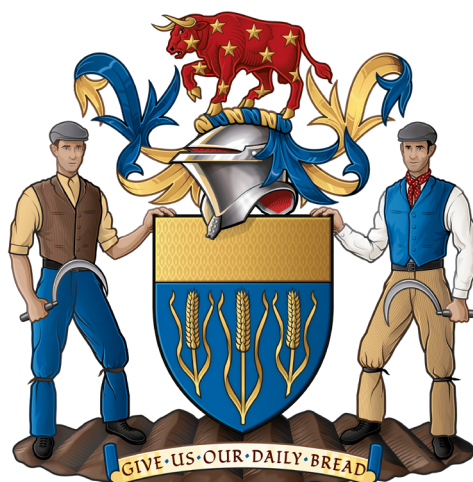




The Worshipful Company of Farmers

Inspiring, encouraging and developing excellence in the management and leadership of UK agriculture



UK Food and Agriculture Post BREXIT

A report commissioned by the Worshipful Company of Farmers

Compiled and written by

Emeritus Professor Allan Buckwell Imperial College

September 2020



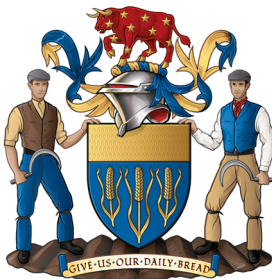
MASTER'S INTRODUCTION TO PROFESSOR ALLAN BUCKWELL'S RESEARCH PAPER

Directing charitable funds for the benefit of the UK farming industry is an essential part of our Company's annual activities. February 2020 saw me approach Allan Buckwell to commission my Master's year research paper for delivery this autumn. He had in 2016 predicted the UK exit from Europe would be in December 2020. How right he has turned out to be.

Relevant research studies made widely available to the industry forms part of our leadership contribution to it. Farmers' response to Brexit today is linked to even larger issues. Climate change, diversity, self-sufficiency, super-technology versus the countryside and now leavened with the Covid virus and a turbulent US election as well. If Brexit left farmers uncertain, these extra issues following a poor harvest, now 150 mm of rain, and no wonder worries and confusion in farmers' kitchens is the result.

Hopefully Allan's paper will help steady decision makers' hands during these immensely changing times. I commend it to you.

David J H Bolton
MASTER FARMER 2019/2020



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developing excellence in the
management and leadership of
UK Agriculture'





UK Food and Agriculture post Brexit

A report commissioned by the Worshipful Company of Farmers

Allan Buckwell

13th October 2020

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Key messages

- 1 The events of Brexit will be “done” by the end of 2020. The UK will be outside the EU and the process of discovering what Brexit really means will then begin.
- 2 For farmers four key uncertainties remain:
 - a. How smoothly DEFRA will design, and administer the ELM schemes with what drop in financial support by 2024, and the scale of support thereafter.
 - b. The extent and effects of the additional frictions on trade with the EU
 - c. The timing and content of trade deals with big agricultural exporters.
 - d. The environmental and animal welfare standards the UK chooses for itself.
- 3 English farmers would be wise to assume that public financial support will contract.
- 4 Without a common UK agricultural policy to replace the CAP, sooner or later frictions in agri-food will arise between the devolved territories.
- 5 Labour from the EU will be less available to UK agriculture and the food chain.
- 6 A UK-EU Free Trade Agreement may well be concluded. This will not avoid more friction on trade with the EU than now. Further frictions with the EU may arise relating to the N Ireland protocol and if there is any UK agri-food deregulation.
- 7 The likelihood and content of a UK-US FTA is impossible to call!
- 8 The UK will not discover a generalised way of restricting imports of products it considers have been produced to lower animal welfare or environmental standards. This issue will have to be addressed through consumer information and transparent, trustworthy sourcing throughout the food chain.
- 9 Reviews of the long run post-Brexit, post-Covid, future of UK food system conclude it is not sustainable. System transformation is required to address four emergencies: climate, biodiversity, diet health & food waste, structural problems in the food chain.



- 10 Five reports (and the EU Green Deal) illustrate this with key recommendations:
 - a. **Climate Committee:** less agricultural land, more forest, peat & bioenergy, less red meat consumption.
 - b. **Helm:** public goods, polluter pays; environmental net gain, a nature fund & plan.
 - c. **Lang:** also stresses food culture and food poverty.
 - d. **Farming & Countryside Commission:** suggest a ten-year transition agroecology.
 - e. **National Food Strategy Pt 1** stresses children's nutrition & scrutiny of trade deals.
- 11 If consumption patterns change, e.g. less meat, farmers will have to adjust.
- 12 Adjustment based on public goods to pay for biodiversity plus precision agriculture and new technologies are is not likely to be sufficient – eg for climate and health.
- 13 Advocates of de-intensification - less use of fertilisers & pesticides, switch to organic - must demonstrate the technical feasibility & farm economics.
- 14 The implications of reduced agricultural area and deintensification of agriculture for food prices and for international trade have to be more thoroughly analysed.
- 15 The legislative basis for the foreseeable future for land use, agriculture and the food system will shortly be in place in the EU Withdrawal Agreement, Agriculture and Environment Bills and in any trade deals concluded. New strategies will therefore have to be accommodated within this framework.
- 16 The 'increase productivity to feed the world' narrative does not fit the UK post Brexit, but there is no simple alternative either. Some farm systems should de-intensify but others will go in the opposite direction.
- 17 New opportunities for land managers may arise for carbon, bioenergy, water and biodiversity provision. But there is no escaping that farming must learn how to reduce its GHG emissions & ammonia and its water pollution and restore soil fertility.



1. Introduction

The manifesto behind the conservative victory in the May 2015 General Election included a promise of a referendum on EU membership before 2017. Because all agricultural, trade, environmental and many other regulations impacting agriculture and food are EU competences it was clear that EU exit could signal profoundly important changes for this sector. In autumn 2015 the Worshipful Company of Farmers (WCF) invited the author to prepare a report on “The Agricultural Implications of Brexit”. This was one of the WCF’s educational contributions to help engage and inform farmers of potential strategic developments in their industry.

A report (henceforth abbreviated to WCF Brexit 1) was duly published in early February 2016 before the referendum date had been announced. Table 1 below reproduces the 11 key messages of that report with a colour code. Five of the messages are coloured green indicating the prediction was broadly correct. Four are shaded amber as they refer to post-Brexit, post-transition changes which could not be judged in Autumn 2020. The remaining two messages are shaded pink showing the prediction was plain wrong. Message No. 2 suggested the negotiation period would be two years. The author did not anticipate that it would take 9 months after the referendum before Article 50 would be sent to the Commission notifying the UK intention to withdraw. Nor was it expected that four months of the negotiation period would be used to allow a general election in which the government majority vanished! Nor that there would be three extensions to the allowed negotiation period. Eventually, the process from referendum to exit from the political structures (but still not the economic provisions) took 42 months not 24! The second, wrong key message, No. 11, was the suggestion that the status quo would prevail in favour of continued EU membership. This author was not the only analyst to fail to predict the outcome: 52% to 48% vote to leave the EU on a 72% turnout!

If nothing else, the five years 2016-2020 galvanised intense and indeed anguished discussion and debate about post Brexit policies – not least for food and farming. In the process three critical Parliamentary actions will set the legislative basis for the post Brexit era. They are, the 2018 European Union (Withdrawal) Act which gives UK legal authority for all existing EU regulations, and two Bills still under debate during 2020, the Agriculture Bill and the Environment Bill. The former provides the powers for public interventions in agriculture to replace the Common Agricultural Policy and is expected to come into force on 1/1/2021. The latter provides the ambitious target under the 25-Year Environment Plan to ensure that the state of UK natural capital in future improves rather than deteriorates.

These three measures set some important broad indications of the strategic direction of agricultural and environmental policy. However, they leave considerable uncertainty about critical details of domestic agricultural and land use policy and of course tell us nothing about international trading conditions. Yet it is the operational details of these policies and the economic environment which are critically important to business. There is also more uncertainty in summer 2020 about the state of the national economy than there has been for many decades because of the scale of public financing and borrowing to support the economy through the Coronavirus pandemic. Meanwhile since the 2016 referendum three other big-picture considerations have emerged which further cloud the future for land-based businesses. These are: the biodiversity and climate emergencies and, arriving in January 2019, the Covid-19 public health crisis which, inter alia, has highlighted the costs of bad diet to the nation’s health, its wellbeing and to the treasury.



Table 1 Key messages in WCF Brexit 1

1	A referendum to remain or leave the European Union will take place before 31/12/17, and is most likely between June 2016 and April 2017. The policies which will follow Brexit will not be clear by the time of the referendum, only general indications.
2	Following a 'leave' vote, there will be a two-year negotiation period of intense debate on Britain's trading relationship with the EU and the rest of the world, and on the British Agricultural Policy (BAP) to replace the Common Agricultural Policy (CAP).
3	The EU trade question is fundamentally a choice between remaining close to the EU single market, and therefore having to retain most EU existing regulation, or leaving the single market in order to allow some deregulation.
4	Whichever outcome, there will be more customs controls, and thus higher trading costs, than now on trade with the EU (both ways). These could depress UK farm prices and raise some consumer costs. If the UK then chooses lower protection levels on agriculture with the rest of the world this would also depress some UK farmer prices, but reduce consumer costs. Therefore together, farmers might face weaker prices, whilst consumer food prices, on balance, may not be much affected.
5	UK domestic agricultural support will not be higher than now under the CAP, and could well be lower. It is likely that a UK government will continue with some direct payments to farmers – but for how long, with what conditions is unknown. Aspects of rural development policy are also likely to continue. UK policy could be less risk averse and more positive with respect to agricultural technology. The details of these policies will diverge between England, Scotland, Wales and Northern Ireland.
6	These uncertainties, starting from depressed prices in 2016, will reduce confidence and investment in agriculture, and probably reduce rents, land prices and lending to agriculture, unless and until clarity emerges on the new British Agricultural policy.
7	Direct payments are decoupled from production, so agricultural production effects of any cuts will be small, production changes may arise if third country trade is opened.
8	The effects of these changes will cause some disruption and hardship in the short run. Farms most vulnerable are those dependent on current payments, for example the grazing livestock sector, and farms which are heavily borrowed.
9	However, markets for all inputs and services to farming will adjust to these shocks, and processors and retailers will be concerned to ensure continuity of supplies. Farmers themselves will adjust; there is much scope to improve UK agricultural productivity which has slipped compared to other EU countries. There could be a catalytic effect of Brexit with beneficial long run effects for the sector as a whole.
10	From a countryside and environmental perspective there are strong downside risks associated with these potential developments. Much therefore depends on how the opportunity to design a new British rural policy better tuned to UK needs is grasped.
11	This author expects the status quo will prevail and the UK will remain in the EU. However the referendum debate will expose, yet again, that current CAP is not well tuned to support environmentally sustainable and viable farming. The so-called 'reformed EU' will still have an insufficiently reformed agricultural policy.

In view of this continuing uncertainty the Worshipful Company of Farmers decided to engage once again into the business of peering ahead to see what can be said about the implications of these dramatic developments for British food, agriculture and rural land use. This is the aim of the current report (WCF Brexit 2).

The structure of the report is as follows. Section 2 summarises the progress in defining the post-Brexit policy framework for food, agriculture and the environment and the trading and regulatory set-up. Section 3 then reviews five contributions to the grand debates on our food system and land use which have been taking place over the last five years.



These are reports authored by the Committee on Climate Change, by Profs Dieter Helm and Tim Lang, a Food Farming and Countryside Commission set up by the Royal Society of Arts and Henry Dimbleby's National Food Strategy¹. Section 4 attempts to extract from this maelstrom of ideas the key strategic choices we confront which are characterised as choices about the area and the intensity of use of land allocated to agriculture, food consumption, prices and trade. The final section 5 summarises and offers some implications for farmers.

Note that the scope of this paper is the UK wherever possible but as the story gets more detailed the complication of devolved governance in the UK cannot be avoided. Specifically on agricultural and environmental policy the coverage slips to cover just the English Parliamentary Bills for these issues. Even for these because they are framework, enabling legislation all the interesting practical details of policy are still unknown beyond some broad principles. Much space is taken up on the trading relationships with the EU and other countries and these are UK matters applying to farming throughout the British Isles. Beyond chapter 2 the ideas are general and relevant to all the territories of the UK.

¹ Full references for the five reports can be found in the corresponding sections of Chapter 3.



2. Where have we reached on post-Brexit policies?

The path to Brexit turned out to be a political marathon taking longer than most expected. The Appendix contains a summary timeline of the main steps in the tortuous political path which culminated in the European Union (Withdrawal Agreement) Act (23/01/2020). This paved the way for UK exiting the political institutions of the EU a week later at 11pm on 31/01/2020.

No one can reasonably argue that there was poor information about what was at stake during the referendum campaign. The process of Brexit spawned a massive literature. This included independent analysis from the academic world as well analysis from stakeholder organisations explaining what Brexit could mean for all sectors of the economy and society including food and agriculture. For example, the Agriculture and Horticulture Development Board (AHDB) produced a great deal of farmer-facing analysis of the exit options and their potential effects. Anyone who wanted to see what the 'experts' thought Brexit could mean for their sector had plenty to read.

However, this material was not an easy read. Most lay people do not know much about customs unions, single market rules, free trade agreements and the WTO. Even an explanation of the outlines of these structures is not very helpful for businesses because the details matter as much as the broad principles. Furthermore, because the fundamental choice between relatively soft Brexit – meaning remaining within the EU Customs Union and Single Market, and harder Brexit involving departing both, ran right up to the closing weeks of the three-and-a-half-year process. This meant that all analyses had to consider the implications under multiple scenarios: in-or-out of the various EU structures and with-or-without trade agreements with major trading partners. Such reports are never easy to digest. The results are inevitably projections based on numerous assumptions presented for many scenarios. It can certainly be claimed that voters did not know in June 2016 which version of leaving the EU they were voting on, but material was available to explore the implications of each version. It is said that a majority of farmers voted leave². None can reasonably complain that the implications had not been spelled out, including in WCF Brexit 1!

Analysts of the agricultural implications of Brexit were agreed that these would depend broadly on four sets of factors: the replacement British agricultural and environmental policies, the economic relationship with the EU, the trading relationships with other countries and any changes in the regulatory regime for food and farming including the labour market. The rest of this chapter summarises what is known about these considerations.

2.1 English agricultural and environmental policy.

These will be shaped by the provisions of the respective Bills proceeding through Parliament during 2020.

The Agriculture Bill

This was initially introduced into Parliament on 12/09/18 but only reached the report stage in the Commons before the chaotic 2017-19 Parliament ended following a change of Conservative leadership and the second post-referendum general election. The Agriculture Bill was reintroduced, with some changes, in January 2020. It is an enabling Bill to allow public expenditures for agricultural and other purposes.

² The evidential basis for this is not very clear beyond an oft-quoted Farmers' Weekly survey, however, the main farmers' organisations do not contradict this claim.



These are spelled out in the footnote³. The expectation is that the Bill will complete its passage through Parliament and come into effect on 1/1/2021. By that time most English farmers should have received their last basic payments under the CAP. Under the Agriculture Bill these payments will then be phased out over seven years, starting in 2021 with £150m of cuts, initially scaled by payment size. The pace of basic payment cuts thereafter is yet to be announced, likewise whether provision will be made for farmers to cash-in the remaining stream of payments as a capital sum is still to be consulted upon. Meanwhile payments to farmers under existing multi-year CAP agri-environment and climate schemes (Countryside Stewardship) will continue until the core of the new policy, a new suite of Environmental Land Management Schemes (ELMS) to pay public money for public goods, is in operation. This is expected in 2024. The ELM schemes are expected to operate in three tiers. The first tier, expected to be available to all, is a basic scheme for paying farmers to adopt more sustainable farming practices, for example integrated pest management and better farm nutrient planning and management. The second tier is expected to be akin to existing stewardship, but more farmer-chosen and less audit-driven in its administration. The third tier is oriented to wider-scale land management changes such as afforestation and peat management.

There is no indication of the scale of total expenditures under ELMS or how they will be allocated between the tiers. Political assurances have been given that the present level of total CAP funding will be maintained for the life of the current Parliament (until December 2024). Until the three-tiered ELM scheme is launched, the plan is to utilise funds saved from Basic Payment cuts in a series of pilot ELM schemes. These are expected to try out ideas such as: auctions where farmers' bid to supply certain environmental services, schemes involving payments by results, and ways of engaging multiple farmers and other stakeholders in landscape-level schemes e.g. for a river catchment. There are few hard details yet available about such actions and similarly little information about other actions, for example to help productivity improvement, under the other expenditure headings in the Agriculture Bill.

Given the time it takes the administration to launch new payment schemes, enrol farmers, set up the IT systems and make payments is hard to see that all the funds saved from basic payments from 2021 will be circulated back in pilot ELM schemes and new (productivity) or other schemes before the full ELMS are launched in 2024. For several years farming organisations persistently flagged this issue, referring luridly to a 'valley of death' in the flow of payments. The industry developed ideas for a Sustainable Food and Farming Scheme to be up and running until the full ELMS is available. The Government brought announced their first ideas for a Sustainable Farming Incentive as a fore-runner of the basic tier of ELMS in mid-October 2020. It is not difficult to imagine a dip in support arising in the period to 2024 simply because there are 'insufficient applications' for the schemes offered.

3 It is a Bill to authorise expenditure for certain agricultural and other purposes; to make provision about direct payments following the United Kingdom's departure from the European Union and about payments in response to exceptional market conditions affecting agricultural markets; to confer power to modify retained direct EU legislation relating to agricultural and rural development payments and public market intervention and private storage aid; to make provision about reports on food security; to make provision about the acquisition and use of information connected with food supply chains; to confer powers to make regulations about the imposition of obligations on business purchasers of agricultural products, marketing standards, organic products and the classification of carcasses; to make provision for the recognition of associations of agricultural producers which may benefit from certain exemptions from competition law; to make provision about fertilisers; to make provision about the identification and traceability of animals; to make provision about red meat levy in Great Britain; to make provision about agricultural tenancies; to confer power to make regulations about securing compliance with the WTO Agreement on Agriculture; and for connected purposes. <https://services.parliament.uk/Bills/2019-21/agriculture.html>



The longer-term willingness to fund agricultural policy to the extent enjoyed for the last decade or more (circa £3 billion), is not known. Public finances were already tight as the Government took office. The extraordinary expenditures to deal with the Covid-19 pandemic is causing the public debt to balloon. Future public expenditures will demand even more stringent tests of value for public money. The unexpected public expenditures for the pandemic caused the planned November 2020 Comprehensive Spending Review to be postponed. The deep uncertainty farmers have been exposed to since 2016 about the domestic agricultural policy therefore largely continues. It would be wise for English farmers to plan on the assumption that the longer run public financial support available to them will contract.

Because implementation of the CAP was devolved to the four UK territories, domestic agricultural policy will also be devolved and there are certain to be divergences in agricultural policy between England, Scotland, Wales and N Ireland. The N Irish situation is further complicated by the fact that the Withdrawal Agreement included the provision that N Ireland essentially remains in the EU customs area to avoid border controls at the Irish border. The extent to which there will be divergence between the devolved territories in supports to farmers and interventions to support markets in exceptional circumstances is not known. How such divergence will be managed is a further unknown. These are not trivial matters, there is a great deal of cross border trade in agricultural products between the devolved territories including in live animals.

The Environment Bill

The three major areas of the Bill are: first giving the secretary of state the power to amend regulations in areas of environmental concern. Major concerns targeted are air and water pollution, plastics, waste management and resource efficiency. Second the Bill proposes to legally enshrine biodiversity targets. It will introduce a general duty "enhance" biodiversity in England and Wales and make provision for grants of planning permission in England to be subject to a condition to secure the objective of biodiversity net gain. Indeed the 'biodiversity net gain' of any development would have to exceed the pre-development value by 10%. This could represent a significant opportunity for land managers who will supply the net gain. The Bill will also require public consultations before certain tree felling. The third aspect of the Bill is to create an environmental watchdog called the Office of Environmental Protection (OEP). The necessity for such a body was heavily promoted by environmental organisations who are concerned that outside the EU there is no European Commission whose job it is to hold Government 'feet to the fire' to implement legislated environmental targets. This will be a function of the proposed OEP. It remains to be seen what bite this watchdog will have.

The government claims the Bill is paramount to ensuring both its 25 Year Environment Plan (25YEP) and its climate goal of Net Zero Carbon Emissions by 2050. However, the very facts that the environment plan was launched before and independently of the Net Zero commitment, one is for 25 years the other 30 years, and that the Government's detailed road map for achieving the climate target is far from complete, indicate the work that remains to ensure coherence between these goals.

The Environment Bill provides the basis for the Government to set its own 'independent' environmental standards to replace those currently enshrined in EU directives. Whether it will use these new powers to maintain, increase or dilute standards post Brexit remains is a critical unanswered question. As a significant polluter of air, water and atmosphere the agricultural sector will be impacted by any changes in approach from the existing standards.



But there could also be important opportunities, and even funding streams, for farmers and other land managers from the ideas for biodiversity net gain and the land management contributions to climate protection. These may partly be rewarded through the ELMS scheme. Chapter 3 discusses broader ideas about this.

2.2 The UK's future economic relationship with the EU

First it is important to note that the (confusingly titled) **EU (Withdrawal) Act 2018** provided the basis in UK law for the continued operation of practically all the EU legislation which has accumulated since we joined the EC in 1973. This means that all current EU regulations and directives including those impacting on food and agriculture influencing for example: food standards, animal welfare, plant and animal health, pesticides and fertilisers, environmental regulations and social and labour regulations should be assumed to continue to apply until specific new UK laws are introduced to change them. The Agriculture and Environment Bills are currently the only examples where policy is being changed. All other EU regulations should be assumed still to apply.

The Withdrawal Agreement which settled the key withdrawal issues and included a political declaration on the future economic relationship with the EU was finally achieved with the EU on 19 October 2019. This was initially rejected by Parliament, a further flexible extension to the negotiations until 31/1/20 was granted. Another UK general election took place on 12 December 2020 in which the Conservatives won a substantial majority on the platform of 'Get Brexit Done'. Following this, the Withdrawal Agreement was finally accepted by the UK and then the European Parliaments on the 23 and 27 January 2020 respectively paving the way for UK exit from the EU political institutions on 31/1/2020. It remains in the EU customs union and single market for an 11-month transition period until 31 December 2020. The option (Article 132 of the Withdrawal Agreement) to extend transition by one or two further years (subject to EU agreement) was not exercised despite the interruption to negotiations on the UK-EU Free Trade Agreement and Brexit preparations caused by the Coronavirus pandemic.

2.2.1 The Withdrawal Agreement is a 535-page legally binding document. It spells out how Brexit impacts on citizens' rights, the separation and transition arrangements of every aspect of economic, social and legal life over which we have pooled arrangements with the EU for the last 47 years. It explains the financial provisions and institutional arrangements for future official contacts between the EU and UK and dispute settlement procedures. It has three Protocols. The longest one concerns N Ireland especially the arrangements to avoid a hard border on the island of Ireland. The other two protocols relate to UK bases in Cyprus and to Gibraltar. The Agreement is enshrined in UK law through the **European Union (Withdrawal Agreement) Act 2020**.

2.2.2 The political declaration has no legal force but was a political agreement between the UK Government and the EU. It is a 27-page statement couched in much looser language which sets out to establish "the parameters of an ambitious, broad, deep and flexible partnership across trade and economic cooperation with a comprehensive and balanced Free Trade Agreement at its core, law enforcement and criminal justice, foreign policy, security and defence and wider areas of cooperation." The economic matters occupy the largest Part II of the declaration taking up 61 of its 141 paragraphs. The new relationship goes far beyond economics, it has also to deal with a large number of critical issues especially those concerning security, defence, intelligence, migration, counter terrorism and police cooperation.



On the economic aspects the declaration “envisages” comprehensive arrangements that will create a free trade area, combining deep regulatory and customs cooperation, underpinned by provisions ensuring a level playing field for open and fair competition”. As far as tariffs are concerned the parties expect that “The economic partnership should, through a Free Trade Agreement, ensure no tariffs, fees, charges or quantitative restrictions across all sectors with appropriate and modern accompanying rules of origin, and with ambitious customs arrangements.” They want to “promote regulatory approaches that are transparent, efficient, promote avoidance of unnecessary barriers to trade in goods and are compatible to the extent possible”. The document speaks of “ambitious” customs arrangements, “mutual recognition of trusted traders’ programmes, administrative cooperation in customs and value added tax (VAT) matters and mutual assistance . . . and exchange of information”.

What do these agreements mean for the food and agricultural sectors? *Until the end of 2020*, with the one critical exception of labour and immigration, there is essentially no change in the economic relations with the EU.

2.2.3 Labour and immigration. During the last quarter century, given free movement of citizens and accompanying EU enlargement, the UK’s agriculture and the food and hospitality sectors have made considerable use of labour provided by citizens of other EU Member States. In agriculture this reliance involves both seasonal and casual workers especially used for harvesting, but also includes a large number of full-time workers in production agriculture, in many roles in slaughterhouses, meat and other food processing, and in the catering and hospitality sectors. This free movement in the EU continues to apply until the end of transition. EU citizens living in the UK are now required to apply for ‘settled status’ by 30/6/2021 and will generally be permitted to remain. The bureaucracy surrounding this requirement and the political messages throughout the 5-year Brexit campaign have certainly been unsettling to EU citizens living or working in the UK or contemplating coming here. Government has clearly signalled its intention to exert greater control over immigration – especially from the EU. The explicit (but comprehensively failed) target deployed for the last decade to reduce annual net total (EU and non-EU) immigration below 100,000 was dropped in the 2019 manifesto but a large expectation has none-the-less been created that immigration will fall. Unsurprisingly therefore net EU migration has fallen considerably from approaching 200,000 in 2014 at its peak to 50,000 in 2018⁴. *The general point is that EU labour is expected to be less available in the UK in the future.*

The new points-based immigration system comes into force on 1/1/21. Government guidance on this for employers states that: “The new system will treat EU1 and non-EU citizens equally and transform the way in which all migrants come to the UK to work. Under a points-based immigration system, points are assigned for specific skills, qualifications, salaries and shortage occupations. Visas are then awarded to those who gain enough points”⁵. EU workers who are already here may apply for settled status. The new system applies to future potential immigrants. Seventy points are required for entry and the key characteristics

⁴ Migration is a complex multi-factor phenomenon, there are a range of explanations for the development path of migration between the UK and the EU. As the Member States which acceded to the EU in 2004 and 2014 develop many of their citizens return. The fall in the pound/rise in the Euro following the referendum also contributed to reduced flows as it eroded the higher wage benefit of the UK relative to other EU countries. Note there was also a surge of UK emigration to the EU following the referendum.

⁵ The Government guidance on the Points Based System is here: <https://www.gov.uk/government/publications/uk-points-based-immigration-system-employer-information/the-uk-points-based-immigration-system-an-introduction-for-employers>



earning 20 points each are: the applicant has a job offer, the job is at the appropriate skill level, the applicant will earn £25,600 or more, is in a job shortage occupation, and has a PhD in a STEM subject relevant to the job. Characteristics earning 10 points are: speaks English, has a salary between £23k and £25.6 and has a PhD in a subject relevant to the job. Jobs in agriculture are not classified in the Shortage Occupation List⁶, and workers in these sectors are generally classed as Tier 5 and thus lower skilled⁷. For a standard 39-hour week agricultural workers are unlikely to be earning above £20,000 annually given current minimum agricultural wages. It therefore looks unlikely that many will succeed in getting visas. The availability of future agricultural labour therefore depends on what if anything follows the 2019 and 2020 Seasonal Workers Pilot scheme which operated for workers in the edible horticulture sector. Similar uncertainty hangs over the food processing and food service and hospitality sectors which have employed many EU workers in the last two decades⁸.

2.2.4 The UK – EU Free Trade Agreement. Negotiations on the future economic relationship with the EU commenced on 2 March 2020 following publication of negotiating positions at the end of February. It was initially planned that five rounds of negotiation would take place by mid-May followed by a high-level UK-EU meeting in June. The EU tabled a Draft Treaty text covering all the issues of the future relationship on March 18. The UK publicly responded two months later (19 May) with its 290-page draft Comprehensive Free Trade Agreement and eleven draft texts covering other issues. However, in the meantime the Coronavirus pandemic intervened. Videoconference rounds replaced face to face meetings in April, May and June. Little progress was made until October.

The main disagreement can be summarised as follows. From the EU perspective the difficulty was what they saw as the UK's 'refusal to commit to conditions of open and fair competition and to a balanced agreement on fisheries'. For the EU the issue is the 'level playing field' which was part of the political declaration. The EU sought 'legally binding commitments to uphold high standards over time in areas of state aid, competition, taxation, labour standards, environmental protection, climate change, and sustainability. The partnership would involve continued application of EU rules (dynamic alignment) on state aid. In the remaining areas, the parties would agree not to regress below the standards applicable at the end of the transition period (non-regression)' ⁹. However, the UK is firmly opposed to any obligation which would involve giving up control of its own laws or for the EU institutions to have any jurisdiction in the UK. The government's position is that the EU was insisting on conditions for the UK which are not included in the EU's other trade agreements, failing to take account of the fact of the UK's withdrawal from the EU. The EU response is that the UK is economically larger, geographically much closer, has been fully integrated in the EU single market and is therefore a much greater competitive threat than Canada.

The key unresolved issues as the negotiation neared its mid-October deadline were state aid rules and fisheries. The fear of the EU seems switched from concerns that the UK would seek a low-tax deregulatory 'Singapore on Thames' approach to worry that the UK will use its own

6 The link to this list is <https://www.gov.uk/guidance/immigration-rules/immigration-rules-appendix-k-shortage-occupation-list>

7 A link to Appendix J of the which shows the codes of practice for skilled workers is <https://www.gov.uk/guidance/immigration-rules/immigration-rules-appendix-j-codes-of-practice-for-skilled-work>

8 But which have suffered disproportionately from the lockdown to combat the Coronavirus.

9 <https://commonslibrary.parliament.uk/research-briefings/cbp-8923/>



State aids not so much to support struggling traditional industries but rather to steal a march on new promising areas in life sciences, pharmaceuticals and clean energy. Whilst the sides are far apart on fisheries the general judgement is that this is too small an issue economically to prevent final agreement.

There is speculation¹⁰ as to the tactics of the UK government, in that it may consider that it has less to lose from a failure to achieve a free trade agreement than would have been the case if it had failed to secure the Withdrawal Agreement. It could also be the case that the UK might perhaps see an advantage in being able to avoid obligations under the Northern Ireland Protocol if no trade agreement were concluded. The UK government team may be hoping that pressure to secure a trade agreement might result in greater concessions from the EU side towards the end of the transition period than could otherwise have been expected, but this cannot be predicted. To allow ratification by the UK parliament and the EU Council and Parliament and to come into force on 1/1/2021 the trade agreement has to be finalised by 31 October 2020. The implications of the failure to secure an FTA are considered below.

2.3 Trading arrangements with the rest of the world

The UK decided to prioritise Free Trade Agreements with the USA, Japan, Australia, New Zealand and with the Comprehensive and Progressive agreement for Trans-Pacific Partnership (CPTPP)¹¹. The choice of the US and Japan is presumably based on their size and thus opportunity for UK exporters. Australia and New Zealand may be amongst the first as they are English speaking and culturally close to the UK and therefore likely to be more straightforward to secure and demonstrate Britain's ability to do such deals. There is not much public information on the progress in these negotiations¹². By October 2020 the UK had secured 21 agreements with 50 countries including Japan, Korea, Israel and S Africa^{13,14}. Many of these agreements are roll-overs of existing EU FTAs. It will take considerable time to work through this process, and as each FTA is concluded close inspection will be required to discover the full implications sector by sector and product by product. This is the nature of trade agreements.

The rhetoric setting out these agreements is high-flown. For example, the policy paper from the Department of International Trade (DIT) pitches the UK as the "champion of free trade" and suggests a UK-USA FTA offers "significant opportunities throughout the economy, from agriculture to professional services. Potential benefits include better jobs, higher wages, more

¹⁰ This is taken from Bird and Bird, solicitors. <https://www.twobirds.com/en/news/articles/2020/global/continued-negotiation-of-uk-eu-trade-agreement>

¹¹ The eleven CPTPP members are: Australia, Brunei, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. It was signed in 2016 as the Trans Pacific Partnership including the USA, but as the USA withdrew soon after the election of President Trump, it was signed as the CPTPP in March 2018. It seeks, inter alia, to reduce tariff and non-tariff barriers to trade in goods including agricultural produce.

¹² The most recent updates on the Department for International Trade (DIT) website are several months out of date.

¹³ As of 11th September 2020 the UK had secured 20 trade agreements with 49 countries, some through the use of a *mutatis mutandis* concept, in order to quickly replicate the existing agreements between the EU and these countries, only having to call out those minor areas of differentiation (this allowed some agreements to be reduced to around 40 pages from the original around 1400). Among them are significant economies — by nominal GDP — such as Japan, South Korea, Switzerland, Israel and South Africa. See the link for the list as of 1/8/20. https://en.wikipedia.org/wiki/Free_trade_agreements_of_the_United_Kingdom

¹⁴ An agreement on a Free Trade Deal with Japan was announced on 11 September. This is the largest country to date (after Korea) with which such a deal has been struck. As these two countries are net agricultural importers there could scope for expansion for UK agrifood exports. <https://www.gov.uk/government/news/uk-and-japan-agree-historic-free-trade-agreement>



choice and lower prices for all parts of the UK.¹⁵ Because trade negotiations are a UK (not devolved) competence, and because the government is well aware of the sensitivity of the issue of some US food standards, the document highlights benefits to the UK regions and opportunities for exports of high quality UK food products. For example the mandate for the UK-US FTA contains promises of bolstering existing trade in Scottish salmon and Scotch whisky, while lowering (US) tariffs on cashmere, clothing and high quality meat. It flags the possibility of greater access for lamb and dairy producers and reducing the present 17.6% tariff on Cheddar cheeses. It asserts “that the agreement will “ensure high standards and protections for UK consumers and workers and build on our existing international obligations. This will include not compromising on our high environmental protection, animal welfare and food standards”¹⁶.

However, it is eye-catching how small the estimated benefits to UK GDP will be from these FTAs. For example, in the UK-US FTA, i.e. with agreement the largest economy in the world outside the EU, two scenarios were analysed. Scenario 1 with ‘substantial tariff liberalisation and 25% reduction of actionable non-tariff measures and regulatory restrictions’. Scenario 2 ‘full tariff liberalisation and 50% reduction of actionable measures’. The potential increase in long run UK GDP under these two scenarios was estimated to range from 0.07% to 0.16% respectively, equivalent to between £1.6 to £3.4 billion. In relation to the sums involved in Brexit these do not seem large! Compared to the contraction in GDP due to the Covid-19 pandemic they seem trivial. The gains to the US economy are estimated to be smaller than to the UK.

On food and agricultural trade the DIT analysis shows that the average UK tariffs¹⁷ on US exports are 4% for agriculture, 16% for processed foods, and 14% for other processed foods. The corresponding figures for tariffs facing UK exports to the US are 1%, 8% and 4%, i.e. much smaller. But the frequency of Non-Tariff Measures (NTMs) faced by UK exports greatly exceeds those facing US exports. Such figures seem to indicate the US has more to gain in these sectors. However, it is clear in the report that both sides have sensitivities about agricultural and food trade particularly sugar, milk, cheese and meat. It is customary for such products to deploy exceptions and the use of tariff rate quotas (i.e. limited quantities of reduced or tariff free imports). It is the small details of trade agreements which matter: the precise products, concessions and quantities. These details may only emerge late in the process of negotiation.

There is less analysis in the published DIT papers on the trade negotiations with Japan, Australia, New Zealand and the CPTPP. The total UK economic benefits of FTAs with Australia and New Zealand combined are, naturally as they are much smaller economies, even smaller than the figures cited above for the US. They range from 0.01% to 0.02% of UK GDP for the same two scenarios as above. For all of these trade agreements it is clear that the greatest benefits for the UK are better access to markets in services of all kinds, as well as certain goods and e-commerce. Japan is also seen as a greater opportunity for expanded UK food exports and is not seen as a threat to UK agriculture and agri-food sectors. However Australia and New Zealand are already large exporters to the UK for agricultural and food products, including wine. These are seen as sensitive for the UK.

¹⁵ UK-US Free Trade Agreement, p5.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/869592/UK_US_FTA_negotiations.pdf

¹⁶ Op cit, p9.

¹⁷ These refer to the EU common external tariff which applied in all EU Member States including the UK until the end of 2020.



2.4 Where does this leave tariffs and what are the economic impacts¹⁸?

Start with the trade relations and tariffs. Until the end of 2020 the UK remains in the EU Customs Union and Single Market. Therefore, there is continuation of free movement of goods, citizens and capital between all EU Member States, zero tariffs and few non-tariff barriers on trade within the EU. The EU's Common External Tariff (CET) applies to trade between the UK and third countries except where there are preferential trading arrangements are in place, and there are many such arrangements especially with developing countries. What then follows?

There are principally two scenarios to be considered – a UK-EU free trade deal is secured or it is not and we crash out of the Customs Union and single market on 1/1/2021.

First, consider a **UK-EU Free Trade Deal (FTA) is agreed**, endorsed by both Parliaments (UK and EU) and comes into force on 1/1/2021. The least disruptive outcome is that the FTA includes zero tariffs in both directions and, initially at least, no new non-tariff barriers. In this situation established trade flows with the EU in both directions can continue. The costs of conducting trade will not be identical to now because the UK/EU border is re-established having been eliminated in 1992 following the EU's Single Market drive (enthusiastically backed by none other than Margaret Thatcher). There will be new paperwork, physical checks and therefore potential delays at ports and airports. This will add some trading costs which currently do not exist. How much depends on the quality of the preparations at both ends and how quickly both traders and the Border Agencies adapt to what will, inevitably, initially be a challenging situation. The longer run development of UK – EU agrifood trade then depends on whether UK policies remain essentially aligned with the EU or whether the UK starts to diverge. This could apply for example to food standards, environment, labour, social matters and technology, and if such changes are expected to impact agri-food markets then trade restrictions and disputes are a likely outcome. If this happens it could result in future impediments to trade. The EU is highly sensitive to this because a significant plank in the rhetoric for Brexit was freeing the UK from unwarranted EU red tape.

With regard to the trading terms with non-EU countries, it seems unlikely that there will be further FTAs agreed with major agricultural exporting countries mentioned before 1/1/21¹⁹. In the absence of completed new trade agreements a starting assumption is that the UK and the countries involved in the great many preferential trade agreements, including the Generalised System of Preferences for developing countries, that have been secured by the EU, will both continue to honour these arrangements. However, it would not be surprising if some countries decide that as the UK is no longer a member of the EU it does not suit them to continue with the EU trade arrangements and disputes might arise at least temporarily disrupting trade. It is very hard to anticipate for which country or which products this might arise²⁰. This is part of the general uncertainty the UK has chosen for itself. For countries outside the preferential arrangements²¹ the Most Favoured Nation (MFN) Tariff which the UK will apply, is called the UK Global Tariff (UKGT). This was published on 19 May 2020.

¹⁸ This section is written entirely from the perspective of the agrifood sector and trade and does not take account of impacts on other sectors and macroeconomic effects through interest rates and exchange rates

¹⁹ The highest political priority was a UK-US FTA – but this now looks impossible before the US Presidential election.

²⁰ One such possibility concerns the sharing out between the EU and the UK of tariff quotas. These are important in agricultural trade.

²¹ This includes most of the big powers in agricultural trade like US, China, India, Brazil, Argentina



This will apply to the UK imports from these countries. UK exporters to these countries will face the same MFN tariffs that are currently imposed on EU exports.

The UK's new global tariff emerged in two stages. The first indication of Government thinking on tariffs was published on 13 March 2019 in the context of Government preparations for a 'no deal withdrawal'²² following the second Parliamentary rejection of Theresa May's proposals. The Trade Policy Observatory of Sussex University summarised this tariff as follows²³. "The UK has proposed to liberalise most MFN tariffs to zero. In order to comply with WTO rules, in a 'No Deal' scenario these new tariffs would apply to trade with the EU and with non-EU countries. The share of the UK's imports that would be tariff-free under the Government's proposed MFN tariffs, compared with the UK's current situation, represents a substantial liberalisation with regard to non-EU imports. This would reduce the EU's competitive advantage in exporting to the UK and would encourage more imports from non-EU countries". The agri-food sector which has strong protection under the EU CET would be hardest hit by this tariff, but of course it would also provide tangible consumer food price benefits. This tariff was presumably intended to send messages both to the EU negotiators as well as the domestic audience at that time. Such strong liberalisation would certainly have exposed UK agriculture to strong import competition adding to the much-discussed disastrous impacts on UK sheep, beef and malting barley exports to the UK in the event of EU tariffs on such exports following a 'no deal' exit. However, it would also have considerably reduced the UK's negotiation space in subsequent FTA agreements.

Once the withdrawal deal was secured the new global tariff (UKGT) was consulted upon and announced. This quite different tariff has broadly followed the EU's CET with its strong protection for agriculture. It contains some simplifications and streamlining, eliminating small 'nuisance' tariffs, rounding the numbers and denominating absolute duties in £/tonne²⁴ instead of €/tonne. The view of the Trade Policy Observatory, which first set out their criteria for an intelligent tariff for a country in favour of trade, is that "the UKGT more or less ticks all the boxes and potentially does a 'good job' of navigating the tricky trade-offs". However, they signal two significant concerns²⁵. "Having tariffs different from the EU's Common External Tariff (CET) immediately means that rules of origin (ROO) will become more of an issue in the negotiations. It is well known that negotiations over rules of origin can be difficult, complex and lengthy. . . The closer the alignment between the UK's Global Tariff and the EU's CET the easier it would be to minimise these complications and to seek genuinely liberal approaches to rules of origin and their cumulation. The UK Government entirely ignored the question of ROOs in its summary of and response to the consultation on the Global Tariff – even though the issue was raised in submissions to the consultation. By lowering tariffs, especially on intermediates, the UK Global Tariff is sending a signal to the EU about the desire to increase competitiveness of UK exports. While a perfectly legitimate action by the UK, the issue of UK policy shifting to increase competitiveness in EU markets is clearly an EU concern (hence the insistence on level playing field provisions).

22 Whilst previously 'no deal' referred unambiguously to no withdrawal deal, it now applies to no Free Trade Agreement deal, so the clumsy additional word is now necessary!

23 Gasiorek M, Magntorn Garrett J and Winters L A (2020) What should we make of the UK's 'No Deal' tariffs? UK Trade Policy Observatory, Sussex University, <https://blogs.sussex.ac.uk/uktpo/2019/03/>

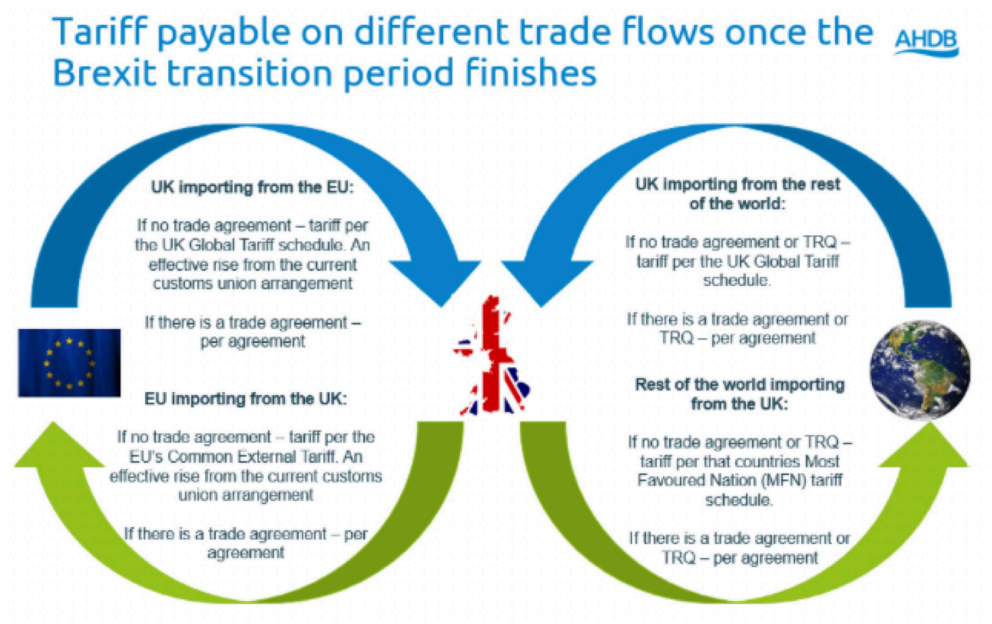
24 Using the exchange rate of 1.2 €/£. Note that the protective effect of these absolute tariffs can vary strongly as commodity prices rise and fall, the attempt to convert them into ad valorem tariffs did not get very far.

25 Gasiorek M and Magntorn Garrett J (2020) UK Trade Policy Observatory, Sussex University, <https://blogs.sussex.ac.uk/uktpo/2020/05/21/reflections-on-the-uk-global-tariff-good-in-principle-but-perhaps-not-for-relations-with-the-eu/>



It is therefore possible that the proposed UK Global Tariff will complicate the EU FTA negotiations and may harden the EU's position on other elements of the negotiations." The second concern flagged is that the UK is not a single negotiating area for the purposes of trade policy because of the complication of the N Ireland protocol which requires that region to apply the EU's CET. The EU's fear is that N Ireland becomes the back-door entry point for imports which have entered Britain under lower UK tariffs. To deal with this may necessitate border controls between GB and NI and within the island of Ireland, neither of which will be welcomed and both of which will add trade costs.

An AHDB infographic neatly summarises the possibilities for agri-food trade from January 2021.



A further technical difference between the UKGT and the EU CET identified by the Agriculture and Horticulture Development Board (AHDB) is that "the UK also intends to remove the EU Meursing table, which acts as an additional barrier for certain processed products, depending on their sugar and dairy content. Its current aim in the EU is to ensure there is a mechanism in place so that processed products, such as biscuits, waffles, pizzas and other confectionary items, aren't able to by-pass tariff rates that are levied on bulk or raw materials. Some will view this as adding clarity, improving simplicity for importers, and prepping for upcoming trade deals, others may point to simplification of tariffs (removal of Meursing, rounding down) as lowering existing barriers.²⁶ "

Turning to the second possible scenario, the transition period ends with no agreed new EU Treaty or Free Trade Agreement. In this situation our economic relationship with the EU becomes that of a third country, and each side treats the other on WTO terms. This means the UKGT will apply to UK imports from the EU and the EU's CET will apply to UK exports to the EU.

²⁶ According to the Food and Drinks federation the Meursing Code contains 13,608 separate tariffs on biscuits, chocolate, bakery goods and confectionery alone. <https://www.fdf.org.uk/responses/FDF-Response-Government-Customs-White-Paper.pdf>



Compared to the current situation of no tariffs this will increase UK domestic prices of imports and reduce the domestic prices of exports. As the UK is a net agri-food importer with respect to the EU this sector will be more protected than now. This will mean some food price inflation.

It is very difficult to anticipate the full effects of an untidy, and presumably therefore acrimonious, Brexit in the circumstance of failure to agree the proposed FTA. The Treaty under negotiation covers a great deal more than trade in goods. It embraces a large number of regulatory, security and other arrangements affecting almost every aspect of commerce and life. They have developed over the almost half century of membership of the EU. If these are unresolved then a great many businesses and organisations may find themselves in a legal vacuum. How this shows up will be discovered in the days, months and years following Brexit. There is uncertainty about the readiness of staff and facilities at entry points to administer the new customs arrangements. Supply chains for foods, medicines, veterinary products are certainly amongst those most vulnerable to delays. Which pinch points turn out to capture the headlines has yet to be discovered.

The broad economic effects of the various possibilities on agriculture have been analysed by the consultants Agra CEAS for the AHDB. Their chosen variable of interest is the impact on Farm Business Income (FBI) in the UK. The only published study compared the situation with and without an agreed UK-EU FTA, but in the no deal scenario the assumed tariff is the liberal 2019 tariff and not the now-agreed UKGT. This analysis was updated to include the 2020 tariff as an internal exercise to help the AHDB and has not been published. However, the results have informed the AHDB's outlook on the likely impact of a no trade deal outcome. To develop scenarios it is necessary to make a range of other assumptions in addition to tariff rates. Key variables are the fate of direct payments to farmers, progress with the new environmental land management payments, labour availability/costs and any change in regulatory costs. The projections of Farm Business Incomes to 2022 made the following assumptions:

- Basic Payments, cut either £150m and reallocated to Rural Development (as already announced for 2021) or eliminated.
- 50% increased costs for regular and casual labour, 15% rise in contract costs, no increase in cost of casual labour (under the assumption of a new SAWS equivalent scheme).
- No change in regulatory costs.

Compared to the baseline FBI (of £43,000/farm) averaged over all types of farm²⁷ the announced agricultural policy changes **with an agreed FTA** are estimated to result in FBI falling by 24% to £33k per farm, whereas in the **no FTA deal scenario** with the 2019 tariff liberalisation FBI falls by 40% to £26k/farm. In the event that Basic Payments are eliminated the falls in FBI are of course considerably greater (to £5.6k/farm with an FTA and to a small negative in the case of no trade deal). The impact on Farm Business Income under the 2020 UKGT is expected to be marginal – although the scenario in which Basic payments are eliminated would certainly constitute a big impact on farm business incomes, reducing them to around a third of the baseline. The relative impacts across the scenarios (with or without an FTA, and the scale of the cut in direct payments) are broadly the same for all farm types.

²⁷ This is the weighted average Farm Business Income calculated from the sample of the 1762 farms averaged over the years 2015/16, 2016/17, 2017/18 which participate in the Defra supported Farm Business Survey in England.



Comparing the impacts across farm types within each scenario there are differences. Perhaps surprisingly the least badly affected farm types are lowland and LFA beef and sheep farms as the market losses experienced are assumed to be largely offset by additional 'pillar 2 type' funds. This assumes that these public good payments represent additional income rather than solely compensation for income forgone.

The key take-away message from all the AHDB Brexit analysis is that domestic support policies are at least as important to farmer's economic fortunes as trade arrangements. However, until the details of trade arrangements are clearer than now it is impossible to be more precise about their impacts. It should also be mentioned that a major lesson the AHDB took from close inspection of these results, looking at the highest and worst performing farms within each farm type, is that the highest performing farms are always the least badly impacted under any of these policy changes. This emphasises the importance for farmers to know and act upon their key performance indicators and costs of production.

Projections of impacts of policy change on farm business income as analysed in the AHDB study are not the whole story for several reasons. First, the methodology measures short run immediate impacts of the policies on prices and costs but does not allow for adjustments by farmers and markets in response to the policy changes²⁸. Such adjustments are real and take place up-stream in farm supplies and down-stream to food processors and retailers. They invariably reduce the longer-term impact of the policy changes as farmers change their input and output mix and are induced to improve their productivity. Second, it is also the case that a significant proportion of farm businesses have diversified and have other income streams. The effects of Brexit on these activities has not been taken into account. Some of these diversification activities such as a move into on-line direct marketing have been boosted by the Coronavirus pandemic. Others, for example hospitality, events (weddings) and accommodation, have been severely stunted. It is a complex picture, but it illustrates that changes in the economic performance of strictly farming activities will have a lower impact in highly diversified rural businesses. A third factor which will influence the economic effects in reality are wider macroeconomic changes, the most important of which is any change in exchange rates. Brexit has already caused a lower pound than prevailing before the referendum and there has been some further slippage in autumn 2020 as the prospect of no trade deal heightened. As the UK runs a general trade deficit with the EU (not just an agri-food trade deficit) a lower exchange rate will create a further inflationary impact including on food prices.

2.5 Longer run effects, standards and regulatory alignment

Turning to the longer run effects of future trade agreements, farmers' organisations have indicated concerns that their sector might be 'sacrificed' in trade negotiations. These fears are well-founded because the agricultural sector is one of the most heavily protected sectors in the economy. For nearly half a century since the UK joined the EC in 1973 agriculture has been protected in three ways. First, by high tariffs on imports under the EU Common External Tariff, second, by non-tariff barriers which restrict certain imports and third, by generous support under the CAP (which is promised to continue in the UK in one form or another until at least 2024).

²⁸ Agra CEAS Consulting considered second order impacts qualitatively in their research reported to the AHDB.



The average applied tariffs on agri-food products (under the EU CET) is currently about 14% compared to the economy-wide average of 4%²⁹. The sectors with highest average tariffs are dairy (35%), sugar and confection (28%), animals and meat (18%) and cereals and cereal preparations (17%). These are not much changed under the UK global tariff.

The purpose of trade negotiations is to reduce barriers to the exports of each participant. This is expected to produce economic benefits in the form of lower consumer prices for previously protected products and more efficient resource allocation as more of (global) production arises in the countries with lowest production costs. As three of the countries the UK has targeted as priority for securing free trade agreements are significant agricultural exporters (the USA, Australia and New Zealand) farmers' concerns are understandable. Whilst consumers benefit from lower tariff and non-tariff protection, liberalisation exposes farmers to more competitive production from overseas.

Politically, it is not a strong argument simply to argue for protection because local production cannot compete with more efficient, lower cost producers abroad. Farmers' leaders have therefore long learned to find broader arguments which can command wider support. For many years under the Common Agricultural Policy the argument has been marshalled by farmers organisations that the EU has higher social, environmental and animal welfare standards than other countries and these justify the protection the sector enjoys. The evidence basis for this claim is weak. All countries have regulations for these issues. The EU claims of systematically higher standards have never been subject to robust detailed analysis product by product. It has certainly not been demonstrated that observed differences in standards justify the scale (and distribution) of farm support in the EU. It should also be noted that EU's commercial food importers, processors and retailers claim that produce sourced outside the EU matches the required EU standards. With so many products and standards, this is a complex area in which to tie down the truth.

The current debate on the UK's FTAs and food and agriculture, has not centred around efficiency and food prices. It has focussed on food standards and food security. Each of the issues, efficiency, regulatory standards, and food security are multi-faceted and complex. They are at the heart of the current debate on the food system and will be taken up in following chapters.

Meanwhile in the current post-Brexit debate the political priority given to securing an FTA with the USA very quickly became associated with two specific issues of food production standards: hormone treated beef and chlorinated chicken (let's call them HB&CC). Looking at these serves to illustrate the complexities of dealing with differing production standards in international trade. American production of HB&CC are taken in most UK discourse as self-evidently bad things epitomising low standards associated with US food exports leading to concerns about consumer health and animal welfare. Genetically modified soy and corn

²⁹ Matthews A (2020) The protective effect of EU agricultural tariffs. This is a thorough and clearly explained review of the complexities of judging the scale of EU protection of its agrifood sector. The headline is that the EU applied tariffs "keep agricultural imports between 13-14% below their predicted level in the absence of tariffs. EU agricultural imports might be around €20 billion higher if tariffs were eliminated. This is a lower bound estimate as some sectors (such as Animal products and Beverages) had to be omitted due to difficulties in obtaining statistically significant results. The results show that the sectors where import protection has the largest impact include processed foods, tropical products, fruits and vegetables and tobacco. These are not usually the sectors that attract most attention in debates on agricultural trade liberalisation". <http://capreform.eu/the-protective-effect-of-eu-agricultural-tariffs/>



products are not far behind in the things to watch out for. The NFU raised food standards as a prime lobbying objective and sought to insert clauses to protect UK food standards into law. They proposed amendments to get this into the Agriculture Bill and have successfully raised the profile of this matter by initiating the following petition.

NFU petition on Food Standards

I want the food I eat to be produced to world leading standards.

Our Government should ensure that all food eaten in the UK – whether in our homes, schools, hospitals, restaurants or from shops – is produced in a way that matches the high standards of production expected of UK farmers. Covid-19 has highlighted the importance of food security and traceability.

I believe the UK Government should seize the opportunities of 'Global Britain' to promote sustainable models of production and consumption across the world.

Farming throughout the UK has high standards of safety and welfare with an ambition to be net zero in greenhouse gas emissions by 2040. There are very strict controls on farming methods allowed in the UK and I expect the same of all food which is imported here so the food I eat is as safe, traceable and produced to high welfare and environmental standards.

Before the UK begins to negotiate trade deals with countries around the world, I call on the UK Government to put into law rules that prevent food being imported to the UK which is produced in ways that would be illegal here.

By 10 September, the petition had received nearly 1,050,000 signatures by mid-October. However, the Government resisted amendments to put this issue into law. Their argument is that it is unnecessary. They say that for the totemic issues of HB&CC, imports of both of these are currently prohibited under EU regulations. These regulations are now UK law as a result of the 2018 EU (Withdrawal) Act. Therefore, unless and until these regulations are amended through a Parliamentary process, they remain UK law so such products cannot be imported. Government ministers have repeatedly said in public, and in Parliament – and indeed in the negotiating mandates for FTAs that “Any agreement will ensure high standards and protections for consumers and workers, and will not compromise on our high environmental protection, animal welfare and food standards.³⁰”. There are no proposals to change the regulations banning these two products. In addition, to head-off the concerns about dilution of standards the Government created a Trade and Agriculture Commission. Its objectives are:

“to bring together stakeholders across the industry, calling on their expertise to advise on:

- *Trade policies the Government should adopt to secure opportunities for UK farmers, while ensuring the sector remains competitive and that animal welfare and environmental standards in food production are not undermined.*
- *Advancing and protecting British consumer interests and those of developing countries.*
- *How the UK engages the WTO to build a coalition that helps advance higher animal welfare standards across the world.*
- *Developing trade policy that identifies and opens up new export opportunities for the UK agricultural industry – in particular for SMEs – and that benefits the UK economy as a whole³¹”.*

³⁰ Department for International Trade (2020) UK – US Free Trade Agreement, Introduction, p5.

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/869592/UK_US_FTA_negotiations.pdf

³¹ Department for International Trade 24 July 2020

<https://www.gov.uk/government/news/truss-formally-launches-trade-and-agriculture-commission>



It is chaired by Tim Smith a former head of the Food Standards Authority and has fourteen other members from the farming and food industries. However, it is a short-lived body as the terms of reference require it “to produce an advisory report at the end of its six months’ work”. It is not clear if the sensitive FTA’s will be nearing conclusion within this period. This Commission is an acknowledgement of the ‘pragmatic proposals’ in Dimbleby’s First Stage Report on a National Food Strategy published in July 2020³², but falls short of his suggestion:

“The Government should give itself a statutory duty to commission an independent report on all proposed trade agreements, assessing their impact on: economic productivity; food safety and public health; the environment and climate change; society and labour; human rights; and animal welfare. This report would be presented alongside a Government response when any final trade treaty is laid before Parliament. Sufficient time must be guaranteed for the discussion of these documents in the House of Commons, the House of Lords, and by the relevant select committees.”

2.5.1 The totemic cases: hormone treated beef and chlorinated chicken.

The **hormone treated beef** issue is a long-running dispute in international trade going back to the early 1980s. A recent US Congressional committee review³³ of the issue summarises the dispute as seen from the other side of the Atlantic and the italicised phrases below come from this report. The EU ban was initiated on human health protection grounds, and the US side of the dispute claims that the scientific evidence does not support this action. The case has been through a series of WTO dispute consultations, settlement panels, arbitration proceedings, and formal appeals. The Beef Hormone ban was found to have violated a number of SPS³⁴ provisions and the EU was invited to bring its directives into conformity which it did not do. As a result, compensatory measures were allowed and introduced by the US (e.g. import duties on Roquefort cheese). The EU formally complained about these measures. Neither side has emerged clear victor in the dispute³⁵. In October 2008, the WTO issued a mixed ruling allowing the United States to continue its trade sanctions but allowing the EU to maintain its ban. Following the drawing up of a memorandum of understanding in 2009 the EU has granted market access to U.S. exports of beef raised without the use of growth promotants, and the United States has suspended higher duties for imported EU products listed under the dispute. The EU has now accepted a 45,000 tonne Tariff Free Quota for imports of beef and during 2019 reached an agreement in principle with the United States and other substantial supplying countries that 35,000 tonnes of this quota will be allocated to the U.S., phased over a 7 years period, with the remaining amount left available for all other exporters. It is hoped this is the end of the dispute between the EU and the US. However, now the UK shares of these quotas will have to be agreed.

³² Dimbleby H (2020) National Food Strategy Part One. This is discussed in greater detail in section 3.5 below.

³³ Renee Johnson (2015) The U.S.-EU Beef Hormone Dispute, Congressional Research Service 7-5700 www.crs.gov/R40449

³⁴ See below for an explanation of WTO’s Sanitary and PhytoSanitary (SPS) rules.

³⁵ Trade in beef was further disturbed and complicated by a US ban on British beef following the BSE crisis in the 1990s



Chlorine treated chicken

This dispute has been running since the late 1990s³⁶. It is the practice in the US to process chicken with various chemical 'pathogen reduction treatments' to reduce microbes³⁷ on the meat. Since 1997 the EU has prohibited the import of poultry treated with any substance other than cold air or water unless that substance has been approved. The US complaint is that the EC has not made available the procedures for obtaining approval of a substance. In 2002 the US requested approval for four substances, but none have been approved, they have all been rejected for approval. No evidence has been offered for risks to health³⁸. The US claims that the EU measures are inconsistent with their WTO obligations and requested a panel on October 2009. This was established later that year but has made no progress.

The chlorinated chicken case in particular provides an example of the difficulty of using trade policy to deal with production methods or processes as opposed to the product itself. The concerns about US poultry production and processing are that the chlorine washes are to compensate for what is alleged to be poor hygiene behaviour on farm and in the poultry processing and distribution supply chain. Understandable public concerns about these issues morphs into concerns about animal welfare for caged poultry, their handling, transport and slaughter and also about the welfare of meat processing workers as well as hygienic practices in these facilities. There are certainly real issues about aspects of the meat industry and its practices. However, such concerns do not only arise in the USA. Investigative journalists and NGOs periodically uncover animal welfare standards and meat handling and hygiene practices which are well outside acceptable standards – and not just in the USA. This surfaced in the USA, but it also emerged in summer 2020 in the UK (Anglesey) and in Germany and the Netherlands following the detection of concentration of Covid19 infections amongst meat processing staff³⁹. Because of the nature of their work, meat processing plants may be intrinsically vulnerable to viral spread. Compounding this, meat processing in many countries relies on migrant labour under employment and social conditions which raise concern. Using trade policy to deal with these social, animal welfare, and meat hygiene matters is quite likely to lead to disputes.

The HB&CC examples serve to make several important points. First, any trade restrictions on grounds of product standards have to be pursued specific product by product and specific concern by concern. It therefore serves little purpose talking in general terms about 'high food standards'. Second, trade restrictions can only be imposed in a non-discriminatory way and on the basis of independently assessed, sound scientific evidence of harm using internationally agreed criteria and protocols for demonstrating such harm. Third, it is particularly difficult to attempt to ban products on the basis of the way they are produced as opposed to the intrinsic properties of the product itself. This is explained further below. Fourth, dispute settlement in these matters is an extremely technical and slow process drawing criticism from most participants. To make matters more difficult the WTO dispute settlement process is currently in deep trouble following the US decision to veto the appointment of new judges to the WTO Appellate Body which adjudicates contested rulings over disputes between member countries.

³⁶ This account is based on the WTO's current status of dispute DS389, European Communities – certain measures affecting poultry meat from the US. https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds389_e.htm

³⁷ Such as salmonella and campylobacter commonly encountered in poultry production the world over.

³⁸ Indeed the EU Food Safety Authority (EFSA) has found that "chemical substance in poultry are unlikely to pose an immediate or acute health risk for consumers".

³⁹ A news report (26/6/20) concerning the EU from Euractiv was <https://www.euractiv.com/section/agriculture-food/news/working-conditions-in-meat-processing-plants-make-them-hotbed-for-covid-19/>. A report by FAIRR a global investor network supported by institutional investors reported that meat, fish and dairy companies are a pandemic risk. This is due to the nature of their work as well as worker status and treatment. <https://www.euractiv.com/section/agriculture-food/news/covid-19-could-be-straw-that-breaks-meat-industrys-back-says-new-report/>



2.5.2 Dealing with product standards in the WTO system.

It is not surprising that core WTO principles behind freeing trade in goods in a non-discriminatory way ⁴⁰, minimising tariffs and non-tariff barriers, and avoiding quantitative restrictions and subsidies, should focus on products themselves, on their intrinsic character and properties. This is encapsulated in the idea of 'like products'. Under WTO case law four criteria are used to determine whether products are "like". These are: (i) the physical properties of the products; (ii) the extent to which the products are capable of serving the same or similar end-uses; (iii) the extent to which consumers perceive and treat the products as alternative means of performing particular functions in order to satisfy a particular want or demand; and (iv) the international classification of the products for tariff purposes.

In the case that a product has been produced in a way which risks undesirable health impacts for consumers it may be claimed that this product is unlike others not produced this way and restrictions can be applied to its import. Such cases should be capable of resolution by appealing to robust scientific evidence, and this should be capable of being done in reasonable time. The beef hormone and chlorinated chicken cases illustrate that this seemingly logical approach does not always work. Protagonists are capable of dragging out the procedures over decades.

Externalities such as environmental side effects of farm production systems and animal welfare effects of livestock production systems will generally not show up in measurable changes in the products themselves. There are two reasons for being concerned about this. First, citizens may care a great deal about such considerations and wish to discourage certain practices by avoiding products produced using them. Second production under regulations which bans certain processes or practices may be higher cost and therefore uncompetitive with imported produce not respecting such standards. Can these considerations be built into trade and trade agreements? The WTO says they can. It is not simple however and will always have to be considered one product and process at a time. The next five paragraphs summarise the relevant technical considerations involved based on WTO documents ⁴¹.

WTO members are able to adopt trade-related measures aimed at protecting the environment and public health, subject to certain specified conditions. The measures taken to achieve environmental protection goals may, by their very nature restrict trade and thereby impact on the WTO rights of other members. They may violate basic trade rules, such as the non-discrimination obligation and the prohibition of quantitative restrictions. But it has been accepted through some key cases that exceptions to such rules can be made to achieve legitimate policy objectives such as protecting human, animal or plant life and health,

⁴⁰ Non-discrimination is the foundation first Article of the General Agreement on Tariffs and Trade, it is also known as Most Favoured Nation (MFN) treatment. It means that under the WTO agreements, countries cannot normally discriminate between their trading partners. If one country is granted a special favour (such as a lower customs duty rate for one of their products) then the same treatment has to be offered to all other WTO members.

⁴¹ The next two paragraphs are based on the WTO Rules and environmental policy, an introduction.
https://www.wto.org/english/tratop_e/envir_e/envt_rules_intro_e.htm



and natural resources⁴². In such cases the measures must comply with GATT rules, or fall under the exceptions to these rules and their application should not reveal a protectionist intent.

Article XX of the GATT on General Exceptions lays out the specific instances in which WTO members may be exempt from GATT rules. Two exceptions are of particular relevance to environmental and human health protection: Articles XX(b) and (g). These allow WTO members to justify GATT-inconsistent measures if these are either necessary to protect human, animal or plant life or health, or if the measures relate to the conservation of exhaustible natural resources, respectively. In addition, the introductory paragraph of Article XX (its "chapeau") has been designed to prevent the misuse of trade-related measures. This says, an environmental measure may not be "applied in a manner which would constitute a means of arbitrary or unjustifiable discrimination between countries where the same conditions prevail, or a disguised restriction on international trade."

There are four other aspects of WTO rules relevant to the interaction between environmental and public health measures and trade. First the Agreement on Technical Barriers to Trade (TBT). This seeks to ensure that product specifications, whether mandatory or voluntary (known as technical regulations and standards), as well as procedures to assess compliance with those specifications do not create unnecessary obstacles to trade. The Agreement recognizes countries' rights to adopt such measures to the extent they consider appropriate — for example, to protect human, animal or plant life or health, or the environment. However, in doing so they must be non-discriminatory to avoid unnecessary obstacles to trade; specifications and procedures should be harmonised with international standards as far as possible; and there should be transparency by notifying them to WTO.

Second the Agreement on Sanitary and Phytosanitary Measures (SPS) deals with food safety, and human, animal and plant health and safety regulations. This recognizes members' rights to adopt SPS measures but stipulates that they must be based on a risk assessment, should not create unnecessary obstacles to trade (should be applied only to the extent necessary to protect human, animal or plant life or health), and should not arbitrarily or unjustifiably discriminate between members where similar conditions prevail. The Agreement encourages members to adapt their SPS measures to the areas (regions, countries or parts of countries) that supply their imports. The SPS Agreement complements the Technical Barriers to Trade Agreement. It allows members to adopt SPS measures for environmental purposes, but subject to such requirements as risk assessment, non-discrimination and transparency.

Third is the application of rules to non-product related processes (NPRP). Labels such as "free-range," "organic," or "fair trade," denote a quality in the product that generally have no tangible effects on the labelled products. Whether or not such labels regarding non-product related process ("NPRP") can be termed 'technical regulations' is the subject of controversy. Technical regulations apply to "product characteristics or their related process and production methods", implying that this does not extend to NPRPs. However, other parts of the rules omit the word "related", suggesting that technical regulations may apply to labelling. This has not been clarified although in one of the key cases the Tuna-Dolphin case, it was held in that case that the 'dolphin-safe' labelling was a technical regulation. So it could be assumed that labelling of NPRP products can fall under the scope of technical regulations.

⁴² The key exceptions which laid the foundations of this case law are: Brazil-retreaded tyres, EU-asbestos, US-gasoline and US - shrimp



Fourth, is the Agreement on Agriculture. This was adopted during the 1986–94 Uruguay Round of GATT negotiations. It was the culmination of two decades of discussion of how to bring agricultural trade into the rules and disciplines of the GATT/WTO. Until this agreement agricultural trade was subject to widespread use of highly trade-distorting subsidies and non-tariff barriers, not least in the European Union. The Agreement on Agriculture sought to reform trade in agricultural products and provide a basis for market-oriented policies by converting non-tariff measures into tariffs, abolishing export subsidies, and defining rules and reduction commitments for domestic supports. The preamble to the agreement referred to members' commitment to reform agriculture in a manner that protects the environment. Under the agreement, domestic support measures with minimal impact on trade (known as "green box" policies) are allowed and are excluded from reduction commitments — they are listed in Annex 2 of the Agreement. Among them are expenditures under environmental programmes, provided that they meet certain conditions. The exemption was intended to enable governments to capture "positive environmental externalities".

What has all this got to do with Brexit and future trade deals? The answer is everything. By leaving the EU the UK signalled its desire to agree its own trade terms with the rest of the world by negotiating trade deals with all its major trading partners including the EU. It also wants to be an active, constructive member of the WTO as the rules and disciplines of trade adapt – for example to climate change and the growing importance of environmental protection. It will achieve these goals only by following the rules and procedures of the WTO itself. It is therefore necessary that stakeholders are well-informed about what is and is not allowable on domestic supports, payments to farmers, and trade measures to deal with products produced abroad using methods which are unacceptable or prohibited in the UK.

The choices the UK has to defend what it believes to be its high production and welfare standards are analysed by Wilkinson⁴³. His advice is first to be very clear on the nature of the problem with the imported product. If it is a health risk then evidence has to be compiled to substantiate this. If the issue is legitimate consumer concern about production methods Wilkinson's advice is first to look for a labelling or market segmentation solution engaging the food industry in sourcing and promoting only raw materials produced to the UK equivalent standards. If evidence can be found that animal welfare measures are necessary to protect animal or even human health (e.g. by reduced antibiotic use) then the key is to ensure this is objective and published. Other approaches such as seeking differential or conditional tariffs, higher for the non-approved product, lower for the product produced in the acceptable way are only likely to work if it can convincingly be demonstrated that the products are unlike. Such criteria will have to be clearly and objectively specified and the measures applied in a non-discriminatory way and which also allows competitor's products to be assessed to see if they meet the criteria.

To summarise this issue of standards, it is delusional to think that the UK is going to devise a clever way of imposing generalised import restrictions on produce it considers have been produced with lower production or processing standards. There may be some specific products for which this can and will be done, but, like hormone treated beef and chlorine washed chicken, they will be exceptions.

⁴³ Wilkinson Derrick (2020) Defending British farming Standards in post Brexit Negotiations, EuroChoices, 19(1) 4-9.



The lessons are clear. First, if UK standards really are higher and treasured by consumers then document how and communicate this as loudly and clearly as possible to consumers through food and ingredient labelling, and by insisting the food industry source only the higher quality products. Second, as far as is possible without compromising the very quality standards upheld, match the productivity of the competition.

The section concludes with a few thoughts on regulatory reform. It was a major plank of the case for Brexit that EU regulation is burdensome and UK productivity could be greatly assisted by being freed of EU red tape. For food and agriculture, the debate on regulations and standards has demonstrated some contradictions. The preponderant arguments have been that the UK has higher standards for environment, animal and plant health and welfare, food hygiene and worker standards than in exporting countries⁴⁴. The primary concern is how to restrict imported products which are produced to lower standards under-cutting the UK market. There is also an ambition to raise animal welfare standards. Yet if the environmental performance of UK agriculture is so high why is there so much concern (and evidence) of pollution of soils, water, air and atmosphere, and so much loss of biodiversity and degradation of ecosystem functioning? And how is it that so much will have to be spent to pay farmers to restore natural capital? On other occasions both Government spokesmen and farmers' representatives can be found complaining of over-zealous EU regulation. Three such examples are the EU Nitrates Directive, legislation on pesticide approval, and the treatment of modern biotechnology in plant breeding (genetic modification, and gene editing). None of these are on the table for legislative reform at present. There is enough legislation to cope with already. They are likely to be high in the list of candidates for debate and potential reform in coming years. Each will be hotly contested in the UK, and all three, if changed (relaxed) significantly, will then pose serious trade issues with the EU.

2.6 Summary on Brexit

The UK has left the political structures of the European Union signing an international agreement to do so. Great Britain will leave the Customs Union and Single Market on 31/12/20⁴⁵. At this point the EU Common External Tariff will be replaced by the UK Global Tariff on trade with countries with whom the UK has not struck bespoke Free Trade Agreements by that time⁴⁶. It is further expected that the UK will continue to apply EU preferences on trade with the many countries with which the EU has preferential trade agreements. Until it is changed, most EU non-trade regulation will continue to apply in the UK after 1/1/21. Apart from the new UK or English agricultural, environmental and migration policies in all other areas EU Regulations and Directives will continue to apply into the future until new UK legislative action is taken⁴⁷.

As of Autumn 2020 the UK is still in the EU economic structures so there have been limited economic impacts to date. The pound has been about 11%⁴⁸ lower since the referendum making UK imports dearer but exports more competitive. The public finances have borne the considerable preparatory costs of Brexit.

⁴⁴ Including in the EU, see Dimbleby's Part 1 report Table 4.1 which shows examples of divergent standards even in the EU single market. The next two paragraphs are based on the WTO Rules and environmental policy, an introduction.

⁴⁵ Leaving N Ireland in at least some provisions of the Customs Union in order to avoid a hard border in the island of Ireland as per the N Ireland Protocol. At least until the publication of the UK internal market Bill on 10 September this was thought to be the case.

⁴⁶ See footnote 13 for the FTAs achieved by autumn 2020.

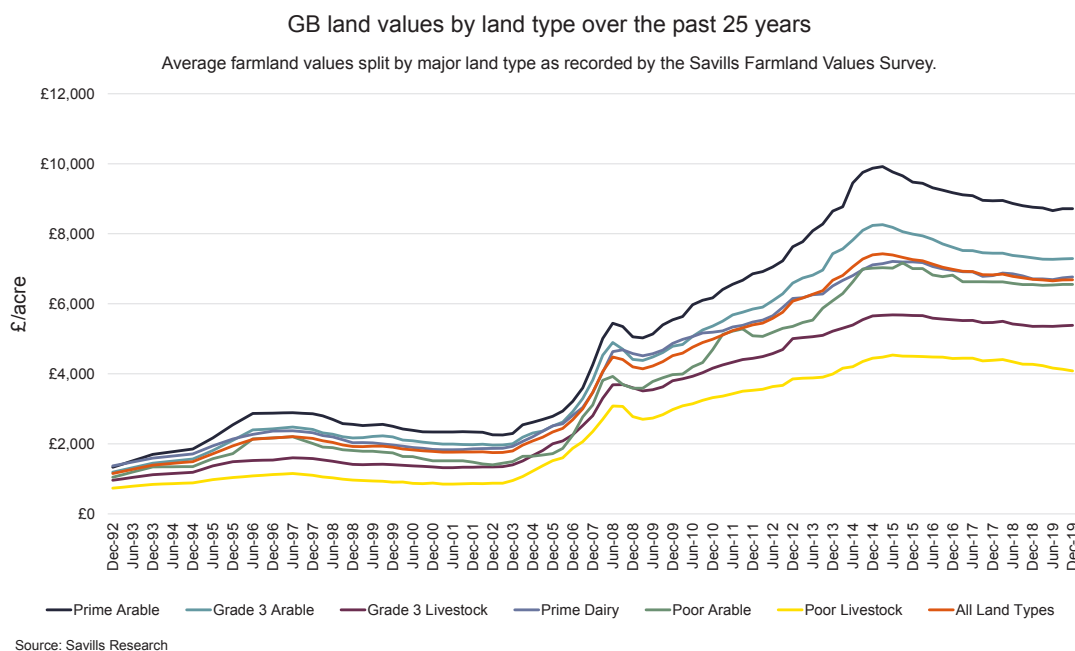
⁴⁷ This could be by primary legislation which allows full Parliamentary debate following public consultation, but under the European Union (Withdrawal) Act there is far wider provision for changes in what were EU regulations to be made using statutory Instruments which involve far less Parliamentary scrutiny and consultation.

⁴⁸ Average of 1.12 €/£ compared to 1.25 €/£ taking four years either side of the referendum.



They have yet to bear the withdrawal bill⁴⁹ and further costs of customs arrangements at ports. An unquantifiable cost has been paid in the form of postponed or cancelled inward investments due to the political turmoil of the four-year exit process, but this is offset by some inward investment resulting from the Brexit decision.

For the land-based sectors two tangible impacts to date have been the end to the quarter century trend of rising agricultural land prices (see below), and a jolt to the dependence on EU labour in agriculture, food processing and hospitality. For the most part, the uncertainties and questions raised in the 2016 WCF report on implications of Brexit remain. We now know broadly how the support to farming will be transformed in the next seven years. We do not know the details, nor how much public financial support will remain. It seems likely it will be less (after 2024) and what remains will mostly have to be justified as payment for public environmental services. We do not yet know the extent of potential new income streams coming into rural businesses for carbon and biodiversity management. We know there are ambitions to raise animal welfare and environmental standards.



Farmers have had four years to contemplate how they will adapt their farming business and other enterprises as CAP payments are phased down and out. Maybe it will take the reality of the first cuts in 2021 to shake those who have not yet planned for this eventuality. There will be additional friction compared to now in trade with our nearest and largest trading partner the EU, but the longer run terms of trade with the EU and with major competitors further afield remain to be discovered. Just as in 2016 the possibilities range from little detectable effect on agricultural markets, to a significant opening of the market to agricultural exporters who have clear price advantage over the UK production⁵⁰. Whichever is the case, relying on discovering domestic laws which bar the imports of produce not produced under identical regulatory standards in the UK is a pipe dream.

⁴⁹ The final bill the 'Financial Settlement' agreed in the Withdrawal Agreement is estimated to be £33b most of which is paid in 2020-2023, but because as it will be paid over the period to 2064(!) the final amount paid will depend on changes in the exchange rate.
<https://commonslibrary.parliament.uk/research-briefings/cbp-8039/>

⁵⁰ This assessment refers to the market impacts of potential trade deals and does not purport to make any predictions about other market developments e.g. conditioned by the Covid19 pandemic or other large and extraordinary disturbances to markets.



We will have to rely on good marketing, labelling and ultimately British citizens' choices at supermarket check-outs and restaurants. This way we will discover the real extent of consumer preference for British standards.

3 Five reports on Food, Farming, Health and Environment

Chapter 2 reviewed the principal changes in progress defining the legislative framework within which agriculture will operate from 2021. The outcome of the Agriculture and Environment Bills and the trade deals under negotiation are the most important acts determining the conditions under which farms and the food system will operate in the coming years. Indeed, these large comprehensive Acts would usually be expected to define the legal framework for decades to come. For example, the last such big-picture Agriculture Act was in 1947. It therefore seems unlikely that further radical policy frameworks could be high in legislative priorities for a number of years, maybe even decades.

Yet in the last five years during the Brexit debate there has been considerable activity amongst academics, NGOs, Governmental organisations and think tanks exploring radical ideas for food system and land use policy. These have been part of and built upon general public awareness and societal debate about the climate and biodiversity crises. The public, in turn, seemed especially captivated and stimulated by the second round of Attenborough's Planet Earth and Blue Planet series in 2016 and 2017 respectively. The food system and land use in agriculture both here and abroad are generally accepted as important factors in these crises. Simultaneously, and closely linked to the undesirable climate and environmental impacts of human activity, there has been growing awareness of the damage to health and wellbeing caused by human diets and some agricultural practices such as the use of antibiotics in animal production⁵¹.

One outcome of these debates has been a series of high-level reports by experienced organisations and scientists proposing some strong changes in the operations of the UK food system and rural land use. Five such reports will be examined in turn.

3.1 Committee on Climate Change (CCC) – Land Use Report

The Committee on Climate Change is an independent, statutory body established under the Climate Change Act 2008. Its purpose is to advise the UK and devolved governments on emissions targets and to report to Parliament on progress made in reducing greenhouse gas emissions and preparing for, and adapting to, the impacts of climate change. The UK takes pride in being the first country to set up such a committee and to put climate targets into law backed-up by five yearly carbon budgets (of the total CO₂ equivalents which can be emitted). The UK also claims to be the first country to legislate for the target of Net Zero Greenhouse Gas Emissions by 2050.

⁵¹ This turns out not just to be a problem in animal production. There are also emerging signs that microbial resistance to human medicines is developing as a result of some fungicides used in agriculture. See Fisher M.C. et al (2018) Worldwide emergence of resistance to antifungal drugs challenges human health and food security. *Science* 360, 739-742.



The Committee published a comprehensive review of the climate impacts of agriculture and land use in 2018 ⁵². The following year it published its advice to Government to set the UK-wide Net Zero 2050 target for emissions covering all gases and all sectors ⁵³. This was quickly agreed by government and one of the last acts of the Theresa May Government in June 2019 was to enshrine this target in the Climate Change Act 2008 (2050 Target Amendment) Order 2019. The CCC has since published its ideas for how each sector can implement the Net Zero target and their suggested policies relating to agriculture and land use were published in January 2020 in a report: Land use policies for a Net Zero UK ⁵⁴.

It is important to understand the scope and logic behind these policy proposals. This is determined by the nature of the climate change interactions between food farming and wider land use and the way GHG accounting is done in the global commitments on climate (through the Intergovernmental Panel on Climate Change), as for example in the 2018 Paris Agreement. Agriculture itself is a small but significant emitter of GHG (45.6 MtCO₂e ⁵⁵ in 2017, which is 7% of total UK emissions). These emissions are mostly in the form of methane (CH₄) which mainly comes from enteric fermentation in ruminant livestock (38%) and nitrous oxide (N₂O) emissions from managed soils (52%) which is an inevitable part of the nitrogen cycle in the soil in crop production. Farming also directly emits carbon dioxide through the burning of fossil fuels used in transport, power, lighting, heating and cooling. It is acknowledged by the CCC that whilst the core non-CO₂ emissions can and must be reduced, they are probably impossible to eliminate. They are an intrinsic part of the biology/biochemistry of ruminant and crop farming. Even with serious and sustained efforts to reduce agricultural emissions, agriculture is expected to remain a net GHG emitter in 2050. On the other hand, certain farming and other land use activities have the capability of sequestering carbon – in soils and in biomass. These actions, in what is called the Land use, Land Use Change and Forestry (LULUCF) sector, can thus offset remaining emissions in 2050 from the ‘difficult’ sectors – agriculture (and aviation).

This logic dictates that for climate protection purposes agriculture and wider rural land use must be considered together. Based on their analysis of the relationships involved, the CCC suggested that actions are required under five distinct headings involving agriculture, LULUCF and food consumption. These are summarised below with an indication (in parentheses) of the relative contribution of each set of actions measured as the estimated savings in GHG by 2050 compared to business as usual.

- **Low-carbon farming practices** such as controlled release fertilisers, improving livestock health and slurry acidification to reduce emissions from soils, livestock breeding and feeding to inhibit CH₄, and manure management. (10 MtCO₂e)
- **Afforestation and agro-forestry.** Increasing UK forestry cover from 13% of UK land area to at least 17% by 2050 by planting around 30,000 hectares or more of broadleaf and conifer woodland each year. (34 MtCO₂e including the contribution of harvested materials and agroforestry)

⁵² Committee on Climate Change (2018) Land use: Reducing emissions and preparing for climate change.

⁵³ The detailed analysis of how this could be achieved sector by sector was published in May 2019 Net Zero Technical Report. The relevant sections for farming was chapter 7 Agriculture, land use, land use change and forestry.

⁵⁴ <https://www.theccc.org.uk/publication/land-use-policies-for-a-net-zero-uk/>

⁵⁵ Whilst carbon dioxide is the principal Greenhouse gas, methane, nitrous oxide (and others) are significant contributors to climate change, the effects of non-CO₂ gases are converting to CO₂-equivalents using global warming factors and the result then quoted in millions of tonnes of CO₂ equivalents, abbreviated to MtCO₂e.



- **Peatlands.** Restoring at least 50% of upland peat and 25% of lowland peat while allowing food production to continue on the most productive land (5 MtCO₂e).
- **Bioenergy crops.** Expanding the growing of perennial energy crops by around 23,000 hectares each year. (2 MtCO₂e emissions savings in the land sector plus an extra 11 MtCO₂e from the harvested biomass with Carbon Capture and Storage (CCS).
- **Reducing consumption of the most carbon-intensive foods** (i.e. beef, lamb and dairy) by at least 20% per person and reducing food waste by 20%. (7 MtCO₂e). These measures imply a shift towards current healthy eating guidelines and can drive sufficient release of land to support the necessary changes in tree planting, peat rewetting and bioenergy crops. Alongside expected population growth, they imply around a 10% reduction in cattle and sheep numbers by 2050 compared with 2017.

These suggestions were offered by the CCC as indicative of the mix and scale of the required actions from the land-based sectors. In practice some of these actions may turn out easier to deliver than others and the realised balance of these actions may turn out differently. However, a critical lesson from this analysis is that the climate challenge for food and agriculture requires action on all rural land management. This requires agriculture, forestry and bioenergy to be dealt with in an integrated way. Action on farming alone will not be sufficient. Another is that there has to be a significant diversion of agricultural land, to forestry, bioenergy crops and peat restoration, the CCC estimate this as 20% of the current agricultural area. Much, but not all, of this should come from grasslands especially extensive grazing lands. It is argued these are currently neither very profitable nor contributing much food.

Even integrated actions on wider land management are insufficient. The CCC suggest that to square a reduced agricultural area with feeding a still growing UK population without drawing in more food imports requires further action. One is to stimulate productivity improvement in agriculture. Defra constantly refers to data showing UK agricultural productivity has lagged that of other countries and that 'sustainable intensification' can simultaneously improve productivity and environmental performance. The other way to accommodate switching land from food production to carbon sequestration in forestry and rewetted peat is by constraining consumption. This can be argued on both environmental grounds for example cattle are the largest contributors both to nitrogen imbalances and GHG emissions, and on the grounds of diet, health and well-being⁵⁶. Hence the fifth component of the CCC advice for dietary change away from livestock products, and action on reducing food waste. The advice is also that early action is essential. It takes a long time for many of the suggested actions to take effect, especially afforestation and peat rewetting. Unless these are underway soon their contribution will not be sufficient to reach the 2050 Net Zero target.

⁵⁶ The most authoritative source cited on this is Food in The Anthropocene: the EAT-Lancet Commission on Healthy Diets From Sustainable Food Systems. https://eatforum.org/content/uploads/2019/07/EAT-Lancet_Commission_Summary_Report.pdf Its principal conclusion was that "Transformation to healthy diets by 2050 will require substantial dietary shifts. Global consumption of fruits, vegetables, nuts and legumes will have to double, and consumption of foods such as red meat and sugar will have to be reduced by more than 50%. A diet rich in plant-based foods and with fewer animal source foods confers both improved health and environmental benefits.



A wide range of 41 policy actions are suggested by the CCC to bring about these changes⁵⁷. These include: (i) stronger and better enforced **regulation** in a number of areas: NVZs, water and soil management, bans on peat burning & extraction, (ii) using **public funds** to incentivise non-carbon benefits of afforestation (e.g. for biodiversity and flood alleviation using ELMs and other mechanisms), (iii) assisting development of **private funds** e.g. from emitting sectors to fund carbon markets in afforestation, (iv) in some cases **mandating private owners to act**, e.g. water companies to restore peat land under their ownership. It is recognised that a different set of **consumer and food industry-facing policies** are required to induce the diet change and waste reduction targets. The Committee says that if softer measures prove insufficient to shift consumption behaviour then stronger pricing and regulation will have to be considered. Three flanking policy requirements to accompany the above policy changes are flagged. First, trade policy must protect the risk of carbon leakage from trade in agricultural products, i.e. some kind of **carbon border tax** may have to be considered. Second, agriculture would benefit from **R&D** assistance to improve its productivity. Third that It is important to establish a strong **monitoring, reporting and verification** system to verify that actions are taken to meet the Net Zero target.

The Government's formal response on the measures to bring about its new target of Net Zero 2050 is awaited. Because climate affects all sectors of society the response has to be across government involving most departments in a coordinated and coherent way. This is never easy and a minimal condition to bring it about is very strong and clear leadership from the top, for example by proclaiming climate as the No. 1 environmental priority. There are few signs that this is going to happen. Although a new Cabinet Committee on Climate Change to be chaired by the Prime Minister was set up in October 2019 the Government website reports no meetings or information about this committee. The CCC reports to Government through the Department of Business, Energy and Industrial Strategy (BEIS), the Department for the Environment (DEFRA) does not seem to signal climate protection as a priority. It is understandable that the Covid-19 pandemic and Brexit preparations are taking up most of the political bandwidth in autumn 2020. Perhaps the opportunity to correct this is in preparation for the UK-chaired COP-26 meeting in December 2021.

As far as the food and land use aspects are concerned, in principle, the Agriculture and Environment Bills between them provide the powers to devise many of the policy measures needed to deal with the first four headings of the CCC list. However, stimulating the creation of 'markets' to pay for carbon sequestration in forests and peat, activating a significant rise in bioenergy, promoting the required research for bioenergy carbon capture and storage as well as mitigating methane emissions in ruminants will require actions beyond those provided for in these two Bills. Actions on public food procurement, on the food industry and through education, welfare policies and health advice to bring about consumers dietary behaviour change and waste reduction all require cross government coordination. The very fact that so many levers have to be pulled to deal with the land-based actions for climate protection is substantially complicated by the devolution of powers. Climate and trade policy are UK powers whilst agriculture, environment and land use are devolved. It will require a strong will to cooperate to overcome these complications and drive coherent policy across the UK.

⁵⁷ Table 1 lists these 41 'Key recommendations to deliver net-zero on land' pp14-17 of the Land Use Policies for a Net Zero Agriculture, see fn 49.



3.2 Helm – Green and Prosperous land

Dieter Helm is Professor of Economic Policy at the University of Oxford and Fellow in Economics at New College, Oxford. He is the Independent Chair of the Natural Capital Committee and this concept informs Helm's approach to land and other natural resource management. That committee's website defines "Natural capital is our 'stock' of waters, land, air, species, minerals and oceans. This stock underpins our economy by producing value for people, both directly and indirectly. Goods provided by natural capital include clean air and water, food, energy, wildlife, recreation and protection from hazards." It goes on to assert that "Natural capital underpins all other types of capital – manufactured, human and social – and is the foundation on which our economy, society and prosperity is built".

Helm's book *Green and Prosperous Land*⁵⁸ has the sub-title "A blueprint for rescuing the British Countryside". This serves as an early warning that the author is excoriatingly critical of the job of looking after the countryside by those who have owned and farmed it in the post war era, hence it needs rescuing.

It is a powerfully argued, strongly worded, critique of the depletion of Britain's natural capital and a suggested suite of measures required to reverse this. There is no serious dispute that natural capital in the UK has been degraded seriously in the post-WWII era. This is well documented – though not systematically so in this book – as destruction of terrestrial and aquatic biodiversity, GHG emissions, air pollution by ammonia, water pollution, soil erosion, compaction and loss of organic matter. It is regrettable that Helm's depiction of this sets off with extravagant language referring for example to the "agricultural battle with nature – to destroy everything that competes with crops and livestock" (p4). It can only be inflammatory to say "We go on tipping more and more fertilisers, pesticides and herbicides into our water courses" (p43) when this is simply not true⁵⁹. The story of state and private involvement in the innovations in plant and animal science and the resulting intensification of agriculture in the decades following the WWII food shortages is complex. It is counterproductive to damn farmers alone for developments which were driven through state-funded as well as private research by the very understandable needs to increase food production and transform farming into a modern business sector.

Accepting that we are where we are, the contribution of the book is that Helm is ultimately optimistic that with the correct market and policy signals in place then the destructive negative externalities of food production can be avoided to everyone's benefit. The book spells out with great clarity the policies needed for restoring rivers, for a green agriculture, the uplands, coast and nature in cities. The measures needed are spelled out in chapters called: public goods, paying for pollution, a nature fund, and the Plan. There is a chapter specifically on climate change and the Net Zero emissions target.

There is little doubt that Helm was highly influential in persuading the then Secretary of State at DEFRA, Michael Gove, to adopt the public goods narrative for the Agriculture Bill. The groundwork for this has been laid for a great many years in the academic literature, in the general discourse and in 25 years-worth of agri-environment schemes. The industry was well primed for this concept. Helm insists on a strict interpretation of public goods and rightly warns against allowing the concept to slip into payment for vaguely defined public interest. He flags that the payment rates for public goods should be based on their production costs

⁵⁸ Helm Dieter (2019) *Green and Prosperous Land*, William Collins, London, 346pp.

⁵⁹ The use of mineral fertilisers and plant Protection Products in the UK has declined from their heights in the 1990s See Buckwell et al (2020) *Crop protection and the EU food system – where are they going?*, RISE Foundation Brussels. (p21 – Total quantity of PPP use in GB fell 51% from 1991 to date.)



and not difficult-to-arrive-at valuations. He points out that deciding the right total sum to allocate for the restoration of natural capital is not easily derived from cost benefit analysis. "This is at best only a partial answer because it is marginal whereas the environment comes in systems" (p194). His advice is therefore to define the ecosystems, the landscapes, and catchments with an assessment of their state of degradation and what is required to restore them and then allocate the total sum available between these systems. He leaves it unanswered how to arrive at the total sum. This is unavoidably a political judgement, and trial and error can help indicate whether the funds are scarce and natural capital is being restored but more remains to be done, or the opposite.

The book makes the case for polluter pays thus: the cost of fertilisers should be "the price charged by the manufacturer plus the delivery cost to the farm plus the cost of applying it plus the costs to the rivers of the run-off (and the subsequent eutrophication and algal blooms and loss of oxygen in the water) plus the costs of the carbon emissions in the production of the fertilisers. Extend this to pesticides and the economics of agriculture would be transformed" (p196). Yes, indeed they would. To Helm, it is easy. However, the account then gets confused. At first it is suggested the additional costs of these inputs would be "passed through into food" and farmers "would be no worse off". Then it is suggested that prices of alternative systems "might fall as the market expanded and less polluting farming methods were able to gain advantages of bigger market share". But there again, "even if prices go up, this is still the right thing to do. It is us consumers who buy these pollution-inducing agricultural products and are therefore really the polluters who should ultimately pay for the damage our consumption habits cause". Which way is he trying to argue? The link between inducing food system change, food prices and trade will be taken up later.

The book feels on firmer ground as it explains that the optimal pollution level is rarely zero, that there is no exact science in determining the right pollution tax level and that an ideal environmental charge is one which abolishes itself. The polluter pays chapter also dwells on the issue of natural capital destruction by development for housing, commerce and infrastructure by sweeping these up in proposals for net environmental gain. This is the principle that as any development is likely to destroy natural capital the developer should be required to compensate for this by paying for land elsewhere to be managed to ensure net environmental gain. Helm is clear that the uncertainties and asymmetries surrounding the environmental losses and the achievement and maintenance of the gain are such that there should be a large precautionary margin built in to ensure a net gain not just neutrality. There is a useful, but inconclusive, discussion of how to set the baseline against which to assess the losses.

The taxes and subsidies section closes with a discussion of the subsidies under the CAP and three subsidies to farmers through the tax system: inheritance tax relief, lower fuel duties on red diesel and exemption for business rates. All these are seen as unjustified, potentially environmentally harmful, subsidies which of course should go. The discussion of the CAP is marred by the inaccuracy in asserting that basic payments are paid for owning land, the reality is that it is levied on the party which has the land at their disposal (the tenant in the case of rented land). More serious is the unthinking repetition of the undisputed fact that payments scaled by land area accrue disproportionately to the larger land holdings, without recognising that a broadly identical distribution of payments will result from payments for land-based public goods. The larger land managers are likely to provide more, and be paid more, for such goods.



Helm argues for the creation of a nature fund to foster more comprehensive and coherent restoration and maintenance of natural capital. He suggests this could be created by pooling the already existing expenditures on agricultural subsidies, plus expenditures on flood defence, water companies and nature protection activities of Defra and its agencies, supplementing these with the revenues from his proposed pollution taxes (including but not only on fertilisers, pesticides and carbon) and from the environmental net gain charges to developers. He also has ideas for charges on those depleting natural capital assets (oil, gas and minerals). The idea for a nature fund is built on the Norwegian sovereign wealth fund. This is accumulated from oil and gas revenues and used for the benefit of future generations. The suggested objective of the nature fund is to provide the basis for achieving the aim of the 25 Year Environment Plan 'to leave the natural environment in a better state for future generations'. Helm is all too aware of the practical difficulties of ensuring worthwhile expenditures from such a fund. He stresses the independence of the fund managers working to pre-agreed plan of what has to be delivered with robust assessment. He warns of the danger of 'capture' by interest groups – he especially singles out farmers and the NFU, but also 'key individuals' with their "particular ideas like rewilding and technological fixes" (p261).

The final chapter of Helm's blueprint discusses his idea for a (national nature) plan. He is clear on the need for the plan to work from a robust accounting base on the state of all natural assets (rivers, farmland, soils, uplands coasts). He suggests it will need to establish a risk register to ensure these assets are maintained to guide resource allocation from the nature fund, perhaps under the 10 goals spelled out in the 25 YEP. He is also realistic about the many practical challenges of defining and operating such as fund in a coherent and integrated way at different scales – even with the benefits of new technologies. However, Helm is less clear on the institutional and operational details of the plan. Where and how to embed it ⁶⁰, how to ensure its independent ability to work from scientific evidence, and especially his *bête noire*, how to keep vested interests at bay? He wants a "proper Environment Protection Agency charged with regulating, licensing, prosecuting and enforcing across public and private sectors with a broader domain and more legal teeth than the Office for Environmental Protection." (p281). But he is pessimistic about achieving this. Indeed, towards the end of his chapter on the Plan, he sounds a depressing note that "The result is likely to be a muddle and a muddle that blurs institutional responsibilities and loses the integrated approach. It does not have to be like this but probably will be (p282)." Perhaps realistic, but sad.

In short Helm's prescription for a green and prosperous land is strong on achieving the greenery – with a combination of the elements: public goods, pollution taxes, net environmental gain, a nature fund managed by a strong, independent body working to a long-term national nature plan. This might well contribute to broadly defined national prosperity, but the impact on the prosperity of the land management sector itself is not investigated. The public goods and environmental net gain ideas are explicitly part of the agriculture and environment Bills. The extent to which the other ideas will be picked up is not yet clear.

3.3 Lang – Feeding Britain

Tim Lang is Professor of Food Policy at City University London and has been a prominent commentator on food and agricultural matters for many years. His book *Feeding Britain* also has a sub-title: *Our food problems and how to fix them* ⁶¹. The bulk of the book (420 of 469 pages) is taken up defining the problems.

⁶⁰ Surprisingly he did not refer to the challenge of dealing with the challenge that environmental management is a devolved area in UK administration and politics.

⁶¹ Lang, Tim (2020) *Feeding Britain. Our food problems and how to fix them*, Pelican Books, London, 567pp.



This discusses a wide range of issues about UK farm and food industry structures and performance and its environmental impacts. What distinguishes the book from many other critiques of the food system is that it insists on a much broader consideration by introducing food cultures, diets, health and well-being as well as the issue of social inequalities and food poverty. Lang strongly believes that the UK food system is not secure. Although he cannot resist analysing this superficially in terms of the degree of self-supply of agricultural products, Lang's much more substantial point is that Britain's current food system is fundamentally insecure because it is ecologically and socially unsustainable. Apart from the pollution and degradation of natural capital our food system and society show a significant incidence of poor dietary habits leading to widespread chronic ill health, plus food poverty. Lang suggests we have an insufficiently regulated food industry and inadequate governance to better guide resource use and food consumption. He repeatedly refers to many of the undesirable aspects of food system are subject to some kind of 'lock-in', implying that only a radical shake-up can bring about change.

Lang's solution is entitled 'accelerating the great food transformation'⁶². This first requires a better long-term food policy including a land strategy in which "human and ecosystem health take a central role in food and land planning" (p435). What this means and how it is to be done are not very clearly answered. A 'multi-criteria approach' with six headings is proposed to define a sustainable food system which better integrates: (i) public health (over-, under- and mal-consumption), (ii) environmental improvement and resilience, (iii) social and cultural aspects, (iv) a political economy which delivers decent wages, fully costed but fair food prices, (v) high quality food and (vi) all democratically accountable (at local to global levels).

Lang evidently has great faith in official and high-level reviews and institutional change. His solutions chapter proposes six such reviews:

- A Government special joint food defence review to examine if we are drifting into over-reliance on external food sources (p445)
- An Audit of what more could be grown in Britain (p446)
- A Royal Commission to map out the multi-criteria principles (p.449)
- A short-term Food Resilience and Sustainability Task Force (p450)
- The national infrastructure commission should map a food resilience and sustainability infrastructure plan for a thirty-year transition (p462).
- An authoritative review of options on whether "we should pay higher food prices or shorten food chains and recalibrating the national minimum wage and national living wage to include the cost of sustainable diets (p460)

...and six institutional innovations to decide and implement the policies necessary for the food transformation.

- Restarting a Cabinet Food Sub-committee (p446)
- Reorganising the Food Standards Agency and Public Health England to create a multi-criteria framework to define high quality food and sustainable dietary guidelines (p452).
- A Food Citizenship Education Council (p454),
- A new regional system of urban and rural food and farm colleges (p455),

⁶² Lang attributes the phrase the great food transformation to the Eat-Lancet Commission report.



- A new set of regional structures with food-planning responsibilities (p464), and
- Either an enlarged remit for the Environment, Food and Rural Affairs parliamentary committee with less focus on farming, or a new Food Security Committee (p465).

These are all intended to contribute to the formulation of a new Food Resilience and Sustainability Act with legally binding targets and delivery mechanisms (p443).

There are few specific proposals for food and agriculture. The following are examples:

- Switching CAP supports to “reward mainly environmental land management as a public good” . . . “but this must include food as a value in itself.”
- Doubling the farmer’s share of gross value added in the food chain.
- Strengthening competition policy, perhaps creating regional concentration limits for individual supermarkets
- Over the next thirty years Instituting full cost accounting for food including its environmental externalities

They are not explained in any depth. Lang recognises the social welfare problem of raising food prices – but does not come down on any solution.

The book frequently refers to the need for a holistic approach embracing technological, economic, social, environmental, cultural, political and institutional dimensions and all are covered in the book. But, alas, in the process we discover the complexity and often indeterminacy of the relationships between these variables and are left concluding that everything must change but we at a loss to say what should change most or first. As far as the direction of change for the farming industry is concerned, it seems reasonable to conclude from his chapter on the environment and his proposal for full cost accounting to include environmental externalities that Lang agrees with Helm, in arguing that agricultural intensification has gone too far and should be wound back. This is much more explicitly argued in the next report.

3.4 RSA, Food, Farming and Countryside Commission (FFCC⁶³)

Our future in the land

The RSA refers to the Royal Society for the encouragement of Arts, Manufactures and Commerce. This is a charity set up 1754 which, for its first 100 years, encouraged innovation and excellence in six areas - Agriculture, Manufacture, Chemistry, Mechanics, Polite Arts, Colonies and Trade. Its current mission is explained as: “Through our ideas, research and a 30,000 strong Fellowship we are a global community of proactive problem solvers, sharing powerful ideas, carrying out cutting-edge research and building networks and opportunities for people to collaborate, influence and demonstrate practical solutions to realise change”.

The RSA, together with support from the Esmée Fairburn Foundation, set up a Food Farming and Countryside Commission chaired by Sir Ian Cheshire in late 2017. This undertook a wide search and consultation on views about the future for the UK food and land use systems and produced the report ‘Our Future in the Land’ in July 2019 ⁶⁴.

⁶³ Henceforth this report will be referred to as the FFCC report.

⁶⁴ A link to the report is: <https://www.thersa.org/action-and-research/rsa-projects/public-services-and-communities-folder/food-farming-and-countryside-commission#>



The report summarises what it sees as our broken food and land system in these terms. “Driven by poor policy and perverse incentives, the food and farming system has become one of the main drivers of human and ecosystem crisis. From deforestation, loss of wildlife and soil degradation, to widespread pollution and spiralling diet-related ill-health, people and planet have suffered alike. Far from being the sector that nourishes us, and the land on which we all depend, the system has damaged and depleted our precious and finite resources”. In addition to these problems of diet and health, and the environmental and climate impacts of our food consumption and production, the report also addresses structural and economic imbalances in the food chain and the stresses found in rural society, such as housing and services. The report and its fifteen recommendations are structured around three themes:

Healthy food is everybody's business

1. Levelling the playing field for a fair food system – good food must become good business
2. Committing to grow the UK supply of fruit, vegetables, nuts and pulses, and products from UK sustainable agriculture, and to using them more in everyday foods
3. Implementing world-leading public procurement, using this powerful tool to transform the market
4. Establishing collaborative community food plans help inform and implement national food strategies and meet the different needs of communities around the UK
5. Reconnecting people and nature to boost health and wellbeing

Farming is a force for change

1. Designing and implementing a ten-year transition plan for sustainable, agroecological farming by 2030
2. Backing innovation by farmers to unleash a fourth agricultural revolution
3. Making sure every farmer can get trusted, independent advice by training a cadre of peer mentors and farmer support networks
4. Boosting cooperation and collaboration by extending support for Producer Organisations to all sectors
5. Establishing a National Agroecology Development Bank to accelerate a fair and sustainable transition

The countryside has to work for all

1. Establishing a national land use framework in England that inspires cooperation based on the public value of land, mediating and encouraging multipurpose uses
2. Investing in the skills and rural infrastructure to underpin the rural economy
3. Creating more good work in the regenerative economy
4. Developing sustainable solutions to meet rural housing need
5. Establishing a National Nature Service that employs the energy of young people to kickstart the regenerative economy

Many suggestions are made throughout the text for policy measures to activate these recommendations and in summary the Commission offered strong support to what they described as the compelling underpinning principles which have emerged from the Natural Capital Committee (which, of course, were at the core of Helm's book). These are *public money for public goods*, the *polluter pays principle* applied to environment, health and wellbeing, and *net environmental gain* to which they add '*and fair net social gain*'.



All of these ideas merit follow-up explanation and discussion but attention is focussed on the recommendations for the ten-year transition towards agroecological farming and the fourth farming revolution.

The ten-year transition would be driven by four elements explained in Box 7 (p43) of the report. The first is **'universal baseline payments'** for all farmers essentially to establish common data and competences on the natural and social capital on farms. Second, **targeted payments** to align public and private investment for public value. These would prioritise a list of ten mostly environmentally focussed land management practices (from woodland creation and agroforestry, carbon sequestration in peat, to creating and restoring habitat corridors). Also in the list are public access, high animal welfare systems, and developing horticultural production and supply chains. In addition, payments would be offered for conversion to agroecological ⁶⁵ systems based on the lessons of organic farming conversion and maintenance payments. The third element are **fiscal incentives** directed towards climate protection. This refers to phasing-out the red diesel subsidy and redirecting the funds thereby raised towards renewable bioenergy, woodland creation and agroforestry. The fourth element of the move towards agroecology is to establish a timetable for **more stringent controls on the use of pesticides and antibiotics**. The report "anticipates that the scientific case for this will continue to grow and a trajectory should be set towards farming with minimal use of potentially harmful chemicals by 2030". The potential trade impacts of these ideas is acknowledged by the final remark in Box 7 that government should commit to ensuring that UK producers will not be undercut by trade deals with countries operating to lower standards.

3.5 Dimbleby – National Food Strategy (NFS) – Part One.

An indication of the intensity of the debates on the UK food system is given by the fact that in August 2019 the Government judged it sufficiently important and urgent to try and assemble ideas and maybe even some consensus by setting up an 'independent review'. The review is chaired by Henry Dimbleby⁶⁶ backed by an advisory panel of representatives, 5 from agriculture, 11 from the food industry, governmental and non-governmental organisations and 9 academics/experts. The review is serviced by senior Defra staff. It is charged "to help Government create its first National Food Strategy for 75 years". The remit is "to address the environmental and health problems caused by our food system, to ensure the security of our food supply, and to maximise the benefits of the coming revolution in agricultural technology". It was initially expected that this would be a one-year exercise with an interim report to gather reactions in April 2020. The government committed to responding with a White Paper six months after the review is published. The review team are also asked to review progress 12 months after that.

However, (the chaotic developments of the Brexit process – not stated but this must have been a factor, and) the Covid-19 pandemic intervened in this timetable and changed the initial focus of the Review team.

⁶⁵ Agroecological agriculture is defined by the FAO as "an integrated approach that applies ecological and social principles to the design and management of food and agricultural systems. It seeks to optimise the interactions between plants, animals, humans and the environment and the social aspects that need to be addressed for a sustainable and fair food system." It applies the principles of the regenerative economy to agriculture. A useful review by the International Union for the Conservation of Nature (IUCN) of the farming systems which claim to be sustainable and based on natural processes is: Oberc and Arroyo Schnell (2020) see footnote 87

⁶⁶ The National Food Strategy website summarises: "Henry Dimbleby co-founded the Leon Restaurant chain, before going on to becoming Director of London Union, which runs some of London's most successful street food markets. He was co-founder of the Sustainable Restaurant Association and co-authored the School Food Plan (2013)". "He was appointed lead non-executive board member of the Department of Environment Food and Rural Affairs in March 2018.



It was decided to produce the National Food Strategy in two parts. Part one “contains urgent recommendations to support this country through the turbulence caused by the COVID-19 pandemic, and to prepare for the end of the EU exit transition period on 31 December 2020”. Part two which will present “a comprehensive plan for transforming the food system” will be published later – the date is not yet set. Extraordinarily for a Government sponsored report of this kind, part one is written in the first person by the Chairman of the review, although clearly he has benefited from an immense amount of backup help.

Part one opens with the observation that despite the massive shakeup to the food processing and distribution system by the lockdown to contain the virus spread, “after a wobbly start, [that] there were no serious food shortages is a testament to the flexibility and entrepreneurialism of so many food businesses, and the resilience of the system as a whole”. The report documents how workers in the food processing and retail system have suffered amongst the highest Covid-19 hospitalisations and death rates and that the hospitality sector is one of the worst hit economically. It also became clear that diet-related illness (diabetes, Coronary heart disease) is one of the top three risk factors for dying of COVID-19. On this, Dimbleby says, “This has given a new urgency to the slow-motion disaster of the British diet”. For these reasons the report focussed on two issues: children’s nutrition and ensuring the free trade agreements under negotiation uphold high UK standards and protect the environment.

Before coming to its recommendations on these two issues the report provides with stunning clarity an account (as of early summer 2020⁶⁷) of the impact of the pandemic on the UK food system and an impressive and depressing account the food culture in the UK and its impact on the nation’s health. It also looks closely into the issue of food poverty, which already existed but was worsened by the economic impacts of the measures taken to control the pandemic.

The list of recommendations on **children’s nutrition** focused on child food poverty and was to have also included a proposal to limit the advertising and promotion of unhealthy foods. However, action on this was announced just before the report was published as part of the Government’s New Obesity Strategy⁶⁸. Dimbleby’s four recommendations are:

- Expand the free school meal scheme to every child up to the age 16,
- Extend the Holiday Activity and Food Programme to all areas in England, so that summer holiday support is available to all children in receipt of free school meals,
- Increase the value of Healthy Start vouchers to £4.25 per week and expand the reach of the scheme,
- Extend the work of the Food to the Vulnerable Ministerial Task Force for a further 12 months up until July 2021. It should collect, assess and monitor data on the number of people suffering from food insecurity at any time.

⁶⁷ And it is wise to note that the pandemic was far from over by autumn 2020.

⁶⁸ See, <https://www.gov.uk/government/news/new-obesity-strategy-unveiled-as-country-urged-to-lose-weight-to-beat-coronavirus-covid-19-and-protect-the-nhs> New measures included: Legislating to end the promotion of foods high in fat, sugar or salt (HFSS). Banning the advertising of HFSS products being shown on TV and online before 9pm. Introducing a new campaign – a call to action for everyone who is overweight. Working to expand weight management services available through the NHS, Publishing a four-nation public consultation to gather views and evidence on our current ‘traffic light’ label to help people make healthy food choices. Introducing legislation to require large out-of-home food businesses, including restaurants, cafes and takeaways with more than 250 employees, to add calorie labels to the food they sell. Consulting on our intention to make companies provide calorie labelling on alcohol.



The recommendations on **preparations for trade agreements** were prefaced by the realistic observation that “Any blanket legislation requiring other countries to meet our own food guidelines would make it [importing] nigh-on impossible. We already import many food products from the EU that don’t meet UK standards. A blanket ban would make it impossible to continue trading even with this most closely aligned of partners”. Therefore three more subtle measures are proposed.

- The Government should only agree to cut tariffs in new trade deals on products which meet our core standards covering animal welfare, environment and climate concerns, and these should be set by the newly established Trade and Agriculture Commission.
- The Government should adopt a statutory responsibility to commission and publish an independent report on any proposed trade agreements. The report would be presented alongside a government response when any final trade treaty is laid before parliament.
- The Government should adopt a statutory duty to give Parliament the time and opportunity to properly scrutinise any new trade deal. It must allow time for relevant select committees to produce reports on any final deal and allow a debate in the House of Commons.

Active attempts are underway in the House of Lords to pursue these ideas through amendments to the Agriculture Bill. The scrutiny ideas may succeed, but the government is unlikely to tie its hands in trade negotiations by promises on standards built into agriculture or environment bills.

The direction that Part two of the National Food Strategy is likely to take is pungently signalled in the final chapter of Part one entitled: “The New Green Revolution”. It suggests that “the current food system does terrible damage to the environment. Building a better future – one where our food no longer makes us, or our planet, sick – will be the biggest challenge of all”. It will be interesting to see which, if any, of the recommendations from CCC, Helm, Lang and the FFCC for changes at farm level are picked up in the Part Two recommendations.

3.6 EU debates on a sustainable food system

Before drawing the threads and implications of these reports, it is important to note where the EU debate is going on these matters. Even though the UK has now left the EU and is free to choose its own food, agricultural and environmental standards and policy, if we choose to diverge from the EU then there **will be** consequences chief of which is more trade friction.

The EU has been engaged in its 7-yearly CAP reform discussions since 2018 to set the CAP regulations for the period 2021-27. The process was not completed before the 2019 changes of Commission and Parliament. CAP reform was delayed partly because the EU budget could not be settled until Brexit was ‘agreed’ late in 2020⁶⁹. The CAP reforms are expected to be agreed during 2020 to allow the new Policy to take effect from 2022. The essential structure of the CAP is unchanged with its two pillars and two budgets with approximately 70% of the funds in Pillar 1. The two biggest changes are first to decentralise the detailed setting of policy instruments from Brussels to the Member States. Each Member State is required to conduct a SWOT analysis and needs assessment from which they devise a CAP Strategic Plan.

⁶⁹ And the budget process was subject to major revision in September 2020 as a €750 billion Covid-19 recovery package was proposed. <https://www.consilium.europa.eu/en/infographics/ngeu-covid-19-recovery-package/>



This should address the identified needs driving towards the nine agreed objectives of the policy all within a common framework. The nine objectives comprise three each for economic, environmental and social needs with quite detailed targets and outcomes defined. The second important change is to subject all measures, including Pillar 1 payments, to a monitoring and evaluation process to ensure they are helping achieve the objectives. A new element in the policy to help raise the climate and environmental ambitions is to create a Pillar 1 Eco scheme to replace the ineffective greening measures. These reforms give scope to Member States to reshape the policy to suit their circumstances and if they wanted they could increase their environmental ambitions and actions. All the signs are that in most Member States this opportunity will not be pursued. CAP stasis prevails.

In short, by 2027 UK farmers will have lost their Basic Payments whilst farmers across the channel will continue to receive payments averaging perhaps €250/hectare on their eligible hectares.

Meanwhile the identical debates which have taken place in the UK are mirrored by very similar discussions taking place in Brussels and especially in countries in north west Europe. An indication that these are not simply pie-in-the-sky ideas of academics and NGOs, is that the new European Commission in its first political act after coming into office in December 2019 announce a Green Deal for Europe to be followed up by a 'Farm to Fork' strategy for the EU food system, and strategies *inter alia* for biodiversity, climate and forestry. The debates in four countries are summarised as follows.

Given that **France** is the EU's largest agricultural power and has been a driving force in EU agricultural policy since the birth of the CAP in the 1960s, the French case is of great interest. The political battle between the production-oriented approach of the biggest farming organisations and those concerned about the environmental cost of this approach has been steadily moving towards the latter since 2007. That year, President Sarkozy initiated a series of meetings called the Grenelle d'Environnement⁷⁰. These discussions between government, business, unions and civil society organisations sought to draw up actions for the environment as a contribution to Sustainable Development Goals (SDG). Since then there has been a progression of policy statements and laws which seek to encourage a transition of French agriculture to agroecology. This was subsequently enshrined in the 2014 French Law for the Future for Agriculture, Food and Forestry which promotes the idea of agroecological practices⁷¹. Targets for the adoption of agroecological principles in farming have been set a number of times, initially to have agroecology adopted by 200,000 farms by 2025. All this, of course, was to be operated within the structures and rules of the CAP. But progress has been slow. As part of this drive, French policy has made specific efforts to contain the use of pesticides, again, without notable success. Over time the 'agroecology project' has widened to embrace a variety of less environmentally damaging agricultural practices⁷².

70 The name Grenelle came from the street, Rue de Grenelle, where the first meeting took place near the French Ministry of Ecology, Energy, Sustainable Development and Territorial Planning.

71 As explained by Gonzales et al The French government worked on a new law made public on 13 October 2014, under the name of "LOI No. 2014-1170 d'avenir pour l'agriculture, l'alimentation et la forêt" (Law 2014-1170 of 13 October 2014 of the future for agriculture, food, and forestry). This law provides a rationale for the combination of economic, environmental, and social performance through sustainable and highly productive agroecological practices. Gonzalez R A, Thomas J, and Chang M (2018) Translating Agroecology into Policy: The Case of France and the United Kingdom, Sustainability-10-02930.pdf.

72 These are summarised in late 2018 in the communication: https://www.gouvernement.fr/sites/default/files/locale/piece-jointe/2018/12/20181130_panorama_de_laction_climatique_pour_lu2019agriculture_lu2019agroalimentaire_la_foret_et_la_bioeconomie_version_anglaise_bd.pdf



No other EU country has (yet) followed France in such an overt drive to agroecology. However, reports along the lines of those reviewed in Chapter 3, written by authoritative scientific and in some cases governmental institutions, which come to similar conclusions can be found in several other EU countries. **Germany** is one such example. A recent report of The Scientific Advisory Board on Agricultural Policy, Food and Consumer Health Protection (WBAE) of the Federal Ministry of Food and Agriculture (BMEL) released a report in August 2020 *"Promoting more sustainable food consumption: Developing an integrated food policy and creating fair food environments"*. The report defines four key dimensions of sustainable food consumption, the "Big Four": health, social issues, environment and animal welfare. The advisory board's chairman Harald Grethe said "Germany is lagging behind other countries in developing and implementing a food policy that addresses these sustainability goals in a coherent and consistent manner". "Achieving key sustainability goals requires a comprehensive transformation of the food system. The current food environment is not conducive to sustainable food consumption. More decisive policy intervention is required to help consumers make more sustainable food choices." The Advisory Board offered nine recommendations for the transformation process two of which were: use price incentives – "Prices should tell the truth", and "develop and label agricultural systems – organic and more".

The Netherlands provides another example. Despite its relatively small land base, Dutch agriculture is estimated by some to be the second largest agri-food exporter in the world⁷³. But the Dutch have long realised that they have a severe problem of nitrogen and phosphorus pollution which has stimulated many reports and plans. A recent report from Wageningen University⁷⁴ concluded that "focus on increasing [agricultural] production to combat hunger and poverty does not solve the problem and promoting production efficiency in many cases adds to ecological stress rather than reducing it". Therefore "Interventions aimed at changing behaviour that contribute to achieving SDGs need to be socially, economically and environmentally sustainable". This report majored on the contribution the circular economy can make. It also stressed that this must be done through a systems approach which provides solutions that benefit all three sustainability dimensions simultaneously.

Sweden has long shown a disposition towards both recognising the power of markets and the decentralised capitalist system and also their limitations in dealing with broader societal issues especially the environment. It is perhaps no coincidence that the world's most famous climate campaigner is Swedish! Sweden has an independent foundation for Strategic Environmental Research called Mistra which has recently contracted with the Swedish Agricultural University, SLU Uppsala, to undertake a 4-year, 64mSEK project on 'Food Futures'. The conceptualisation of the problem and need for food system to change closely mirrors the analyses at the heart of the five reports above⁷⁵. The researchers are charged to advise on how to make practical progress on the challenges of climate, biodiversity, diets and health and farm and food system economic sustainability.

73 This July 2018 claim is based on: <https://humboldt.global/top-agricultural-exporters/> The top five are: USA \$150b, Netherlands \$94b, Germany \$86b, Brazil \$79b and France \$74b

74 Van Berkum S and Dengerink J (2019) Transition to sustainable food systems: the Dutch circular approach providing solutions to global challenges. Wageningen University and Research Report 2019-082. <https://edepot.wur.nl/495586>

75 The background paper identifying the challenges and outlining the required research is: Kuylensstierna J et al (2019) Food Security and sustainable food systems: research to support a sustainable competitive and innovative Swedish food system by 2030. https://www.mistra.org/wp-content/uploads/2020/01/mistra_bp_food_security_2019.pdf



The **European Union** has taken up these issues at the highest level. As it took office the new Commission announced the Green Deal on the 11 December as a centre piece of its strategic approach for the EU. Climate change, specifically carbon neutrality by 2050 is at the core and there are strong strategic messages for biodiversity, the food system and health (referred to as the 'Farm to Fork' strategy) as well as many other sectors including energy and transport. The Group of Chief Scientists of the European Union published their recommendations "Towards a sustainable food system" in March 2020⁷⁶. These scientists claim: "There is broad scientific consensus on what is needed to achieve a sustainable food system. This includes increasing or maintaining agricultural yields and efficiency while decreasing the environmental burden on biodiversity, soils, water and air; reducing food loss and waste; and stimulating dietary changes towards healthier and less resource-intensive diets". Their focus was on how this can be achieved. They argued this is essentially a social science question requiring the EU to;

- Make environmental, social and economic sustainability the central objective of all policies relevant to food
- Ensure a fully integrated approach to bring about a sustainable food system
- Address power and information asymmetries in the food system
- Combine regulatory, financial, behavioural, information, communication, and education measures

Despite delays due to the Covid-19 pandemic, the Farm to Fork and Biodiversity strategies were published on 20 May 2020. These are premised on the same diagnosis of the challenges as we've identified in the UK: climate, biodiversity and diet & health crises. Amongst many other matters, these strategies propose a series of explicit targets for agriculture for 2030. First, is a target, in this case to be put into EU legislation, to reduce overall use of Pesticides by 50%⁷⁷. Then there are a series of aspirational targets for: a 50% reduction of nutrient losses and 20% reduction in mineral fertilisers use, a 50% reduction in sales of antimicrobials for farmed animals, and an increase in the area of agricultural land under organic farming to 25%.

The next step is that Member States have to find a way to insert these aims into their CAP National Strategic Plans which are an integral part of the process for operating the Common Agricultural Policy for the period 2021 -2027. Two other processes underway in the EU which could have strong significance for the UK are expected revisions to EU pesticide legislation and a review of the appropriate regulatory framework for new breeding techniques.

The outcomes of these EU developments are uncertain. There is a determination to make a Green Recovery from the Covid-19 pandemic, but by autumn 2020 the greening proposals were already encountering resistance and reaction from certain interests and some Member States not all of which see the crises as defined and debated in north west Europe.

⁷⁶ This group of Scientists from around the EU includes Paul Nurse, Director of the Crick Institute London. A Link to the report is https://ec.europa.eu/info/sites/info/files/research_and_innovation/groups/sam/scientific_opinion_sustainable_food_system_march_2020.pdf

⁷⁷ The target is A 50% reduction in the overall use and risk of synthetic crop protection products with a 50% reduction in use of more hazardous products (such as the ones authorized by Member States under emergency conditions). The word synthetic here explicitly excludes those products used in the organic market, including copper sulphates which is known to be harmful to certain species and is a candidate for substitution.



4 Lessons from these reports and the UK's strategic choices

To this point Chapter 2 has laid out the main elements of the UK's post-Brexit legislative framework for food and agriculture, although of course this does not specify the critical implementation details which are not yet available. Chapter 3 has summarised five examples of the high-level policy thinking which has characterised the UK debate on our food system and rural land use in the last five years and shown that similar ideas are afoot in the EU. What are the lessons from these analyses and what are the key strategic choices which have to be made?

4.1 Lessons for the UK food system and land use

The five studies reviewed in Chapter 3 all insist that **a food system approach is essential** to see farming in its correct context. In rising to the challenges faced, production agriculture cannot be 'fixed' in isolation. Actors throughout the food chain have to be involved including consumers. This in turn will have important implications for food prices, and thus social welfare and for international trade. All that said, the ultimate focus of this paper is to understand the implications for the UK farm sector.

It can be drawn from the five UK (and the EU studies) that the three principal challenges to the European food system and land use are diets & ill health, climate change and biodiversity degradation. These issues are becoming generally accepted as defining the fundamental unsustainability of our food system. This is what poses the long run food security challenge.

Four of the five studies (CCC, Lang, FFCC and NFS) major on **diets, health and food waste**⁷⁸. In essence the diagnosis is that compared to dietary guidelines defining the intake of nutrients required for body growth, maintenance and activity, a significant part of the population is over-consuming calories from sugars and fats and over-consuming protein. There is still too much salt in our diets and too little fibre. The protein overconsumption is particularly pernicious because the growing of crops to feed animals and livestock production itself are biologically inefficient and leaky and are responsible for much of the agricultural pollution⁷⁹. The case against this overconsumption is both the life-shortening health costs to individuals and society and the environmental damage of the production associated with this unnecessary consumption. Overconsumption and waste represent a massive misuse of scarce resources.

⁷⁸ Helm does not because his focus is natural capital and thus land use and production. But he is well aware of the diet and health issue.

⁷⁹ This is fully explored in Buckwell et al (2018) Where is the safe operating space for EU livestock? RISE Foundation, Brussels. The uncomfortable truth about over-consuming protein is that the surplus to requirements as protein has to be deaminated by the body and then burned for energy – an extremely wasteful process.



There is increasing determination to tackle this issue especially starting with the young to ensure they do not follow their parents down the path to over-weight and its associated ill-health. There are several paths through which collective government action can operate and indeed is already operating. The sugar tax exemplifies that fiscal measures can play a role. More can be done through education (both through knowledge and by establishing active exercise), through the National Obesity Strategy and through public procurement of food in schools, hospitals and all public outlets. A further critically important determinant will be the extent to which governments pressurise the food processing, retailing and food service and hospitality sectors to take action on diets and health. Some progress has been made on salt in food. However, these issues have been 'out there' long enough for it to be evident that relying on the food industry to see self interest in changing dietary habits is not sufficient. Is there the will to push the industry harder? Meanwhile consumer behaviour can and does change in response to the general discourse on food. Most of this influencing is beyond the reach of those in the primary production sector⁸⁰. Farmers should note that sustained systematic efforts by society to change its eating and exercise habits can, and probably will, bring about slow noticeable change in food consumption. The trends are already evident in the decline per capita red meat and milk consumption and moves towards rebalancing plant vs animal protein towards the former. *The lesson is clear, the market place is changing, and when it does suppliers must adjust.*

The rest of this chapter is premised on the assumption that there is a determination to drive change in food consumption behaviour in the UK and these efforts will, albeit slowly, contain over-consumption and rebalance diets towards plant-based foods. The focus is then on the agricultural production and land use issues and what farmers may be asked to do to rise to the climate and biodiversity challenges.

Unsurprisingly the clearest and strongest messages on climate come from the Climate Committee's land use report. The CCC argue that the food and land use contribution to Net Zero 2050 cannot be achieved without considering changes in consumer and food industry behaviour reducing unhealthy over-consumption and reducing food waste. Confronting the biodiversity crisis is not the prime motive, nor expertise, of the CCC, but containing climate change is itself critical in order to limit damage and restore biodiversity. The CCC argue that the significant land use changes they recommend – a 20% reduction in agricultural area, taken up by increased forest and bioenergy crop areas, and rewetted peat – *all could, provided they are appropriately incentivised and managed*, be entirely consistent with restoring biodiversity. Less clear is how to ensure that drives to increase productivity in farming to make up for the reduced agricultural area are not detrimental to biodiversity.

There is a tendency amongst mainstream farming organisations, to suggest that the biodiversity challenge can be sufficiently tackled, broadly speaking, by a combination of deploying the Public Goods approach plus Precision Agriculture (call it PG+PA). Farmers are paid to restore biodiversity around fields, in the margins, along banks and water courses and in the numerous 'unproductive' areas of the farm which can be managed with a new eco-focus. Meanwhile farmers continue to intensify in-the-field but they do this deploying new technology to improve environmental performance.

⁸⁰ This not in any way to overlook or belittle the many examples of highly imaginative farmers who find new ways to grow, process, differential and sell their products – locally and nationally. Farmers can and do influence food consumption but their efforts are dwarfed by the much larger players in the food chain.



There is considerable momentum and investment worldwide in looking for such new agricultural innovations. This effort is to be found in large multi-nationals who provide many of the variable inputs into agriculture. It also resides in universities and government research institutes where developments in molecular genetics and other new technologies is felt to offer great promise. There are no doubt significant further opportunities to bring about further improvements in the intelligent use of pesticides and mineral fertilisers using precision farming techniques based on GPS control, robotics, big data, Artificial Intelligence, and perhaps also through the fruits of new breeding techniques which build-in pest resistance. This approach is often described as sustainable intensification.

Another dimension of technological developments in the food system is the move towards contained, i.e. indoors highly intensive crop production systems. These will usually be hydroponic systems where excess nutrients are filtered and reused, light, temperature and atmosphere are carefully controlled, water and energy use are minimised, tight biosecurity and biological pest control are practiced. Production in such 'vertical' systems is generally high value salad crops and herbs, and they are often located close to consumption centres. These truly are factory farms, they are capital and knowledge intensive systems. Perhaps one-step even more intensive are systems under development to produce cultured meat. Together with developments in insect culture, alga-culture and fungal-based processes these all offer routes to produce protein not based on farm animals. Whilst some of these are in commercial development others are still at the laboratory and pilot stage, their scaling up possibilities and regulatory hurdles are not fully understood. They will no doubt play some part in future food systems.

Does an approach based essentially around paying farmers for public goods and assisting them to adopt precision agriculture stack up? Can this dual approach be developed to sufficient scale and managed in such a way that it steers farmers to make their appropriate contribution to meet the climate and biodiversity targets? This seems unlikely for the following reasons. First it sounds rather like business as usual. Whilst the phrase 'Paying for Public Goods' may only have come into prominence in the farming press and discussion in recent years it has been about in the academic and professional discussion about agricultural policy for over a quarter century. Indeed, the UK has been experimenting since the 1990s with a succession of environmental schemes under the CAP. Similarly, precision agriculture is not new. It too has been developing over three decades initially following detailed measurement of yield variation across fields followed by mechanisation (in the control of variable fertiliser and pesticide application) and use of Global Positioning Satellites (from the mid-1990s) and digital control⁸¹. These two ideas, Public Goods + Precision Agriculture, can undoubtedly be taken further but they do not seem likely to show the step change in environmental performance that most claim is necessary. Furthermore, this two-part strategy does not deal frontally with the land use changes required for climate protection. If these measures are insufficient then what other approaches and policy measures are required?

⁸¹ A highly detailed history is provided in: the first chapter by Franzen D and Mulla D, *The History of Precision Agriculture*, in Qin Zhang ed. (2016) *Precision agriculture technology for crop farming*, CRC Press, Taylor Francis Group.



4.2 Strategic choices on land use and agriculture

These considerations can perhaps be crystallised in two strategic choices now facing the way we use our agricultural land in the UK. The first concerns the area of land allocated to agriculture. Is the UK prepared to put in place sufficient incentives to significantly reduce it as outlined by the CCC? The second question then focuses on the intensity with which we use the agricultural area. Is the UK going to follow the technology optimists with a dual Public Goods + Precision farming approach and perhaps in some areas increase production intensity, or will it take stronger action to contain pollution and drive towards sustainable farming systems with lower intensity? Short-hand terms for this choice, admittedly at risk of over-simplifying, are:

- Reduce the agricultural area?
- Reduce the intensity of agriculture?

Each, are now addressed and then some implications of are considered.

Reduce the agricultural area?

This is explicitly advocated by the CCC. The positive way to describe it is reallocating land to climate and biodiversity protection. None of the other reports are quite so clear about this but many of their recommendations push in this direction. Decisions already taken in the Agricultural and Environment Bills will also partly drive this way. The most important (if they happen) are the removal of basic payments and the introduction of environmental net gain for development. Much grazing land (and not only in the uplands) is economically extremely marginal and survives largely due to CAP direct payments. If these subsidies are removed as announced and areas of marginal grazing livestock (or crop) production become unviable, then land managers and owners will consider other uses for that land. If opportunities become available for funding for such land to be devoted to create biodiversity and cultural landscape services, for flood protection, water storage, bioenergy production or of course, for carbon sequestration in forests and rewetted peat then of course these will be looked at seriously.

Public payments to farmers under ELMS is one potential source of such funding. A general presumption seems to be that this will mostly be available for biodiversity and cultural landscape services rather than carbon or bioenergy. It remains to be seen if significant funds are realised from Net Gain and how they will be managed and deployed. As they will arise (and be collected?) through local development will they be administered locally or centralised and administered via Defra agencies? These important institutional and governance questions are far from resolved. But there is no doubt that if all new residential, commercial and infrastructure development is required to meet and fund net environmental gain then a significant expansion in land managed primarily for nature could be secured and could go a long way to joining up and even expanding nature areas. Under the right conditions many landowners may be happy to offer marginal land for such purposes.

There is also little doubt that the demand for schemes for carbon offsetting could, if they are permitted to, rapidly accumulate a large flow of funds to support new afforestation and peat management in order to store carbon. Power companies, airports, airlines, and many other businesses from Amazon to Zoom may be interested in purchasing C credits to enable them to continue emitting GHG. How far and under what conditions this is permitted, and whether such funds accrue to UK land managers or go abroad, is yet to be discovered.



There are many matters to be resolved about these changes in land use involving governance issues between Westminster and the devolved administration, and between Whitehall and local authorities, and a variety of practical matters for landowners for example permanence⁸², the tax treatment of diversified rural businesses, planning and tree planting and felling regulations. With the necessary financial incentives in place the ambitious scale of land use change called for by the CCC could be achieved. Whether this happens at all, and whether it is in time to make the necessary carbon saving, therefore depends on the political will for it to happen and the will to find a way through the institutional maze which governs land use in the UK.

Reduce the intensity of agriculture?

Although the phrase 'de-intensify agriculture' is not in common usage, there are many organisations which have implicitly argued that it should happen. For decades, critiques of agriculture have pointed to 'intensification' as having caused environmental damage, and therefore the solution must be to reverse this. Intensive agriculture is the most commonly used phrase to summarise the reason for environmental damage in agricultural areas. The word intensity always refers to a ratio, and in agriculture it quite explicitly points to inputs per hectare and outputs per hectare. The intensification of farming⁸³ has embraced a wide range of actions: field and farm enlargement, simplification and specialisation of farm businesses, substitution of capital for labour, developments in plant and animal breeding, nutrition and health, mechanisation and business management. These are all inputs into farm production which have increased over a static or much more slowly rising agricultural area. The aspect of input intensification most criticised because of their direct impacts, has been the increased reliance on two categories of variable inputs, mineral fertilisers and Plant Protection Products (PPPs). These have become totemic issues in farming. For the farmer, the purpose of intensification was to achieve higher and less variable yields and higher quality crops in terms of consistency and freedom from pest damage or mycotoxin contamination. But the judgement of many is that these developments have been over-done to the detriment of the environment including the climate, leading to calls that intensification should be reversed.

Environmental NGOs will be unconvinced that the dual strategy of Public Goods + Precision Agriculture will be sufficient. Whilst supportive of a role for public payment for public goods they are highly suspicious of precision agriculture. It is seen as a 'business as usual' approach which got us into the mess in the first place. Helm is also clear that farmers and the input supply industries are not to be trusted on this. His focus is natural capital, the thrust of his recommendations is therefore concerned with both reversing biodiversity decline and combatting climate change. He supports payment for public goods, but insists this must be accompanied by **changes in economic incentives** which remove CAP and other subsidies, and internalise pollution costs by taxing pesticides, fertilisers, carbon and other harmful emissions. These are expected to drive change in behaviour. One supposes that provided new technologies do contribute to reducing pollution and do not degrade biodiversity then Helm would be content to let business managers decide the most appropriate technologies to deploy once the right signals are in place.

⁸² Landowners are generally reluctant to embrace contracts with the word 'permanent' in them, it seems a step too far to make that commitment. This is surely resolvable by agreeing suitably long contracts with built-in review.

⁸³ Which incidentally is a world-wide phenomenon



From their analyses and recommendations, it is clear that Helm, Lang and explicitly the FFCC, support the need to **de-intensify agriculture**. What does this mean and how should it be done?

De-intensification is usually proposed through one or both of two lines of attack. First is to reduce the use and risk to environment and health of mineral fertilisers, PPPs and antibiotics in livestock production. The second, is to switch farming systems to what are called more sustainable systems of agriculture. Neither of these routes is as straightforward as they might at first seem⁸⁴.

Reducing the risks to health, climate and environment from fertiliser and pesticide use can be achieved by better formulation and much more precise use, reducing the usage to exactly that required for intended beneficial effect with minimised leakage into the environment or collateral damage. In the case of pesticides there is also scope to substitute less risky biological control products for synthetic chemicals, and to refocus breeding goals to place more attention to pest resistance. There are intrinsic difficulties in specifying what it means to reduce risk and use of pesticides. The make-up of PPPs, their formulation and application technologies have rapidly evolved, and are continuing to develop. Far lower quantities of these products are applied, although often more frequently, than in earlier versions⁸⁵. But because of the difficulties of defining risk most proposals refer to reducing the total physical quantities of these inputs to agricultural land per year. The sorts of measures offered to achieve this are setting targets, offering education and advice on integrated pest management, using taxes (with or without the revenues being used to help transition), and regulation⁸⁶. There are examples of all these measures being deployed around the EU. An interesting case study for pesticides is to compare Denmark which has used pesticide taxes and seen some reduction in use, and France which has used exhortation and adjustment assistance and seen little or no change in use.

Switching to sustainable farming is intended to mean a more substantial change in the farm system. There is no single definition of what it involves. A recent paper by the International Union for the Conservation of Nature⁸⁷ (IUCN) examines fourteen approaches to sustainable agriculture. The most widely known such system, and the only one which is regulated and documented in the EU (and in other countries) is organic farming⁸⁸. Most of these systems have in common that they include prohibitions or restrictions on the use of fertilisers and most PPPs. Beyond this, each system has its own positive prescriptions of farming practices which generally aim to restore ecosystem functioning in soils and in the farmed environment⁸⁹. Their narrative is that 'they seek to farm with, and not against, nature'. Some of these systems go considerably beyond technical farm level practices and seek wider community buy-in and more profound societal change.

84 The issues surrounding pesticide use are discussed fully in Buckwell et al (2020) Crop Protection and the EU Food System – where are they going? RISE Foundation, Brussels. The quantity of pesticide use in GB is estimated to have fallen 51% since 1990, and the rate of application of PPP per treated hectare by 70% from 700g/ha to 230 g/ha based on Pesticide Use Survey data compiled by FERA, <https://secure.fera.defra.gov.uk/pusstats/index.cfm>

85 After ten years of efforts to define and measure harmonised risk indicators for pesticide use the EU finally published two Harmonised Risk Indicators in November 2019. They are quite crude and only measured for a short period 2011-2017. One index fell 20% the other rose 50%. It is quite difficult to judge if the environment and health are safer.

86 An independent review of EU regulations on pesticides referred to them as the most onerous in the world for gaining approval to place plant protection products on the market. Nonetheless there are active discussions to make it more rigorous. See footnote 77.

87 Oberc B P and Arroyo Schnell A (2020) Approaches to sustainable agriculture, IUCN, <https://portals.iucn.org/library/node/49054/>

88 The 14 systems are: Agroecology, Nature-inclusive agriculture, Permaculture, Biodynamic agriculture, Organic Farming, Conservation agriculture, Regenerative agriculture, Carbon farming, Climate-smart agriculture, High nature value farming, Low external input agriculture, Circular agriculture, Ecological Intensification and Sustainable Intensification. Of these only Organic Farming is EU certified, regulated and documented. The paper acknowledges there is no agreement on what constitutes sustainable agriculture and no systematic comparable measurement of the environmental or economic performance of these systems.

89 The most common such practices are: longer rotations, cover & companion crops, mixed crop & livestock farming, providing nutrients by use of legumes, manures, composted material & digestates, and introducing greater diversity in fields and around them.



It is one thing to decide that sustainable farming is to be encouraged for the future, another to bring about the change at significant scale.

First, will the demand for sustainably produced food grow? It has steadily grown, albeit from a low base⁹⁰. It is claimed in the UK that that 58% of people have purchased some organic food items in a typical week. But despite this growth the overwhelming majority of food and drink expenditure in the UK is not organic⁹¹. It does not seem likely that the discourse on sustainable food alone will induce the scale of step change in demand envisaged. It will probably require more dirigiste collective action for example through public procurement e.g. in school and other public sector canteen meals, perhaps by mandating minimum inclusion rates on retailers' shelves, or inclusion rates of organic ingredients for food processors and food service companies. If the demand cannot be stimulated then of course if the supply increases the premium price for the sustainable product will be eroded or disappear.

Turing to the supply of sustainably produced food. The opportunity to 'go sustainable' has been available to farmers since the term was invented in the mid 20C. The 'Organic' label has very successfully established itself as a mark of high-quality food which is kind to the environment and commands a price premium as a result. Agricultural policy has included assistance for converting to organic farming since the 1990s. The measures are designed to help farmers through the period when they can no longer use mineral fertilisers or most pesticides but cannot yet sell their produce as organic. The favourable publicity, price premium and conversion schemes have got us to the current situation where 2.7% of UK agricultural area is in organic farming⁹². How far, and how, could this be increased? Even with some strong incentives to change away from conventional farming through tougher regulation and fertiliser and pesticide taxes for example, it will require considerable change of attitude plus stimulus and help if the organic area is to be increased significantly, e.g. to the proposed EU target for organic area of 25% by 2030.

This poses large questions for both the motivation and the farm economics of such change. Making such a shift in farming system requires belief and determination. It is a multi-year process that has to be learned by trial and error and willingness to experiment. It may involve farmers learning how to grow a different crop mix and maybe re-introducing livestock with all that entails such as fencing, water supply and buildings. New skills have to be learned⁹³. There would also be important implications for markets, food prices and international trade. Unfortunately, these issues receive little attention in the reports advocating such system change.

4.3 Some implications of these choices

How feasible are the combinations of policy being recommended? It is reasonable to ask if we know what mixes of reduced food consumption, reduced agricultural land area and land intensity are mutually achievable to achieve climate and environmental goals, and what the resulting price and trade consequences would be. This section can do little more than pose some questions.

⁹⁰ One estimate suggests global expenditure on organic food and drink has grown five-fold this century from \$18b to \$95b, <https://www.statista.com/statistics/273090/worldwide-sales-of-organic-foods-since-1999/>

⁹¹ It is hard to find statistics, but Statista claim organic food and drink expenditures in the UK in 2018 was £2.2b, and Defra's estimate of total UK expenditure on food and drink 2018 was £225b. This puts the organic share at 1%. <https://www.statista.com/statistics/282379/organic-food-and-drink-sales-in-the-united-kingdom-uk-since-1999/>

⁹² The current 485k Ha of organically farmed land (63% of which is permanent pasture) is 34% lower than the 2008 peak UK indicating how sensitive it is to economic conditions. Organic milk producers ran into difficulty as the price premium dropped.

⁹³ There are many excellent books describing the process, an early example is the 15 year journey by Barry Wookey, in 'Rushall: the story of an organic farm, Blackwell, Oxford 1987.



Feasibility. The purpose of de-intensifying agriculture is to reduce environmental damage. It is axiomatic that it will involve lower yields per hectare of agricultural land. The evidence is that the organic farming systems have yields which are between 25% and 40% lower than conventionally farmed crop yields⁹⁴. Can de-intensified production be squared with policies to attract land out of agricultural production to protect the climate? The CCC analysis was that it is feasible for the UK to reduce agricultural area 20% by 2050 and still to feed the growing UK population⁹⁵ without increasing the current degree of import dependence. This is partly because they assume actions are in place to reduce consumption of especially beef and dairy products by 20%. The CCC did not include a reduction in intensity in their analysis. Indeed, they point out the scope to increase productivity of agriculture based on Defra evidence that UK agricultural productivity growth has lagged other countries. The other studies reviewed in Chapter 3 did not include quantitative modelling of these questions. *This points to a significant research gap which really ought to be filled as strategies for the UK food system and land use are debated.*

To test the feasibility of the mix of policy changes under discussion affecting both food consumption and production, such modelling should be capable of handling land use change, regionally and by broad land use types, as well as market interactions and adjustments for the main crop and livestock products showing the balance of production and utilisation and price and trade effects. As the policy changes are proposed in order to combat climate change and environmental degradation such modelling should also be capable of incorporating indicators of GHG emissions and environment. This is a tall order. It is far from simple to combine all these elements into one modelling approach. It will require the collaboration of bio-physical, market and trade analysis. A vital component of such work should also be farm-level modelling both for policy analysts to understand impacts at this level but also to help farming organisations and their members understand the implications of policies being contemplated.

Food prices and welfare. The current economics of organic farm production work because this niche market receives an organic premium for the lower-yielding, higher unit cost, production. Organic producers have also received financial help through agricultural policy. There seems to be an underlying presumption that food prices in the new sustainable food system will be higher than current prices. It is argued by Helm, Lang and many environmentalists that food prices are artificially (and undesirably) low because they do not include costs to the environment or the costs of ill-health inflicted on society. It is therefore quite consistent that a sustainable food system would be expected to have higher food prices if it internalises these externalities. Furthermore, higher food prices would be consistent with drives to contain over-consumption and food waste. However, such changes have to be practically and politically realisable if they are to be considered credible policy.

In 'normal' times food prices are a highly sensitive social and thus political issue. These sensitivities are considerably heightened during times of economic crisis as discovered in the Covid-19 pandemic. When unemployment rises it is no coincidence that it often rises first and fastest amongst those already on insecure incomes, part time or zero hours contracts for minimum wages.

⁹⁴ Seufert, V., Ramankutty, N., Foley, J.A., 2012. Comparing the yields of organic and conventional agriculture. *Nature* 485, 229–232.

⁹⁵ The CCC analysis assumes the UK population grows by 9 million, 13%, by 2050. It also includes land take from agriculture to provide the settlements for the larger population (housing, employment and infrastructure needs).



In these circumstances food poverty e.g. as indicated by food bank usage, rises fast. The National Food Strategy Part 1 documents this graphically. Therefore, policy which drives towards higher food prices could only be envisaged if accompanied by credible and real action. This means adapting social welfare safety-nets to avoid the higher food prices harming the poorest in society. These are usually people on low incomes, with large families and the elderly who spend a far higher proportion of their income on food than average families. This is an aspect of what is customarily referred to as the 'just transition' and 'leaving no groups behind'. It is easy to assert but difficult to convince those who speak for the disadvantaged that it will be delivered effectively.

Domestic policy and trade. The second challenge for the pursuit of a food system with higher prices is that trade policy would have to adjust. A decision in the UK to operate a high food price policy to protect human and environmental health is likely to outrun corresponding policies in some other parts of the world. This is especially so for countries with major exports of agricultural raw materials who strategically position themselves as competitive low-cost producers. As part of the EU since 1973 the UK had a long experience domestic agricultural prices above the world market prices until the mid-1990s. The end to this strategy was brought by the Agreement on Agriculture concluded in the Uruguay Round of the multi-lateral negotiations under the GATT. This required variable import levies to be converted to tariffs and reduced, export subsidies to be eliminated and trade-distorting domestic supports to farmers to be subject to reduction commitments. The UK is at liberty to return to the position of maintaining higher domestic prices based, this time on the high moral ground of protecting high standards for environment, animal welfare and climate protection. But trade negotiations to achieve this will not be simple, especially with agricultural exporting countries, and will therefore carry a price. This takes us back to section 2.6 and the feasibility and effectiveness of protecting these standards in UK law.

A final thought. What happened to the concerns about the **structural weakness of farming in the food chain**? None of the five studies reviewed elevated this to the level of a fundamental challenge on a par with climate, biodiversity and health. The structural weakness can be characterised as an atomistic⁹⁶ primary production sector squeezed between highly concentrated up and downstream sectors in the food chain. There is little doubt that return on capital invested in agriculture is significantly lower than that in the other parts of the chain⁹⁷. In the EU this resulted in this sector becoming dependent on subsidy. This is an issue with quite different character to the climate, environmental and health challenges. It points to the economic unsustainability of the chain. If it is not addressed it becomes an impediment to reform and change. Lang and the Food and Farming Commission address this issue in sympathetic terms, and there are indications that the National Food Strategy will do too. Helm shows little concern for the economic viability of farm businesses. The implication is that it's their job, like any other business, to deploy and manage their assets to return an acceptable margin given the prevailing regulatory framework and market conditions and no business has the right to pollute or degrade natural resources. As a department of government the CCC does pay regard to the economic impacts of its recommendations.

⁹⁶ I.e. highly fragmented.

⁹⁷ Comparing such returns is a complex matter. A large part of the capital in agriculture is the value of the land and this in turn is influenced by some non-production related considerations such as tax benefits and the pleasure of the traditional farmhouse and its surrounds. But low returns may also be due in part to the inefficiencies of farms which can stem from motives other than profit maximisation, and the cushioning effect of subsidy.



It gives prominence to Defra analysis which shows that UK farm productivity has systematically lagged that of other countries (in the EU and beyond), suggesting if this was tackled it could help deal with the economic weakness of farming. There is truth in this. There is also some truth in the arguments, which often emanate from the Treasury, that the system of CAP direct payments (per hectare), drives up the price of agricultural land, and also by injecting a relatively secure income base for farms it diminishes their incentive for efficiency. There could be lower rents and more incentive for innovative rural business management outside the CAP support system.

However beyond relatively anodyne measures such as strengthening the grocery code and encouraging producer groups the farm structural challenge has not yet elicited heavy-duty policy change as the three other challenges have. Investigations are underway in the EU on whether there could be helpful changes in competition policy to allow farmers' organisations to rebalance bargaining power. There might be lessons to be learned there. Meanwhile, from a farmer perspective the policies for climate, the environment and health latter look likely, at least in the short run, to make the economics of farming more difficult not less. These considerations make it all the more important that proposals and recommendations to transform the food system and land use really have to pay more attention to the rural businesses dimension. The transformation will only come about if it is founded on viable businesses.

5 Summary and final words

Brexit alone is a once-a-half-century event. It is changing the agricultural, and environmental legislation underpinning the land-based economy and the trading regime within which food and agriculture operate. Notwithstanding five years of negotiating and preparing for Brexit food and farm businesses were none the wiser on the most important operational details of these policies and trade regimes with less than three months before Britain steps outside the EU economy. Add declarations of emergencies for climate, biodiversity, diet/health, and throw in a viral pandemic, and it is not so surprising that there has been a great deal of thought about where the food sector and land use should be heading.

This is undoubtedly unsettling for those running land-based businesses. How should they react to the big debates swirling around the way the UK uses its land, produces its food and feeds itself? Broadly there are two competing narratives in play.

Narrative A suggests Britain must produce more to help feed the world, it says that we are dangerously under-provided with our own food supplies and there is an exciting new world out there with new technologies. These can enable us to be more productive and also to reduce the environmental footprint.

Narrative B says the whole system is broken – from consumption to production and the food system in between. It has to be transformed and move towards nature-based solutions to restore soil health and ecosystem functioning. This narrative also tends to argue for local production.

Neither of these narratives stack up, they are both incomplete. Narrative A pays no attention to over-consumption and waste, insufficient attention to climate stability and restoring biodiversity. It suffers from an overdose of techno-optimism. But narrative B pays no attention to economic and technical feasibility and does not work through the food price, social welfare and international trade effects of its preferred food and land use system and it is silent on technology. Yet the starting presumptions of both narratives contain some truth.



Meanwhile, farmers do what they always do. They have harvested this year's crops and prepared seedbeds for the next, they have gathered the fruit and fed their animals and maintained their buildings, fences and hedges. Businesses can only manage what they see in front of them – their costs and prices, resources and technology. They can and should therefore 'stay alert'. They should keep a keen eye on: developments in consumer behaviour in the goods they sell; on the emerging trade regimes that are agreed; on the new regulatory frameworks for agriculture, environment and climate as the details are revealed in the coming years; and on the technological developments which offer opportunities to do new things or to do old things more efficiently. They can also follow the AHDB advice and watch carefully what how the top 25% performers – economically and environmentally manage it, and try to match that performance if they don't already.

However the big debates pan out, and whatever the National Food Strategy part 2 comes up with, the legislative framework and most important trading relationship for post-Brexit agriculture (with the EU) will be in place by the end of 2020. There will be no political will or parliamentary room for further legislation in those areas – policy will be worked out within that frame. There may well be new opportunities in carbon, bioenergy, water management and biodiversity provision (both through ELMs and Net Gain). But at the same time there will be no escaping the need to reduce GHG emissions and ammonia, to reduce water pollution and restore soil fertility.



Appendix: Timeline towards Brexit

(based on Euronews <https://www.euronews.com/2020/01/30/brexit-timeline-2016-2020-key-events-in-the-uk-s-path-fromreferendum-to-eu-exit>)

23/6/16	Referendum, 52% voted leave the EU, 48% remain on a 72% turnout.
24/6/16	David Cameron announces resignation. He resigned 13/7/16, quit parliament 12/9/16
11/7/16	Theresa May won Conservative Party leadership election, PM on 13/7/16, appoints B Johnson as Foreign Sec, D Davis as Brexit Sec.
2/10/16	Theresa May says she will trigger A50 by end of March '17
3/11/16	High Court Rules British Govt cannot trigger A50 without parliamentary approval, which was subsequently sought and given.
17/1/17	T May Lancaster House speech: UK will leave single market, "no deal better than bad deal"
29/3/17	T May triggers A50 in letter to European Council President Donald Tusk, Barnier the EU negotiator
18/4/17	T May (surprisingly) announces General Election for June 2017
May2017	Commission publishes negotiating mandate for Withdrawal Agreement: key issues are finances, citizens' rights and Irish Border
8/6/17	General election, Conservatives lose majority, deal with Ulster Unionists DUP keeps them in power, reshuffle appoints M Gove as Enviro Sec.
17/7/17	Brexit talks get underway in Brussels between UK and EU (More than a year post referendum!)
22/9/17	T May speech in Florence: will honour budget commitments and proposed 2-year 'implementation' period.
8/12/17	Joint report by UK-EU on withdrawal terms which had been deadlocked, UK wants to move to future relationship.
2/3/18	Mansion House speech: concessions on free movement, budget, ECJ, fishing
19/3/18	Draft agreement published with many areas showing no agreement
28/6/18	European Union (Withdrawal) Act enacted, repeals the European Communities Act 1972, transfers all EU into UK law, creates powers for Ministers to enact secondary legislation.
6/7/18	Chequers plan, includes 'managed divergence', but soft Brexit
8/7/18	Brexit Sec D Davis resigns, B Johnson resigns next day
21/9/18	T May cold shouldered by EU leaders at Salzburg EU Council: UK accused of cherry picking, and Irish Border ideas illegal said Barnier.
25/11/18	Deal struck – includes an all-UK Customs territory to resolve the Irish backstop
13/12/18	T May survives a Parliament vote of no confidence in her leadership
15/1/19	First meaningful vote on the Withdrawal Agreement Bill rejected 432 to 202, worst ever Govt loss on a key bill.
30/1/19	Parliament gives mandate to seek alternative arrangements for the Irish backstop
12/3/19	Government loses second meaningful vote by 149
20/3/19	T May required by Parliament to ask for extension to 30/6/19
23/3/19	Large pro-EU march in London, asking for 2nd referendum
29/3/19	Third meaningful vote lost by 58, but no majority for any other solution, including a second referendum



10/4/19	T May asks for a further extension. Flexible extension to 31/10/19 approved by EU Council
23/5/19	UK participates in EU Parliament elections. Next day T May announces she will stand down. Brexit party and pro-remain parties do well, Tories and Labour lose many seats.
23/7/19	Boris Johnson wins election to Conservative leadership, he is PM next day.
19/8/19	B Johnson asks EU to drop Irish backstop, EU refuses
28/8/19	B Johnson prorogues parliament for 5 weeks to widespread uproar, courts invited to decide if lawful
3/9/19	21 Tory MPs rebel on drive for exit on 31/10 with or without a deal, they are expelled from the party.
5/9/19	B Johnson says he will die in a ditch if we don't exit on 31/10.
9/9/19	Benn Bill to prevent UK leaving without a deal becomes law
24/9/19	Supreme Court rules the prorogation was unlawful, parliament reopens
29/9/19	Conservative Party Conference: slogan "Get Brexit Done"
3/10/19	UK withdrawal plan sent to Brussels, no backstop, rejected by EU 3 days later
8/10/19	UK-EU talks all but collapse
10/10/19	BJ and Leo Varadkar announce a possible pathway to a deal
17/10/19	Deal struck, includes border in the Irish sea – previously anathema to Govt (and DUP).
19/10/19	Parliament withhold approval, BJ has to seek another extension, big march in London
22/10/19	B Johnson puts Brexit legislation on pause citing MP obstacles
28/10/19	EU offers a flexextension to 31/1/20
29/10/19	B Johnson announces a General Election on 12/12/19
1/12/19	New Commission takes office under von der Leyen, Michel takes over from Tusk, Barnier stays in role
12/12/19	Conservatives win 80 seat majority, Scotland and N Ireland register anti-Brexit votes
23/1/20	European Union (Withdrawal Agreement) Bill enshrining the deal becomes UK law
29/1/20	European Parliament approves Withdrawal Deal
31/1/20	UK leaves EU at 11pm GMT
1/2/20	11 month transition period commences
31/12/20	UK leaves the EU single market and customs union

Brexit process has engaged

3 Prime Ministers: **David Cameron** til 13/7/16, **Theresa May** 13/7/16 – 23/7/19, Boris Johnson 24/7/19 –

3 Brexit Ministers: David Davis July 2016 – 8/7/18, Dominic Raab (8/7/18 – 15/11/18)
Stephen Barclay 15/11/18 – 31/1/20 when the department for exiting the EU was dissolved

5 Defra SoS since the 2010 Conservative/Lib Dem government:, **Caroline Spelman** 2010-2012,

Owen Patterson 4/9/2012-14/7/2014, **Elizabeth Truss** 15/7/2014-14/7/2016, **Andrea Leadsom** 14/7/2016-11/6/2017, Michael Gove 11/6/2017-2019, Theresa Villiers 2019-2020, George Eustice 2020 – date.

2 General elections: 8 June 2017 (Cons 317, Lab 262, Lib Dem 12, Scots Nat 35, DUP 10, Others 14)
12 December 2019 (Cons 365, Lab 202, Lib Dem 11, SNP 48, DUP 8, Others 16)



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