National Food Strategy

Independent Review

RECOMMENDATIONS IN FULL

Recommendation 1. Introduce a sugar and salt reformulation tax. Use some of the revenue to help get fresh fruit and vegetables to low income families.

What is it?

The Government should introduce a £3/kg tax on sugar and a £6/kg tax on salt sold for use in processed foods or in restaurants and catering businesses.

This would encourage manufacturers to reformulate their products to use less sugar and salt, in order to keep costs down. In some cases – where products cannot be reformulated, and therefore remain extremely high in sugar and salt – the increased cost might be passed on to the consumer. This would make such products less appealing.

The tax would apply to all sugar and other ingredients used for sweetening (such as syrups and fruit extracts, but not raw fruit) at a rate of £3/kg. This is approximately the same rate as the current Soft Drinks Industry Levy (SDIL), which the sugar tax would replace.[1] It would apply at a rate of £6/kg to all salt sold for use in food manufacturing. As salt is used in much smaller quantities than sugar, the rate needs to be higher in order to achieve an impact.

Neither tax would apply to ingredients used in home cooking. This exemption could be managed either by taxing sales to manufacturers and food service businesses, or by taxing all sales of sugar and salt when they leave the factory gate and then allowing supermarkets to claim a rebate for sales to consumers. Although small businesses could theoretically abuse this exemption, the quantities of sugar and salt larger businesses require are so great that serious evasion is unlikely in practice. If it did become a problem, retailers could be encouraged to restrict the amount of sugar or salt sold in a single purchase.

In order to stop food manufacturers relocating overseas to avoid these taxes, imports of processed food should also be taxed according to sugar and salt content when they enter the UK. Importers should be required to register for the tax, report the amount of added sugar or salt contained in their product, and pay the tax on that sugar or salt at the same rate as charged domestically.

The taxes should be introduced through primary legislation in the 2024 Finance Bill. There should be a three year period before implementation to facilitate adaptation. Research by the Food Standards Agency suggests that, even under normal circumstances, most food products are reformulated or reviewed by their manufacturers over that time frame.[2]

Rationale

People in the UK eat too much sugar and salt. Adults should consume no more than 30g of sugar a day, but on average we each eat 50g per day. Children eat even more, with teenagers aged 11–18yrs eating an average of 55g per day.[3] This means that, on average, sugar provides over 12% of children and teenagers' total calorie consumption[4] – over twice as much as the Scientific Advisory Committee on Nutrition (SACN) recommends.[5] Similarly, UK adults on average eat 8.4g of salt a day, 40% more than the recommended 6g a day.[6]

This contributes to poor health and costs us millions of disability-adjusted life years (DALYs) per year.[7] Sugar consumption is one of the main contributing factors in people becoming overweight or obese, which is estimated to account for over 1.4 million DALYs annually.[8] It can lead to conditions including diabetes, heart disease and stroke – not to mention tooth decay, which is the leading cause of hospital admissions in children aged 6–10yrs.[9]

Eating too much salt is strongly linked to high blood pressure, which can cause strokes and cardiovascular disease. A meta-analysis found that a high intake of salt was associated with a 23% increase in the risk of stroke and a 14% increase in the risk of cardiovascular disease.[10] Conversely, falls in salt consumption have been associated with substantial improvements in people's health: when salt consumption in northern Japan went down by 4g a day, stroke deaths fell by 80% in spite of the fact that the population's weight, fat intake, alcohol consumption and tobacco use all went up.[11]

People on low incomes and some ethnic minorities are the hardest hit by these harms.[12] The poorest fifth of the population get 12% of their energy from sugar, while the richest get 10%.[13] While this sounds small, over time it can make a significant difference to people's weight and their wider health. Deprivation is strongly linked with weight and diet-related ill health. For example, those living in deprived areas are twice as likely to be classed as obese or overweight.[14]

As well as the harm it does to individuals, eating too much sugar and salt is bad for the nation's finances. The Organisation for Economic Co-operation and Development (OECD) estimates that obesity already accounts for 8% of annual health expenditure in the UK. That amounts to approximately £18bn, or as much as we spend on the police and fire services combined.[15] Type 2 diabetes (the type linked to poor diet) cost the NHS £8.8bn in 2011/12.[16] And these costs will rise, given that obesity is expected to continue increasing until it peaks at 37% of the population in the mid-2030s.[17] One study estimated that every unit of body mass index put on by every individual raises the UK's annual healthcare costs by £16.[18] By 2035/36, Type 2 diabetes could cost the NHS £15.1bn a year, or one and a half times as much as cancer does today.[19]

It therefore seems clear that we should try to reduce individuals' sugar and salt consumption. We considered a range of mechanisms for doing so. Past policies focused strongly on voluntary measures and individual behaviour change – for example, handing out leaflets or running marketing campaigns to promote healthier diets. Of the 689 diet-related Government policies launched between 1992 and 2020, just under half (43%) put the onus on individuals to change their behaviour, and 37% were policies that supported healthier eating but still required individuals to make better choices (e.g. providing healthy options in canteens).[20] These programmes, especially the ones which required individuals to change their behaviour, have not worked well because they assume that people take balanced, rational decisions about what they eat, and have the motivation, means and ability to act.[21] In many cases – and especially when people are short of money, time and kitchen skills – this is wishful thinking.

Those policies which placed fewer demands on individuals, and more on manufacturers or other food businesses, were usually voluntary.[22] This reduced their effectiveness. While the voluntary salt reduction programme was successful in its early phase, with salt intakes reducing from an average of 9.5g/day in 2000 to 8.1g/day in 2011, progress has since stalled.[23] Only half of the targets for 2017 were met, in part because reporting requirements were weakened and enforcement was minimal.[24] A similar voluntary sugar reduction programme challenged food manufacturers to cut sugar in their products by 20% before 2020, but only achieved a reduction of 3%.[25]

Mandatory interventions have been more successful. Following the introduction of the Soft Drinks Industry Levy (SDIL), the average sugar content of soft drinks fell by 29%. Preliminary results from a study looking at the health impacts of the SDIL estimates it will result in 6,200 fewer decayed and missing teeth and 36,000 fewer cases of obesity in children and teenagers in England.[26] But because of the narrow range of products it covers, it is still not enough to really change people's diets and the health consequences that follow from them. Adults currently consume 20g too much sugar per day, and even if free sugars were totally eliminated from soft drinks, they would still be consuming around 15g too much sugar every day, and teenagers around 16g a day.[27] In reality, the SDIL has only cut average sugar consumption by 1.8g per person, per day.[28]

The evidence suggests, therefore, that we need a measure that places the onus on businesses and not on individuals; that is mandatory and not voluntary; and that covers a wide range of products. This led us to a tax similar to the SDIL, but covering a wider range of products.

Our proposed tax is mandatory for all companies, and places fewer demands on consumers than previous policies. It targets a wide range of processed and prepared foods, which are the principal source of sugar and salt in British people's diets:[29] 85% of the sugar sold in the UK is for use in manufacturing and 75% of the salt we eat comes from processed foods.[30] A tax on the amount of sugar and salt used in these foods will create a significant incentive for companies to reformulate their products so as to avoid having to put the price up, which would be damaging to their business in the UK's highly competitive and price-sensitive food market.[31] We know that industry responds to taxes on unhealthy foods by reformulating. As discussed above, the SDIL produced a reduction in the sugar content of soft drinks of 29%, while the Public Health Product Tax in Hungary encouraged 40% of manufacturers of unhealthy foods to reformulate their products.[32]

Similar measures have been shown to be effective around the world. Sugary drink taxes in Mexico, Barbados, South Africa and the UK have led to reformulation and reduced sales of drinks high in sugar.[33] In Mexico, an 8% tax on non-essential food items with a high calorie content relative to their weight led to a 6% decrease in purchases.[34] In Hungary, a tax on unhealthy foods produced a sustained fall in consumption of those foods by most consumers.[35]

In addition, the evidence suggests that food taxes do not lead to economic damage or job losses. The SDIL had no lasting negative impacts on the UK soft drinks industry: firms' turnover remained constant and share prices continued to grow.[36] A recent study of the food and soft drink tax in Mexico found that it had no impact on employment either in the manufacturing industry or in retail.[37]

There is strong public support for cutting the amount of sugar we eat through taxes on unhealthy food. 70% of respondents in a 2017 survey supported the existing SDIL, and this level of support remained constant after the tax had been in place for almost two years.[38] Half of respondents to a 2018 survey by the Food Standards Agency said they were concerned about the amount of sugar in food.[39] Roughly the same numbers supported taxes on unhealthy food in

surveys by Demos and YouGov.[40] Recent polling by the Health Foundation found that 63% of people would support an extension of the SDIL to other sugary foods such as sweets and biscuits, while a survey by the Food, Farming and Countryside Commission found majority support for taxes on foods high in fat, salt and sugar.[41]

Costs and benefits

This tax would have two main effects: incentivising businesses to reformulate their products and driving up the cost of those products which are not reformulated. Costs would therefore be incurred by two main groups: businesses and consumers.

Businesses would incur costs in administering the tax and reformulating their products. Given the scope of the taxes, however, calculating an average cost of reformulation is next to impossible. Some larger manufacturers may achieve economies of scale. Some products are easier to reformulate than others. Sugar reduction is easier in liquid and semi-liquid products such as yoghurt than in biscuits or confectionery, while salt reduction is likely to be more challenging in products such as cured meats and cheeses, where it is used as a preservative as well as for flavour.[42] Nonetheless, there is considerable room for improvement in this area. The tax will incentivise further innovation and reformulation, such as the use of potassium chloride – which is less harmful to health than conventional salt.[43]

Where businesses do not reformulate, consumers will face price rises. This was seen with the SDIL: where drinks were not reformulated, businesses passed on an average of 105–108% of the tax to the consumer (that is, the price went up by slightly more than the tax).[44] Usually, price increases make products less appealing to the consumer – which is, in the case of unhealthy foods, a good thing. If consumers do not change the foods they purchase, the Sugar and Salt Reformulation Tax could produce average price increases of around 16p–20p per adult per day.[45] These price rises would be driven mostly by the tax on sugar, which would lead to price increases of 15–25% in desserts, biscuits, confectionery and juice. Products with little or no added sugar, such as vegetables, fruit, grains, dairy and meat, would not become more expensive. Some examples of price rises are set out in Table 1 below, while full details of our analysis of price rises are set out in the accompanying economic analysis.[46]

Since part of the purpose of the taxes is to change the way people shop, however, the actual price rise experienced by people would be smaller. Consumer responses to price increases differ depending on several factors, including the strength of individual tastes and how easy it is to substitute one product for a cheaper alternative.[47] More details on our methods of assessing price increases can be found in our economic analysis.[48]

Table 1

Examples of predicted price rises for non-reformulated, reformulated and other products

Product	Sugar content per pack	Salt content per pack	Price rise from sugar (per pack)	Price rise from salt (per pack)	Current cost of a pack	Cost of a pack after tax	Current price per 100g	Price per 100g after tax	% increase
Cadbury Dairy Milk [49]	25g	0.11g	7.5p	£0	£0.60	£0.68	£1.34	£1.51	13%
Cadbury Dairy Milk 30% less sugar 35g[50]	13g	0.06g	4p	£0	£0.60	£0.64	£1.72	£1.83	6%
Salt and Vinegar Pringles 200g[51]	3.6g	4.6g	£0 (not free sugars)	3p	£2.50	£2.53	£1.25	£1.26	1%
Tesco Salt and Vinegar Crisps (6x25g)[52]	0.2g	0.4g	£0 (not free sugars)	1p	£0.77	£0.78	£0.51	£0.52	2%
Apples (min. 5 pack)[53]	78.5g	0g	£0 (not free sugars)[54]	0	£0.54	£0.54	£0.27	£0.27	0%

Since people on lower incomes are likely to have diets higher in sugar than richer people, the tax could be seen as regressive: it could have a larger impact on the poor than on the rich. However, the health benefits it could deliver would be progressive, since poorer people are more likely to be overweight and suffer from diet-related diseases. Precisely because people with lower incomes are more sensitive to price changes, they are likely to make bigger changes to their diets to avoid the taxes. Such an effect has been seen in evaluations of the Mexican tax, which has delivered greater health benefits to people with lower incomes.[55]

However, we are concerned about one possible unintended consequence. If hard-pressed families find the cost of their food shop going up, they may actually cut back on healthy food – which, as we have seen, is more expensive per calorie than unhealthy food (especially when you factor in the opportunity cost and difficulty of cooking from scratch).

We have therefore put in place a series of measures to ensure that low-income households get financial support, prioritising healthier foods. The details of these measures are set out under Objective 2. They include expanding free school meals and making the Holiday Activities and Food programme permanent (to support children during term time and during the holidays); an expansion of the Healthy Start scheme (to support diets at home); and trialling a "Community Eatwell" programme that enables GPs to prescribe fruit and vegetables to less affluent families suffering, or at risk of suffering, from diet-related illness. We estimate the total annual cost of these to be £1.1bn, which would be paid for by the tax.

The main financial impact on the Government will be positive. Excluding the enormous long-term gains from improving public health, we estimate the tax could generate between £2.9bn–£3.4bn per year for the Treasury. This includes £2.3bn–£2.8bn from the sugar tax and £570m–£630m from the salt tax.[56] There could be significant administrative costs to the Government in implementing and collecting the tax, especially if the exemption of retail sales is implemented through the provision of rebates to retailers. (This could require additional resourcing from HMRC due to the number of retailers selling sugar and salt in the UK, and also impose administrative requirements on these businesses.) There would be further monitoring costs from ensuring imports of products containing added sugar and salt were subject to the tax too. To ease these costs, the Government may want to consider a "de minimis" threshold, meaning that businesses which use small amounts of sugar, ingredients used for sweetening or salt are not affected by the taxes. This is similar to the Soft Drinks Industry Levy, which only applies to manufacturers which produce over 1 million litres of soft drinks per year.[57] We have not estimated these costs in our modelling.

Further monitoring of the impact of the tax will be required, but these mechanisms largely exist and we do not expect significant increases in costs from these elements. For example, biannual sodium surveys, National Diet and Nutrition Surveys (NDNS) and ongoing analysis of Kantar data will all be required to make sure the taxes are achieving their intended effect. These are already carried out by Public Health England.

It is likely that the benefits of the tax will arise from a combination of the reformulation of products and from changes in people's buying habits in response to price increase. We estimate that, combined, these could lead to a reduction in sugar consumption of n 4–10g per person per day and in salt consumption of 0.2–0.6g per person per day. Given we are not quite certain how much reformulation or change in consumer behaviour there will be, or how these two factors might interact, we have estimated the impacts as ranges. These span scenarios where customers and businesses are relatively unresponsive to the taxes, to those where they are very responsive. Full details of these estimates can be found in our economic analysis.[58]

The estimated reduction in sugar consumption would bring us between 16% and 83% closer to the target level of 30g per person per day, and amount to a cut of between 1kg and 3.6kg of sugar annually.[59] It would reduce the average calories eaten per person per day by 15-38kcal.[60] According to the UK's expert group on calorie reduction, this could completely halt weight gain at a population level (which would require an average reduction of 24kcal per person per day).[61] Modelling by the Department of Health and Social Care (DHSC) suggests that this calorie reduction could save 400,000–1,030,000 quality-adjusted life years (QALYs) over 25 years. Additional modelling for the National Food Strategy by the London School of Hygiene and Tropical Medicine (LSHTM) estimates that the number of QALYs saved over 25 years could be even greater, at 900,000–2,300,000 (worth approximately £1.5bn–3.7bn).[62] Based on the DHSC modelling, the UK's economic output could be between £2.2bn and £5.7bn greater, thanks to a larger and healthier workforce. The NHS could save £1.6bn–£4.1bn and the social care system £1.9bn–£4.8bn. Combining all of these benefits, the total gain to the UK could be as much as £63bn over 25 years.[63]

Similarly, the reduction in salt consumption would

bring us between 8% and 25% closer to the target level (6g per person per day). According to modelling by LSHTM for the National Food Strategy, this could save 537,000–1,400,000 QALYs over 25 years and increase the UK's average life expectancy by 0.6–1.8 months per person. The economic value of this could be £22.7bn–£59.3bn across the UK.

The above modelling indicates that of the estimated 1.5 million years of healthy life which are lost to diet-related illness, disease and premature death the Sugar and Salt Tax could save 37,000-97,000 of those years.[64]

These are all conservative estimates: more detail on why this is the case can be found in our economic analysis.[65] By way of example, we have not assessed the positive impact of reductions in portion sizes. Since the UK groceries market is competitive and price-sensitive, manufacturers sometimes choose to shrink the size of portions when the cost of ingredients goes up.[66] If they chose to do so in response to the taxes, it could lead to lower consumption, because consumers are not generally attentive to changes in the size of portions.[67] One estimate has suggested that eliminating larger portions from the diet could reduce the calories consumed by the average British adult by 12–16%.[68] The extent to which this happens will be determined by a range of factors – for example, how producers of similar products respond. But it seems likely that the beneficial impacts of the tax could be even greater than our conservative estimates.

Endnotes

[1] The current upper SDIL rates is 24p per litre if the drink has over 8g of sugar per 100ml. This is around 0.3p per g of sugar.

[2] Food Standards Agency. (2009). Impact assessment of the revised salt reduction targets. HMG. Available at: https://www.legislation.gov.uk/ukia/2009/86/pdfs/ukia_20090086_en.pdf

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Recommendation 2. Introduce mandatory reporting for large food companies.

What is it?

All food businesses with over 250 employees should have a legal duty to publish annual data on their sales of various product types as well as food waste.

This duty would extend to retailers, restaurants and fast food outlets, contract caterers, wholesalers, manufacturers and online ordering platforms.[1] Food businesses with a franchising model would be treated as the sum of their franchisees operating under the same brand.

The report should include figures (both value in sterling and volume in tonnes) for:

- Sales of food and drink high in fat, sugar or salt (HFSS) excluding alcohol.
- Sales of protein by type (of meat, dairy, fish, plant, or alternative protein) and origin.[2]
- Sales of vegetables.
- Sales of fruit.
- Sales of major nutrients: fibre, saturated fat, sugar and salt.
- Food waste
- Total food and drink sales

The metrics should be reviewed every five years. The legislative basis for mandatory reporting should be a Good Food Bill, which we recommend should be introduced in the fourth session of this Parliament (2023/2024) (see Recommendation 14).

The metrics should be captured as a percentage of the volume of all of food and soft drink sales, to allow like-for-like comparison, year on year. This will also allow for shifts in market share over time, so that any company which grows significantly over the reporting period is not punished for its success.

The data should be reported through an online portal and made publicly available at the company level, rather than at an aggregate sector level. The Food Standards Agency (FSA) should develop the portal and provide guidance required by companies to standardise reporting, so there is a common set of definitions and data standards in place. The data would form part of the FSA's annual report to Parliament on the state of the food system (see Recommendation 14).

In making this recommendation, we are keen to avoid a proliferation in the metrics on which businesses are already required to report. Therefore, the FSA should maximise opportunities for harmonisation with other data reporting initiatives, such as the World Benchmarking Alliance.

Rationale

Substantial shifts in the nation's diet are required if we are to reduce the environmental and health impacts of our consumption, while supporting the high standards of food, farming and animal welfare that the public expects.

Disclosure of data – and the public scrutiny that comes with it – encourages businesses to take action to improve their practices. For example, the Carbon Disclosure Project (which runs a global disclosure system to help companies manage their environmental impact) has found that when companies disclose data on their carbon emissions for the first time, just 38% of them have an emission reduction target in place. By the third year they disclose, however, this increases to 69%.[3] Transparency by itself incentivises companies to improve.[4]

Reporting data makes it easier for investors to know what is going on in the companies they own, and to pressure management for change. The ShareAction Workforce Disclosure Initiative led to 140 of the world's largest companies agreeing to publish data on their workforces.[5] This enabled 70 investors in Amazon to make their views known in relation to an attempt to form a trade union in Alabama.[6]

Experience shows that reporting has more of an impact when governments make it a legal requirement with precise specifications. For example, the introduction of mandatory reporting on the gender pay gap, and a standard method to assess it, has helped to narrow that gap.[7] But the scheme needs to be well designed: even where reporting is mandatory, as in the case of modern slavery, it can have a limited impact if enforcement is weak and there is a lack of

transparency and accountability.[8] The design of this recommendation is based on lessons learned from previous similar efforts, including these two examples.

The ultimate aim of the proposal is to change sales and consumption patterns for the foods for which reporting is required. This is important because these foods account for the main discrepancies between what the Government recommends people eat and what they actually do. Two-thirds of the population eat less than the minimum recommended level of fruit and vegetables and a third eat more than the maximum recommended level of red and processed meat. Across the population, we would need to increase our fibre intake by 50% and cut our consumption of sugar, salt and saturated fat by 12–40% to meet the recommended levels.[9] These discrepancies have a number of serious consequences for our health and the environment, which are outlined under other recommendations.

We recommend exempting smaller food businesses (those with fewer than 250 staff) for three reasons: larger businesses make up the vast majority of the overall sector, the administrative burden for smaller businesses would be too onerous, and enforcement would be too difficult.

Costs and benefits

Reporting requirements will make it possible to identify where businesses are making progress in helping their customers to shift to healthier and more sustainable diets, and where they are not. It will encourage action by businesses to improve the figures they report. This action is likely to take three forms:

1. Increasing the availability of healthier products, which are currently lacking across a number of product categories. For example, only 0–9% of pasta, ready meals and sandwiches on sale are high in fibre.[10] Businesses wanting to improve their figures may invest in new products that are healthier and more sustainable.

2. Reformulating existing products, to reduce sales of less healthy foods and drive up sales of healthier ones. Some retailers are already taking steps in this direction: for example, Tesco's Beef Mince With Vegetables contains around a third less beef than normal mince and more fibre and vegetables.[11] Reporting requirements will create incentives for further such progress.

3. Improving the marketing of healthy products. Currently less than 2% of food and drink advertising spend goes on vegetables.[12] We know that when they are advertised, consumption goes up, as shown by the vegetable advertising campaign "Eat Them to Defeat Them".[13] If businesses have stronger incentives to increase consumption of healthy products, they are likely to spend more on promoting them.

We have not assessed the cost to businesses for this recommendation. We do not expect significant costs, as most businesses already track their sales and report Electronic Point of Sales (EPOS) data to the Office for National Statistics.[14]

Endnotes

[1] "'Food business' means any undertaking, whether for profit or not and whether public or private, carrying out any of the activities related to any stage of production, processing and distribution of food" – see https://www.legislation.gov.uk/eur/2002/178/article/3

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Recommendation 3. Launch a new "Eat and Learn" initiative for schools.

What is it

The Department for Education (DfE) should launch a new "Eat and Learn" initiative for all children 3–18 yrs, in partnership with the new Office of Health Promotion. This would make learning to eat well part of every child's school experience. It would involve the following elements:

1. Curriculum changes
2. Accreditation
3. Inspection
4. Funding
5. Recruitment and training

Curriculum changes

Although schools have had a legal obligation to teach since 2014, food education remains a second-class subject. To ensure that food is taken seriously there needs to be change at all levels of the education system, from teaching staff to Government.

a. Sensory education for early years: the DfE should update the Early Years Foundation Stage framework (the curriculum standards that apply to children in nursery and reception classes) to include sensory food education. This teaching method – in which children are introduced to new foods and encouraged to explore them with all five senses – has been shown to increase children's willingness to try fruit and vegetables.[1]

b. Reinstate the food A-level: This would ensure that beyond 16 there is a proper qualification available for students wishing to continue studying food and nutrition after their GCSEs, whether that is purely because of interest in the subject or in preparation for careers in hospitality and other food related professions. The A-Level should first undergo a substantial redesign, conducted in consultation with food education experts and specialists. The new A-level should include learning about the food system and where our food comes from, and how the food we eat affects the environment and our health.

c. Review other qualifications: the DfE should conduct a qualification review to ensure that existing and new qualifications such as T Levels in Science and Catering provide an adequate focus on food and nutrition, and a progression route for students after GCSEs. This is particularly important in light of the post- EU Exit skills shortage in hospitality.

Accreditation

Schools should be encouraged to adopt a "whole-school approach" to food. This means integrating food into the life of the school: the dining hall should be treated as the hub of the school, where children and teachers eat together; lunch treated as part of the school day; the cooks as important staff members; and food as part of a rounded education.[2] The Government should require all schools to work with accreditation schemes - such as Food for Life - to improve school food and education using this whole school approach.

These accreditation bodies would provide training and support for leaders and staff. There are various organisations that provide, or are in the process of developing, suitable online training. For example, schools could use the online professional standards and training that the Local Authority Caterers' Association have developed.

As an absolute minimum, to achieve bronze certification, schools should be required to: account for how school food funds had been adequately spent; fully comply with the School Food Standards (for nutrition) and Government Buying Standards for Food (for procurement); demonstrate that the food and nutrition curriculum was being met; and ensure their catering staff (whether employed directly or through contractors) are adequately trained to deliver quality meals.

Inspection

Ofsted should assess the quality of food and nutrition lessons with the same rigour as they do English or Maths lessons. When Ofsted inspects a school, it conducts deep dives of a sample of the subjects taught. This involves meeting curriculum and subject leaders to understand the way that the curriculum has been designed, its strengths and weaknesses,

and check how core topics are being covered. The only subject that is always inspected in this way is reading (in primary schools). Ofsted should ensure that inspectors conduct deep dives in food and nutrition classes as often as they do for other subjects, to ensure that all schools are taking the subject as seriously as they should.

Ofsted should also publish a regular food and nutrition "research review". Starting in April 2021 Ofsted uses research to establish an evidence-based understanding of the quality of a school subject. These reviews are based on existing literature and present research relevant to the specific curriculum. Reviewing food and nutrition will improve both the status and the quality of the subject.

Ofsted should ensure that mandatory certification under the accreditation scheme has been successfully executed, and should consider the certification award level in their overall school rating.

Funding

We recommend that the government should pay for the ingredients that children use in cooking lessons (as they do for schoolbooks), in early years settings as well as in schools. The current system leads to waste – it is hard for parents to buy ingredients in one-portion quantities – and to stigma for children whose parents struggle to afford them. Teachers must be given the time, equipment and support to be able to order, prepare and store these ingredients, including funding support staff where necessary.

We recommend that the government doubles the funding for the School Fruit and Vegetable Scheme, from £40.4m to £80.8m. But it should give the money directly to schools rather than administering the scheme centrally.

There should be an entitlement to at least one portion of local fruit or vegetables a day for every infant school pupil. Schools and their caterers should be encouraged to use the dynamic procurement scheme (see Recommendation 13) to purchase fruit and vegetables from local suppliers once this system is rolled out nationally. The Government should provide comprehensive guidance and training on how they can do so.

Recruitment and training

Primary school teachers should be given the training and guidance they need to be able to deliver the curriculum. At secondary level, an essential step is tackling the shortage of food teachers. The DfE should monitor the number of food teachers and actively recruit and attract more specialists to tackle the shortage, by improving the information available on how to become a food teacher and by reinstating the food teacher training bursary.[3]

Implementation

The implementation of all of these changes should be placed under a dedicated Eat and Learn team in DfE. The DfE should update the School Food Standards. These standards need to align with the Reference Diet when this becomes available (see Recommendation 14), so that school menus are both healthy and sustainable. In line with the Reference Diet, the requirement to serve meat three times a week should be removed from the School Food Standards. In the meantime, the DfE should also ensure that the Standards reflect the most recent scientific advice from the Scientific Advisory Committee on Nutrition (SACN) on sugar and fibre consumption in children.[4]

To support school leaders an interactive website for the initiative should be created by the DfE and the Office for Health Promotion. It should signpost schools and early years providers to the best materials available, and to expert organisations who can support the goals of the initiative. It should also create a space for exchanging best practice between schools. The initiative should be widely marketed and create opportunities for engaging parents in its goals and securing endorsements and support from celebrities and public figures.

Rationale

Children's diets are not good enough. Childhood obesity rates more than double during primary school.[5] On average, children of primary and secondary school age eat less than half of the recommended five portions of fruit and vegetables a day, and no age group or income quintile meets the recommendation.[6] The shortfall is worst in teenagers.[7] This is not only a problem in childhood but also leads to long-term issues: a childhood diet low in fruits and vegetables is linked to increased cardiovascular risk in adults.[8] Good nutrition and maintaining a healthy weight in childhood help prevent obesity and diet-related ill health later in life.[9]

The school closures that have punctuated the pandemic have worsened the situation. Evidence suggests that children's diets have deteriorated during the pandemic: 35% of secondary school pupils report consuming more cakes and biscuits, 41% more crisps and 28% more sugary drinks.[10] The effect is likely to be similar to that seen during summer holidays, with children having more access to unhealthy foods and behaviours (such as excessive screen time). Children

in food-insecure families may also have lost out on the hot, nutritious meal they would have expected at school.

Under normal circumstances, schools and early years settings offer a prime opportunity to improve children's diets. School-aged children eat a substantial proportion of their meals in school during term time, and for some a free school lunch is their main meal of the day.[11] They also have to study food: the curriculum states that schools should attempt to "instil a love of cooking in pupils", and teach them the skills they need "to feed themselves and others affordably and well, now and in later life".[12] By 14, all pupils should be able to "understand the source, seasonality and characteristics of a broad range of ingredients" and "cook a repertoire of predominantly savoury dishes".

The Government has not been using this opportunity as well as it might. It intervenes inconsistently to promote good nutrition. There is a particular lack of focus on increasing fruit and vegetable consumption among very young children and also among teenagers, when consumption is lowest.[13] Sensory food education, which has been shown to increase children's willingness to try new fruit and vegetables, is not yet widespread.[14]

Food education more broadly is inadequate. With the publication of the School Food Plan in 2014, food education was incorporated into the school curriculum.[15] But its implementation has been weak. There is no national champion for food education, no team responsible in DfE or Ofsted, no monitoring at a national level, and no subject reviews or research as there are in other subjects. As a result, many schools are simply not meeting the requirements of the curriculum. A 2018 survey of primary schools conducted by Ofsted found that while 89% had timetabled some curriculum time for lessons on food and healthy eating, only 26% offered cooking activities, 21% grew food and 24% had whole-school assemblies about healthy living.[16] Many secondary schools report that gaps in funding for materials, support staff and a lack of specialist teaching staff prevent them meeting the requirements of the curriculum.[17]

This problem has been exacerbated by the withdrawal of the food A-level. Food is currently the only national curriculum subject without an A Level. This means that children with an interest in food cannot pursue it at school beyond 16. Students who might have continued into higher education and careers in the food sector – including teaching food in schools – have lost a vital route to training.[18] The absence of an A-level in the subject has inevitably led to a reduction in status, funding and the availability of good food teachers.[19]

Without an A-level to go on to, the number of children taking the food GCSE has also declined. This is particularly concerning as recent statistics show that a third of the UK food and drink industry workforce is due to retire by 2024, leaving the industry facing a shortage of about 140,000 recruits.[20] These are not jobs that can be filled by unskilled school leavers: one-third of jobs within the food industry require a degree or postgraduate degree/PhD.

As well as the quality of food education, we also need to see further improvements in the quality of food provision in schools. As we discuss in Recommendation 13, this is vital in order to increase their uptake. Only 39% of primary school children who do not receive free school meals choose to eat them, often because they are unappealing.[21] This is regrettable, because school meals are almost always healthier and more nutritious than the alternatives.[22] And they can – if well-cooked and appetising – help to broaden palates and develop good eating habits by introducing children to new tastes and healthier foods.

One reason why some school lunches aren't as good as they should be is staffing. A skilled and well-trained chef will make high-quality, healthy, sustainable food that children will eat, and will know how to do this on a budget. In practice, however, school catering staff are often undervalued and untrained, both within schools and in the catering profession.[23] Formal training for school catering staff is not consistent and there is an emphasis on food hygiene and safety, and not on cooking skills.[24] Investing more in training is vital to improve the quality of meals.

Finally, expanding and improving the School Fruit and Vegetable Scheme (SFVS) will also play an important role in increasing consumption of fruit and vegetables by children. The existing scheme has already shown clear benefits. Government evaluations of the SFVS in 2004, 2006, 2008 and 2010 concluded that the SFVS increased consumption, encouraged children to try new fruit and vegetables that they might not have tried otherwise, and increased knowledge about healthy eating, particularly among children from deprived areas.[25] Giving schools the autonomy to choose local products and deliver the initiative in a way that is best suited to local requirements will improve the quality of delivery.

Costs and benefits

The annual cost to Government to deliver this recommendation is £206m, of which £124m is for food education ingredients. Over the next three years the total is £411m, assuming implementation from autumn 2023.

The DfE and the OHP should bid to secure funding in the next Spending Review.[26]

The initiative should be formally evaluated after the first three years, with a view to continued investment for at least ten more years. The £40.4m per year funding for the existing DHSC school fruit and vegetable scheme should be folded into this initiative.[27]

This estimate includes the cost of:

- At least one portion of fruit or vegetables per child each day (for 190 days) prioritising local, seasonal produce where possible (Recommendation 13).
- Food education support materials and ingredients.
- Monitoring and evaluation of the initiative.
- The Eat and Learn website to support school and early years providers

We estimate that mandatory training for catering staff in child nutrition and school food standards will take four hours, undertaken around usual duties or during inset days.

We expect the initiative to yield the following benefits:

- Increased uptake rates of school and nursery meals.
- A reduction in food waste.
- At least 90% of children leaving primary school having been taught all elements of the Design and Technology Curriculum on Cooking and Nutrition.
- At least 90% of children leaving secondary school able to prepare and cook at least five healthy savoury dishes using a range of cooking techniques.
- All staff working in school and nursery kitchens having received training to deliver high-quality, nutritious meals.
- More children leaving secondary school with passes in food GCSE and A-levels.
- More teachers who are qualified to teach food courses.

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Recommendation 4. Extend eligibility for free school meals.

What is it?

The Government should:

- Raise the household earnings threshold for free school meals (FSMs) from £7,400 to £20,000.
- Extend eligibility to children who are undocumented or have No Recourse to Public Funds (NPRF).
- Enrol eligible children for free school meals automatically.

This would increase the number of children benefiting from free school meals by 1.1 million, at a cost of £555m per year. The Department for Education (DfE) should bid for these funds in the upcoming Spending Review.

Rationale

The current income threshold for FSMs is too low. Children aged 7-18yrs only qualify if they belong to a family with after-tax earnings of £7,400 or less and receive qualifying benefits.[1] This threshold is so low that it excludes many families that are food insecure. Nearly half of food insecure families with children do not qualify for FSMs because of the earning threshold (see Figure 1).

In addition, children who have No Recourse to Public Funds or are undocumented are ineligible for FSMs however little their family earns (though exceptions have been made during the COVID-19 pandemic). There are almost 400,000 such children in the UK.[2]

Finally, even eligible children are often missing out. Currently, FSMs are "opt-in": parents have to know about the scheme and apply for it. The effect of this is that, according to a 2013 estimate by the DfE, 11% of children entitled to FSMs do not receive them.[3]

This has serious consequences for those children. In the most extreme cases, they are going hungry. In one study by the Unity Project, over half of parents of children with NRPF reported that on at least one occasion they had been unable to give their child a hot meal all day because they could not afford it.[4]

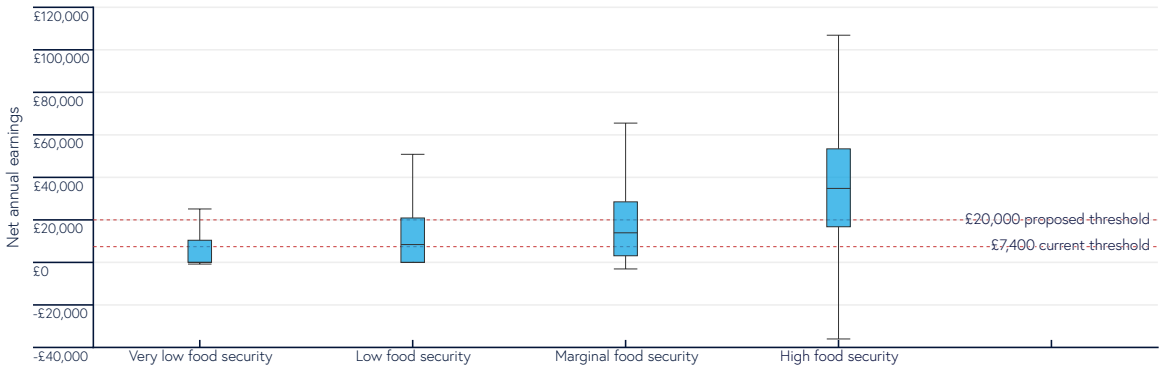
The harmful effects of hunger on children's behaviour and educational performance are well known from scientific research.[5]

Only 20% of children in the poorest socio-economic class who would have to pay for school meals do so.[6] The main reason for this is cost (although appeal and sub-standard school food are also an important factors – which we address in Recommendation 14).[7] Most children who do not eat school meals have a packed lunch instead, but this is almost always less healthy than even the most uninspiring school meal. Only 1.6% of packed lunches meet the nutritional standards required for a school meal.[8]

This contributes to the diets of poorer children being less healthy than those of their richer schoolmates. The National Dietary Nutrition Survey (NDNS) reveals that children from the least well-off families eat substantially less fruit and vegetables, oily fish, fibre and other healthy foods than children from the most well-off families.[9] Free school meals are the simplest, least intrusive way to ensure that all children have at least one well-balanced, healthy and nutritious meal a day.

In Part One of this strategy, published last July, we recommended that the Government should extend free school meals to everyone on universal credit, up to the age of 16. We estimated this would cost £670m. However, since the pandemic began, a further 230,000 households in the UK have registered for qualifying benefits: an increase of 7%.[10] This means that extending eligibility to everyone on Universal Credit (including NRPF children and children aged 16–19yrs) would now cost £790m, at a time when the public finances are already under extreme pressure.

We have therefore tried to target those households in most urgent need of free school meals. We found that increasing the income threshold to £20,000, and making FSMs available to children who are undocumented or have NRPF, would ensure that 82% of households with "very low food security", and 70% of households with "low food security" would



Box plots show median (central line), quartile ranges and full range (excludes outside values).

Figure 1

Food insecurity among families with an 8- to 19-year-old in England by annual earnings.[16]

be eligible for FSMs. In total, almost three-quarters of food-insecure families with school children would receive FSMs.

We also recommend introducing automatic enrolment for FSMs. The Government has data on which families receive benefits that qualify them for FSMs, but this is not shared with schools. The Government has previously argued that this option is unviable for reasons of data protection. We urge the DfE to find a viable mechanism for automatic enrolment: it cannot be right to let paperwork stand between a child and a hot meal.

Free school meals are extremely popular with the public. In one recent poll 89% of the respondents agreed that: "Every child has the right to have a healthy meal at least once a day".[11] Three-quarters agree that: "Parents are responsible for feeding their children, but government must step in for children whose parents are unable to do so". Just over half (51%) of respondents went even further, saying that "school meals should be free for all students so that poor students are not stigmatised". Respondents to the National Food Strategy's Call for Evidence put forward similar recommendations.

Children in England are in danger of being disadvantaged in this respect compared to those elsewhere in the UK. In Northern Ireland, the eligibility threshold is already £14,000, almost double that in England. Scotland currently has a similar threshold to England, at £7,320 per year, but FSMs will start being rolled out to all primary school children from August 2021.[12] Wales has the same FSM threshold as England, but the Welsh Government is planning to review the criteria and extend eligibility.[13]

Costs and benefits

Based on current household incomes, expanding FSMs in the way we recommend would cost the Government an average of £544m per year for three years.

Our recommendation would guarantee an additional 1.1 million children from low-income families a lunch in school. In total, 2.8 million disadvantaged children (including those aged under 7 who are eligible for means tested free meals) would benefit from a free school meal, covering 76% of families who are food insecure. For a full explanation of the methods used for estimating these figures, see online supplementary material.

This would have benefits for those children's health, but also for their educational achievement. Following one pilot of universal free school meals in 2009–11, primary school pupils made between four and eight weeks' more progress than expected.[14] Pupils from poorer families and those who had previously done less well at school showed the most improvement. Jamie Oliver's 2004 campaign to improve school food benefited children's achievement in English and maths, as well as reducing absences.[15]

In addition to the cost of free school meals themselves, eligibility for free school meals is linked to other funding streams. Schools are provided with a Pupil Premium for each child in receipt of FSMs. The purpose of the Pupil Premium is to help close the attainment gap of the most disadvantaged children. If the Government deems the cost attached to the larger number of Pupil Premiums once eligibility for FSMs is widened to be too high, the following two options would allow costs to be retained at current levels:

- The first option is to cap the Pupil Premium budget annually. The value of each Pupil Premium payment would then be determined by dividing the cap by the total number of eligible children.
- Alternatively, the Government could freeze the number of children eligible for Pupil Premium in each school at 2021/22 levels until the 2024 review following the completion of the Universal Credit transition. The review could address whether Pupil Premiums should continue to be linked to FSMs or if there is a better alternative for allocating them.

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Recommendation 5. Fund the Holiday Activities and Food programme for the next three years.

What is it?

The Government should extend Holiday Activities and Food programme for the next three years.

The Holiday Activities and Food (HAF) programme offers a free holiday club to children who normally receive free school meals. This includes at least one hot meal a day, prepared in line with the School Food Standards. In most areas, children who do not receive free school meals have also been able to take part in HAF programmes, for a small fee. In response to a recommendation in Part One of this strategy, the Government rolled the programme out nationwide for 2021. (It had previously been trialled in 17 local authorities.) There is, however, currently no funding for the programme to continue beyond 2021.

The Government should commit to funding HAF programmes for the next three years. It should also evaluate the scheme to make sure that the current level of provision – four days a week for four weeks in the summer and a week at Christmas and Easter – is enough to make sure vulnerable children are not going hungry.

Rationale

Holidays are a particularly hard time for families experiencing food insecurity. Three million children are estimated to be at risk of hunger during the school holidays every year, and data from food banks shows a surge in demand for emergency supplies over the summer.[1] During the pandemic, the percentage of households experiencing food insecurity – as defined by the Government – increased from 7.6% to 9%.[2] Between April 2020 and March 2021, 17% of respondents to a nationally representative survey reported skipping meals or cutting down on portions because they could not afford enough food.[3] Households with at least one child were significantly more likely than the general population to have had to get help from a food bank or food charity.

As well as a cooked lunch every day, HAF programmes provide fun activities, exercise and social interaction. Even before the pandemic, children from poorer households were less likely to participate regularly in extra-curricular activities than children from higher income groups.[4] Eighty per cent of parents on low incomes report being unable to take their children out for activities during school holidays.[5] This makes them feel isolated and harms their health: children from the most deprived areas see their cardiovascular fitness go down over the summer holidays by more than their peers.[6]

HAF clubs also provide activities related to cooking and healthy eating. Children who are eligible for free school meals show more interest in these activities than children who are not eligible for free school meals.[7]

Evaluations of the pilot HAF programmes and similar schemes elsewhere have shown their positive impact on disadvantaged children. A 2019 assessment of HAF found that children's socialisation and wellbeing improved as a result of participating in the scheme.[8] Where local programmes have been evaluated in the UK, they have shown children have better diets and activity levels on the days they attend the programme.[9] Parents' wellbeing is also improved when children attend holiday clubs, and families say that they are better able to feed themselves healthily.[10] In the USA, summer food programmes for children have been running for more than 50 years. The programmes are associated with significantly lower rates of food insecurity and have benefits both for the diets and the academic performance of children from low-income and food-insecure families.[11]

There is a broad public consensus that the Government should provide children with healthy meals if their parents cannot afford to do so. In a nationally representative poll run in November 2020 89% of the respondents thought that "Every child has the right to have a healthy meal at least once a day" and 75% agreed that "Parents are responsible for feeding their children, but government must step in for children whose parents are unable to do so".[12] Respondents to the National Food Strategy's Call for Evidence proposed that disadvantaged children, including those from low-income households or with no recourse to public funds, should be provided with free, healthy and nutritious meals over school holidays as well as during term time.

Costs and benefits

If this proposal is combined with our recommendation to raise the income cap above which children become ineligible for free school meals, we estimate that an additional 1.375 million children of all ages will be eligible for HAF and that 985,000 children will take up the scheme in total.[13]

The average annual cost over three years to deliver this recommendation is £449m. This figure takes account of the uplift in the number of children that would be eligible for HAF to align with our recommendation on FSM eligibility. [14] The Department for Education should bid for these funds in the upcoming Spending Review.

Endnotes

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[13] These numbers assume the uptake remains the same as the current scheme at 35%, and include existing and newly eligible children.

[14] The reduction in cost post-2024 assumes unemployment falls and household incomes rise after the pandemic.

Recommendation 6. Expand the Healthy Start scheme.

What is it?

The Government should expand the Healthy Start voucher scheme to all households earning under £20,000 with pregnant women or children under five. It should take steps to increase uptake among people who are eligible.

Healthy Start is a scheme which provides coupons for vitamins as well as vouchers that can be used to buy £4.25 worth of fruit, vegetables and milk per week.[1] The scheme is open to all pregnant women under 18yrs. It is also available to other pregnant women and families with children aged 3yrs or under, provided that they receive one of a number of qualifying benefits and have a low income.[2]

We recommend that all households with earnings under £20,000 should be made eligible. In addition, the age limit should be raised to include children aged under five. This would be accompanied by regular evaluations of the scheme, to understand its impact on fruit and vegetable consumption and to review the value of the voucher.

At the same time as expanding the scheme, the Government should attempt to increase uptake among eligible people by:

- Running a £5m communications campaign to publicise the expansion of the scheme.
- Making sure public information on the scheme (such as the website and leaflets) is up to date.
- Making the application process simpler.
- Making sure GPs, health visitors, midwives, social workers and early years workers are aware of the scheme and can help eligible families to apply. This could involve:
    - Updating the IT system GPs use so they are informed about Healthy Start.
    - Making it standard practice to give application forms to parents when they first record a pregnancy or when their children are born.
    - Making sure application forms are readily available in GP surgeries, children's centres and other settings where pregnant women and mothers are likely to be.
    - Encouraging local authorities, Clinical Commissioning Groups and hospital trusts to support people who work with pregnant women and young families (e.g. welfare rights workers, people working in food banks and community volunteers) to help them access the scheme.
- Continuing with plans to digitise the scheme (while ensuring alternative options are still available for those without digital devices).
- Considering how the scheme could be developed to allow purchases to be tracked, so as to allow more thorough evaluation of the scheme.

Rationale

Children do not eat enough fruit and vegetables. Children under five from families with low incomes eat on average only three portions of fruit and vegetables a day, instead of the five they need.[3] This can affect their health as adults. Eating too little fruit and vegetables as a child is linked to increased cardiovascular risk in adulthood.[4] Good nutrition and maintaining a healthy weight in childhood helps prevent obesity and diet-related ill health later in life.[5]

One of the main reasons for this is the affordability of fresh produce.[6] We set out the evidence for this in Recommendation 7. People consume more fruit and vegetables when they are cheaper or free.[7] A systematic review of 20 field studies found that discounts and vouchers for healthy foods increased purchases and consumption of them.[8] Another review of 14 studies concluded that food subsidy programs increase people's intake of targeted foods or nutrients by 10–20%.[9]

The current Healthy Start voucher scheme has been shown to increase spending on fruit and vegetables by 15%. This amounts to an additional 1.8kg of fruit and vegetables per month, or 22 portions.[10] Women receiving Healthy Start vouchers ate more fruit and vegetables and were more likely to get enough iron, folate, calcium and vitamin C than women who received vouchers for an earlier scheme that just provided milk.[11] Studies on the effects of Healthy Start

have shown that it plays an important role in helping pregnant women and their children access healthier foods. It has increased the quantity and range of fruit and vegetables consumed, as well as establishing good habits.[12]

Healthy Start has also been shown to have an impact beyond financial support.[13] Women registered for the scheme report that Healthy Start made them think more about their health and diet, and this led to better dietary choices.[14]

However, the current scheme is too narrowly targeted. Just 530,000 pregnant women and children are eligible for it.[15] Over 250,000 children under five living in food insecurity cannot benefit from it.[16] Expanding the eligibility to any family earning less than £20,000 would reach 73% of food insecure families.[17] Extending the age eligibility to children under five would fill an existing nutritional gap where poorer children have stopped benefiting from Healthy Start but are not yet in school and receiving free school meals.

Furthermore, low uptake means that many eligible families are missing out. Current uptake is only around 50–60%.[18] This is thought to be due to a series of barriers which make it difficult for eligible people to find out about the scheme and to then apply successfully.[19] The application form is only available in English, can appear complicated, and there is little support for applicants to help them complete the form. The result is that almost a third of applications are rejected because the form is incorrectly filled in.[20]

Uptake has actually worsened during the pandemic, just when many families need this scheme most. At the start of the pandemic, the Government removed the requirement for the Healthy Start application form to be signed by a healthcare worker. The unintended consequence was that healthcare workers stopped alerting families to the scheme, leading to a drop in uptake.[21]

Other issues also contribute to low uptake. The scheme still relies on paper vouchers, which can be lost and damaged, although the switch to a digital card is underway. Only registered retailers accept the vouchers and there is currently a shortage of them in rural areas and in shops serving minority ethnic communities.[22] Some retailers are helping out by providing extra discounts and promotions for people using their vouchers, but they say that the scheme is currently too small to warrant significant investment.

A strong communication campaign can make a difference to uptake in just a short time. Since the End Child Food Poverty taskforce began its communication campaign in September 2020 Healthy Start uptake has risen by ten percentage points.[23] We would expect to see a further rise in uptake in response to the taskforce refreshing its communications campaign in April 2021 and the Government increasing the value of the voucher.

Costs and benefits

Under this recommendation, an additional 612,000 people would benefit from the scheme, taking the total number of beneficiaries to just under 1.15 million.[24] It is hard to estimate the benefits of increasing fruit and vegetable intake on very young children, since the impacts of poor diets often take years to materialise. However, introducing fruit and vegetables at an early age can help set habits which stay into adulthood. We anticipate that many of the benefits of the current Healthy Start scheme, including increasing the healthiness of household shopping baskets, would also apply to newly eligible households.[25]

The expansion of eligibility would cost an additional £80m–130m a year, depending on take up.[26] We also recommend a one-off £5m communications campaign. This would bring the total cost of the scheme to £165m-£285m per year, depending on uptake. Over three years the total additional cost is £245m – £395 m. The Department for Health and Social Care should bid for these funds in the upcoming Spending Review.

There would be additional costs to implementing and monitoring the scheme, but given the scheme already exists, we do not anticipate these to be significantly more than they are now.

To put this in context, it is estimated the sugar and salt tax (see Recommendation 1) could raise between £2.9bn–£3.4bn a year. The additional costs of expanding Healthy Start coverage would be more than covered by the revenues of the levy.

Endnotes

[1] The Government increased the value of the voucher in response to a recommendation in Part 1 of the National Food Strategy. The sum chosen (£4.25) was estimated to cover the cost of providing one child with five portions of fruit and vegetables and half a pint of milk each day for a week, as assessed in: Scottish Government. (2018). Welfare Foods – a consultation on meeting the needs of children and families in Scotland. Scottish Government, p6. Available at: https://consult.gov.scot/health-protection/welfare-foods/user_uploads/sct0218087754-1_welfarefoods_p4.pdf

[2] The exact income threshold varies depending on which qualifying benefit the family receives. For example, families on Universal Credit can earn no more than £408 per week from employment.

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Recommendation 7. Trial a "Community Eatwell" programme, supporting those on low incomes to improve their diets.

What is it?

The Government should trial a "Community Eatwell" programme to provide targeted healthy eating support for people on low incomes. If the pilot is a success, the programme should be rolled out across England.

Pilot projects should identify patients who need dietary support and refer them to a Link Worker – a non-clinical staff member with specialised training to support healthy eating – who would design a programme to suit their needs and help them engage with local services. Patients would receive an Eatwell Prescription for free fruit and vegetables, perhaps alongside access to local programmes that encourage healthy eating (e.g. cooking classes in community kitchens). They would also get advice and support from their Link Worker to motivate them to engage in their personal programme.

Up to seven Primary Care Networks (PCNs) should be invited to bid for the chance to set up their own pilot programmes, to run over three years.[1] These programmes would use social prescribing and other interventions to support healthy changes in behaviour, in particular increasing fruit and vegetable consumption.

The exact makeup of the programmes should be designed locally, to take advantage of existing facilities and initiatives, and make sure the programmes respond to local needs.

Following the three-year pilot, a detailed evaluation should be conducted to help decide if and how the programme should be rolled out across England.

Rationale

We know that preventing disease is much more cost-effective than treating it. One study found that the average return on investment for public health interventions is 14, meaning every pound spent delivers fourteen pounds of benefits.[2] Yet in 2018, the NHS spent only 5% of its budget on preventing disease.[3] The Government is currently attempting to address this issue through a new "Green Social Prescribing" programme, which is being trialled in seven PCNs around England.[4] This is intended to improve patients' mental and physical health before they become acutely unwell. It enables GPs to prescribe therapeutic activities such as walking clubs, community gardening and food-growing projects.

The CEP would complement these existing services by giving practical support to patients to change their dietary behaviour. Exercise alone is not sufficient for people to lose weight. The CEP would help break down the barriers of knowledge, confidence, accessibility and cost that can stop people improving their diets.

Low consumption of fruit and vegetables is linked to cardiovascular disease, diabetes and cancer.[5] In 2019, diets low in fruit accounted for 10,066 premature deaths and approximately 210,000 disability-adjusted life years (DALYs) in the UK.[6] Diets low in vegetables accounted for 5,935 premature deaths and just under 98,000 DALYs. While almost everyone in the UK eats too little fruit and vegetables, the problem is particularly acute among the most disadvantaged. The poorest 10% of British people eat on average 42% less fruit and vegetables than recommended, while the richest eat 13% less.[7] The bottom 20% of the population by income eat a full portion of fruit and vegetables less a day than the top 20%.

A major reason for this is affordability. Healthier food tends to be more expensive per calorie than less healthy food.[8] The healthiest products in the Nutrient Profile Model scoring system (such as potatoes or broccoli) cost over six times more per calorie than the least healthy products (such as chocolate bars or pepperoni).[9] The poorest 10% of people in Britain would have to spend almost three-quarters of their disposable income on food in order to eat in line with the Government's recommended Eatwell Guide.[10] But convenience and knowledge also play a role. People on low incomes are less likely to have access to a car and therefore less able to travel out of their area or transport food in bulk.[11] They may not have a fridge or freezer.[12] Finally, they may lack knowledge about the benefits of fruit and vegetables in preventing disease, or how to cook with them.[13]

For this reason, initiatives aiming to increase fruit and

vegetable intake have been shown to be effective in improving people's health. They can reduce the body mass index (BMI) of patients suffering from obesity, hypertension and diabetes, as well as of overweight and obese children.[14] Increasing fruit and vegetable consumption has been shown to be more effective at improving health than reducing consumption of foods high in fat and sugar.[15]

An effective way to increase consumption is to provide people with free fruit and vegetables, including through prescription programmes.[16] In Washington DC, for example, the Produce Prescription Programme allows doctors to prescribe vouchers for fresh fruit and vegetables and receive cooking lessons, nutritional education and guided tours of shops and supermarkets to help them shop well. Of 120 patients who received produce prescriptions between 2012 and 2017, half lost weight while on the prescription.[17]

Such programmes can be highly cost-effective. The NHS spent over half a billion pounds on anti-diabetes medication in 2018/19, at an average cost of more than £300 per patient.[18] By contrast, in one US study, a fruit and vegetable prescription programme cut diabetic patients' blood sugar levels by an average of 7.5% in 13 weeks, at a cost of $40 per patient.[19]

We recommend that the Government should trial such a programme in the UK. This should be led locally by PCNs, working with community organisations: such local, community-based approaches have been shown to be effective at changing people's eating habits.[20]

Costs and benefits

The pilot programme would cost £2m per year, or £6m over the three-year trial.[21] The Department of Health and Social Care should secure funding for this through a bid in the next Spending Review. If the programme is rolled out across the country, the cost would increase.

The programme should increase consumption of fruit and vegetables in the communities where it is piloted. These communities should be among the most deprived according to the Index of Multiple Deprivation.[22] Patients should be monitored to see whether they experience direct health benefits, including weight loss and reductions in blood sugar, and whether this eases pressure on local NHS services – in particular GP appointments and the cost of medication.

Endnotes

[1] NHS England defines PCNs as follows: "GP practices working together with community, mental health, social care, pharmacy, hospital and voluntary services in their local areas in groups of practices known as primary care networks (PCNs). PCNs build on existing primary care services and enable greater provision of proactive, personalised, coordinated and more integrated health and social care for people close to home." NHS England. Primary Care Networks. Available at: https://www.england.nhs.uk/primary-care/primary-care-networks/

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Recommendation 8. Guarantee the budget for agricultural payments until at least 2029 to help farmers transition to more sustainable land use.

What is it?

Defra should guarantee the budget for agricultural funding until 2029, maintaining it at its current level of £2.4bn (in real terms). It should ring-fence £500m–£700m of this money for natural carbon removal and restoring semi-natural habitats.

The Government made a manifesto commitment to maintain funding for agriculture at an average of £2.4bn per year until the end of this parliamentary term (2024). This budget was based on 2019 rates of subsidy payment for farmers, rather than on a calculation of the cost of delivering specified environmental outcomes. It should maintain at least this overall spending commitment through the remainder of this decade, progressively shifting around £2.2bn of agriculture spending from Direct Payments (the Common Agricultural Policy subsidies we have inherited from the EU) to Environmental Land Management schemes (ELMs). This leaves around £200m for improving farm productivity and innovation, in line with Defra's proposals.

The Government should ring-fence £500m–700m for schemes to encourage natural carbon removal and habitat restoration. These schemes would incentivise farmers to convert their less productive land into nature-rich, carbon-sequestering landscapes. Some of these landscapes would still produce food, albeit with lower yields. Some priority habitats, such as heath and species-rich grassland, are best managed with conservation grazing. Very extensive grazing is compatible with creating new woodlands. Livestock farmers seeking to diversify into woodland entirely could retain roughly 10% of a typical commercial flock or herd.[1] Other areas of land (notably peatlands, which can only recover under extremely low grazing pressure) would not produce food at all.[2]

Farmers would receive payments on the basis of carbon sequestered and nature restored – both of which can be monitored using techniques developed by the Joint Nature Conservation Committee.[3] Schemes for land use change should be designed in ways that are simple and easy for farmers to enter: it should be no more difficult than the Sustainable Farming Incentive (SFI) that is already being rolled out.

The initial payment rate would be 100% of costs, with an additional per hectare uplift to make sure farmers receive a fair return on land brought out of production.

Defra should ensure that it is easy for tenant farmers to enter the schemes, as well as farmers who own their land. Each scheme should be carefully proofed to ensure it does not inadvertently disadvantage tenants or commoners. The schemes should be designed with sufficient flexibility to allow innovative approaches to achieving their goals.

Rationale

In the UK, agriculture is responsible for about 10% of total greenhouse gas emissions, and 83% of ammonia emissions, mostly from livestock farming and fertiliser use.[4] This has barely changed over the past ten years. Morever, intensive agriculture has had a devastating effect on biodiversity. Since 1970, 41% of UK wildlife species have decreased, and in the last ten years we have failed to meet 14 of our 20 biodiversity targets.[5]

Farms must be supported and incentivised to reduce their total environmental impact, in order to help meet a range of national targets, the most notable of which are the "30x30" commitment to protect 30% of land in England for nature by 2030, the 25 year plan for nature, and the net zero target and carbon budgets.

Some progress can be made through improvements in practice (such as lowering pesticide and fertiliser use or managing animal waste better). But changing the way agricultural land is used will be central to restoring nature and achieving our net zero goals. We estimate, in line with the Climate Change Committee's (CCC) 6th carbon budget report, that roughly one tenth of agricultural land in England will need to transition to woodland, restored peat, other semi-natural habitats and energy crops by 2035, as part of the broader UK road to net zero.[6]

This is why the Government is reforming the agricultural support system in England. By 2027, the previous land area-based Basic Payment Scheme (BPS) will be fully phased out and replaced by payments for public goods. ELMs will pay for farmers and land managers to do things such as maintaining hedgerows,

low-till farming and maintaining new woodlands.

We think that Defra is, broadly speaking, taking the right approach. They will use 30% of the ELMs budget for the Sustainable Farming Incentive and will ensure that all payments are for changes that go beyond the regulatory baseline.[7] Farmers have received subsidies based primarily on the amount of land they farm, or the quantities of food they produce, for over seventy years. They need time – and money – to adjust their business models.

Nearly 40% of farms currently depend on Basic Payments to make a profit. Cutting these subsidies before they have had time to adjust could be disastrous for their bottom line. Livestock farms are more likely to be affected by these changes than other farms, and in the longer term, their prospects could get even worse:[8] new trade deals are likely to make the market for meat more competitive, while reductions in meat eating and increases in the consumption of alternative proteins will make it smaller.[9]

Of course, the whole point of ELMs is to incentivise sustainable farming practices over unsustainable ones. But for farmers to adapt and plan for the future they need clarity. Many farmers have voiced concerns about the lack of clarity over what ELMs will mean in practice, particularly for small farms;[10] and about the industry becoming increasingly unappealing to the younger generation because of the low profit margins and the uncertain future. This response to our call for evidence captures the bind that some farmers find themselves in:

"I write this with a real dilemma on my hands that I imagine must be typical of many farmers. We have a small upland farm with permanent grassland & don't use artificial fertilisers. We produce ruminants (deer) which make this small farm viable. Should we continue as we are, or should we plant trees and thereby have no income and no value to our land? Economically it's a no-brainer. But ecologically?" – National Food Strategy Call for Evidence.

Land use change for natural carbon removal and semi-natural habitats

Simply removing Basic Payments by 2027 would see nearly 40% of farmers go bust, even if they retain existing payments for nature.[11] At the other end of the spectrum, removing Basic Payments would still leave the top quintile of farms making profits of £30 to £50 for every £100 of input.[12]

These differences in profit are not just the result of farmers' effort or skill. Every farmer knows that much of the difference lies in the land itself. But the challenge of farming unproductive land can now be turned into an advantage, for both the farmer and the common good. Some of this unproductive land is exceptionally well suited to creating environmentally friendly landscapes, ranging from species-rich wood pasture grazed by rare breed cows, all the way to new biodiverse forests and rewetted peat bogs. They are overwhelmingly upland farmers, though lowland grazing farms appear in this group too. The nation needs the carbon storage and natural habitats that their land – around 20% of English farmland – is exceptionally suited to provide.

Reducing food production on some of this land poses very little risk to our food security. Losing the least productive 20% of farmland would reduce the calories we produce by only 3%.[13]

We commissioned Forest Creation Partners (FCP) to assess the suitability of agricultural land in England for the planting of both broadleaf and commercial coniferous forest, based on a suitability assessment incorporating physical, regulatory, and economic constrains (see online supplementary material). Using a search area of the least productive land in England, which produces less than 3% of our calories, their analysis suggests around 420,000 hectares are likely to be suitable for forestry creation.[14] This is enough land to meet the Climate Change Committee's tree planting recommendation for England by 2030 and 2050.

This is, however, unlikely to happen without Government support. Mixed broadleaf forest is not a commercial enterprise, due to a lack of private markets for carbon credits and eco-system services. Coniferous forest can be profitable without public support, beyond an initial establishment grant, but it is less good for biodiversity than mixed broadleaf forest.[15] Peatland can never be profitable in the absence of markets for carbon sequestration or natural capital restoration. Even extremely extensive grazing to maintain certain priority habitats is uneconomic without payments for nature. Over time, as markets for these goods are developed, farmers should be able to contract with private entities to supply them.

In the meantime we, the public, should provide a fair return for nature and carbon removal, just as we should pay a fair price for the food that farmers grow. We calculate that £500m–£700m per year –around a third of the ELMs budget – would enable the Government to give farmers a fair return for managing roughly 400,000 hectares of species-rich broadleaf forests, 325,000 hectares of restored upland peat and around 200,000 hectares of farmland land dedicated

mainly to nature. This would start the land use change necessary to meet the country's nature and net zero goals.

Any scheme to support land use change needs to be designed in a way that is simple and easy to access. Previous woodland creation schemes have had limited participation due to the complexity of Countryside Stewardship prescriptions, along with delays in payments and lack of clarity over funding.[16] It also needs to be easy for tenant farmers to participate. At present almost half of agricultural land is tenanted.[17] Many recent tenancy agreements are shorter than five years and do not permit tenants to plant trees.[18] Potential solutions include extending tenants' rights to object to landlords prohibiting reasonable environmental changes being made on their land, and discourage short-term tenancies by restricting inheritance tax relief to tenancy agreements of ten years or more.

A scheme to enable land use change needs to be scaled up rapidly, so it is available to farmers seeking to respond to the following policy deadlines:

- The halving of BPS by 2024 and its removal by 2027.
- The 2030 "30x30" nature commitment.
- The 2032 end of the 5th carbon budget, in line with the UK's 2050 net zero law.
- The 2042 end date for the 25-year plan for nature.

Without rapid introduction of Defra's other planned environmental schemes, marginal farms are likely to see the Sustainable Farming Incentive (SFI) as the only viable source of support. Indeed, farmers and land managers have already made requests for eligibility for SFI to be as broad as possible.[19] Without a ring-fenced budget for land use change, and a clear route through the agricultural transition period, marginal farmers have limited options. They can either: lobby to expand the SFI into a scheme that could end up paying all farmers without providing environmental goods; attempt to intensify production in ways that cause both environmental damage and lost opportunity for carbon capture;[20] or else go out of business and sell their land, causing a structural shift in land ownership away from traditional, small-scale ownership.

The public values farmers, and wants to see them fairly paid for the work that they do.[21] Land use change through ELMS should pay farmers a fair wage for the nationally important carbon and nature restoration work they will do. Our economic analysis shows that ELMS should expect to pay farmers around £775 per hectare for the multiple environmental benefits of broadleaf forest. Doing so will address the negative impact of current support schemes and farming methods on the health and wellbeing of farmers. (Roughly one in eight farmers never take holidays, despite the average working week exceeding 65 hours.[22]) It will also bolster rural incomes, supporting the economic viability of increasingly diversified rural economies.

Total funding for agriculture

To ensure that ELMs are successful in achieving their targets for the environment, Government will need to show the schemes are adequately funded, accessible, and guaranteed for the long term. Otherwise many farmers may seek to make up for lost income by increasing intensification. This would make it even harder to achieve our environmental goals.[23]

We have worked with the Wildlife and Countryside Link to estimate the costs of ELMs, working from models originally put together by the Royal Society for the Protection of Birds, The Wildlife Trusts and National Trust.[24] While far from complete, these calculations suggest that a budget of around £2.2bn per year is approximately what is needed to support the farming sector to contribute to environmental targets over the next ten years (Table 1). If we include Defra's 9–10% budget for measures improving farm productivity, this would suggest a total budget of £2.4bn–£2.5bn will continue to be needed for agriculture.[25] This would not, however, include provision to improve people's enjoyment of the natural environment, which is a target in the 25 year environment plan and a focus of public goods payments under the Agriculture Act 2020. So the total budget required is likely to be substantially greater. As an absolute minimum, therefore, the Government should commit to at least maintaining current agriculture spending until 2029.

Table 1

Annual cost to deliver Environmental Land Management outcomes over the next ten years (NFS updated RSPB model)

Land management practice	Cost (£m per year in England)
Priority habitats	760
Boundary features	333
Historic environment	56
Arable land	523
Grassland	342
Organic	17
Total land management	**2,031**
Additional elements	
Environmental land management advice	42
Securing vulnerable high nature value farming	120
Business advice to vulnerable HNV farms	3
Securing long term changes in land use	10
Sub-total: Additional cost elements	**175**
Total	**2,206**

Costs and benefits

The benefits of the land use change component of ELMs should be consistent with the policy targets outlined above, and should include (by 2035 at the latest):

- The creation of at least 410,000 hectares of additional woodland in England, equivalent to 3% of the land area of England – bringing English woodland cover up to 13%.[26]
- The restoration of an additional 325,000 hectares (100%) of upland peat.
- An additional 200,000 hectares of agricultural land to be managed for nature that is not suited to living on a farm. This will involve allowing large areas to restore natural processes and rebuild ecosystems. Restorations may include lowland heath, large water bodies and marsh, reed beds, wet grassland habitats, and species-rich grassland. Specific actions will need to be tailored to local conditions.

Overall, this would enable an extra 7% of land in England to be protected for nature by 2035. This will contribute to the Government's "30x30" pledge, which requires 30% of the total land area of England to be protected for nature by 2030. Presently, 26% of land in England has some form of protection, meaning that at least 4% more land will be needed to meet the target.

In addition, much of the land that is already protected is in a poor ecological state: 75% of Sites of Special Scientific Interest (SSSIs) in English National Parks are in an "unfavourable condition", meaning they are not being protected sufficiently.[27] Alongside improvements to farmed land, ELMs could reverse the decline in English nature and help fulfil the 30x30 pledge.

Our calculations of the cost of land use change – which led to the recommendation of ringfencing £500m–700m – are based on forestry cost analysis from Forest Creation Partners (online supplementary material available on the National Food Strategy website), alongside analysis of the cost of restoring and maintaining peatland and other priority habitats. Based on these, we have calculated the annual costs required to support the creation and maintenance of these habitats. We made two assumptions that are relevant to the cost of this approach:

- Restoring forest, peat, or priority habitat must not be loss-making for the farmer. For forestry specifically, we adapted the FCP model, so that broadleaf woodland, which is loss-making without payments, would break even with a 0% rate of return over 40 years.
- The land manager must receive a fair and reliable income – the FCP's model assumes annual earnings of £28,000 for a 50-hectare plot. We have included similar labour costs in our assessments of peat and other priority habitats.

Assuming both of these requirements, and without carbon credits, total payments of £775 per hectare per year would be needed to support broadleaf woodland over a 40-year period. At a carbon price of £69/tCO_2e – below HMT's expected carbon price for 2030 – with carbon credits paid from year 15 of forest establishment, payments could drop to £250 per hectare per year.[28]

Currently, the least profitable 25% of upland farms receive ~£260/ha in annual subsidies, most of which are in BPS payments.[29] Despite this subsidy, the average upland farm relies on ~£28,000 in unpaid labour undertaken by farmers and their families.[30]

Without a carbon price, our broadleaf scenario is more expensive. This is because our forestry scenarios assume an annual salary, rather than expecting unpaid labour. If we assumed the same willingness to carry out unpaid labour for woodland management, the cost of broadleaf woodland, without income from carbon credits, would drop to £257/ha – demonstrating the comparative cost effectiveness of paying for woodland compared to our existing system.

In broad terms, peat restoration and maintenance of priority semi-natural habitat cost between £240–£600/ha before any carbon credits.

Each pound invested benefits the public several times over. Achieving net zero in the UK by 2050 would cost landowners a total of £1.6bn per year, and return £0.9bn per year in private revenues. It would return public benefits of £4bn per year, however, so public investment would provide value for money.[31] Nature restoration is estimated to yield benefits ranging from 2:1 (e.g. saltmarsh restoration) to 9:1 (inland wetlands restoration).[32]

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Recommendation 9. Create a Rural Land Use Framework based on the Three Compartment Model.

What is it?

Defra should devise a Rural Land Use Framework, to be in place by 2022.

First, Defra should work with the Local Nature Recovery Networks to prepare a National Rural Land Map (as described in Recommendation 12). It should include:

- Data on the productivity of agricultural land derived from the June Farm Survey and the Agricultural Land Classification.[1]
- Priority areas for the environment (using, for example, existing data on Peaty Soils Location and Living England maps).[2]
- Areas where there are significant levels of pollution (with data from, for example, the UK Emissions map and the Together for Rivers map).[3]
- The England Tree Strategy, England peat action plan and Local Nature Recovery Strategies.[4]

Defra should then put together the Rural Land Use Framework and publish this as a report. This should provide detailed assessments of the best way to use any given area of land, and inform the many existing incentive schemes and land-based strategies in Defra. The framework should set out the best way to achieve a "three compartment model" for the country, including which land is most appropriate for semi-natural land, low-yield farmland and high-yield farmland, as well as land that is appropriate for economic development and housing. It should be clear how the model can help meet the Government's legal commitments to reach net zero by 2050, and protect 30% of land for nature by 2030 (the "30x30" target). The report would be updated annually.

Land changes cannot be imposed by central Government. Defra should make its National Rural Land Map freely available for land managers, to help them make decisions about the use of their land. The framework should also be used by central and local government in decision making – for example, to guide funding from Environmental Land Management schemes (ELMs) for Local Nature Recovery and Landscape recovery. There are currently at least eight different schemes that could influence land use– from the England Trees Action Plan to the ELMS – controlling funds ranging from £10m to £2.4bn per year. The Framework would help join these up. It would also be used to shape regulatory priorities (for example, to improve land management in Areas of National Beauty and National Parks), and to help planning officers take decisions on applications.

The data assembled for both the map and the framework should be shared across government, coordinated by the Geospatial Commission. In particular, Defra should work closely with the Ministry of Housing, Communities and Local Government in support of its housebuilding agenda and reforms to the planning system. The additional land needed for new housing is relatively small (approximately 2.2% of total UK land by 2060): sharing data across government can help make sure that the most appropriate land is used.

Rationale

Land is a scarce resource in England. In the past, we have used it for three main purposes: housing, recreation and food production. (This latter currently takes up 70% of English land.) We now need to do more with our land, using it for nature restoration as well as carbon reduction and sequestration.

The Climate Change Committee has estimated that approximately 21% of agricultural land in England will need to change function – to forestry, energy crops, peatland or agroforestry – in order to meet our net zero commitments.[5] This does not necessarily mean taking the land out of agricultural use entirely. Indeed, without using land for combined nature and carbon removals, or combined nature and food production, it may not be possible to meet all our targets. (At least, not without offshoring much of our environmental footprint and food production.)

Every piece of land is different. The kind of land that could deliver the greatest environmental benefits is often not very agriculturally productive. The most productive 33% of English land produces around 60% of the total output of the land, while the bottom 33% only produces 15%.[6] Similarly, making farming more environmentally sensitive in specific parts of the country could deliver disproportionate gains:

reducing runoff just from the 5% of agricultural land that produces the most water pollution could reduce phosphorus and sediment in our rivers by 25%, and their nitrogen load by 13%. Indeed, the only major area in England where our food, environmental and carbon reduction goals clash is the Fens. This is exceptionally good agricultural land, in large part because of its peaty soil, which would otherwise be a major carbon sink.[7]

This is why we need better data on how the land should be used. Unless we have a clear idea of which land should ideally be used for what, we could compromise our food security or make our environment even worse. Collating and publishing this information will help farmers and landowners to work together to improve conditions in local areas. It will also make the new ELMs much more likely to succeed. This was recognised by many stakeholders in the government's consultation on the ELM policy discussion document. They repeatedly highlighted the need for improved use of data and evidence to determine local priorities, including the use of land mapping data.[8]

In drawing together the recommendations in this report, we undertook an analysis which makes a start at doing just this. We identified land that is best used to protect both nature and carbon at the same time; showed that much of this land could be mainly used for nature and carbon at low risk to our food self-sufficiency; and analysed where within this low productivity land peat and woodland could be restored. Our results are summarised on four maps below (Figures 1, 2, 3, and 4). This underpins our recommendations for ELMs (Recommendation 8) and this land use framework.

Costs and benefits

A Rural Land Use Framework will outline the most effective means of achieving net zero by 2050 and 30% of land managed for nature by 2030. By using better data, we will be able to achieve these targets while reducing land used for farming by less than 1% of agricultural land per year up to 2050, maintaining food security, increasing forest coverage by 4% by 2050 and improving and increasing other land managed for nature.

Carbon nature food maps[9]

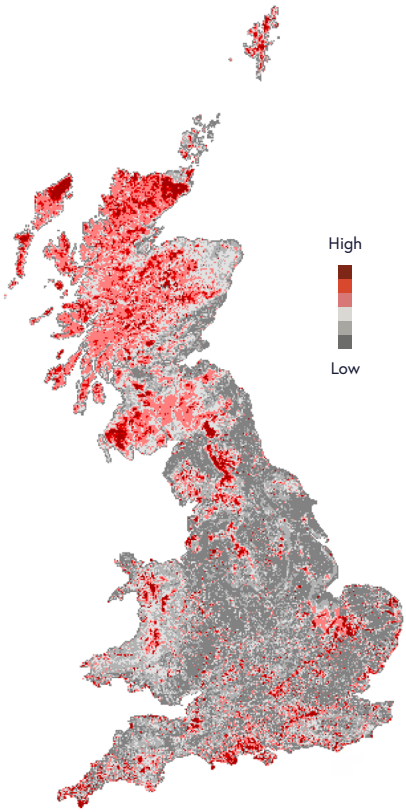
Figure 1

Priority regions for both carbon and biodiversity

It is possible to devise a combined carbon and biodiversity strategy, by finding those areas that are high in both carbon and nature value, and deprioritising areas that are high in carbon but very low in nature value.

Using this combined strategy across Great Britain finds that 90% of our highest priority carbon storage, and 91% of our highest priority nature areas can be found in the same locations.

There doesn't need to be a conflict between protecting nature and carbon.



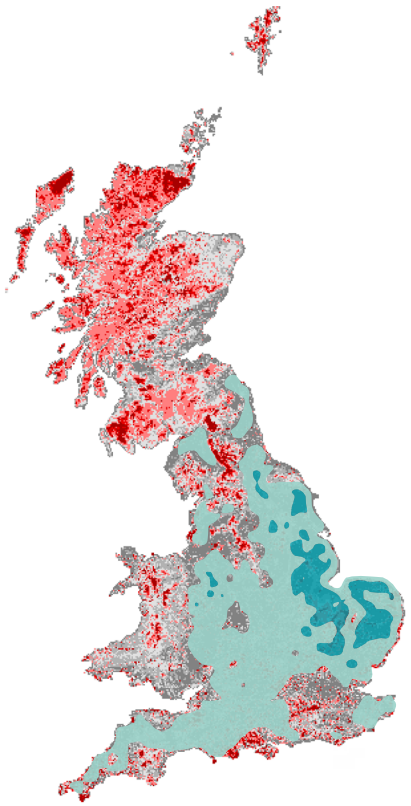


Figure 2

Much of the agricultural land that produces our least calories is high priority land for carbon and nature

The area in blue and green grows ¾ of the total calories produced in England. The areas not covered in these two colours could – in theory – not be farmed at all if we reduced waste in the system. They contain many of the highest priority areas for nature and carbon protection - the Fens being the major exception.

Within this clear area, giving 10% of the least productive farmland to nature would mean producing 1% fewer calories. Doubling this to 20% would mean producing 3% fewer calories.

Figure 3

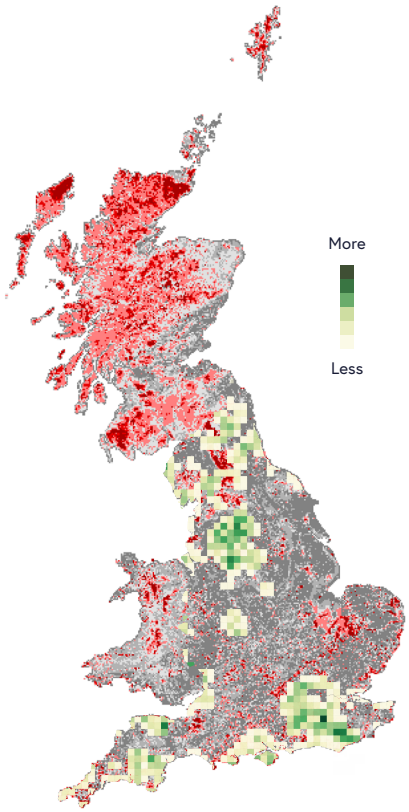
We can grow enough forest on our least productive agricultural land to reach our net zero goals

This map shows the share of the least productive 14% of farmland (across 2.4m hectares) that is suitable for forest creation. The underlying analysis takes place at farm scale.

The assessment excludes a large range of land due to physical suitability, planning constraints (all peat, protected habitats, and areas unlikely to receive planning permission are excluded), and future climate suitability.

Darker greens indicate a greater proportion of land is suitable.

In total, 424,456 ha (17%) within this area are plantable - with the majority being suited to broadleaf woods. This is around the area which would need to become woodland to hit our net zero goals.



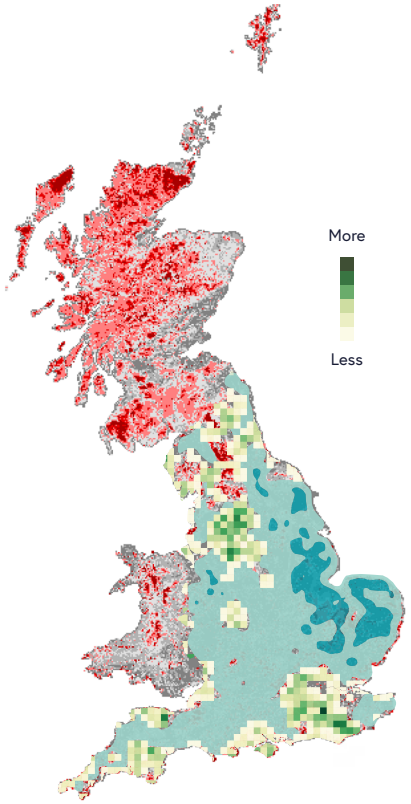


Figure 4

Priority land for nature and carbon, land suitable for forestry and land that produces most of our food

Combining all these maps together shows, at high level, areas in England where the land is most well suited to new woodland, restored peat, and other natural habitats (blank or green squares); those areas well suited to lower intensity farming (green), and higher intensity farming (blue).

A national map can only tell part of the story: farm productivity, habitat quality, and people's priorities vary at local level, and this is ultimately where decisions on land use will be made.

Note: Calorie production and forest analysis conducted for England only.

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Recommendation 10. Define minimum standards for trade, and a mechanism for protecting them.

What is it?

The Government should draw up a list of core minimum standards which it will defend in any future trade deals. These should cover animal welfare, environment and health protection, carbon emissions, antimicrobial resistance, and zoonotic disease risk. The Government must then set out which mechanisms it intends to use to protect these standards.

The UK has high standards of animal welfare and environmental protection. While many of these are important to our trading relationships, there are standards that are less relevant to international partners (for example, the way that we manage our grouse moors). There are also some standards that do not apply in the UK but are necessary to reduce serious harms overseas (for example, rules against deforestation of rainforests). The Government should set out a list of minimum standards which it expects imported food to meet in support of the objective of a healthy and sustainable food system.

The Government should also set out a mechanism which it proposes to use to defend these standards in trade deals. This means making sure trade deals do not force the UK to weaken its own standards, or open the UK market to imports that do not comply with those standards and thereby undermine them. One way to do this without breaking the WTO's anti-protectionism rules would be to make tariff reductions within free trade agreements (FTAs) contingent on products complying with UK core standards. Noncompliant products would incur the UK's full most-favoured-nation tariff, which is high enough to keep imports of such products at low levels. This is the mechanism we proposed in Part One of this strategy, and which was also suggested by the Trade and Agriculture Commission.[1] Whether the Government chooses this approach or another, it must have both the mechanism and the standards in place before taking any further steps towards trade agreements with countries such as the United States and Brazil.

Rationale

Signing free trade agreements with countries such as Australia, Brazil or the United States, who are able to produce food at a lower cost to the UK, is likely to cause our imports of food to rise. Many of the countries with which the Government is seeking to make free trade agreements can produce food at a lower cost than the UK. For example, the cost of producing beef in the UK is 2–4 times higher than in Australia (UK: ~ $480-780 per kg sold, Australia: $180-310 per kg sold).[2] Much of this difference is due to differences in landscape, weather conditions, scale of operations and other factors which have no connection with standards. Many Australian farm products would still be highly competitive on the UK market even if they complied fully with UK core standards.[3] There is even evidence to suggest that some overseas farmers can produce food at rather lower environmental cost than UK farmers can (for example, New Zealand lamb).[4]

But some countries do produce cheaper food through environmentally costly practices – such as ongoing deforestation for grazing land. Some have very low standards of animal welfare. If cheap food from these countries was allowed to flood the market, UK farmers would not be able to compete on price. Although UK consumers like the idea of locally produced food that is kind to animals and the planet, we are hugely influenced by price.[5] Cheap, low-standard food would quickly capture a greater proportion of the market than locally produced foods. This is particularly the case for ready meals, catering and processed foods, where provenance is less clear and which represent a large and growing fraction of our consumption.[6]

This risks seriously increasing our global impact on nature and the environment. The UK market for meat and dairy already takes up more land abroad than at home, and food that is imported has a total impact on species loss ten times greater than the food we produce domestically.[7] As the problems of the environment and nature are global ones it would be pointless – and hypocritical – to reduce the harms created by our own farming system while simply transferring those harms overseas.

Beyond carbon and the environment, there is the issue of animal welfare. The UK has some of the highest standards of animal health and welfare in the world.[8] For example, as part of the EU we banned growth hormones for cattle in 1981, while these are still in use in countries including Australia, Canada and the

US.[9] There are also examples where we have higher standards than the EU. The maximum stocking density for chickens is 39kg/m^2 in the UK, compared to 42kg/m^2 in the EU.[10] Access to the lucrative UK food market is a prized commodity: if we strike careful trade deals, which allow privileged access to our market only to producers with standards that match our own, we can incentivise positive change across the global food system. Conversely, if we accept goods with lower standards, we undermine our own values while disincentivising progress abroad.

The UK public feels strongly about maintaining our food standards as we enter trade deals. Numerous opinion polls have shown this to be the case, e.g. 82% would prefer to retain current standards;[11] 93% think food standards should be maintained after EU Exit;[12] 81% of respondents would be concerned if the UK Government relaxed laws on meat standards to secure trade deals with the USA and the rest of the world.[13] Red Wall swing voters have also said that they would not want our food standards to be undermined.[14]

This is why the Conservatives, in their 2019 manifesto, pledged that "in all of our trade negotiations, we will not compromise on our high environmental protection, animal welfare and food standards". In Part One of this strategy, we proposed a way to honour this pledge. We suggested that the Trade and Agriculture Commission should draw up a list of core standards, covering food safety, animal welfare, responsible antibiotic use and the prevention of severe environmental impacts (for example, the clearing of rainforest for beef grazing). In striking trade deals, it should offer to lower tariff barriers only on those products that comply with these standards. Our partner countries would be asked to set up verification systems, so that exporters wanting to benefit from reduced tariffs could prove that they were compliant with UK standards. These would be similar to those currently operated by the US Department of Agriculture, which verifies American beef producers wanting to export certified hormone-free beef to the UK and EU. A similar recommendation was made by the Trade and Agriculture Commission when it reported earlier this year.[15]

Despite these recommendations from two independent reports (both commissioned by the Government), the Government has still not said what standards it proposes to protect, or what mechanism it will use to defend them in trade negotiations. It has now agreed in principle a trade deal with Australia which contains no such mechanism. As things stand, this will eventually allow Australia to export unlimited quantities of meat to the UK, regardless of how it was produced. Australian standards are closer to the UK's than those of other countries, such as Brazil, and the volume of imports from Australia may not be large enough to seriously compromise the UK's attempts to protect the environment and animal welfare. But this deal sets a dangerous precedent.

If future trade agreements are made in the same way – with no core standards in place, and no way of enforcing them – it will make it much harder to carry through the recommendations in this strategy. Reducing the carbon footprint of meat consumption in the UK will be challenging enough as it is. But if we sign Australian-style deals with countries such as Brazil, it would mean allowing cheap beef with a much higher carbon footprint to undercut our own produce. Our true carbon footprint – including that from imports – would be worse than ever, and we would bankrupt our own farmers in the process. This would be both ethically and commercially absurd. That is why the Government must move quickly to implement its manifesto pledge.

Costs and benefits

We have not assessed the potential benefits of this recommendation. This is because it is intended to avoid worsening our position rather than to improve it.

Endnotes

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Recommendation 11. Invest £1 billion in innovation to create a better food system.

What is it

Under its new Innovation Strategy, the Government should invest in transforming the food system. This should include:

- Establishing a £500m fund, managed by UK Research and Innovation (UKRI), to invest in innovation for healthy and sustainable diets, including £75m for alternative proteins.
- Ensuring the £280m Defra has already earmarked for innovation through the Agricultural Transition Plan supports a full spectrum of "farmer-led" approaches, with priorities including agroecological farming, horticulture, and methods for reducing methane emissions from cows and sheep.
- £50m to help build, fund and support an innovation cluster where scientists and entrepreneurs can develop, test and scale up new alternative proteins.
- Setting up two What Works Centres, with a combined endowment of £200m, to strengthen the evidence for farming and food policies.

The Government should make creating a better food system one of the first "long-term missions" of its Innovation Strategy, due to be published very soon. All the Government departments and agencies with responsibilities for the food system should explicitly commit to this mission, including Defra, the Department for Health and Social Care (DHSC), the Department for Education (DfE) and the Food Standards Agency (FSA), coordinated by UKRI. The Government should pursue the mission through a package of innovation investment worth £1.03bn, of which £280m is already committed.

Challenge funding for healthy and sustainable diets

The mission should be backed by a new "challenge fund" of £500m, available over five years, targeted at practical innovation that supports a nationwide shift to sustainable and healthy eating. This fund should focus on achieving the changes in diet that we set out in Chapter 16. This might include accelerating work to reformulate processed foods, trying out new ways of helping customers change their habits, and boosting locally-led initiatives to improve diet and health. But it should also be used to help develop new ways of growing food, such as vertical farming and precision fermentation. In particular, and in addition to capital investment in the alternative protein cluster described below, the fund should allocate £75m to research on alternative proteins.

The fund should be managed by UKRI and open to applications from projects which are likely to have a practical impact. Projects of all sizes would be eligible for funding and could be commercial or non-commercial in nature. To ensure that support reaches a wide variety of fields, UKRI should invite people from businesses, community enterprises and government, as well as academia, to govern the fund and review project proposals. The funding should include innovative mechanisms for leveraging private investment, building on the experience of initiatives such as the Transforming Food Production Series A Investor Partnership Programme.[1] The challenge fund would be managed in coordination with complementary innovation funds across government.

Farmer-led innovation

Defra has already ring-fenced £280m to support innovation in its seven-year Agricultural Transition Plan. This funding focuses on "farmer-led" innovation, recognising that the driving force behind regenerative agriculture has usually been the people on the ground, trying out new ideas. This approach is designed to ensure investment goes not only on developing new tools and techniques, but also on making sure they are actually used in the field. It is crucial that Defra sees through this promise to take a farmer-led approach, and backs innovation across the full spectrum of regenerative farming: not just high-tech new ideas (important though these are), but also the agroecological methods that have been starved of investment up to now. It should draw on the experience of successful independent initiatives such as Innovative Farmers, the Yield Enhancement Network and Farmer Clusters.[2]

Fruit and vegetable production

One priority for Defra should be fruit and vegetable growing, with its innovation funding becoming a key component of an ambitious growth strategy for fresh produce, developed with the industry. This should be

supported by a wider programme of investment to boost horticultural productivity sustainably, creating a less bureaucratic, more inclusive and better funded successor to the previous EU Fruit and Vegetable Regime.

Methane suppressants

Defra's £280m fund should also specifically include investment to develop new technologies to suppress methane emissions from cows and sheep, and to encourage their take-up by farmers. Defra should create a small team to scan the horizon for new methane-reduction products, develop a targeted research programme, and put together a timeline for integrating new products onto farms. At least initially, this is likely to require incentivising farmers to use the products or subsidising their cost, since the initial costs are likely to be high. Well-targeted investment could help bring new products to market and roll them out speedily.

Alternative proteins cluster

Defra should put an additional £50m towards a commercial innovation "cluster" to develop, test and scale up alternative proteins. This cluster should be based around an existing area of investment, such as the Centre for Process Innovation's novel food unit, or one of the Agri-Tech Centres. The funding would provide open-access facilities to allow emerging businesses to test and scale up new products. It would be complemented by commercial revenue.

What Works Centres

Finally, the Government should set up two What Works Centres to strengthen the evidence for policies and practices to improve the health impact and sustainability of farming and diets. The first, focused on effective policy and practical interventions to improve farming, has already been piloted by the Agriculture and Horticulture Development Board (AHDB), in the form of the Evidence for Farming Initiative (EFI). This could be expanded and formalised to play a pivotal part in improving the quality and coherence of advice on the practical implications for agriculture of goals such as net zero. Defra should ensure it has a long-term future by co-funding EFI through an endowment of £50m, alongside investment by AHDB and industry. As other centres affiliated to Government have already shown, an endowment fund will give the centre financial flexibility, as well as the ability to make longer-term plans and pursue a robust scientific strategy.[3] Defra should collaborate closely with EFI to inform future themes and priorities for its farmer-led innovation fund.

The second What Works Centre should focus on improving policies and business practices to encourage a large-scale shift towards sustainable and healthy diets. It should take research already conducted by scientific institutions and governments around the world and translate it so that it becomes accessible to policymakers inside Government – for example through evidence briefings, data visualisations, summaries or guidance documents. It should also evaluate Government policies, conduct large-scale experimental studies, and assess small-scale pilots and experiments, to determine which new interventions are likely to be most effective. While the centre should remain independent of Government, it should maintain close links with relevant departments to ensure effectiveness. This centre should be established with an endowment of £150m, jointly funded by Defra and DHSC, to guarantee funding over 10 years. UKRI should work closely with the centre in developing priorities for the new challenge funding.

Rationale

Providing an abundance of healthy and sustainable food will require innovation. Many of the measures in this strategy will contribute to such innovation by helping businesses, government and academia direct their own research and development. For example, the legislation we propose (Recommendation 14) will set the direction for improving the health and sustainability of the food system, while the mandatory reporting (Recommendation 2) and the data programme (Recommendation 12) will help innovators and investors align with these goals. But direct innovation funding is also required.

Such innovation would have economic benefits, boosting the UK's involvement in emerging technologies such as gene editing, synthetic food production, nanotechnology, microalgae bioreactors, the internet of things (IoT), robotics and sensors, 3D food printing, and artificial intelligence. But it is also important that it should be directed in the public interest, which is why government investment is so important. The Government is expected to recognise this in its new Innovation Strategy, seeking to harness innovation to address social and environmental goals. The public want innovation to be a force for social change as well as economic growth.[4]

Innovation funding

The UK already produces world-class food science and invests a lot in agricultural research. Only scientists in the USA, where the Government spends seven times as much on agricultural research and development, are more frequently cited in research in agriculture

and the biological sciences.[5] But the UK is less effective than comparable countries at innovation – the successful application of ideas. This has been a particular concern for businesses and policymakers concerned with food and agriculture.[6] A key innovation metric is change in total factor productivity (TFP).[7] From 2006 to 2016, TFP growth in the Netherlands was 2.6%, in Germany 1.8% and in Denmark 1.2%. In the UK it was only 0.6%.[8] The UK spends on agricultural research and development around as much as France and almost twice as much as New Zealand, but has seen slower productivity growth than either of those countries, relative to agricultural turnover.[9]

There are a number of reasons for this.[10] First, there has been an overall lack of funds for applied research: Defra's research budget has dropped dramatically over the past decade, from £225m in 2007 to £52m in 2017; over the same period, the Food Standards Agency's research budget fell from £17m to £2m a year.[11] Second, much of the public investment that has been made in innovation has been heavily focused on agriculture, particularly agricultural inputs, rather than the food system more generally. While the innovation funding Defra will provide under its Agricultural Transition Plan is extremely welcome, and rebalances agricultural funding towards the practicalities of farming, it will not correct the gap in public investment in food system innovation beyond the farm gate. Third, the current infrastructure for research and development is too centralised and does not offer sufficient involvement to the people who will actually have to apply new tools and technologies on the ground – farmers and agri-food businesses. Fourth, the Government's previous mechanisms for supporting farming and food innovation through Innovate UK have focused too narrowly on commercial innovation and have been inaccessible to non-commercial (e.g. policy or community) innovation projects, which are important for wider diet change.[12]

Fruit and vegetable production

Fresh produce is the sector of primary food production where growth most squarely aligns with the national interest. The link between what we grow and eat in this country is of course indirect, and the nation could eat 5-a-day without increasing production. Yet as Defra already promotes the case for Government investment to improve productivity, it makes sense to prioritise sectors where growth – through efficiencies and in volume – could directly benefit national health.[13]

Between 1985 and 2014 there was a 27% decline in the areas planted to fruit and vegetables.[14] Over the same period, our reliance on imports has increased sharply, only partly explained by seasonality and the increased demand for a wider range of products that cannot be grown in the UK. There are clear opportunities for UK growers to secure a greater share of the UK market.

Although the EU Fresh Fruit and Veg Regime has its flaws, notably the level of bureaucracy associated with the scheme, it has enabled the industry to co-invest and improve productivity. Defra should adapt the best elements of the EU scheme, to create a package of investment that aligns more closely with Government, consumer and grower requirements.

Methane suppressants

One area of innovation that urgently needs Government support is reducing emissions of greenhouse gases from cattle and sheep. Farmed ruminants (mainly cattle and sheep) emit methane equivalent to 22 $MtCO_2e$/year, which is almost half of all UK agricultural emissions.[15]

Methane emissions can be reduced by:

- Rearing fewer ruminants, therefore eating less meat.
- Capturing the methane they emit, either by moving them inside or by attaching devices to them (both of which could harm their welfare).[16]
- Reducing the amount of methane each animal emits (methane inhibition).

There are a number of technologies for methane inhibition in development, but only one is so far commercially available: a feed additive called 3NOP. This has been found to have no impact on milk production or quality in dairy cattle, but its effects are short-lived so it needs to be given regularly in animal feed.[17] This makes it less practical for use in the kind of extensive grazing systems that are common in the UK. Other additives are currently in development, including a seaweed called Asparagopsis. Lab trials in Australia have found that adding 2% Asparagopsis cattle feed could reduce methane emissions by 99%.[18] In the longer term, selective breeding and "methane vaccines" may also provide a solution, particularly for sheep which are fed almost entirely on grass. Investing in these technologies offers our best hope of decarbonising livestock farming without massively reducing the number of farms in the sector and the amount of meat we can eat.

Alternative proteins cluster

Even if cows and sheep can be made to emit less methane, we would still be left with the high land-use footprint of ruminant production and the health risks of red meat.[19] We would still have to eat less meat than we do now. This is why an innovation cluster aimed at stimulating new alternative proteins would be so valuable.

Alternative Proteins

The umbrella term "alternative proteins" refers to a range of products that can serve as a substitute for conventional meats, from bean burgers to insect mince. These can broadly be separated into:

1. Plant-based proteins, which use existing vegetables and pulses. Many products of this kind are already available but come at a price premium and with varied flavour profiles and textures.
2. Insect-based proteins, which include some products for human consumption but are being developed more widely as animal feed.
3. Precision fermentation derived proteins, which use microbes such as yeast, algae or bacteria to replicate existing animal products (e.g. casein, egg proteins), create novel meat substitutes (e.g. Quorn), or create ingredients to flavour and enhance other foods.
4. Cell-cultured meat, which involves growing animal tissue in vitro. This is currently a very expensive process and is unable to replicate the texture profile of meats, but is chemically identical to meat from animals.

Plant-based proteins produce 70 times less greenhouse gas emissions than an equivalent amount of beef, and use 150 times less land.[20]

Globally, per capita consumption of proteins has been growing over the past 50 years.[21] Coupled with population growth, this means our demand for proteins may outstrip production in the future.[22] While this problem is not one of need, as average global consumption of proteins currently far exceeds our biological necessity, the current trends will require new sources of protein.[23]

Even without any further advances in alternative proteins, 11% of global proteins could come from non-animal sources by 2035. But innovation could double that.[24] If we achieved that doubling in the UK, direct annual greenhouse gas emissions could fall by an additional 3MtCO2e / year, which is about 5% of total emissions from UK agriculture. Over 900,000 hectares – 5% of all the land used for farming in the UK – could be released for other uses, such as nature, carbon capture and extensification.[25]

Along with the environmental and other benefits, growing the alternative protein sector will benefit the UK economy. If the UK produces all of the new alternative protein it consumes, the industry could create an additional 10,000 good manufacturing jobs. In addition, 6,500 jobs would be retained in farming to produce inputs for the industry.[26] Without a strong domestic alternative protein sector, these factory and farming jobs could be lost to other countries.

The UK's competitors know this, which is why investment in the sector is growing globally. The US leads the global market in production of alternative proteins, with companies like Impossible Foods, Memphis Meats and Perfect Day last year raising $700m, $161m and $300m respectively in capital.[27] The Netherlands has developed one of the largest agribusiness regions in Europe – Food Valley – with universities, start-ups and multinationals working together to change the industry, by creating new vegan products and sustainable packaging alternatives.[28] Singapore and Israel have both proactively fostered alternative protein start-ups, and Singapore was the first country to give regulatory approval to a cultured meat product.[29] If we do not take action to support this sector, it is likely that start-ups will be more attracted to these other countries.

The UK has some existing advantages: our universities are leaders in alternative protein research, with an established research centre at Bath University directly linked to the production of alternative proteins, and projects at the universities of Cambridge, Newcastle, Manchester and Aston to improve production methods.[30] We also have nascent production centres for alternative proteins, for example at the Centre for Process Innovation (part of a Catapult), with links to farming through our Agri-Tech Centres. Establishing strong connections between academics, scientists, entrepreneurs and producers would give us a competitive advantage over other countries.

Some of the processes used to create alternative proteins are essentially the same as those used in the pharmaceutical and petrochemical industries, so the UK's strengths in these sectors means that skills and experience could be easily repurposed. Moreover, we

have a large alternative protein market in which to sell new products. The UK has the largest market for meat alternatives in Europe, having grown by 40% from 2014 to 2019 and being projected to rise above £1.1bn by 2024.[31] This has led Tesco to set a target of 300% more alternative meat products by 2025 compared to 2018.[32]

In sum, our existing advantages and the scale of our domestic market could make England an attractive place for commercial investors in this new industry, but this needs to be supported by government investment. This would enable the UK to shape this new market in line with our standards and values, as well as building a new export industry to respond to protein shortages globally. If we do not act soon, we will end up as net importers of these products, losing out on new green jobs.[33]

What Works Centres

Finally, the two What Works Centres are intended to ensure that all this innovation actually gets the right results. The evidence currently available to farmers and agricultural policy-makers is fragmented, incoherent and confusing. The EFI, initially proposed by the Food & Drink Sector Council's Agricultural Productivity Working Group, was conceived by the farming industry to address this problem.[34] It has the potential to play a crucial part in translating the farmer-led research and development that Defra will be funding into quality-assured and widely relevant guidance for policy makers, farmers and their professional advisors. This will help to make the whole "knowledge and innovation ecosystem" that supports the transition in agriculture more effective. The initial evidence on net zero farming that EFI has collated during its pilot phase is testimony to its value.

There is currently no equivalent of the EFI collating evidence on how to change diets to increase the sustainability of our food system. The National Institute for Health Research, which gathers evidence and evaluates policy for DHSC, focuses exclusively on health. Moreover, there has been little focus to date on policies that can modify the economic and environmental factors that influence diet. The complexity and cost of testing and evaluating such approaches calls for dedicated resources.[35]

Experience suggests we need a new approach, as attempts to improve the national diet have so far had a very limited impact. Despite 14 Government strategies between 1992 and 2020 dedicated in whole or in part to reducing obesity in England, obesity prevalence has gone from 13% to 28%, and morbid obesity prevalence increased from less than 1% to more than 3%.[36] This is partly due to the tendency to focus on changing individual behaviour rather than making systemic interventions (with the exception of the Soft Drinks Industry Levy). But the failure to learn from previous mistakes is compounded by a lack of monitoring or evaluation.[37] We need more evidence and, in particular, more evidence which can be used to inform policy.[38]

The WWC model has been tried and tested across a range of complex areas of policy and public services. The nine existing WWCs have been effective in improving the impact of policy and services, in areas such as healthcare, education and policing.[39] It is a model that supports a flexible and pragmatic approach to evidence generation and policy design.[40] This includes the need for more trial and error for low-risk interventions, testing, learning and adapting.[41]

Costs and benefits

Establishing challenge funding for innovation to enable healthy and sustainable diets under its Innovation Strategy will cost the Government £500m over five years. This should be secured by Defra, DHSC and other Government departments, led by Defra, through their next Spending Review bids.

That funding should leverage an estimated £160m in private sector co-investment. This assumes 30% leverage for £200m for pre-commercial collaborative R&D projects with industry, and 200% for £50m in investor partnerships. The remaining £250m out of the total £500m funding is for non-commercial (e.g. public health) innovation projects.

This recommendation will deliver an estimated long-term net economic benefit to the UK of £3.5bn.[42]

Focusing Defra's existing innovation funding on methane reduction in ruminants will not involve additional costs to Government. If it succeeds, it could lead to total greenhouse gas savings of 50MtCO2e by 2050, or annual savings of approximately 7% of total agricultural emissions.[43]

Funding a new innovation cluster for alternative proteins will cost the Government £50m, which should all be delivered in year 1 (2022–23). Funding should be secured through a bid in the next Spending Review, coordinated by Defra and working with BEIS and UKRI.

This recommendation will deliver a long-term net economic benefit to the UK estimated to be £350m.[44]

Ensuring a long-term future for the Evidence for Farming Initiative will cost £50m in year 1 (2022-23) in the form of an endowment, to complement and underpin investment by AHDB. Funding for the endowment should be secured by Defra through a bid

in the next Spending Review.

Setting up a What Works Centre for healthy and sustainable diets would cost the Government £150m in year 1 (2022-23). DHSC and Defra should collaborate to secure this funding in the next Spending Review.

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Recommendation 12. Create a National Food System Data programme.

What is it?

The Government should create a National Food System Data Programme to collect and share data, so that the businesses and other organisations involved in the food system can track progress and plan ahead.

This programme should span and connect two main areas of evidence. The first is data about the land, to support the Rural Land Use Framework (Recommendation 9). This includes (among other things) the agricultural productivity of any given area of land, its potential for environmental restoration and carbon sequestration, and local pollution levels in air and water. Defra already holds much of this data, and is working with the Government's Geospatial Commission to pilot high-resolution interactive maps, with as many layers as possible available to the public. This will help the Government, landowners, developers and conservation groups make better decisions about how we use our land.

The second area of evidence comes from beyond the farm gate: data on food production, distribution and retail, and the environmental and health impacts of that food. These include data provided by companies under the mandatory reporting requirements we have proposed in Recommendation 2.

These two areas of evidence should be connected through a single programme, to create a clear, accessible and evolving picture of the impact our diet has on nature, climate and public health, to help guide decision making throughout the food system.

The Chief Scientific Adviser to the Government, alongside the Chief Scientific Advisers at Defra, the Department for Health and Social Care, the Department for Business, Energy and Industrial Strategy and at the Food Standards Agency, should work together to establish a specialist team of civil servants – including IT experts and strategists – to develop and manage the National Food System Data Programme. Working with the Geospatial Commission and the Office for National Statistics, this team should start by identifying the main "customers" for the data programme, and setting baseline data definitions, standards and hierarchies. The team should then identify gaps in the existing data, and broker agreements with third parties – such as retailers or unions – to fill in these gaps without breaching confidentiality.

The key data should be published using visualisation dashboards that make it easier for users to compare information, model future scenarios and assess the effectiveness of different policies or logistical models. These should include the National Rural Land Map (See Recommendation 9).

Some data will be commercially sensitive, and those supplying the data might be willing to share it with the Government but not with industry competitors. There would therefore need to be a "layered" permissions model, to control access to different levels of information. In some cases (such as electronic point of sale data), the Office for National Statistics already collects the data but is not permitted to share it with other parts of government and the wider food sector. Legislation should be introduced if necessary to allow data to be shared as far as commercial confidentiality permits.

Our initial recommendations for food system metrics against which data should be collected are set out in Table 1 below, alongside bodies that currently hold at least some of those data. In addition, the food system is closely connected to many other systems, both national and international. Over time, data on transport, energy, environment, healthcare and so forth should be added to the programme.

Table 1

Recommended food system performance metrics

Metric	Source of data
Environmental outcomes	
Agricultural land productivity (spatial)	Defra
Priority areas for biodiversity (spatial)	Defra
Priority areas for carbon recovery (spatial)	Defra
Air quality (spatial)	Defra
Water quality (spatial)	Catchment Sensitive Farming, Environment Agency / Defra
Species abundancy and diversity	England/UK Biodiversity Indicators, Joint Natural Capital Committee
Environmental footprint of food (domestic)	HESTIA, University of Oxford
Environmental footprint of food (imported)	HESTIA, University of Oxford
Total UK food system GHG emissions	BEIS, Committee on Climate Change (CCC), Waste Resources Action Programme (WRAP)
Percentage of food sourced from areas with sustainable water management	WRAP, World Wide Fund for Nature (WWF), World Resources Institute
Land used for agriculture	Farming Statistics, Defra
Healthy soils	25-Year Environment Plan, Defra (under development)
Food waste	Business reporting (Recommendation 2)
Health outcomes	
Childhood obesity	National Child Measurement Programme, National Health Service (NHS) Digital
Childhood obesity by deprivation	National Child Measurement Programme, NHS Digital
Diet-related healthy life expectancy	Metric to be developed based on Global Burden of Disease
Type 2 diabetes registrations	National Diabetes Audit, NHS Digital
Social outcomes	
Household food insecurity	Family Resources Survey, Department of Work and Pensions (DWP)
Social impact of food	Food & You Survey, FSA
Well-paid jobs	Annual Survey of Households and Earnings, ONS
Animal welfare	Royal Society for the Prevention of Cruelty to Animals (RSPCA) and Soil Association
System resilience	
Source of UK food	Defra
Trustworthiness of food	Food and You, Food Standards Agency (FSA)
Diet and food environment	
HFSS consumption	National Diet and Nutrition Survey (NDNS), Public Health England
Fibre consumption	NDNS, Public Health England
Meat consumption	NDNS, Public Health England
Fruit and vegetable consumption	NDNS, Public Health England
Fruit and vegetable consumption by income quintile	NDNS, Public Health England
Sales of HFSS food and drink	Business reporting (Recommendation 2)
Sales of fruit and vegetables	Business reporting (Recommendation 2)
Sales of protein by type and origin	Business reporting (Recommendation 2)
Sales of major nutrients including fibre, saturated fat, sugar and salt	Business reporting (Recommendation 2)

Metric	Source of data
Total food and drink sales	Business reporting (Recommendation 2)
Price and promotions by major food category (retail and out-of-home)	FoodDB, University of Oxford
Proportion of food outlets which are fast food	Office for National Statistics (ONS)
Exposure of children to junk food advertising	Based on method developed by INFORMAS (www.informas.org)

Rationale

There is global recognition that investment in accurate, up-to-date, geographically specific data is vital to solving many of our challenges.[1] Having the right information makes it possible to set the right goals, track progress and adjust course where necessary.[2]

Good data, cleverly organised, can help companies become cleaner and more efficient, and enable governments to devise and monitor effective policies.[3] We know that data dashboards, of the type that the National Food System Data Programme would produce, work. They are increasingly used across UK government departments and agencies to monitor performance and aid decision making, including Defra, FSA, BEIS, Department for Work and Pensions (DWP). Such platforms have been critical to the Government's efforts to address the COVID-19 pandemic, through the Joint Biosecurity Centre, and support the UK's EU Exit strategy.[4]

There are currently significant gaps in the data available for the food system. Even where data are made available by businesses, they are often difficult to understand and use because they are not presented consistently. For example, Sainsbury's, Marks & Spencer and Tesco have all committed to reporting health-related data.[5] But they publish different types of data in different formats. Standardising the collection and publication of data would make it vastly more usable. This is already recognised by the industry itself, which is asking for an open data framework.[6]

The Government is best placed to resolve this issue. It already collects much relevant data itself. It has the convening power needed to bring companies together and encourage them to share their data in a consistent way. It can also impose legal obligations on business to report consistently.

Improving data sharing in the food system complements the National Data Strategy and calls from the Council for Science and Technology to improve analytical capability and flow of information across government.[7] It will support international efforts to provide information on the food system, such as the Food Systems Dashboard, developed by the Global Alliance for Improved Nutrition (GAIN) and Johns Hopkins University.[8] There is a public desire for a more unified approach to food system governance, as we saw during the NFS Public dialogues. Participants in the dialogues discussed the need to "include more formal arrangements for bringing government departments together to plan strategically for food issues on, for example environment, health and social support measures".

Costs and benefits

The annual cost to Government to deliver this recommendation is £3.5m. Over three years the total is £10.5m.

Defra should bid to secure funding in the next Spending Review.

The improved data access it will provide will benefit the public and the Government by making it easier to set and track long-term health and sustainability goals for the food sector. But it will also help businesses themselves. Large businesses, which already collect extensive data, will see increases in its range, quality and reliability, while the benefit to the food sector's many small enterprises lies in providing credible data they can use for free.

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Recommendation 13. Strengthen government procurement rules to ensure that taxpayer money is spent on healthy and sustainable food.

What is it?

The Government should reform its Buying Standards for Food so that taxpayers' money goes on healthy and sustainable food. All public sector organisations should be required to apply these standards. The Government should aim to increase the role of small and local suppliers in public food procurement, including through the rollout of a web platform currently being trialled in the South West.

The Government should also introduce a mandatory accreditation scheme for caterers in schools, hospitals and prisons, working with existing certification bodies such as Food for Life, to support caterers to reach baseline standards and encourage them to aim higher still.

The Government already has Buying Standards for Food (GBSF), but they do not guarantee that the food is any good. Defra should redesign the GBSF to emphasise the importance of quality over cost. All tenders should be required to meet an achievable but high baseline standard for quality before cost is considered at all. In particular, all food supplied should be required to have been produced in compliance with UK standards. The current loophole allowing substandard food to be supplied where it is necessary to avoid a "significant increase in costs" should be removed. At the next stage of assessment, at least 60% of the marks available should be for quality rather than cost. This should be broken down into a weighting of 30% for public priorities (such as health, sustainability and social value) and 30% for customer service (such as menu variety, service style and customer satisfaction).

The redesigned GBSF should also meet the new Reference Diet that we recommend the Food Standards Agency develops with the Office of Health Promotion, the Scientific Advisory Committee on Nutrition, the Office of Environmental Protection and the Climate Change Committee (Recommendation 14). This diet is likely to recommend serving less meat and dairy and more wholegrains, fruit, vegetables and pulses, to maximise the health and sustainability of the food served. The GBSF should then be updated every five years, like the Reference Diet.

All public sector organisations should be required to apply the redesigned GBSF when procuring food, including those which are currently exempt (such as schools and local authorities). The Government should develop a monitoring and enforcement mechanism to make sure that the food served is healthy and sustainable. This could be achieved by introducing reporting requirements for organisations procuring food or by expanding the Food Standards Agency's remit (though this option would require the recruitment of more Environmental Health Officers and so would come at considerable cost).

The Government should also seek to increase the participation of small and local businesses in food procurement. As a first step, it should provide adequate funding for a pilot of a dynamic procurement system that is scheduled to launch in the South West of England from June 2022. This scheme, based on a web platform run by Bath and North East Somerset Council, should allow SMEs and local businesses to sell smaller quantities of fresh food and drink to public bodies.[1] If the pilot succeeds, the Government should roll out the system nationwide. The Government should also encourage the use of SME and local suppliers in the GBSF.

The Government should work with existing certifiers – such as Food For Life – to introduce a mandatory accreditation scheme for the food served in schools, hospitals and prisons.[2] This would provide training and support for leaders and staff. Institutions that complied fully with the obligations in the GBSF would be awarded a Bronze certificate. Taking further steps towards a good food culture would entitle an organisation to a Silver certificate, while a Gold certificate would be awarded to organisations that demonstrated a whole organisation approach to food.[3]

Rationale

The public sector is a colossal buyer of food. We estimate that it serves 1.9 billion meals a year – over 5% of the total UK food service turnover – at a cost of £2.4bn.[4] This makes public procurement the Government's most direct tool to shape the food system.

This tool is not being used as effectively as it could be. Much of the food served by public bodies is bad. Only 39% of primary school children who have to pay for school meals choose to eat them; while the main barrier for this is cost, another factor is that food is unappealing.[5] In hospitals, 42% of patients rated the food as either satisfactory, poor or very poor; 39% of staff rated the food as poor.[6] Over a third of the money hospitals spend on food goes on items that are thrown away uneaten.[7] Food served in prisons is rated even worse: only 29% of inmates describe the food they receive as "good" or "very good".[8] Some might say that criminals deserve what they get, but better prison food has surprising benefits: there is evidence that prisoners given higher-quality food are less likely to become violent and aggressive.[9]

The food served in Government institutions is often not just unappetising but also unhealthy. In many schools, breakfast consists of sugary cereals and white bread, as well as squash or milkshakes. In some cases, schools even serve chocolate-based cereals and croissants. Break time foods in secondary schools are dominated by unhealthy items, while at lunchtime children are served too much fat, salt and sugar, and too little fibre and vegetables.[10] Yet, even these meals are more nutritious than most packed lunches, which is why it is not only crucial to improve the quality of school food but also to increase access to free school meals (Recommendation 4).

In prisons, breakfast usually consists of breakfast packs, which contain cereal, milk, whitener, tea/coffee sachets, and in some cases some preserves. Prisoners complain about there not being enough fruit and vegetables and too much fat, carbohydrate, salt and processed food.[11]

These problems are in part due to a lack of competition among suppliers. The complexity of tendering processes has made it difficult for smaller businesses to compete. This has led to the market being dominated by a small number of suppliers: the top four contract caterers (Compass Group, Sodexo, Westbury Street Holding and Elior) have 61% of the contract catering market share.[12] The result is that there is often little competition for contracts. This limits procuring bodies' choice and their power to demand high quality. It also fails to encourage innovation.

The current Government Buying Standards for Food (GBSF) are clearly not working well, for a number of reasons.

- **First, the bodies that are required to apply them sometimes do not.** The NHS found in 2017 that only 52% of hospital caterers are fully compliant with the GBSF.[13] The Government does not consistently monitor or enforce the Standards, so there is no way of knowing what the compliance rates are in the wider public sector.
- **Second, even where they are applied, they do not guarantee quality food.** Public bodies are allowed to prioritise price over quality in their procurement decisions. With the challenging budgetary situation in recent years, many have assigned 50–80% of the marks available to price.[14] In practice, this means that the cheapest bid wins, leading to a race to the bottom among suppliers.
- **Third, they fail to take account of the wider impacts of food choices.** The standards do not require institutions to meet the Government's own nutrition guidelines (the Eatwell Guide) and do not consider the environmental impact of the food that is served. They do not reflect the public's clear preferences on issues such as animal welfare (for example, eggs from caged hens may be used). They even permit suppliers to provide imported food that was produced in ways that would not be legal for UK producers if to do otherwise would produce a "significant increase in costs".
- **Fourth, they do not promote a positive food culture in public institutions.** There is often no clear vision, leadership or training around healthy and sustainable food, and very little accountability for the quality of food or how funding is spent. Food is simply not a primary concern.[15]
- **Finally, they are not applied in all public bodies.** Only central Government, hospital food for patients, prisons and the armed forces are bound by them: local governments, schools, visitor and staff food in hospitals and care homes, for example, need not follow the standards.[16] So, even if the standards were effective, they would only improve a fraction of the food that the public sector serves.

Better Government procurement could have an enormous impact. In the first place, there would be a direct benefit to the diets of the 13 million people who eat those meals every year, many of whom are children, hospital patients, or otherwise vulnerable.[17] In particular, schoolchildren are much more dependent than adults on publicly procured food. Food eaten in schools could make up as much as half of a child's diet in term time, and for some children, a school lunch is their only substantial meal of the day.[18] The better

school food is, the more likely it is that children will eat it rather than bringing in packed lunches, which are likely to be less healthy (see Recommendation 4 on free school meals for more on this point). One existing scheme aimed at improving the quality of school food, Food for Life, has been shown to increase consumption of fruit and vegetables by a third.[19] This is good for children's health and for their education.[20]

But there would also be wider gains: Government leadership influences business behaviour and can help nurture a better food culture, especially through its influence on children eating school meals.[21] It will signal to businesses that it is possible to transform menus at scale, demonstrate the Government's commitment to transformation in the food system to businesses, and incentivise innovation, investment and private sector efforts to the same end.

Such impacts have already been seen. When the GBSF were amended to require that all fish procured by the Government should be sustainable, there was change beyond the bodies that were directly bound by the standards.[22] At least 850 million sustainable seafood meals are now served every year across both private and public sectors.[23] Similarly, in Denmark, the introduction of a target that 60% of the food served by public caterers should be organic helped the Government achieve an increase of 57% in the share of agricultural land used for organic farming.[24]

The GBSF could make it more normal to serve and eat meals that contain less meat. Redesigning the GBSF to require more sustainable menus would lead to public institutions serving less meat and more vegetables, pulses and alternative proteins. This would have significant environmental benefits. If all public caterers moved to having even one meat-free day a week, this could reduce meat consumption by 9,000 tonnes a year, saving over 200,000 tonnes of greenhouse gas emissions.[25] Even without eliminating meat completely, many of the dishes typically served in institutional settings lend themselves to partial substitution of meat with vegetables – for example, including minced mushrooms in beef burgers, or beans as well as beef in a chilli.[26] A similar approach at the University of Cambridge saw carbon emissions per kilogram of food fall by a third, with similar reductions in land use per kilogram.[27] This also made the catering more profitable.

To make sure the benefits of higher standards are achieved in practice, proper monitoring and enforcement mechanisms are essential. At present, this is almost entirely lacking outside the NHS. Even in the NHS, it is incomplete: not all food standards are monitored, hospitals are not required to submit evidence and the process has become a "tickbox" exercise.[28] While the latest figures from the NHS's Patient Led Assessments of the Care Environment (PLACE) indicated that 90% of hospitals were compliant, the recent independent review of hospital food raised concerns that this number might not be accurate.[29] In contrast, in Scotland, the Scottish Government and local authorities have told us that inspection of schools has proved effective. Health and Nutrition Inspectors inspect schools to check they are complying with the School Food Standards. The inspectors work in a collaborative way with local authorities and, if a school is noncompliant, the inspectors work with the school to remedy the situation. This is a practical but relatively expensive option for driving compliance with the standards.

Beyond enforcing baseline standards, accreditation schemes are needed to raise the quality of food still higher. This is demonstrated by the Food for Life Served Here scheme. This framework for caterers monitors how food is sourced, cooked and promoted, with criteria covering health, nature, animal welfare and the climate. Institutions are rigorously inspected to make sure they deserve the Food for Life mark of quality. Over 2 million meals are served each day to Food for Life standards, including in roughly 50% of English primary schools, over 50 NHS hospitals and over 50 universities.[30] Some local authorities adopting this scheme are attracted by the incentives it creates for local sourcing: independent evaluation of the scheme has shown that for every £1 spent on local seasonal produce, £3 is generated in social, economic and environmental value in the local community.[31] Children in schools engaged with the Food for Life School Award – which incorporates menu accreditation, alongside food education and practical food activities – are twice as likely to eat their five-a-day and eat a third more fruit and vegetables overall, compared to children in other schools.[32] The quality of service has been recognised by the Scottish Government who fund Food for Life to support local authorities across Scotland. The majority of the 32 local authorities are working with Food for Life and to date 17 are accredited to at least bronze level.

Finally, increasing competition in the market through greater involvement of smaller, local businesses can also help drive up standards. Bath and North East Somerset Council succeeded in doing this via a dynamic purchasing system. They introduced a web platform that allowed 60 schools serving 30,000 meals per week to buy from more than 20 local SME food producers and suppliers. The council evaluation found that the carbon emissions of their supply chain had been reduced and costs had fallen by 6%.[33]

Costs and benefits

Over the next three years, the new expenditure required for the Government to deliver this recommendation is approximately £3m. The annual cost to the Government of delivering an accreditation scheme for public sector food in schools, hospitals and prisons would be approximately £750,000 with an initial support and set up fee of approximately £750,000. This is based on indicative costs given to us by Food for Life. Defra should bid to secure funding in the next Spending Review.

We are not able to determine the cost of ensuring all organisations follow new, redesigned GBSF because the Government does not know what it spends currently on food (the latest available data is from 2014). However, we do know that many organisations including Cambridge University, Chefs in Schools supported organisations and Bath and North East Somerset Council have managed to improve the health and sustainability of their menus without increasing costs by serving less meat and more vegetables, legumes and pulses, and by buying locally and seasonally.[34]

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Recommendation 14. Set clear targets and bring in legislation for long-term change.

What is it?

The Government should set a long-term statutory target to improve diet-related health, and create a new governance structure for food policy, through a Good Food Bill.

The Good Food Bill's diet-related health target would complement the existing statutory target for carbon reduction, and proposed targets in the Environment Bill. The Bill would also require the government to prepare regular (five-yearly) Action Plans to make further progress beyond the initial steps we set out in this report. These Action Plans should set out interim targets, and measures to meet them, that are consistent with the food system's contribution to national health, nature and climate commitments.

In this, the Government would be assisted by the Food Standards Agency (FSA), whose remit would be formally extended. Its existing obligation to promote the consumer interest would be redefined in law to include our collective interest in tackling climate change, nature recovery and promoting health, in the resilience of our food supply, and in meeting the standards that the public expect.

The FSA would have powers and duties to advise the Government on the contents of its five-yearly Action Plans, and to provide an annual, independent progress report to Parliament. This is distinct from the food security reports that, under the Agriculture Act, the Government is now required to make at least every three years; the Government should produce these annually, with broad consultation, bringing in organisations responsible for nutrition, cybersecurity (our food system is concentrated and vulnerable to attack), infrastructure, climate change and the environment.

The FSA would have a statutory duty to consult with the Office for Environmental Protection (OEP), the Climate Change Committee (CCC) and the Office for Health Promotion (OHP) in drawing up its advice and reports, also liaising with the Food and Drink Sector Council.[1] The Bill should specify corresponding statutory functions for the OEP, CCC and OHP to advise the FSA on emerging issues within the remit of each body that are relevant to the scope of the FSA. The FSA would need sufficient resources to perform this expanded role effectively.

In addition, the Bill would put in place mechanisms to support a consistent approach to improving the health and sustainability of the food system across the whole public sector, and throughout the food industry in England. It would:

- Commit the Government to establish and periodically update a healthy and sustainable Reference Diet, to be used by all public bodies in food-related policy-making and procurement.
- Oblige all public sector organisations that spend public money on food to do so in line with specific procurement standards, consistent with the Reference Diet (supporting Recommendation 13).
- Commit the FSA to developing a harmonised and consistent food labelling system to describe the environmental impacts of food products, which we recommend it undertakes in collaboration with Defra and the Institute of Grocery Distribution.
- Require local authorities in England to develop food strategies, developed with reference to national targets and in partnership with the communities they serve.
- Facilitate the development of the National Food System Data Programme by requiring large businesses to publish data on the health and environmental impact of their product portfolios (supporting Recommendations 2 and 12).

Rationale

Targets

This strategy focuses on the three key issues affected by our food system: climate change, the environment and public health. We already have statutory targets with a robust monitoring mechanism for climate change: the Government is obliged by law to work towards achieving net zero carbon emissions by 2050, with the Climate Change Committee monitoring progress and providing advice.

The Environment Bill, which is currently proceeding through Parliament, will require the Government to define similar targets for protecting the environment and nature by the end of October 2022. It should be strengthened to include a legally binding target on the

face of the Bill to halt biodiversity loss in England by 2030.

An equivalent mechanism is needed for diet-related health, where there are currently no long-term binding targets. The targets that do exist – a manifesto commitment to extend healthy life expectancy by five years by 2035, and references in policy to "reducing the number of adults living with obesity, halving childhood obesity by 2030 and reducing inequalities" – should be built upon and made binding.[2] The Government should develop a target to increase healthy life expectancy by reducing diet-related disease, comparable to the net zero target in the Climate Change Act. Healthy life expectancy should be defined and measured using available data on health outcomes (deaths, diseases and dietary risk factors). This is already feasible using data collected and models developed by the Global Burden of Disease Study.[3]

Governance

Maintaining the momentum and political focus necessary for large-scale change is hard. Previous efforts to correct the problems in the food system, such as the cross-Whitehall Food Strategy Task Force, have not lasted.[4]

The CCC reports to Parliament each year on progress towards the net zero target. The long-term environmental goals to be set under the Environment Bill will also be underpinned by interim targets and regular scrutiny by the OEP. A similar mechanism is needed to make sustained progress towards the new health target set under the Good Food Bill, while ensuring this is consistent with the other demands on the food system, including its major contributions to net zero and nature recovery.

The Government should have a duty to prepare and publish a Good Food Action Plan every five years, including legislative and non-legislative measures. The Minister responsible for the Action Plan should be required to consult the FSA in the course of preparing it. The FSA should have the authority and resources to monitor progress towards the current Action Plan and provide an independent report to Parliament, incentivising the Government to meet its commitments.

The FSA is ideally placed to support and scrutinise Government action on achieving the goals of the Good Food Action Plans, because it is an organisation with a clear and widely accepted statutory mandate to protect consumers' health and interests in relation to food, in preference to economic or political interest. As a non-ministerial government department, it is relatively shielded from changes in political leadership, and can hold successive governments to account. Its remit covers not just England but also Wales and Northern Ireland, and it has strong existing ties with Food Standards Scotland, which will enable a coherent UK-wide approach.

Reference Diet

A Reference Diet is an effective tool to ensure a consistent approach across Government policies. In the USA, the Federal Government applies the same set of dietary guidelines to all state-funded schemes, such as the National School Lunch Program and The School Breakfast Program.

Dietary guidance in the UK is based on evidence of the health effects of individual nutrients and foods rather than overall diet, and the different elements of this advice are not always consistent. Our current Eatwell guide, the closest we have to a reference diet, does not take sustainability into account.

In addition, the absence of mandatory dietary guidance for public procurement has been widely cited as a reason for the poor quality of food on offer in public settings (Recommendation 13). Placing the requirement to establish and periodically update a healthy and sustainable Reference Diet within the Good Food Bill ensures that it will stay current with scientific consensus and cultural shifts. This work should be led by the FSA, working closely with the OHP.

Creating a legal obligation for food procured by the public sector to comply with the Reference Diet will allow the Government to lead by example. It will also avoid inconsistencies undermining business and public confidence in the Government's food policy. The Government must not be seen to serve food that falls below the standards it recommends to everyone else.

Environmental impact labelling

There is currently no consistent in-store labelling to show the environmental impact of food. Evidence about the impact of environmental labelling on consumer choices is mixed, but simple systems like traffic lights can help us to make informed choices about what we buy.[5] Creating a simple and consistent method of labelling would ensure that all shops and manufacturers give us the same kind of information about our food. Having to record information about the environmental impact of food production could also influence the way that manufacturers make their products.

Local strategies

National strategies only work when they can be delivered on the ground, including locally. Local initiatives – designed to suit the communities they serve, and implemented with an understanding of local conditions and challenges – are therefore essential for the success of the National Food Strategy. Where local food strategies have already been developed, these have benefited communities and forged partnerships that increased their resilience in response to the COVID-19 pandemic.[6] The evidence from more than 50 cities, boroughs and counties that now have a local food strategy or partnership is that they can increase food security in the long as well as short term, support improvements in public health and wellbeing, and generate significant investment and innovation.[7] But whether you live in such a place is a lottery, and only a handful have the full backing of their local authority. Making this approach an obligation for local government provides an opportunity for these benefits to spread across the whole of England.

Costs and benefits

These measures will underpin the UK's long-term progress towards net zero, nature recovery and better health. They will provide continuity of ambition, enabling the Government – regardless of which party is in power – to lead the country through the difficult but necessary transition that is required in our food system.

The FSA needs sufficient resources to perform this additional role. We recommend it is allocated an additional budget of £5m per year for this, similar to the annual costs of the Climate Change Committee.[8] Over three years the total is £15m.

We do not recommend making specific funds available to local authorities to develop or implement their food strategies. Rather, these costs should be met through the funds Government is making available to support levelling up. These include the UK Shared Prosperity Fund, the Community Renewal Fund, the Community Ownership Fund and the Levelling Up Fund.[9]

Endnotes

[1] The OHP will take over the health promotion functions of Public Health England.

[2] Department of Health and Social Care. (2020). Tackling obesity: empowering adults and children to live healthier lives. Policy Paper. HMG. Available at: https://www.gov.uk/government/publications/tackling-obesity-government-strategy/tackling-obesity-empowering-adults-and-children-to-live-healthier-lives

[3] Available via Global Health Data Exchange at: http://ghdx.healthdata.org/gbd-results-tool

[4] The Strategy Unit. (2008). Food matters: towards a strategy for the 21st century. Cabinet Office. Available at: https://webarchive.nationalarchives.gov.uk/+/http:/www.cabinetoffice.gov.uk/media/cabinetoffice/strategy/assets/food/food_matters1.pdf

[5] Blythe, J. M. and Johnson, S. D. (2018). Rapid evidence assessment on labelling schemes and implications for consumer IoT security. PETRAS IoT Hub. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/949614/Rapid_evidence_assessment_IoT_security_oct_2018_V2.pdf

[6] Sustainable Food Places. (2021). Supporting local food systems responses to Covid-19. Available at: https://www.sustainablefoodplaces.org/coronavirus/

[7] King, S. (2017). Making the case for a place based systems approach: public health professionals' assessment of Sustainable Food Cities. University of West England. Available at: https://www.sustainablefoodplaces.org/Portals/4/Documents/Making the case for a place based systems approach-pp.pdf;

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[8] Climate Change Committee. (2020). Annual report and accounts: 1 April 2019 to 31 March 2020. House of Commons. Available at: https://www.theccc.org.uk/publication/annual-report-and-accounts-2019-2020/

[9] Her Majesty's Treasury. (2021). Build Back Better: our plan for growth. HMG. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/968403/PfG_Final_Web_Accessible_Version.pdf

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National Food Strategy

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