potential exist in each locality, and what can be shared.

Recommendation: Metro Mayors (through the now expanding 'M10' group) and local authorities (through the LGA, CCN, etc) should convene a national conference or a series of meetings across the UK to identify what local government needs to improve its populations' civil food resilience. The resulting report with recommendations should be given to the new National Council of Food Security and Resilience and the Cabinet Office, together with key agencies.

Recommendation: Green belts around towns and cities should be considered as food resilience zones. The Government's intention to loosen planning restrictions for housing should include assessment of land for civil food growing capacity. This should take note of the modification to the Agricultural Land Classification system (see recommendation earlier for this to be modified and updated). Soil and growing space is a precious national resource. Civil food resilience is enhanced if citizens have access to land directly.

Recommendation: A programme of basic food skills to build cultural knowledge generally and with specific application for emergencies should be developed for schools, communities and relevant professions. Existing Key Stage 1-3 cooking classes should be reviewed and revised to address resilience and crises.

Recommendation: Local Authorities, in particular planning departments, should facilitate availability of food-growing land for community food growing in each area. A Right to Grow should be given legislative backing.

Recommendation: The (English) Agriculture Act 2020 should be amended to facilitate closer urban-rural food links, noting the French and Belgian experience. SMEs and 'alternative food networks' should receive help to transition to better food production as a public good. Food should be recognised as a public good under the Agriculture Act 2020 which should be amended to that effect.

Recommendation: The English and Wales Governments should create Land Support Funds, drawing on the experience of the Scottish Land Fund.

Recommendation: Defra and DfE, together with gardening and growing civil society organisations should produce national (England) guidelines on school and community opportunities for growing food akin to those provided by the Welsh Government. This advice should take account of conditions in diverse parts of the country and of urban-rural differences.

Recommendation: The Allotments Act 1950 should be amended with a new Right to Grow on temporarily or permanently unused land. This would enable local communities, as well as children through schools, to consolidate food growing and handling skills. National and local government should commit to the creation of more allotment sites as a contribution to UK civil food resilience.

Reorientation 8: Civil food resilience and preparedness for food shocks will be enhanced by better relations with neighbouring countries. A new Food Diplomacy initiative can help underpin civil food security and resilience.

The problem: Food security and resilience depend on good neighbours and networks. The UK's food diplomacy is frayed. Post-Brexit external relations have not helped food security or resilience. The UK has put itself into an invidious situation by building barriers to food trade with its neighbours. A food diplomatic reset is needed. Other countries are a source of ideas and experience relevant for UK civil food resilience and food security. The public depends on foreign relations daily for food. Food businesses are acutely aware of this heavy reliance on food trading partners but good neighbour relations is about more than the actual food. The political reality is that UK food dependence remains high while reluctance to increase home supply is also high. Relations have soured. These politics would be further stretched by deep shocks to the food system. That is when food networks and trust relations become vital at all levels, from the local to international.

Recommendations:

Recommendation: The FCO, Defra, MCHLG and DfE should encourage food resilience learning exchanges city to city, region to region, institution to institution as part of a renewed mid-21st century food diplomacy.

Recommendation: The UK should take the opportunity of the UN COP 30 meeting on climate change and COP 16 on biodiversity (and successor COPs) to focus on the sub-national level of civil food resilience and security. Championing the injection of a 'civil'

dimension into the COPs would signal a renewed UK contribution to food security and resilience as an international challenge.

Recommendation: More cities and towns should join international alliances such as ICLEI, MUFPF and C-40 that pioneer the development of civil food security and resilience strategies.

Recommendation: Academics and think-tanks should help develop a stronger focus on international lessons that can be learned for the community and societal aspects of food resilience and security.

Recommendation: Relevant UK professional bodies should seek collaborations with international partners to identify and share best practice on civil food resilience. Home economists and nutritionists could refine more appropriate messages for today and diverse cultures and needs. Economists could work through what a Just-in-Case food economy could look like. Urban planners could draw upon the rich international experience of urban food mapping.

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Many individuals and organisations were interviewed and consulted for this report. A condition of all was that interviewees would not be named nor their organisation. Many were content to be named but I judged it better to give equal treatment to all. I cannot therefore give named thanks but only my general gratitude to the many people, organisations, discussions and meetings where people gave time to address civil food resilience.

Wherever possible – almost without exception - sections and notes of discussions were sent to interviewees and others for comment, clarification and amendment. The text has been immeasurably strengthened by that process.

Working on this report has been a humbling but energising experience. Total strangers not just in the UK but internationally gave me time, insights and directions that have immeasurably strengthened it. As someone once said, you don't need a degree to read the writing on the wall. There is much writing on many walls now. The press of events already shapes whether policy-makers 'read' or do not 'read' that writing and make sense of it. This report is a contribution to that process. That other countries are further ahead of the UK in seeing the point is not a surprise. The UK has nearly two centuries of reliance on others to feed it. Most political assessments of UK in the modern world no longer assume it has the power or influence it once did. Some humility as well as urgency is needed now.

As I say when asked if I am made pessimistic or daunted by the task, a reasonable question on such sober matters, I remain an optimist often despite the evidence. But I do believe there is time to begin bridging the civil food resilience gaps. The interviewees and those consulted made that clear.

Finally, my deep thanks to family, friends, colleagues and especially Liz Castledine who encouraged me throughout.

Tim Lang, January 2025

Appendices

Appendix 1: The research process for this report

The work on which this report draws was conducted in six overlapping ‘packages’.

First, the scope for inquiry was mapped and literature on both food and resilience trawled and read. The extensive reference list indicates the range of work drawn upon. Limits to the enquiry were also defined early on, such as deciding what not to investigate and what could be left to appropriate authorities and those that scrutinise them. The National Audit Office, for instance, holds government to account and reports its findings to Parliament to help improve public services. Its review of Defra on food security discusses resilience but only as a matter of supply, and lists only bodies from government and industry.⁸⁸⁰ The remit for Parliament’s Intelligence and Security Committee covers the ‘intelligence community’; the authors were not privy to whether it enters the world of food. It is a Committee set up under statute in 1994,⁸⁸¹ whereas Select Committees are set up under Standing Orders of the Houses of Parliament.⁸⁸² This is not to criticise these bodies, only to repeat what others have observed before, namely that the public interest on food too easily slips between responsibilities. Various reports by the House of Commons’ Environment, Food and Rural Affairs (EFRA) Committee are cited in these pages and are important but not even it has given full attention to civil food resilience. We might hope that risks to the public feature more ahead for both the public and ‘behind closed doors’ scrutineers.

Secondly, a rolling programme of interviews and conversations was conducted with analysts, industry, academics, scientists, state functionaries past and present, and people representing civil society interests. These were used to triangulate and probe particular issues reported in these pages. Interviewees were chosen to represent known sectors and divergent interests. All formal interviews conducted throughout the research and cited here were conducted on a confidential, non-attributable basis to encourage frankness, a format that enables insiders not just outsiders to contribute without compromising positions.¹ A formal Note of each interview was written and sent to interviewees to amend or for comment. These Notes were not transcripts or from recordings but were produced to summarise each person’s position. Interviewees were asked to consider them as though submissions to an inquiry, a distillation of their considered views.

Thirdly, a number of case studies or vignettes were developed at UK national, regional, city/town and community levels. An open call was made through two specialist UK civil society food networks seeking information and positions on what constitutes civil food resilience, and for examples of what might be considered good practice. These led to more specific regional interviews and focuses. It quickly transpired that the ‘sub-national’ level of governance across Britain has a vibrant level of discussion about policy and practice that could contribute to food resilience and is a live and democratic experiment into what structures – formal and informal, state and civil society - might help accelerate civil food resilience.

¹ An example is the report by Prof Ciaran Martin and colleagues on early lessons from covid crisis management. See: Martin, Kan & Fink (2023) *Crisis Preparation in the Age of Long Emergencies*. Oxford: Blavatnik School of Government. <https://www.bsg.ox.ac.uk/sites/default/files/2023-03/BSG-Crisis-preparation-age-long-emergencies.pdf>

Fourthly, a number of international enquiries were made to ascertain the positions on civil food resilience in other countries. These enquiries always began by writing to embassies and government bodies stating our objectives and for whom the study was being conducted, and asking for help to identify what, if any, actions and aids to civil preparedness the country had, and then asking for more detail. Other channels were also pursued where possible. The international experience we gathered provided useful contrasts to what we present about the UK. We strongly recommend more detailed work be conducted both by researchers and the new government on that international experience. We thank the countries that responded and the people who gave time to us.

Fifthly, we wrote to all Local Resilience Forums asking for their experience of food matters, as key local resilience services. We wanted to know whether food matters deemed critical for resilience by others were on their 'radar'. We were advised how busy they were and to expect no or few replies. In fact, 16 Local Resilience Forums kindly answered our questions and provided invaluable views and proposals. Besides their formal survey returns, several provided additional valuable information and thoughts.

Sixthly, a number of public opportunities were taken to present preliminary thoughts from the research. These were occasions to explore specific recommendations and emphases as well as general assessments. They included gatherings all over the UK, some in private under the Chatham House rule, some in large forums. In all, questions and feedback were invited and the many comments at these events helped refine practicalities and generated thoughts about possible ways forward. I thank all who contributed this way.

The final report is, to the best of abilities, a fair record of findings, analysis and recommendations from these six work packages. The key messages and recommendations presented were derived from many sources. It was impressive, and sometimes sobering, how a consensus seems to be emerging that food systems carefully and brilliantly built over decades are today more fragile than the consuming public might expect, and that a readjustment is warranted and might be imposed by events. The quotes in main text are testament to that and citations when included mostly indicate their position such as whether they were an industry organisation or insider, someone working at local and national levels, civil servants or government advisors or academics. Unique positions that might identify senior personnel are disguised. We wanted to know what people really thought.

The report's processes led to conclusions that the enhancement of civil food resilience requires a shift in UK resilience planning. The absence of attention to food in resilience governance is worrying. For it to be addressed will require a politically-led focus on food's 'hard' infrastructure, its material reality, how it flows across the country, how the food system and its distribution systems are engineered.

Some 'soft' cultural change is also needed, such as refining consumer assumptions that other countries will always feed the UK, that food is always there, and that food doesn't matter too much because supermarkets provide it. This social element of resilience is as important, sometimes more important even, than the material reality of food.

Appendix 2: Acronyms (all UK unless otherwise stated)

AAFC	Agriculture and Agri-Food Canada
AI	artificial intelligence
AIC	Agricultural Industries Confederation
ALC	agricultural land classification (UK system of)
AMR	antimicrobial resistance
BEIS	Department for Business, Energy and Industrial Strategy (now merged into DBT)
BFC	Birmingham Food Council (a community interest company)
BFSS	Birmingham Food System Strategy 2022-30
BGF2030	Bristol Good Food 2030
BHRRRC	Business & Human Rights Resource Centre
BBK	Federal Office of Civil Protection and Disaster Assistance (Germany)
BMEL	Federal Ministry of Food and Agriculture (Germany)
BMI	Federal Ministry of Interior (Germany)
BSI	British Standards Institution
CA	Citizens Advice (formerly Citizens Advice Bureaux)
CATL	Ceinture Aliment-Terre Liégeoise (Belgium)
CCA 2004	Civil Contingencies Act 2004
CCA 2008	Climate Change Act 2008
CCC	Committee on Climate Change
CCN	County Council Network (England)
CCS	Civil Contingencies Secretariat (replace by RD in 2022)
CDC	Civil Defence Corps (1948-68)
CIC	Community Interest Company
CNI	Critical National Infrastructure
CO ₂	carbon dioxide (both a commodity used in food industry, and a greenhouse gas measure)
CO ₂ eq	carbon dioxide equivalent
COFOG	UN Classification Of the Functions Of Government (for finance reporting)
COI	Central Office of Information
CSO	civil society organisation
DBT	Department for Business and Trade (merger of former DIT and BEIS)
DC	Distribution Centres (or Regional Distribution Centres) hubs for major retailers
Defra	Department for Environment, Food and Rural Affairs
DfE	Department for Education
DHSC	Department of Health and Social Care
DIT	Department for International Trade (now merged into DBT)
DLUHC	Department for Levelling Up, Housing & Communities (renamed MHCLG, July 2024)
DSIT	Department of Science, Innovation and Technology
DWP	Department of Work and Pensions
EA	Environment Agency
EHO	Environmental Health Officer (or Practitioner)
EPA	Emergency Powers Act
EPC	Emergency Planning College (now part of the new Resilience Academy)
EPRR	Emergency Preparedness, Resilience and Response
ESF	Emergency Support Function (of the US FEMA)
EU	European Union
F4+3	group of top food industry bodies consulted by Defra during Covid
FAPG	Food and Agriculture Planning Group (of NATO)
FBI	Federal Bureau of Investigation (USA)
FCELG	Food Chain Emergency Liaison Group (Defra liaison with industry)
FDA	Food and Drug Administration (USA)
FOCP	Federal Office for Civil Protection (Switzerland)
FONES	Swiss Federal Office for National Economic Supply
FPAC	Food Policy Alliance Cymru (Wales)
FRC	Food Research Collaboration (academia-CSO research exchange network)
FRIF	Food Resilience Industry Forum
FSCRF	Food Supply Chain Resilience Forum (Defra daily call with industry)
FSA	Food Standards Agency

FSIN	Food Security Information Network
FVSG	Food Vulnerability Stakeholder Group (group of c.100 industry, charity and disability organisations consulted by Defra in Covid)
GHG	greenhouse gas
GoS	Government Office of Science (in DSIT)
GCSA	Government Chief Scientific Adviser
GLA	Greater London Authority (2000 to present)
GLC	Greater London Council (1965-86)
GNFS	Global Network Against Food Crises (GNFS)
GRF	Government Resilience Framework 2022 (UK)
GVA	Gross Value Added
HACCP	Hazards Analysis Critical Control Point (a risk management tool)
HHS	US Department of Health and Human Services
HSPD-9	Homeland Security Presidential Directive 9 (US White House)
ICLEI	international network of Local Governments for Sustainability
IoT	Internet of Things
ITPGR	International Treaty on Plant Genetic Resources for Food and Agriculture
JCNSS	Joint Committee on the National Security Strategy (of Houses of Commons & Lords)
JiT	Just-in-Time (delivery logistics systems)
kt	kilotonnes
LCC	London County Council (1889-1965)
LFdB	London Food Board (2022 to present)
LFC	London Food Commission (1984-90)
LFRC	Local Food Resilience Committees (proposed in this report)
LGA	Local Government Association
LR	London Resilience (London's LRF)
LRF	Local Resilience Forum (under the CCA 2004)
lpd	litres per day (water needs measure)
MaPS	Money and Pension Service (of DWP)
MoD	Ministry of Defence
mt	million tonnes
MHCLG	Ministry of Housing, Communities and Local Government (renamed from previous DLUHC)
MUFPP	Milan Urban Food Policy Pact (global inter-city agreement signed in 2015)
MSB	Civil Contingencies Agency (Sweden)
MUFPP	Milan Urban Food Policy Pact (2015)
NABMA	National Association of British Market Authorities
NPPF	National Planning Policy Framework
NATO	North Atlantic Treaty Organisation
NCSA	National Cyber Security Agency
NES	National Economic Supply (Switzerland)
NESA	National Economic Supply Act (Switzerland)
NGO	Non-governmental organisation
NIC	National Infrastructure Commission
NL	The Netherlands
NM-16	National Security Memorandum 16 (Security and Resilience of US agriculture)
NPSA	National Protective Security Agency
NSALG	National Society of Allotment and Leisure Gardeners
NSMS	National Strategy for Maritime Security
NRR	National Risk Register
NSCWIP	National Steering Committee for Warning and Informing the Public
OCG	Organised Criminal Groups
OECD	Organisation for Economic Cooperation and Development
OHID	Office for Health Improvement and Disparities (ex PHE, DHSC)
ONS	Office for National Statistics
PAS	Publicly Available Specification (a fast-track standardisation, usually by BSI)
PESA	Public Expenditure Statistical Analyses (HM Treasury annual reports)
RAE	Royal Academy of Engineering
RASFF	Rapid Alert System for Food and Feed (of the EU)
RCP	Resilience Capabilities Programme (Cabinet Office)

RD	Resilience Directorate (Cabinet Office; replaced CCS)
RNPAT	Réseau National des Projets Alimentaires Territoriaux (National Network of Territorial Food Projects of France)
RRP	Regional Resilience Partnerships (in Scotland), also under the CCA 2004
RSSDR	(food) Risks, Security, Sustainability, Defence & Resilience – a proposed multi-criteria policy approach
RUAF	Urban Agriculture and Food Systems (a NGO)
SAGE	Scientific Advisory Groups for Emergencies
SACN	Scientific Advisory Committee on Nutrition (DHSC)
SFG	Social Farms and Gardens (merger of Care Farming UK and the Federation of City Farms and Community Gardens)
SKU	Stock keeping unit (unique number for each item passing down supply chains)
SLF	Scottish Land Fund (Scottish Government)
SNS	Strategic National Stockpile of the USA (administered by US HHS)
SVA	National Veterinary Institute (Sweden)
t	tonne
TSO	trading standards officer
UK	United Kingdom
UKFSR	Food Security Report (a triennial report first published in 2021; the second in 2024)
UKGRF	UK Government Resilience Framework
UKHSA	UK Health Security Agency
UKRI	UK research and innovation (nine combined Research Councils)
UN	United Nations
UNDRR	UN Office for Disaster Risk Reduction
UPF	Ultra-processed food
USDA	United States Department of Agriculture
USDHS	United States Department of Homeland Security
WFC	World Food Conference (1974)
WFS	World Food Summit (1996)

Appendix 3: Defra 2018 Food Sector Resilience Plan

[page 17 from: Cabinet Office (2018) *Public Summary of Sector Security and Resilience Plans*, London: Cabinet Office, published February 2019]³⁵⁰

Department for Environment, Food and Rural Affairs

The UK food sector has a highly effective and resilient food supply chain, owing to the size, geographic diversity and competitive nature of the industry. Although there is recognised dependency on other critical services, the resilience of the sector has been demonstrated by the response to potentially disruptive challenges in recent years.

Assessment of Existing Resilience

Like many industries, the food sector operates just-in-time supply chains which require sophisticated logistics operations and contingency plans to respond rapidly to potential disruption. The industry remains highly resilient owing to the capacity of food supply sectors and the high degree of substitutability of foodstuffs.

This resilience has been demonstrated in the response to events such as the 2015 flooding, and disruption to cross-channel transportation, the 2009 H1N1 Pandemic, the 2010 Icelandic volcanic ash clouds, the 2012 potential industrial action by fuel tanker drivers and severe winter weather experienced over the years 2010–2014.

Defra has well established mechanisms for engagement with industry. It has been working with the food industry sectors, across government and with the Devolved Administrations, to undertake contingency planning for a range of EU exit scenarios, including a no-deal scenario.

Building Resilience

Government and the sector will continue to work together to ensure the resilience of food supply. This will include:

- Building on recent research into the resilience of food supply with the Food Chain Emergency Liaison Group to respond to and recover from maritime transport disruption resulting from a major coastal flooding event;
- Building resilience in supply chains to extreme weather events; and
- Providing good practice guidance on cyber security. Last November, Defra published guidance on protecting food and drink from malicious attack, which includes specific advice on cyber security. The latest guidance can be found on the FSA's website at: <https://www.food.gov.uk/news-updates/news/2017/16698/updated-advice-for-businesses-on-protecting-food-and-drink-supply>

Defra has commenced a review of the UK Food Security Assessment (last published in 2010), to update and refresh the suite of indicators within it. The UKFSA is a comprehensive analysis of all aspects of food security.

Appendix 4: Organograms and Diagrams on the redesign of local civil food resilience

The sequence of organograms in following pages indicate where the new local Food Resilience Committees could sit in the current UK Central Government (England) structure, and the difference they could make by injecting a civil infrastructure. The paragraphs here repeat content from Chapter 10 to explain their purpose, so the figures are numbers as if in that Chapter.

Figure 10.1 presents the existing resilience structure. This is the structure that currently would be expected to apply to any food crisis. It presents key institutions at different levels of governance from national to local / community.

Figure 10.2 presents how the proposed local Food Resilience Committee would fit into existing multi-level national resilience structures. This shows where and to whom the new committee would report. Most importantly, it inserts the possibility of there being multiple crises not just an 'event'. It also asserts the importance of the public / consumers / citizens as 'recipients' of crises. And it points to the involvement of the infrastructure in which those citizens live and exist.

Figure 10.3 pares the previous figure to its essentials and depicts how the proposed Food Resilience Committee could involve relevant food actors, knowledge and work at the local level.

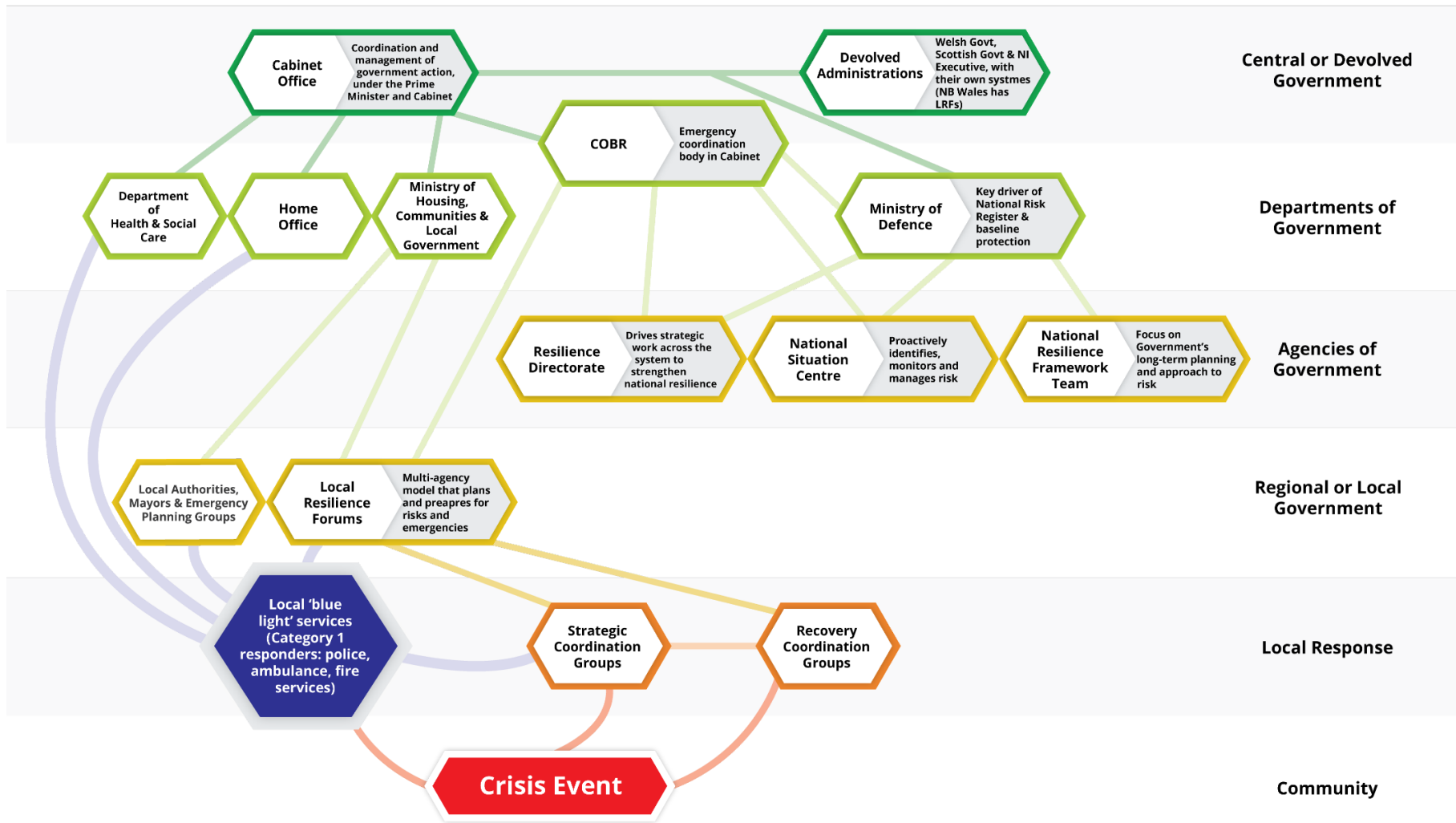
Figure 10.4 depicts how a food crisis could be addressed by this new structure at the local level, and whom it would involve, and the coordinating role of the proposed Food Resilience Committee. Via the dotted line, it connects to the previous graphic. These are the local resources and actors that could make a difference for civil resilience over food.

Figure 10.5 looks entirely through the eyes of the public / citizens in and for crises – how citizens rely on a food and socio-economic infrastructure in crises. It is these that could make a difference and that the current resilience structure cannot address coherently enough, yet which in some places has existing and emerging coordination.

Figure 10.6 takes Wales as an example of the need to address the issue of devolved powers and enhanced food resilience still under the CCA 2004. Wales, a country of just over 3 million people, has a well-organised system of 22 food partnerships covering the whole of Wales. This gives an opportunity for multi-level food resilience planning coherence. The organogram shows where four Food Resilience Committees could sit in Wales' existing resilience structure. It retains the benefits of Wales' direct line of political accountability on resilience matters. The First Minister chairs Wales' existing four LRFs, and there is growing liaison with 22 existing Food Partnerships across Wales (nine of which are active members of the Sustainable Food Places network, for example). The proposed system of local Food Resilience Committees would fit well into this. It would draw upon pre-existing bodies and provide at all levels – local (via the 22 partnerships), regional (via the new four Food Resilience Committees) and nationally (involving ministers etc).

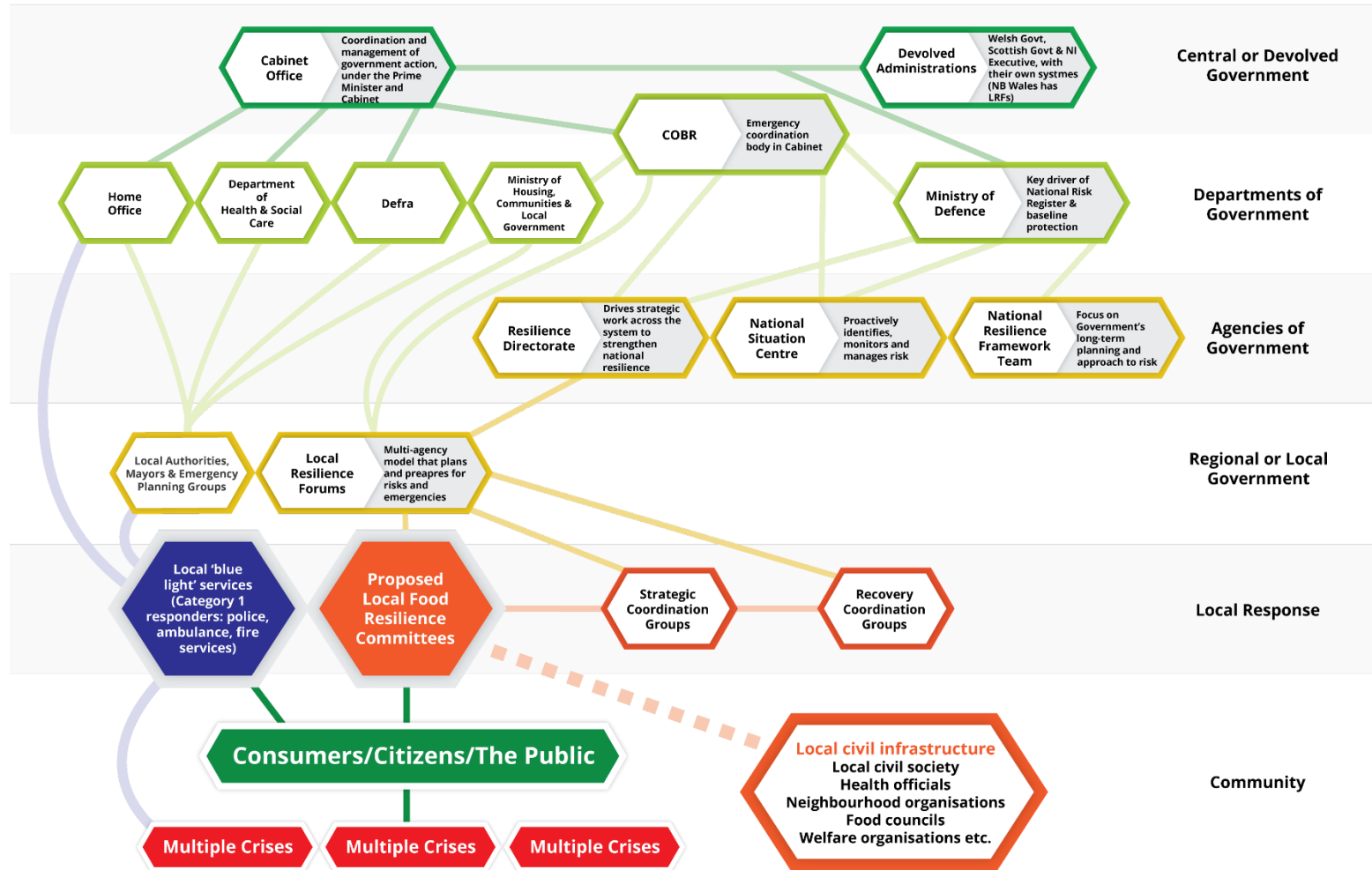
Figure 10.7 represents this graphically. Crucially, it puts resilience into the cycle of policy goals centred on feeding people well in and after shock. This conceptual framework should inform how the high-level 2022 UK Government Resilience Framework is reset and translated for food resilience. Around that RSSDDR cycle are placed functions that ought to occur. These are not an exclusive list but indicative of functions that could deliver good governance.

Figure 10.1: Civil resilience: current overview of crisis response anticipating single local crisis event



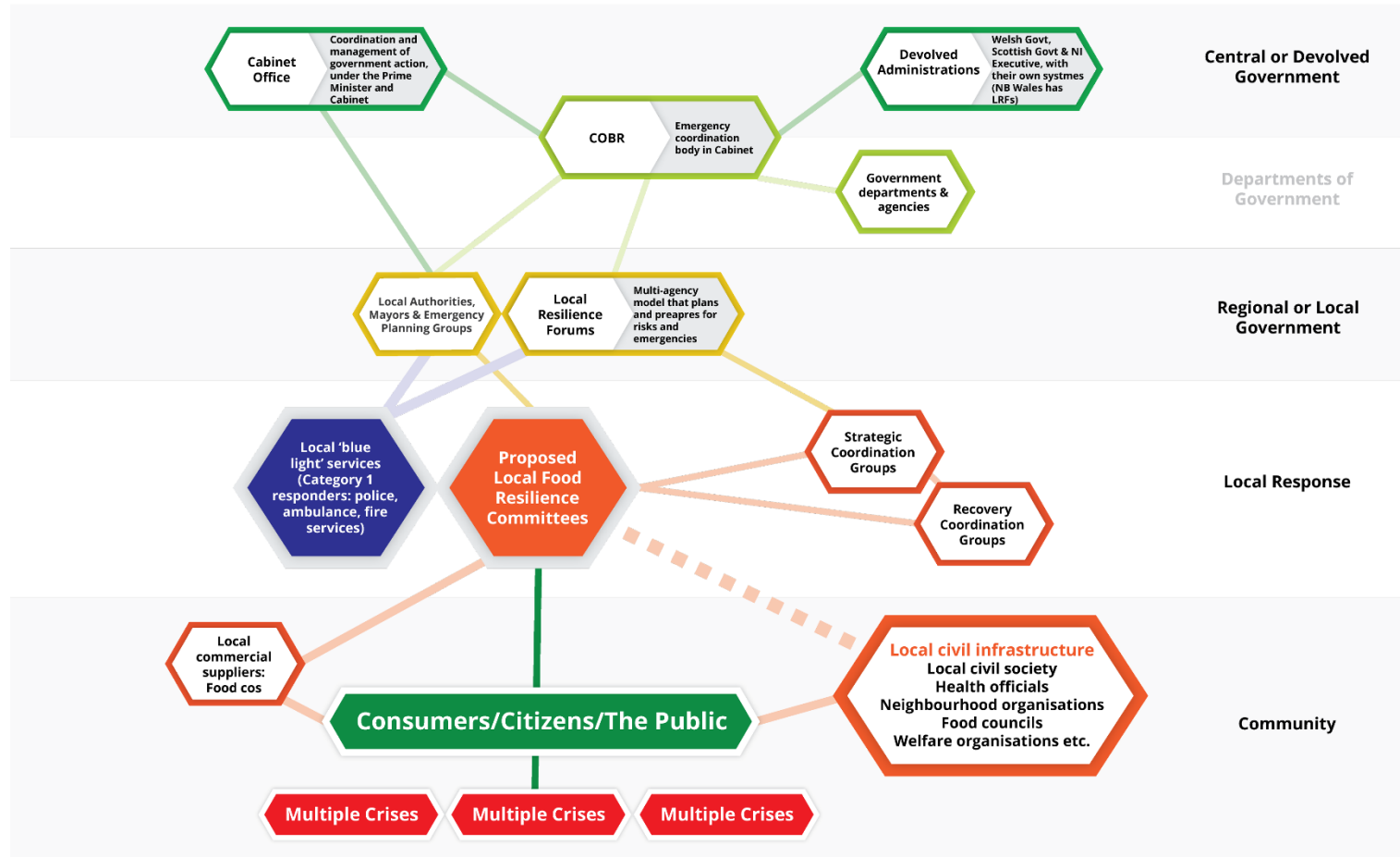
Source: authors / graphic: Gavin Wren

Figure 10.2: Current multi-level resilience structure, amended by addition of proposed Food Resilience Committees to liaise with local food-related civil infrastructure, and in expectation of multiple crises



Source: Authors / Graphic: G Wren

Figure 10.3: A more focussed view of the proposed civil food resilience structure, giving more attention to the public and expecting multiple crises



Source: authors / graphic: Gavin Wren

Figure 10.4: How Local Food Resilience Committees would act as liaison between official resilience structures and existing local / civil bodies



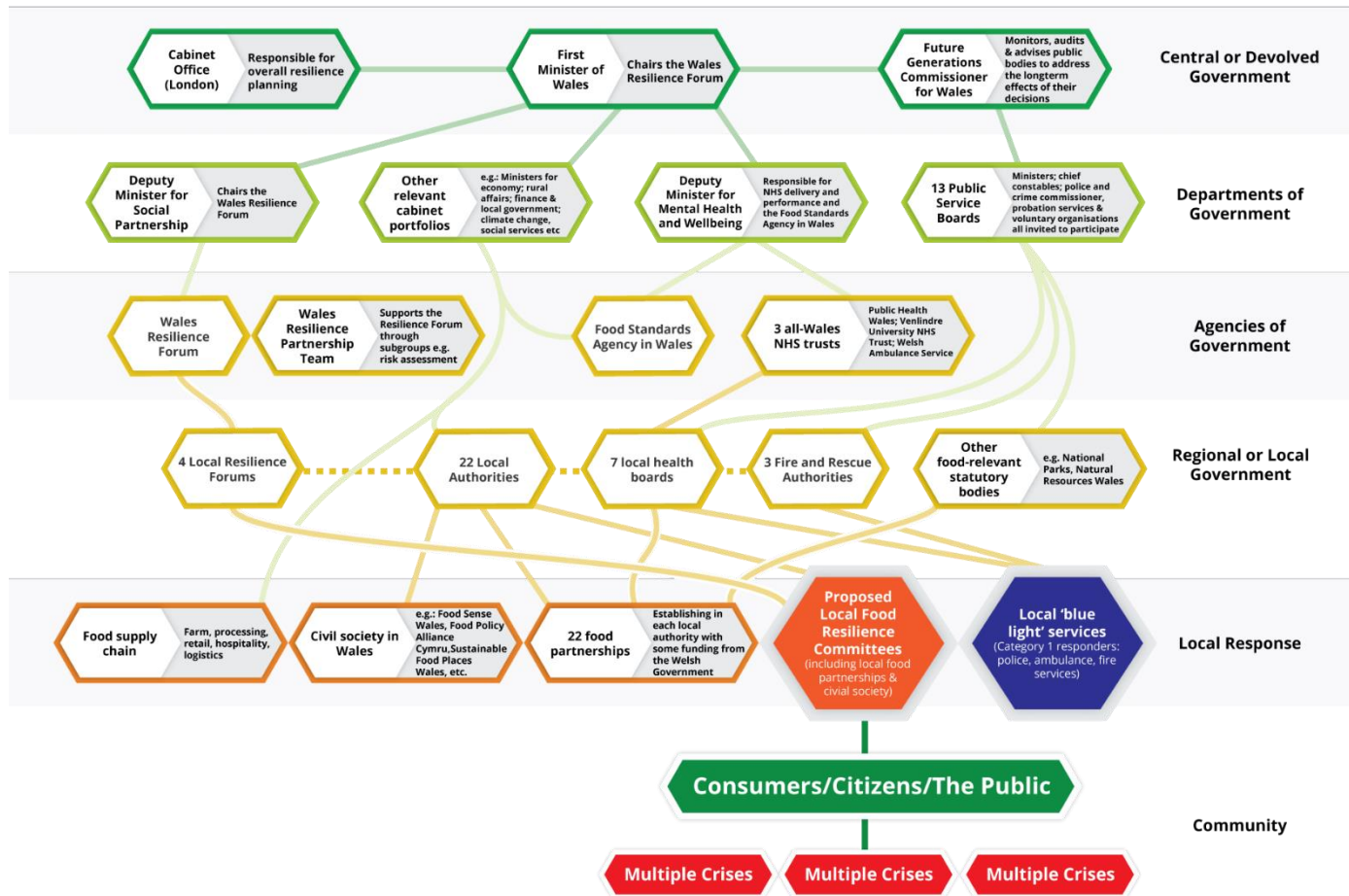
Source: authors / design: Gavin Wren

Figure 10.5: The civic and socio-economic food infrastructure that underpins and affects citizens in communities



Source: authors / design: Gavin Wren

Figure 10.6: Wales' existing resilience governance, with proposed Local Food Resilience Committees liaising with food partnerships



Source: authors / graphic: G Wren

Figure 10.7: Food resilience conceived as being within a web of Risks, Security, Sustainability, Defence, Democracy and Resilience (RSSDDR)



Source: authors / graphic G Wren

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