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Testing times for UK food policy: Nine principles and tests for long-term UK food security and resilience

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Summary

This Discussion Paper summarises the state of post-EU UK food security and policy. It applies a multi-criteria approach, seeing food not as a matter that can be reduced to one overarching goal – cheapness, say, or supermarket availability – but as an issue on which public policy has to weigh up and include several equally worthy and evidence-based concerns. The report offers an approach to ensuring UK food security in the years ahead.

With UK food policy in an uneven state of development – Wales and Scotland have been developing positions for decades, while Northern Ireland's position is fraught due to the Trade & Cooperation Agreement (Brexit) – an opportunity to address the complexity of UK food security now presents itself, with the long-awaited publication of the National Food Strategy Part 2. This is essentially an English Government strategy, but it deserves close public attention.

To that end, the paper offers **nine Principles which should guide future food policy in the national interest.** These propose that it is possible to capture a consensus on the need for change and what it entails. **Each Principle leads to a Test** that the UK public and policy-makers could apply to any proposals emanating from Government in coming months.

The overarching question UK consumers, civil society organisations, industries and governments should be asking is: what would it take to ensure food systems become robust, secure and resilient? The answer almost certainly should be: **make them more diverse – economically, environmentally, regionally and biologically – and don't continue to reduce home food production.** Instead, policy should support the diversification of land use, climate change mitigation and adaptation, preparation for sea-level rise (and other impacts on land use) and skilling consumers and the workforce to drive the transition to sustainable diets sourced from sustainable food systems.

The paper argues that this transition could be difficult, will require clear leadership and public engagement, but that **the combination of environmental, social, health, economic and governance criteria set out below would build resilience not just in the UK's food system and ecosystem but also in the population at large.** The term 'resilience' is used in the sense that is now common in food systems analysis: the capacity of a food system to deal with shocks and stress, whether from internal or external sources.

The paper argues that the focus of public policy and public engagement should be **to ensure food security.** We contend that a country's food system is secure if it provides a supply that is **sufficient, sustainable, safe** (microbiologically and toxicologically), **healthy** (nutritionally), and **equitably affordable** by all. We also insist that our food security should not undermine food security in any country with which the UK trades.

Introduction

The central concerns in this paper are, firstly, that UK food policy lacks overall coherence despite there being wide scientific and some industry agreement that fundamental changes need to happen if the combined threats of diet-related ill-health, climate change, ecosystems stress and food-related social inequalities are to be met. Its second concern is that many of the policy signals from the Government are pointing in the wrong direction, and may compound rather than resolve future difficulties because they are not yet addressing competing challenges within the same policy framework. Thirdly, the UK food system's internal tensions have not yet been resolved by Brexit, and have been heightened by Covid. The prevailing policy mix is an incomplete assembly of inconsistent fragments. Rightly, policy and media attention across the food system is interested in the long-awaited (English) National Food Strategy Part 2 (NFS Pt 2), to be published in July 2021. The present paper, however, has a fourth concern – not just what the NFS does and does not say, but the political process that follows it. The paper urges the British public, Members of Parliament and interest groups to focus on that process, specifically what emerges in the White Paper (due early 2022) and in the food legislation to follow; and also on how governance beyond Whitehall is involved – the regions, the devolved administrations (Scotland, Wales, N Ireland), local communities. Strategy documents are one thing; what the law says tends to have both lasting and deeper impact. Whether non-Whitehall interests are given the powers and involvement due to them will be a key test for whether this post-Europe food policy will stand the test of time.

The paper summarises the widely accepted diagnosis that the UK has fundamental food difficulties. Time is running out on a model of agri-food policy laid down in the period after World War 2.[1] This has had undoubted successes – more food, a wider range, more cultural interest in food matters. But those gains of the last 70 years are laid over deep fissures that have been insufficiently acknowledged – normalised and deepening poverty, costly levels of diet-related ill-health, and catastrophic decline in nature due to food system 'efficiencies', which have led, for example, to the overuse of pesticides and plastics, and have disregarded biodiversity as the infrastructure of life.

The UK's default complacency about its food security places excessive reliance on others to feed it. This is hard-wired in Whitehall. But there are no colonies to feed the UK, and reliance on the EU to feed Britain has now been stretched by politics. The decision, it appears, is being quietly taken to turn the UK's back on the EU, with which for half a century the UK food system has been deeply entwined: and by this we mean not just the Common Agriculture Policy but everything that happens post-farm to process and transport food to people's mouths. Ministers have so far set no clear goals for the UK food system post-Brexit, or even for levels of home production. This is especially critical for the health-important horticulture sector.

Policy responses to the very strong evidence about the need to change course on diet and food production are at best slow and mostly absurdly late. Food marketing strategies, for instance, are at odds with public health objectives. Welcome though the recent restrictions on some food advertising are,[2] they gave unwarranted exemptions to some interests. Food governance in general urgently requires public scrutiny and reform. The Government's default position is to leave food matters to corporate interests, with insufficient attention to the interests of consumers or small and medium-sized enterprises (SMEs).

In 2007, sparked by the oil and commodity price crisis, a three-year process of official UK deliberation was initiated, which culminated in 2010 with an ambitious national food strategy, committed to improving diets and supply chains and to rebalancing production, ecosystems, health and economy.[3,4] That process was closed down by the Coalition Government, and was followed by a decade of uncertainty over where the nexus of UK food-health-land-environment policies might be taken. Those who blamed the EU for most problems assumed that Brexit would resolve the dilemmas.

In 2016-21, with Brexit, the UK began the biggest internally driven political shift of the last half century, a process of change which remains ongoing. It has huge implications for food, not least since the UK's food supplies are still closely enmeshed with the EU's. Half a century's food links are not easily replaced by a new trade deal here or there, as is rapidly becoming clear. (Are Australian beef and lamb seriously to replace British produce?)

This paper focusses on what a food-secure Britain will require, on what ought to happen. The authors set out to identify what is properly called 'the public interest' as well as the national interest. In food as with other issues, people differ on which constituent elements of the public interest they wish to address and prioritise. The paper argues that food can only be put on a proper long-term footing if it satisfies several key tests, which are outlined in the final section.

Leaving the EU is certainly fulfilling the aims of those who value disruption as a driver of change. So, are dissent and disagreement about the way forward inevitable? We think not. Food systems require stability and clarity. We maintain that a broad consensus about food security should be possible, based on what the balance of science and evidence indicates and what most people say they want. **They want a decent, safe, healthy and affordable food supply, which is good for both human and environmental health, and is fairly produced (i.e., doesn't exploit labour or livestock or allow powerful vested interests to exert undue control), and which has the capacity to withstand shocks such as climate change or possible geopolitical disruptions.** The UK's food supply currently does not meet those goals. If the UK is to achieve genuine food security, it will need to satisfy the criteria set out below. Whether a better framework for the future of UK food will emerge from the current politics is uncertain. Many social forces compete for policy dominance, and the outcome will depend on how individuals and institutions behave. The paper concludes by urging the British people and constituent interests to be actively engaged in defining the national and public interest for food policy, and scrutinising all the government's proposed policy measures.

This document uses the term **'food security'**. The term has evolved since first in use and has expanded to include not just desirable goals for people but also processes by which these can be met.[5-7] In this paper, the term is used to mean that a country's food system is secure if, but only if, it provides a supply that is sufficient, sustainable, safe (microbiologically and toxicologically), healthy (nutritionally), and equitably affordable by all. We also insist that our food security should not undermine food security in any country with which the UK trades.

The paper also uses the term **'food resilience'**. This is used in the sense now common in food systems analysis: the capacity of a food system to deal with shocks and stress, whether from internal or external sources.[8,9] In this paper, it is used to cover both the natural and social dimensions of the food system. The resilience of social systems is a key determinant of public health, for example. If people do not have sufficient money or income to feed their children or themselves healthily, how is that a secure or resilient food system?

The paper also makes use of the commonly used term **'food system'**. This refers to all the constituent elements from farm inputs to consumption and waste. [10,11]

With this understanding in mind, the paper summarises the challenges facing the UK food system. We sketch reasons for this state of affairs, and provide a set of principled and pragmatic proposals for beneficial national, regional and local initiatives. As events unfold over the next year, public engagement will be important. MPs need to hear from their constituents. Industries need to listen to consumers, not just lobby on their own behalf. The UK will only achieve food security if there is sufficient pressure on the Government to adopt and implement the necessary changes. This is challenging with a Government for which narrow business interests have held sway; but food democracy is not simply a matter of people 'choosing' at the checkout.

The Problem: UK food (in)security and why it matters

Change: but not fast enough

Most scientists agree that the UK, like many rich countries, faces greater challenges with regard to food security than at any time since 1945.[12,12-14] The UK Climate Change Committee's (CCC) 2021 Progress Report indicated how little the UK is doing to reduce its climate impact, and this certainly applies to the food supply.[15] Concerned about the future, the farming and food industries take initiatives they think will serve their interests. Their gradual efforts to remove some plastic from packaging, and some CO2e from production, processing and transport emissions are not to be dismissed, but the overall impact is far too small and too slow.[16] Long-term developments in how the food system works have normalised its cumulative damage. Vast investments in conventional approaches to reducing direct, short-term costs since World War 2 are hard to reverse. But they must be reversed if real long-term UK food security is to be achieved. It is now clear that public health, social cohesion and environmental sustainability are being severely damaged by the agri-food system. Biodiversity loss, water waste, pollution and soil damage are identified as driven by the food system in the UK and internationally.[17,18] Worryingly, as the CCC report showed, even modest targets for improvement are not being met.

Consumers in control? Or in the dark?

The role of consumers in the current state of affairs is critical. Are they knowingly choosing to cause damage via their food? Or are they duped, or kept in the dark? Positions in many debates about the food system are justified as reflecting and celebrating consumer choices. This is a highly misleading narrative. In reality, there is too often a mismatch between what consumers say they want and what they get, between how the UK eats and what its diet ought to be. Food advertising is not responding to consumers' demands, but trying to change, and preferably increase, what consumers buy. No industrial or commercial sector of the UK economy makes more references to its 'consumers' than do food companies – not least in their vast marketing efforts – yet these efforts too often duck the important challenges (and can be inaccurate, implying small change is all that is necessary). While companies want change to be under their control (and Government has not helped them with clear guidance) the result is that vital changes are being delayed or avoided. Meanwhile the clock ticks, whether one thinks about health or climate or land use. Diets continue to be unhealthy despite a few marginal improvements.[19,20] Obesity is barely reduced; 28% of English adults are obese and a further 36% are overweight, and 35% of 10-11

year olds are obese or overweight.[21] Food poverty, already high, has grown considerably in Covid-19: at least 14% of households with children experienced food insecurity in lockdown.[22] Food bank use rocketed with the 'newly hungry' unemployed.[23,24] Fare Share estimates that 8.4 million people in the UK are 'struggling to afford to eat', with over half those people (4.7 million) living in 'severely food insecure homes'.[25] It is not surprising that demand for free school meals has risen, nor that footballer Marcus Rashford had to campaign to retain an emergency uplift of £20 per week to Universal Credit and access to food for disadvantaged children during school holidays.[26] The Government had downplayed – some argue, ignored – the advice from its own advisor to address that problem.[27]

Politics and policy in flux

Politically, the UK's central and devolved governments' agricultural and food policies are disordered and in flux. In recent years, ministers have made many incompatible promises about the future of the food system, and the apparent direction of travel would not enhance but undermine UK food security. While Brexit was branded as a chance to 'take back control', by mid-2021 no clear direction of change was yet discernible. Initiatives abound but seem too often to step into quagmires. The most politically dangerous so far has been signing the Brexit protocol to put a border in the Irish Sea, fragmenting the UK's 'single market'.[28] Doing a trade deal with Australia implies a weakening of farm animal welfare and food safety standards. The fishing deal with Norway upset UK fishing interests. The ending of EU Basic Payment Scheme farm payments and replacing them with a promise only to pay for (mainly environmental) 'public goods' ignored the UK's need for a secure supply of home-produced foods. Meanwhile, policy on imported food supplies remains unclear. The EU has (so far) continued to feed the UK throughout the Covid pandemic, yet ministers seem to be more enthusiastic for food to travel thousands of miles

from Australia, Brazil or the Asia-Pacific region, rather than from just over the Channel.

The need for robust, multi-criteria, public-interest benchmarks

The food system constantly changes. Since settled agriculture emerged 10,000-12,000 years ago, the pace and scale of change has accelerated. It took thousands of years, until the mid to late 1800s, for fossil fuels to replace animals as the main source of power on farms. And in less than a hundred years since, the oil-based farming, fertiliser and agrichemical industries have seriously undermined long-term agri-food sustainability and security. Even faster, the spread of bar codes, electronic point-of-sale machines, and of course the internet, have changed food logistics in under three decades. Modern on-demand home delivery is further revolutionising the food supply in barely a decade, with effects still unfolding.

So how should changes in food systems be judged? Scientists have demonstrated the damage wreaked in the name of food progress from previous 'revolutions'. Cutting down forests and draining marshes may have seemed good ideas when initiated, but are so no longer. The UK food system – like all the rich world's – now needs to repair past damage, hence the growing interest in 'regenerative agriculture', while meeting the challenge of shifting how consumers want to buy and eat food. The process of dietary and supply change has to address multiple problems and be evaluated against multiple criteria. Actions must be beneficial and not add further harm to existing problems.

Ministers must be dissuaded from a reflex to think that the public interest is served simply by making available the cheapest food. This is an old idea, pedalled to the poor as the only way they could feed their families. Yet the 'cheap food' policy from the 1840s ended up causing considerable harm to national security in World Wars 1 and 2, and for decades has harmed public and environmental

health in this country, and warped land-use in many countries from which the UK imports foods. Politics is easily narrowed into quick terms such as 'cheap', as though that is the same thing as affordable, or people having sufficient incomes to be able to buy and eat a positively health-enhancing diet. What value cheap diets if they lead to premature death and widening socio-economic inequalities of life-expectancy?

In fact no single criterion could be adequate to the task of evaluating any food system. Reading the 2020 Agriculture Act, one might be forgiven for thinking that the sole purpose of land is to provide the 'environment' for wild flora and fauna. But, the environment is shorthand for more than those, important though they are. The environment is a bundle of considerations: water, climate, land use, soil and air quality, bird and insect life, food for people and wildlife, the view, tourism, culture, pleasure. Likewise, the single word 'health' refers to a bundle of considerations: dietary health, safety, short/long-term microbiological and toxicological risks, nutrients and affordability. The same is true for other criteria such as societal, economic and governance considerations. This is why inexorably, over recent decades, scientists and policy-makers have had to expand the set of criteria they apply to evaluate food systems and food policies. Part of the challenge of food policy is to be open about this multiplicity of criteria and clear about how they are to mesh, how they are to be prioritised and whether there can be trade-offs at worst, or win-wins at best.

The argument of this paper is that the UK will only get onto a trajectory towards enhanced food security if it sets clear **public interest criteria** for judging new policies. Policy-makers and politicians want to retain control over policies, of course. But they can and should be held accountable by reference to what is required, when judged against the public interest. In many spheres of public policy, such as on climate, explicit criteria have been established and arms-length government bodies, such as the UK Climate Change Committee, have been created to provide 'critical friend' functions. When it left the EU, the UK stepped away

from many of those bodies. In relation to food, no clear processes yet exist to provide effective 'critical friend' policy scrutiny. This gap needs to be filled. In the view of the present authors, the UK should **have a new Food Security Commission, given a legally binding remit analogous to that of the Climate Change Committee.**

Food governance ahead: a UK Food Strategy? Or England only?

Food governance has emerged as a thorny issue in post-Brexit Britain. Is there a UK approach? Or is it GB only (excluding Northern Ireland)? Or, with Scotland easing away and Wales charting its own agri-rural strategy, is the Whitehall Government's real problem just England? And what about cities, towns and regions? Food policy, like all modern politics, must be seen through a multi-level lens: from local to international. If any levels or parts are missing, the necessary resolve and direction –desperately needed by the public and food industries alike – will not be given by any policy. A 'policy' quickly becomes policy in name only.

In mid-July, the National Food Strategy Part 2 (actually an English document) is published, with a Government White Paper promised for January 2022. A Food Act may follow. Meanwhile, Scotland and Wales already have well-developed policies and debates, which the developments in Westminster might reframe (or, some fear, constrain). Scotland has adopted its Good Food Nation policy framework since 2014.[29] Wales has been developing its strategy as a mix of maintaining rural heartlands while meeting the long-term sustainability ambitions of the Future Generations Act.[30-32] Northern Ireland, however, is shrouded by the practicalities emerging from the EU-UK Trade and Cooperation Agreement and the de facto border in the Irish Sea.[33]

All those developments are influenced by post-Brexit trade deals. What hope for Welsh lamb or beef industries, if undercut by imports in the next decade from Australia? Australia permits its beef

cattle to be dosed with synthetic growth-promoting hormones prohibited in the EU.[34] Australia's RSPCA has already warned the UK to expect worse standards for how meat animals have been reared.[35] Several ministers vaguely promised to maintain UK standards equal to the EU's, but the Australia deal announced in June 2021 suggests that those promises will not be kept. Will civil society or UK food businesses allow this?

Northern Ireland's food border in the Irish sea, and the argument about whether British meat products can be allowed into Northern Ireland, has revealed how brittle UK food policy is.[36] Resolution of such matters is not likely unless the constituent parts of the UK feel they are listened to and their interests taken on board, or if the UK as a whole agrees to accept the EU's food safety standards.

To the people of Britain, food is available on shop shelves apparently 'locally', even if it is sourced via national chains or international trade. There is a desire to source more locally and to 'buy local'. Yet the UK has weak sub-national systems of food governance which could deliver this. From the late 19th century, local authorities were given powers to improve local food infrastructure: markets, water, sanitary protection, school food, education and training.[37-39] Today, when power lies mostly with giant food companies, local food governance again needs to be strengthened, to be a lever to help us out of the current unsustainable state of supply. Public opinion consistently says it wants more local food.[40] Post-Brexit and Covid, the public understands the importance of having local supplies; people want British ingredients not just British brands (although more than half admit to failing to check the source of the ingredients).[41] Schemes such as Red Tractor are no substitute for local contracting, as articulated by the Preston model,[42] for example, which prioritises local suppliers within the legal framework provided by the Social Value Act, 2012.[43] The expanding number of towns, districts and cities joining the Sustainable Food Places network suggests a thirst to rebuild community and local engagement through food.[44] They need to be given new powers, funds and pathways to develop and to enhance local identity and employment.

Why food security matters again for the UK

Food is not just a material or biological product. It is also a matter of identity and social values. The Government's slogan of 'Global Britain' signals an outward-facing aspiration, but what does this global vision entail for food? Is it to be operationalised as 'food from anywhere but Europe'? Neo-imperialist? Quick deals with former colonies such as Australia and New Zealand are emerging. Or is Global Britain to be translated as an 'outer European' or southern Mediterranean (e.g. Tunisia, Egypt, Israel) food sourcing policy? Or is it to extend food supply lines deeper into Africa (former colonies again such as Gambia or Kenya)? Or is globalism mostly to be confined to a food trade deal with the USA? Another option, elements of which are in Scotland's and Wales' thinking but yet to emerge from England, is what might be called 'bio-regionalism'. This would set targets to produce more food from the UK's own resources and satisfy sustainability criteria.[1] Table 1 sets out some of these competing visions and their implications. In January 2021, the UK applied to join the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the 11-nation Pacific Rim alliance.[45] This is perhaps particularly bizarre from a food perspective. The Government launched its application anticipating whisky sales rather than perishable food imports. Proponents so far tend to see an opportunity to increase digital trade.[46] The relevance for food of participating in the partnership remains opaque; ministers seem to assume that UK food security will not be weakened. **The UK Government needs to make clear whether it wants the UK to produce more or less of its own food.** Some ministers seem to want to increase production, but mainly for export, not for domestic consumers. **A rational approach would be to assess what the UK could grow, if it wanted to, within environmental limits. No such analysis has been published recently, to our knowledge.**[1]

Table 1: Different visions for UK food

Policy vision	Focus for food source	Some of what it means for UK farming and food	Some of what it means for consumers	Potential public concerns
Atlanticist	N. America /USA	Competition from even more intensive production	Cheap beef and a possible welcome back to spam and tinned peaches?	Animal, health and environmental standards: eg chlorinated chicken, hormone-fed beef
Globalist	Anywhere, everywhere	Food deals subsumed within wider trade deals	Cheapest food	Traceability; impacts out of sight
Neo-imperialist	Commonwealth countries	Competition more likely from Africa than the Antipodes	More food from Southern and West Africa	Moral uncertainties. Labour conditions
Outer European	S & E shores of Mediterranean	EU on the cheap	Less from EU, more from Turkey, Morocco, Israel	Geo-political uncertainties
Euro-reform	Reformed EU or EFTA	Keeping to EU standards without the subsidies	More of the same	Divisiveness of return / reform / remain politics
Nationalist	UK first	Self-reliance	Higher prices	Reality of international reliance. Loss of some favourite foods.
Uninterested	Food source not priority	Default values dominate	Assumption supermarket shelves fill themselves	Volatility if difficulties or shortages emerge
UK food security	Security begins at home	Increased sustainable production of what the UK can best provide	Greater reliance on local and seasonal fresh foods, when available. More diversity of supply	Reduced variety for some products. Some price implications

Source: Authors, after Lang 2020[1]

In modern times, the high point in UK self-sufficiency was around four-fifths home-produced food in the early 1980s. This has slowly declined ever since. But rather than attempt to measure self-sufficiency, the UK ought to produce annual reviews of 'nutritional adequacy', building on pioneering 2018 studies by Macdiarmid, de Ruiter and Aberdeen colleagues.[47,48] Their work showed that the UK was over-supplied with some nutrients, notably sugar and fats. A recent study has shown how Europeans' reliance on commodities such as soya, cocoa, coffee and sugar will be especially vulnerable to climate shocks, particularly drought.[49] Rising sea levels will almost certainly threaten what little horticulture the UK currently has unless plans to relocate essential fruit and vegetable production away from the Fens begins in the near future. Given anticipated changes from climate, land use, water and soil stress, the UK ought to set clear overall goals for its supply system to match its nutritional requirements.

Food is a critical indicator of the kind of post-Brexit society and economy the UK is to be.[50,51] How will the people be fed and to what standards, from where, produced how, and with which consequences? The answers to these questions will frame the UK's food 'infrastructure'. Consumers are largely unaware of the huge industries and employment which feed them. Whether people knew it or not, voting for Brexit necessitated a radical reworking of how that infrastructure functions. Hence the importance of the pattern of legislation now emerging, and why food is such an important lens through which to evaluate whether the public interest is being served.

Diagnosis: the case for a coherent, multi-criteria food security policy in the public interest

This section summarises the policy challenges, which the subsequent section then addresses.

- There is **now a scientific consensus that a coherent UK food security policy is overdue; that improvements require significant not minor changes; and that the desirable changes will provide multiple benefits**. Dietary changes could deliver better public health, with consequent savings to the NHS and the economy. Changed land-use and farm practices would benefit ecosystems and our communities. Transforming food cultures in the UK to make them healthier and more sustainable would improve social well-being and reduce food's hidden burden on the economy. Investing in better skills and education across the food system would transform a sector characterised by below-average wages and provide decent, skilled and better paid jobs.

- **There is less consensus – though more today than five years ago – about how to deliver the necessary changes.** Some say 'leave it to large companies' (or more broadly, to the market), which can make the necessary adaptations. Others argue this cedes far too much power to incumbent (i.e., already powerful) interests that dominate the UK food system. In this view, while farmers and consumers are what economists call 'price takers' the large retailers and processors are 'price-setters', which means that they are already too powerful, so governments need to re-balance the relationship between different sub-sectors of the food system. Some commentators assume that the necessary improvements can be achieved primarily with technological innovations; others argue that the Government needs to ensure that the trajectory of innovations ensures that food security will be enhanced rather than undermined. The UK Government's current approach to food policy is fragmented and replete with inconsistencies. Some welcome the fragmentation, as they expect that disruption will trigger innovation or provide profitable opportunities. Others see danger in disorder and policy drift. While only governments can set the regulatory and economic regime within which the food chain operates, there is nonetheless a need for a sustained public discussion to influence the Government's deliberations. The Government's food policy-making needs to engage with a wide range of stakeholders, and be open and accountable. In the context of the diversity of perspectives, **a new comprehensive framework focussed on enhancing the UK's food security is needed.**

- The uncomfortable truth is that the UK **food system suffers too many 'lock-ins' to unsustainable modes of production and consumption.** When the world's largest food company admits in an internal (but now leaked) document that a majority of its food products are unhealthy,[52] the status quo is self-evidently unacceptable, and the task of dismantling the lock-ins and thereby enhancing food security becomes a priority. Supposed 'efficiencies' in one sector too often cause problems and impose costs elsewhere. A glaring example is packaging, supposedly all about efficiency and hygiene yet also an opportunity for packaged foods to be branded.[53] Food is not just about what goes into consumers' mouths but also their minds and the preconditions for purchasing. Food is excessively wrapped in plastic which ends up in landfill or pollutes the oceans and seafood, harming countless other species including humans.[54]

- **Food prices are too often distorted or disconnected from products' full costs**.[55] Affluent countries such as the UK still fail to realise how economically vulnerable and fragile their food systems are. World food prices rocketed back in 2008-10. They are rising again today. New disruptor sectors such as home delivery and giant logistics firms such as Amazon emerge in a few years and extract 'value' (i.e. profits) from primary producers and from consumers. Too often they pay insufficient taxes,[56] a matter at last beginning to be addressed in the 2021 G7 agreement, albeit at a low rate of 15%. A goal for a better UK food system would surely be fair returns evenly distributed and not concentrated into relatively few sectors or companies.

- **Intra-UK food policy dynamics show the need for more equitable devolved powers**. England needs a food policy. Scotland, Wales and even Northern Ireland (not least due to uncertainties over the border) are further ahead in thinking about their constituencies' interests. English thinking is dominated by Whitehall with insufficient attention to cities, town and England's regions. The Government's Internal Market Act 2020 tries to impose a pan-UK regime, and weakens the powers of the devolved administrations to set their own minimum food standards. English regions and cities lack devolved structures similar to those granted (unevenly) to Scotland, Wales and Northern Ireland. The UK Government was elected on a manifesto that contained a commitment to English devolution, but it has subsequently shown no enthusiasm for delivering on that promise. City governance is not equitably distributed: despite there being 16 directly elected mayors in England, they have differing powers from each other.[57]

- **There are conflicting signals on food trade deals and international relations.** The Westminster government has been put on the back foot over food standards and trade policy, as well as on food poverty. The public

'gets' the threat of chlorinated chicken and hormone-reared beef. Despite these potent symbols of public preference, the Government has given muddled signals. It says it wants to address adverse impacts of diets on public and environmental health, presses ahead with (so far unclear) deals with countries which want to export food products to the UK, and proceeds to detach the UK from where most imported food actually comes from, namely the EU, and to abandon conformity with EU food standards. The message from early trade deals has been that, by favouring low tariffs, the UK is prepared to weaken existing product and process standards.[58] Doing a trade deal with Australia may sound 'retro secure' but what are the environmental costs of sourcing more food from the other side of the world, some of which fails to meet our current safety standards, and shipping it here using dirty 'bunker-fuelled' ships? And what is the point of switching from a heavy reliance on nearby EU neighbours to taking food from poorer countries in Africa, Asia or Latin America? The UK should enhance its food security without undermining the food security of other nations.

- **UK 'food defence'** is weak. The UK could not feed its people adequately, let alone well, if there was a severe supply or trade crisis. No-one wants such a crisis, yet with geo-politics in a fragile state, there is a strong case for taking food defence seriously. UK supplies and resilience are vulnerable on multiple fronts. Current dominant patterns of UK food production, land-use, trading, processing, retailing and consuming are ecologically and economically unsustainable. But shifting to distant supply sources in preference to the EU introduces a further risk: relying on extended chains when the capacity to protect them militarily and in terms of cyber-security is inadequate. There is next to no attention to building consumer and social resilience on food.

- **Politicians and policy-makers avoid confronting runaway food consumerism,** yet the public sends signals it wants help to do the right thing. Again, the picture is contradictory. While the Government must take responsibility for creating a UK policy framework, consumers must confront the challenges they face individually and collectively. UK eating habits have embedded chronic over-consumption, waste and on-demand instant gratification, yet also send signals of wanting to address obesity, look after children's diets and not harm the environment.

- **Interventions are reluctant and weak, and consumers face an information deficit.** Even though information is a weak form of intervention, the Government does not help consumers by providing (or requiring the food industry to provide) adequate information explaining how what they eat is reliant on carbon emission and water supplies, let alone land and labour.[59] For an economy which purports to be hi-tech, the reluctance to share information on these matters (which the food industry possesses) is inexcusable. New national standards and dietary guidelines are also needed if the system of food information is to be useful. Eating away from home means entering an information deficit zone. In shops, food packaging is plastered with branding 'information' when more space could be given to sustainability information either alongside nutrition and ingredient labelling or integrated into a new multi-criteria information system. Certainly, Government support for weak branding schemes, such as the Red Tractor scheme, should be reviewed and either phased out, or the schemes radically toughened. The sugar levy on soft drinks points to a form of intervention which can be more effective. It forced manufacturers to reformulate.[60,61] The flow of ultra-processed foods now needs to be slowed too. But to progress beyond Rung 2 on the Nuffield Ladder of Intervention (Fig. 1), more high quality and accessible information is needed.

Figure 1: Nuffield Ladder of Intervention
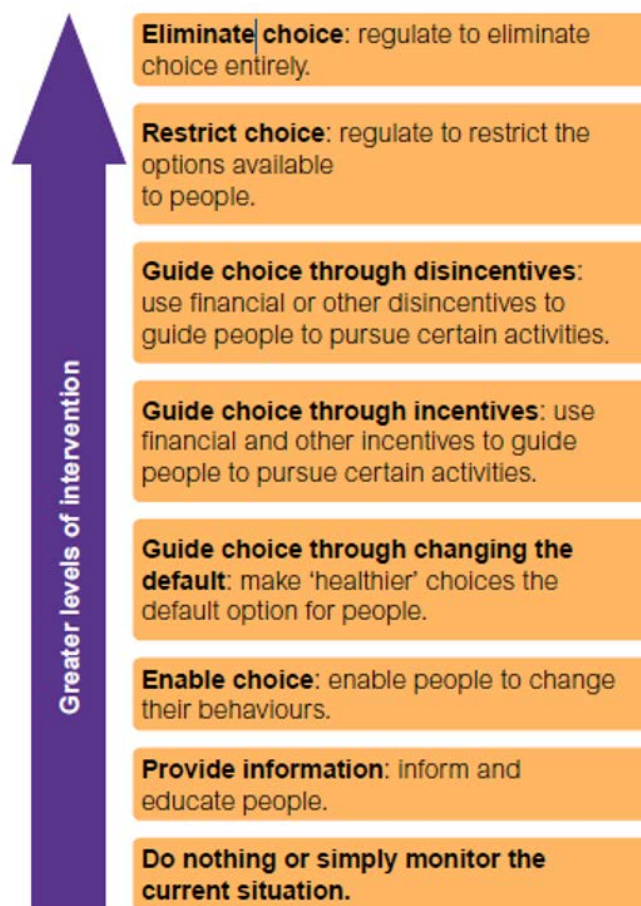
Nuffield Council on Bioethics' Intervention Ladder

Source: Local Government Association graphic of Nuffield Intervention Ladder 2007

- **There is a long-term crisis over food jobs, skills and agri-food education.** Brexit has exposed the UK food system's reliance on migrant and especially EU labour, particularly in the farming, manufacturing and hospitality sectors.[62] Food workers are often very poorly paid, and their jobs are often insecure and badged as low-skill.[63] The meat sector is not alone in cutting production due to labour shortages.[64] The UK food sector is the country's biggest employer – 4.1 million jobs pre-Covid. Now is the time for the UK to invest in reskilling and food citizenship. Former agriculture colleges (a legacy of 19th-century investment) have been subsumed into urban universities and many have lost the agri-food focus needed today. Many urban people want to work in rural areas but their opportunities

are blocked by lack of relevant skills, training or access to land. A new generation of agri-food colleges is therefore needed. Local Enterprise Partnerships and Training Councils seemingly lack sufficient powers to ramp up preparations for a sustainable food labour force.

- **The role of scientific advisors in current food policy-making needs reform.** Currently members of expert scientific committees that advise food ministries such as Defra or the Food Standards Agency are allowed to act as employees or paid consultants to the companies whose products they evaluate. Consequently, far too often those committees make judgements that implicitly favour commercial interests rather than the protection of public and environmental health. If health and sustainability were the guiding priorities, those corporate conflicts of interest would be precluded, and the UK consuming public could be more confident experts were fully committed to a safer, healthier and more sustainable agriculture and food system. Investments in agricultural and food science, technology and innovation need to be redirected away from the pursuit of short-term commercial returns and towards a genuinely secure food system.

- **Processes of short and long-term changes could put the UK on track to a secure food system.** Some changes required are macro-economic: agricultural subsidies should be re-configured to enhance UK food security, for example, rather than giving most to those who need it least or focussing on narrow notions of 'rewilding' without thinking through food supplies and bio-diversity. Some changes are political: for instance, putting food quality and standards at the heart of trade policy, and acting effectively to address diet-related ill-health, including obesity, heart disease and food poisoning, by transforming the food supply. And some are institutional: the budget of the Food Standards Agency, for example, should be enhanced, if it is to be a robust public-oriented body independent both of food companies and of ministerial interference. A test would be whether it and the new Trade & Agriculture Commission stand up for tougher food standards in trade deals. At the local level, the resources and powers allocated to local authority enforcement teams, such as Trading Standards and Environmental Health Officers, need to be strengthened. Much as Covid has shown the importance of local knowledge for effective 'track & trace' surveillance, so local food knowledge and on-hand intervention is needed if the UK is to improve its standards across the food system from farm to fork.

Nine Principles and Tests to help put policies on the right track – Food Security and Resilience or bust

The UK has chosen a lonely route to tackling the problem it shares with many rich countries – namely the task of transforming insecure and unsustainable food systems so they become long-term secure and resilient, capable of withstanding the combination of prevailing threats and likely shocks. In 2021-22, the UK is at a significant moment. The policy process now unfolding must chart a workable relationship between the UK and EU neighbours, between England and its domestic neighbours, and between Whitehall and the cities, regions and communities, or it will be ignored by history.

The forthcoming legal and policy framework will either chart a future which turns our food system in a low carbon, sustainable, socially equitable and healthier direction – or not. It will either ensure

all people are well fed or continue to stretch healthcare and embed diet-related costs and increasing misery. It will either recognise the need to diversify an over-concentrated food economy or continue to allow unnecessary 'value' to be extracted from food producers and consumers. It will either end the shame of food poverty or continue an unsustainable and inexcusable reliance on charitable giving which cannot resolve it. Prevention of harm is a duty of the state. Protection is a good word for health, environmental and social governance.

The UK can no longer duck big choices over how serious it is about its food system. This section returns to the broad goals outlined at the start of the paper: food security and resilience. Outlined here is a set of Principles and Tests by which the public, scientists and policy-makers could judge the adequacy of the current UK food policy-making process. In coming years, major policy statements and legislation will emerge. These must deliver for the public interest, which means making the UK food system more secure and more resilient.

Principle 1: UK food system change should be led by a clear, sound and coherent set of goals focused on food security

Rationale: A better food system requires policy, markets and innovation to be shaped by societally approved, beneficial goals. Health, environment and society should be at the heart of the food economy. We propose that the UK should aim for a food system that provides sufficient, safe and sustainable diets, which maintain people and the natural environment in a healthy state, and does this equitably and in a way which does not damage the interests of any country with which the UK trades food.

TEST 1: Does the Government have a coherent, evidence-informed set of goals for the food system? Will these be regularly reviewed and updated? Are food security and resilience integral to these goals? Is there a target for sustainably derived home-production?

Principle 2: The route to food resilience is through ecological integration, linking healthy diets, biosphere, farming, people and economy

Rationale: As has been made clear, food, human and animal health, our wellbeing, and the capacity of the natural environment and natural processes to sustain life are all interconnected. For food and health, the interdependence is intimate. The One Health movement, in which UK veterinarians have played an important role, has urged policy-makers to see animal and human health as connected.[65-68] Changing environments create opportunities for diseases to move between plants, people and animals, and for new pathogenic viruses to emerge. On other fronts, the 20th century conducted a 'natural experiment' in flooding human diets with 'ultra-processed' foods. The UK eats 52% of its diet in the form of products high in fats, salt and sugars (HFSS).[69] By the 1970s, warnings were emerging of the mismatch between food supplies and good diet-related health. The evidence about physical activity emerged long ago, too, yet car use and other forms of activity that burn fossil fuel rather than food through human physical activity have grown. The food system has even blended these failures with food travelling further, embedding more carbon (and wasting other resources) while people travel to food in cars. The Marmot Reviews confirm that diet is a major factor in the UK's entrenched social and health inequalities.[70,71] Too much farming has been subordinated to producing commodities, which other businesses then turn into profitable products. Now is the time to see Big Food as a 'stranded asset' -- a financial asset with bloated but declining value. This discussion has begun, and warrants serious attention – such as fossil fuels and animal-based food products already receive. A coherent good-health food culture would

be structured to avoid these interlinked negative outcomes and optimise the likelihood of achieving multiple benefits. [72-74]

The challenge here is how to shift the food system from being predominantly based upon linear as opposed to circular economy lines. This means, among other things, recalibrating food finance away from seeing scale, throughput and added-value as adequate measures, to focus instead on ecological efficiency and the recycling of resources. It also requires UK cropping and land use to be diversified, with a farm-to-fork approach supported by appropriate infrastructure. The waste of nutrients occurs as nutrition (thrown-away or unused food),[75] energy (carbon)[15,76,77] and essential growth factors (phosphate, nitrogen).[78] Human sewage treatment and disposal currently wastes large quantities of phosphates, which should be captured and reused. The plethora of local authority recycling systems for food packaging and green waste is a national disgrace, as are the leaking sewage and water systems. Both require attention from central government and the National Infrastructure Commission. Local authorities need to work in a common way for the common good. They are not being helped to do so by central Government.

TEST 2: Is there a commitment to an ecologically integrated food system? Is policy aimed at reducing the avalanche of ultra-processed foods, improving access to nutritious diets, halting environmentally harmful food production practices, and encouraging shorter, low-carbon, more diverse, sustainable and circular supply chains? Are the goals clear and in line with international as well as national agreements?

Principle 3: The food system is dominated by giant companies when a more resilient one would be more diverse

Rationale: The UK food economy is highly concentrated.[1,11] Although there are tens of thousands of small and medium-sized enterprises,

in many sectors a handful of food giants dominates. Large companies, which as already noted are often price setters rather than price takers, dominate UK food supply chains in dairy, chicken and potato processing, for example. This creates asymmetrical market power, which imposes ever-tighter margins onto the less concentrated farm production sector. Nine retailers have almost all UK retail food sales (94.4%), with the top three taking 56.4%.[79] A handful of home-delivery companies has emerged which already flexes power over consumer spend. Large (often transnational) manufacturers own dominant brands.[53] Land ownership is also highly concentrated.[80] During the 2000s the UK has lost half of its farms through amalgamations and pursuit of 'economies of scale'. The increasingly concentrated business model increases vulnerability rather than long-term resilience. Its marketing power distorts consumers' tastes. 'Just-in time' logistics are morphing into a 'nick-of-time' economy, with insufficient consideration of resilience.[81] There is a strong case for re-localising and re-regionalising more food supply, and more people need to be given pathways onto the land. If the Government really wants to level up the economy, it should help foster diverse local food economies with genuinely short supply chains.

TEST 3: Is the Government continuing to encourage concentration in food markets, and the further decline in farm and food SMEs? Or is it taking steps to reduce concentration and barriers to entry, and to create new markets and increase diversity?

Principle 4: Food democracy has to be embedded in publicly accountable food governance

Rationale: Governments of all hues have been reluctant to act for the good of the public until confronted by crisis 'events'. But mounting evidence of environmental, economic and health crises mean this era of too little and too late must end. New institutional structures are needed to enable this rich country to invest in a far more secure and resilient food system. Inequalities in

health and diet reflect inequalities in wealth and food opportunities. The UK and its constituent nations would benefit, for example, from new regional food councils or assemblies, with legal duties to help deliver commitments similar to those embedded in the Climate Change Act and overseen by the Climate Change Committee for the UK as a whole. A legal commitment to reverse food and farming's damage to biodiversity, the environment and health should provide a common framework and the urgency due.

For England, new regional food assemblies could perhaps be based in the existing eight English regions, with appropriate groupings in Wales and Scotland, or they could be centred on city regions given new bio-region status. They should be locally democratically accountable, with elected board members. In addition, the public should carefully scrutinise who is appointed to key bodies. Declarations of conflicts of interest are rightly part of improving food governance. But there is still excessive reliance in many key food committees on people with potentially conflicting commercial interests.[82]

Institutional reforms can begin with Whitehall. A new Cabinet Food Sub-Committee with a remit to speed up and deliver cross-UK food policy should be created, along with a parallel civil service process of co-ordination. While ministers constantly change, it is essential to have a constant support infrastructure, as well as budget to support coordinated work. The Cabinet Sub-Committee should include food system considerations from the agenda of the National Infrastructure Commission, which has a 50-year horizon and so far appears not to have taken food seriously, despite recognising the threats from floods and climate change on, for example, food logistics.[83-85] The reorganisation of the Food Standards Agency, the new health agencies (the Office for Health Promotion, National Institute for Health Protection and Health Security Agency), as well as the Office of Environmental Protection all require food security to be injected into their agendas, and to draw on social policy expert advice to address food inequalities.

We propose, too, that State of Food Security reports should be produced annually by the joint governments of the UK with a parallel process of scrutiny by joint Parliamentary Select Committees for trade, food, health, defence, environment and social policy.

TEST 4: Is the Government comprehensively opening up food democracy in decision-making? Is it purposely creating a more strategic and decentralised institutional structure in which to foster food security?

Principle 5: Food standards must be part of a cycle of continuous improvement

Rationale: Brexit may be 'done' but it is essential the UK is not 'done' by Brexit. Nowhere is this more salient than over food standards. There are thousands of food standards in play on British food; some global, some EU legacy, some national. The point now is to ensure that these move upwards not downwards. The UK is now but one 'vote' among 164 member states of the World Trade Organisation, and is but one delegation on world food standards at the Codex Alimentarius Commission (which determines global food standards), with many 'big player' national delegations dominated by food companies. The UK is no longer part of one of those big players, and appears to be in danger of reducing food standards to a bargaining chip to be used for seeking status or resolving political difficulties (such as the Northern Ireland protocol being turned into an argument over 'sausage wars'). Part of the process of rebalancing the food system for long-term resilience should be the pursuit of higher, more protective food standards. Instead the FSA advises thorough cooking. Currently the advice is not to wash poultry meat or carcasses before cooking them, to avoid spreading dangerous food poisoning bacteria. Our food should be clean enough that we can safely wash it, and no-one wants to eat well-cooked chicken faeces.[86] Leaving the EU has meant a panoply of auditors and

scientific advice has been discarded by the UK. Already, the loss of carefully negotiated standards for human health, contaminant residues and animal welfare is being portrayed as an opportunity to reduce UK standards through trade deals. This is not what the UK public wants or deserves.

In terms of dietary standards, Public Health England (currently being phased out) has been weak on the nutrition and dietary transition that should be addressing obesity and food poverty; and there has also been a lamentable failure to give full advice on sustainable diets. Public Health England's Eatwell Plate should be upgraded into Sustainable Dietary Guidelines, to be used in public and private contracts – not just corralled into public contracts. If high street stores are not using the new guidelines, consumers should avoid them – as they are encouraged to avoid any restaurant with low FSA food safety scores on the entrance.

TEST 5: Is the Government strengthening food standards, providing the public with sustainable diet information and walking up, not away from, the Nuffield Ladder of Intervention?

Principle 6. Eradicating food poverty requires substantially diminishing inequalities, with rigorous monitoring

Rationale: Some argue that poverty 'is always with us' and that the answer is charity: a hand-out, food donations at the check-out. This world of food banks has exploded in the UK.[87] A combination of housing costs, low wages, weak welfare and rising living costs increased the demands placed on charities. Yet the food bank charity sector, now with considerable turnover, is unhappy to exist. It knows that it is not the solution.[88] It has been normalised, and is used by the state to evade its duty to look after its people. Surely it is a principle for any decent state to have food safety nets, to provide help and opportunities, and not to entrench, let alone increase, inequalities. The UK's growing food poverty problem is a matter of national shame. Whether one sees this as a problem of lack of

food or part of the wider problem of inequality, the remedies may converge: evidence suggests that more equal societies are happier, more efficient and have fewer health burdens.[70,89-91]

Policy attention needs to be given not to food banks, but to the food economy. Accepting an economy of low wages is to collude in food poverty. A test of principle for the consuming public is not whether it donates food at the supermarket checkout or makes gift-aided donations to one of the hard-working local food banks, but whether the food economy increases pay and benefits for low-waged employees throughout the food economy.

TEST 6: Is there a commitment to narrowing food inequalities (not just providing inadequate hand-outs for food poverty)? Are real food costs adequately accounted for in wage and welfare costs?

Principle 7: Food Defence should prioritise citizens

Rationale: The point of defence is to protect something of value. A food system is a prime case for defence. The case made here (and elsewhere)[1] is that UK food defence is currently not fit for purpose. Lessons learned from internal threats in the early 2000s generated the Civil Contingencies Act (CCA), 2004;[92] this legislated for proper preparations for national infrastructure protection. Despite the Cabinet Office recognising a duty to communicate with the public, there is next to none.[93] The National Infrastructure Commission barely considers food. And Defra's annual report under the CCA is complacent,[1] This paper is not the place to discuss the adequacy of UK armed forces or whether they take threats to food supply lines seriously enough; we note and approve increased budget and ministerial attention to cyber security. The forced closure of JBS, the US meat giant, in 2021, by cyber attack provided warning of what can go wrong.[94] The high and increasing reliance of the food system on IT for just-in-time logistics, infrastructure and financial transactions points to its vulnerability to cyber attack. A sound food security strategy would embed within it a food

defence strategy. In this respect, a conventional approach to defence is needed.[95]

To go further, the notion of food defence must be rescued from being handed over to the private sector.[96] Already food companies talk of food defence as meaning defending their brands, their supply lines, their market shares and their profits. An adequate food security strategy would put its emphasis on defending people and building their capacity to be food citizens, to have a wide range of skills and capabilities to withstand difficulties and shocks, rather than be solely focussed on protecting business interests.

A genuinely food literate society would share food skills widely. This will require more than cooking classes, useful and enjoyable though those are. A community food defence approach is called for, building on the widespread appetite for supportive communities revealed during the Covid crisis. Building community-based food defence means reconnecting the digital, physical and cultural infrastructure existing in schools, local retail outlets and urban neighbourhoods. It means scaling up what is emerging in community farms and growing schemes, and the many localised efforts to reconnect the urban majority with rural primary industries.[97] Such thinking is further ahead in Wales and Scotland than in England.[31] Achieving civic food defence will require diversifying land use and rebuilding the UK SME agri-food sector. It strengthens the case for developing the all-important horticulture sector on land above the flood level and across the country, not just in historic fenlands.

TEST 7: Is there a food defence strategy which could adequately protect the people? Is this top-down and out of sight or bottom-up and community engaged?

Principle 8: Food science and technology should serve the public

Rationale: UK scientific research and technological innovation in relation to agriculture and food

need to be radically redirected, away from short-term commercial profitability in favour of long-term sustainability, health, safety, resilience and affordability. This will require changes to regulatory incentives, educational institutions and the courses that they provide, as well as systems for allocating research resources.

A new wave of research is needed to help renew rural-urban links, and to create shorter, more benign economic and transport links between town and country. A new generation of public-interest advice and extension services is needed to help fishers, farmers and SMEs to enhance the UK's food security. Self-help groups such as Innovative Farmers ought to be scaled up with input from university research. A new agri-food support and extension training system could build on experience and experiments so far and contribute to creating a Sustainable Agri-Food Development Service (SADS) to replicate what the pre-privatised Agriculture Development Advisory Service (ADAS) used to provide. ADAS was not merely a marketing service; it provided advice, information and guidance to farmers, but it also gathered intelligence on the problems with which farmers had to contend. That intelligence was fed back into the public sector research system, and used to inform decisions about the objectives and priorities of publically funded agricultural research and development (R&D). UK Research & Innovation (UKRI), the body that coordinates the UK's public research councils, must provide a clear steer as to the purpose and direction of food R&D and innovation.

Much is rightly made of the UK's talents in science, technology, engineering and mathematics (STEM subjects). In agri-food as in other areas, UK R&D has been a large beneficiary of EU spending, with the risks of Brexit spelled out before the referendum.[98] The UK has now said it will contribute to the EU's major funding programme, Horizon, but a wedge has been driven between the UK and its European partner bodies which will be hard to dismantle.[99]

A particularly sensitive aspect of the application of STEM knowledge to food is genetic engineering and gene editing. The UK Government, but not its citizenry, was unhappy pre-Brexit about the EU's reluctance to accept genetically modified (GM) foods, especially from the USA. The adoption by the EU of the Precautionary Principle incensed corporate and scientific GM enthusiasts. One of the first post-Brexit actions by Defra, on 7 January 2021, was to announce a consultation on genetic technology, mainly but not exclusively focussing on the suggestion of de-regulating gene-edited crops and livestock.[100] The next day, the Defra Secretary of State re-approved use of thiamethoxama, a controversial neonicotinoid used by rape-seed farmers but an anathema to bee conservationists, which had been banned in 2018.[101] Although scientific enthusiasts and senior politicians are confident that the new genetic technologies are perfectly safe, that assumption is contested by scientific colleagues.[102,103] The British public is understandably sceptical about accepting novel foods whose safety is uncertain, and given that most of the problems with the UK's food system are not simply technological, care needs to be taken to ensure that new technologies will only be accepted if they enhance, and do not undermine, food security in the UK.

TEST 8: Is UK food R&D and involvement of STEM infrastructure directed towards enhancing the UK's food security?

Principle 9: Food work should be skilled, safe and properly remunerated

Rationale: Why is the UK's food system characterised by lower-than-average wage rates, and chronically insecure jobs? Most analysts conclude that it is a mix of history and intense cost pressures imposed by the dominant businesses within the food system. In 1400 an estimated 74% of the English population worked on the land. By 1800 it was about 36% and by 2018, 0.7%.[1] Between Victorian and current Elizabethan times, the food service sector switched from mostly catering for the rich, via domestic service, to catering for the masses, via the modern food service sector. This now dominates food employment – 1.9 million jobs, compared to 1.1 million in retail and about 0.5 million each in farming and manufacturing.[104] The pre-pandemic food sector was among the cheapest employers in the UK economy.[105] In 2021, food employers are complaining about labour shortages, because of the repercussions of Brexit and Covid.

Part of the problem is adherence to a narrow focus on increasing labour productivity by using labour-displacing technologies. The UK has under-valued skills in food production and processing, and this has led to decades of under-investment in skills and training, and recently to a faith in the potential of robotics to displace even more labour. The UK needs a new approach to enhancing food skills. A new generation of agri-food colleges, as proposed above, could make an enormous contribution to enhancing food security in the UK. These should be active participants in partnerships between town and country, offering diverse pathways for skilled employment. Pioneering peri-urban growers (such as Hackney Growing Communities), show that better conditions and training attract high-calibre people.[106] But those initiatives could achieve a great deal more if they were working collaboratively with local training colleges. A food secure Britain must develop mechanisms to encourage the young to see valued careers in farming and food and which encourage new entrants to small-holdings – what earlier analysts called the 'farming ladder'.[107,108] If large landowners are to receive public funds via the new Environmental Land Management Scheme (ELMS), this should be conditional on their providing apprenticeships to new entrants. This would help reverse the long decline in access to farms, exacerbated by the sale of County Council holdings to the private sector.

TEST 9: What mechanisms are being created to enhance food skills and wage rates? Are food labour and decent work integral to the future being charted?
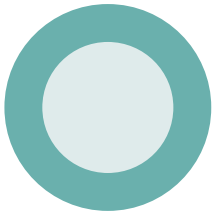
Conclusions: what is holding back this real food deal?

To get these principles, policies and programmes introduced and delivered, and to put the UK on a trajectory to food security, will require a clear focus and sustained public engagement. It requires positive answers to the Tests outlined in the previous section. This paper has argued that food security and food resilience are too fundamental to be left to chance, or to incumbent businesses, or to policy drift, or to centralisation in Whitehall.

Part of the UK's historic food problem has been political, in that all main parties have taken a naively optimistic approach to food and farming. They accepted the post-World War 2 approach as mostly fixed in stone, whether in or out of the EU. A moment of potential transformation came in 2007-10, when a process of policy change began – only for the moment to pass when the Coalition Government took office in May 2010, almost immediately abandoning what had been negotiated across society, with industry and after two years of consultation. This happens in politics. But 11 years on, the UK is again in the midst of a transition, and the direction of change is highly contested. Politicians need to decide whether the critical challenges outlined in this paper are addressed, or whether they will try to retain the status quo, or whether they will focus mostly on a radical liberalisation of economic, trade and safety regulations.

The present authors' argument is that it is vital that all those who share the consensus view outlined here now exert firm influence by all means possible on the Government to adopt an approach that enhances the UK's food security, rather than pandering to incumbent interests and/or assuming that 'the market' will solve all the problems. Companies, too, recognise that framework change is needed for food. Public policy must now re-shape and expand domestic food production

and infrastructure, and re-define and re-evaluate their ecological and social productivity, costs and benefits in order to set the food system on the path to ecological and socio-economic sustainability. The Nine Tests are designed to help deliver that approach.

The challenges require all (not just a handful) of progressive food stakeholders to come together as an active, broad alliance to steer the UK in a better direction, and speedily. The British public, wherever people live, as well as all progressive interests throughout the food system – from farm to waste - need to hold the Government to account by applying these Tests. The food system's insecurity and unsustainability must be centrally about delivering the national and inter-generational interest, for our collective good. Civil society organisations, politicians and progressive wings within food industries should unite to push for enhancing UK food security. Unless the food legislation anticipated for late 2022 is focussed on food security, it will have ducked its historic chance.

The Nine Tests set out here should help the public and policy-makers to provide clear benchmarks against which the future of UK food and agricultural policies should be judged. This is now an urgent priority for the UK polity.

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