

The False Economy of Big Food and the case for a new food economy

PROFESSOR TIM JACKSON



Executive Summary

The principal aim of this study is to address two simple questions:

- **How much does our current food system cost the nation in terms of health?**
- **How much would it cost to ensure a healthy diet for everyone?**

Our answers to these questions, as set out in what follows, are startling.

We are spending more on healthcare, social care and welfare support for those suffering from chronic, food-related disease than it would cost to fix our diet by some considerable margin. We are incurring economic productivity losses (through long-term inactivity and early mortality) that are more than twice what it would cost to ensure access to healthy food. And we are suffering ‘shadow costs’ – associated with a declining quality of life – that are greater than the subsidies that would be needed to ensure a healthy diet for every household in the land. Taken together these direct and indirect costs of our dysfunctional food system are more than four times higher than the costs of fixing it (Figure S.2).

In short there is a virtually unassailable case for a new food economy in the UK: a food economy that is fairer, healthier, more sustainable and more capable of ensuring that everyone in the country – irrespective of class, income, gender, geography, race or age – has the right to affordable, nutritious food.

The report itself is organised into four substantive sections and a final concluding discussion around the implications for policy.

Section 2 summarises the evidence on the links between diet, unhealthy food and chronic disease. These links are now well established. The House of Lords’ recent report *A Recipe for Health* makes it abundantly clear that we neglect them at our peril.¹ Lord Ara Darzi’s ‘rapid investigation’ into the state of the NHS delivers a stark message about the consequences of chronic disease on our healthcare system.² Professor John Deanfield’s recent report on preventive health underlines the same point.³

Modern diets are too high in sugar, salt and saturated fats and too low in wholegrains, fruit and vegetables.⁴ Food processing tends to strip out dietary fibre and nutrients which are essential for a healthy digestive system and help lower the risk of heart disease and Type 2 diabetes. Fertilisers, pesticides and chemical additives introduce toxins into the food chain. The combined effect on our health is devastating. Particular concern has been raised over ultra-processed foods (UPFs) which today constitute 57% of the adult diet in the UK and 66% of the adolescent diet. Far from keeping us well, our current food system, with its undue deference to what is known colloquially as Big Food,⁵ is making us sick. The costs of trying to manage that sickness are rapidly becoming unpayable.⁶

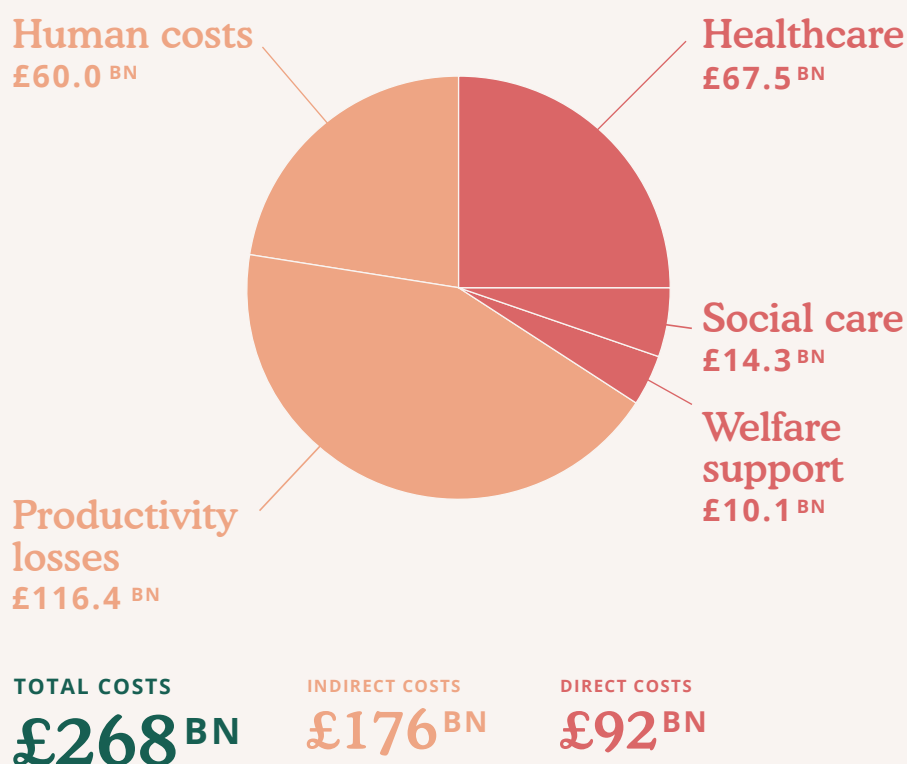
Section 3 offers what we believe to be the first comprehensive estimate of the health-related costs incurred in the UK as a result of this dysfunctional food system. We considered five categories of cost associated with the rising burden of preventable chronic disease:

- Healthcare costs
- Social care costs
- Welfare
- Productivity losses
- Human costs

The first three categories are 'direct costs' identifiable as clear spending lines within the UK's economic accounts. They fall mainly on the public purse but are also borne to some extent by households and businesses. The latter two categories are 'indirect costs' in the sense that they don't appear directly as financial transactions in the UK accounts. Nonetheless they have a profound impact on the economy and on our quality of life. Our analysis revealed direct costs to the UK economy of £91.9 billion and indirect costs of a further £176.4 billion (Figure S.1).

Figure S.1: The health-related costs attributable to food in the UK

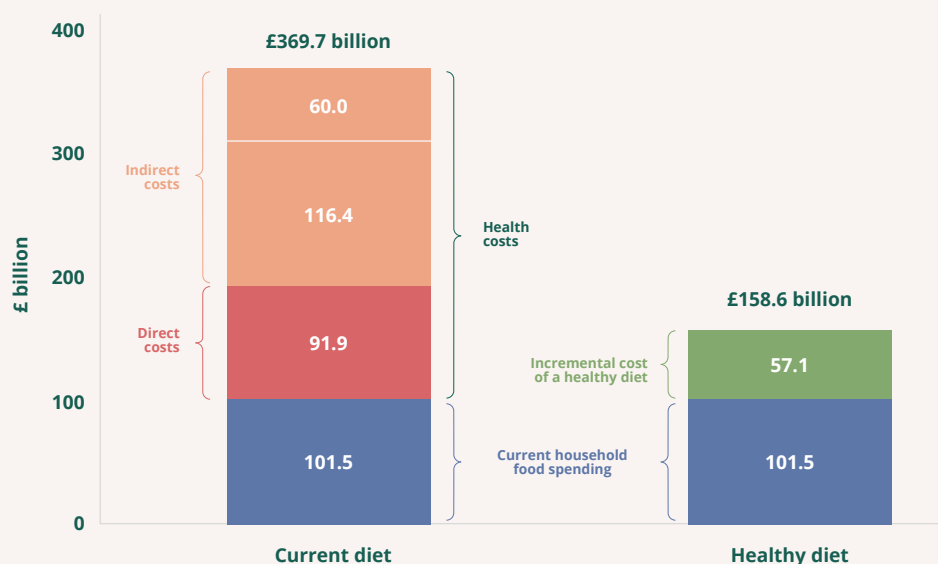
Note: sources and calculations as detailed in the report; see Figure 3, Section 3.



Section 4 calculates the incremental costs of providing every citizen in the UK with affordable, healthy and nutritious food. We used data from the Office for National Statistics to establish the average weekly spending on food and non-alcoholic beverages for each income decile in the UK. We then compare these costs to the incremental (or additional) cost of meeting the government's (2016) Eatwell Guide.⁷ We found that replacing current spending patterns with the Eatwell diet for every household in the country would increase the average cost per household by £38 a week. For the richest households, food spending would rise by just over a third. For the poorest household it would almost double. Using these numbers, we calculate an incremental cost to the nation of providing the Eatwell diet of £57 billion. This represents a substantial (55%) increase on current food spending. But this increase is less than 25% of the total health-related costs (£268 billion) attributable to diet. It is considerably lower even than the direct health-related costs (£92 billion) spent each year in the UK to tackle food-related chronic disease. Figure S.2 reveals that the true cost of our current diet £210 billion pounds higher than the projected costs of a healthy diet. In other words, there is a clear and urgent economic case for transforming the UK food system.

Figure S.2: The costs of current diets v. the costs of a healthy diet

Note: calculations as detailed in the report; see Figure 5, Section 4.

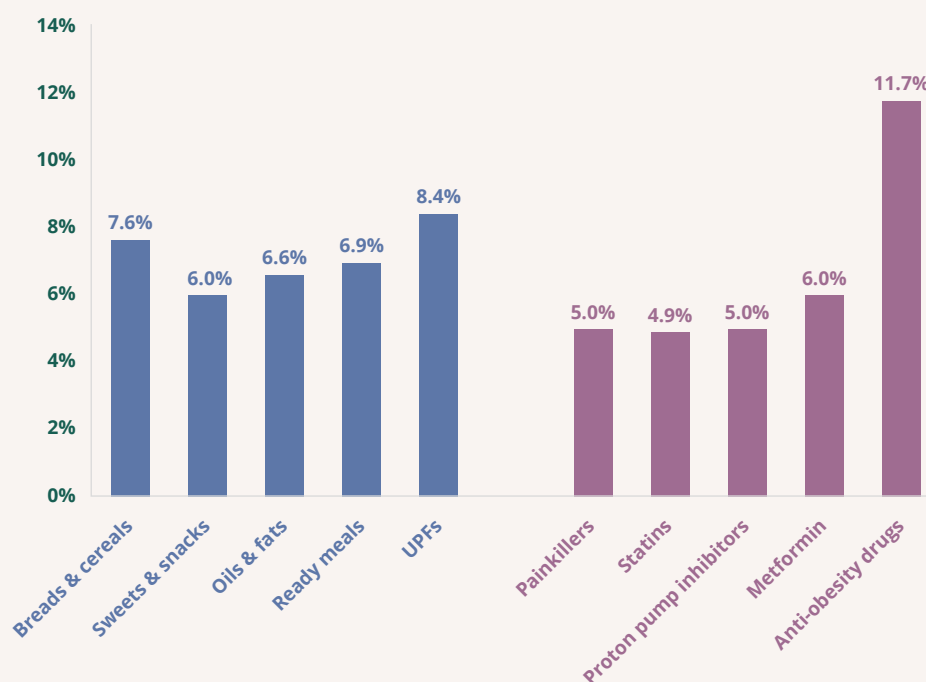


Section 5 examines some of the forces locking us into this dysfunctional economics. The structure of Big Food relies heavily on relatively few transnational, processed-food mega-corporations which have accumulated enormous economic and political power. Revenues from UPF have expanded rapidly in recent years. More than half of that market is held by just eight huge corporations who wield enormous corporate power and considerable influence over government policy.⁸ The market is set to grow even faster (8.4% per year) over the next decade. That's considerably higher than the projected growth rate for food as a whole (6.5%) and almost three times the projected growth rate in global GDP (3%).

The rise of Big Food exhibits pathways of financialisation, industrial concentration and relentless product innovation familiar in other powerful transnational sectors. These strategies are designed to capture consumer taste, increase returns to shareholders and accumulate market power.⁹ But they pose huge risks to public health. And these risks are exacerbated by an uncomfortable co-dependency between Big Food and Big Pharma. The exponential growth in unhealthy food is mirrored by high growth rates in pharmaceutical products which can sometimes alleviate the symptoms – but do not address the root causes – of chronic disease (Figure S.3).

Figure S.3: An unhealthy alliance between Big Food and Big Pharma

Note: the figure shows projected global growth rates for selected food groups and prescription medications; see Figure 7, Section 5.



The government's partnership with US pharmaceutical giant Eli Lilly illustrates the dangers of this dynamic. Anti-obesity drugs such as Lilly's Zepbound and NovoNordisk's Ozempic are almost entirely unproven as long-term management strategies for chronic disease. They carry unpleasant and potentially lethal side effects. They demand constant prescription to prevent relapse. And they are extremely costly. That is enormously attractive for Big Pharma. But it is catastrophic for human health and disastrous for the nation's finances.

Finally in **Section 6** we explore what could be done in response to the economic case we have made here. What is needed now is bold, ambitious, mission-oriented leadership to establish a new food economy. That economy should be anchored in three key principles (Figure S.4):

- the right of every citizen – irrespective of class, income, gender, geography, race or age – to sufficient, affordable, healthy food;
- a regulatory environment which curtails the power of Big Food, promotes dietary health and halts the rise of chronic disease;
- a financial architecture that redirects money away from perverse subsidies and post-hoc damage limitation, towards preventive healthcare and the production of sustainable, nutritious food.

The detailed policies needed to build on these foundations are beyond the scope of this report. They are probably beyond the remit of any individual organisation or stakeholder. It is rather government's responsibility – in collaboration with a wide range of stakeholders – to design the conditions under which change is possible. There is no doubt at all that this change is now urgently needed.

Figure S.4: A policy framework to transform the UK food system

Root the right to healthy food in policy

- Enshrine the right to healthy food in law
- Embed leadership across government
- Empower local producers

Regulate the food environment to prevent harm

- Regulate Big Food
- Protect consumers
- Enforce penalties

Redirect the money

- Tax the bad
- Resource the good
- Lead by example

1. Introduction

There are two stories about Big Food.¹⁰ One is that the food industry is driving down prices through technological innovation, infrastructure investment and supply chain efficiencies. In doing so, it is improving consumer choice and ensuring that even the poorest can afford the calories they need to survive.¹¹

The other is that the food industry is systematically degrading the quality of food that reaches our table, undermining both the health of the population and the integrity of the land. In doing so it is profiting from a rising epidemic of (mostly preventable) chronic disease.¹²

There may well be elements of truth in both stories, of course. But when it comes to changing dietary patterns to promote health, the argument that seems to trump all others is that poorer households already cannot afford to eat and that asking people to change their behaviours is a waste of time. Eating well is a luxury that only the affluent middle classes can afford to care about, according to this argument.¹³

What's clearly true is that food poverty has reached alarming levels in recent years. Food prices have risen by more than 30% since the end of 2021.¹⁴ The Department for Work and Pensions (DWP) has estimated that 7.2 million people were living in households with low or very low food security in 2022–23.¹⁵ That number accounts for 11% of the UK population and 17% of children. It represents an increase of 80% in the space of just three years.¹⁶

The use of food banks has also increased exponentially. In 2023–24 the Trussell Trust distributed 3.1 million emergency food parcels, the highest number ever recorded.¹⁷ That represents a 94% increase in the last five years and a massive 240% increase from just a decade ago. Clearly there is absolutely no room here for complacency in tackling what amounts to a crisis of food insecurity.

Yet the claim that ordinary people have no interest in healthy, sustainable food is not borne out by the evidence. Over the last year the Food, Farming and Countryside Commission (FFCC) invited nearly 120,000 people to take part in a robust process of in-depth dialogue as part of The Food Conversation.¹⁸

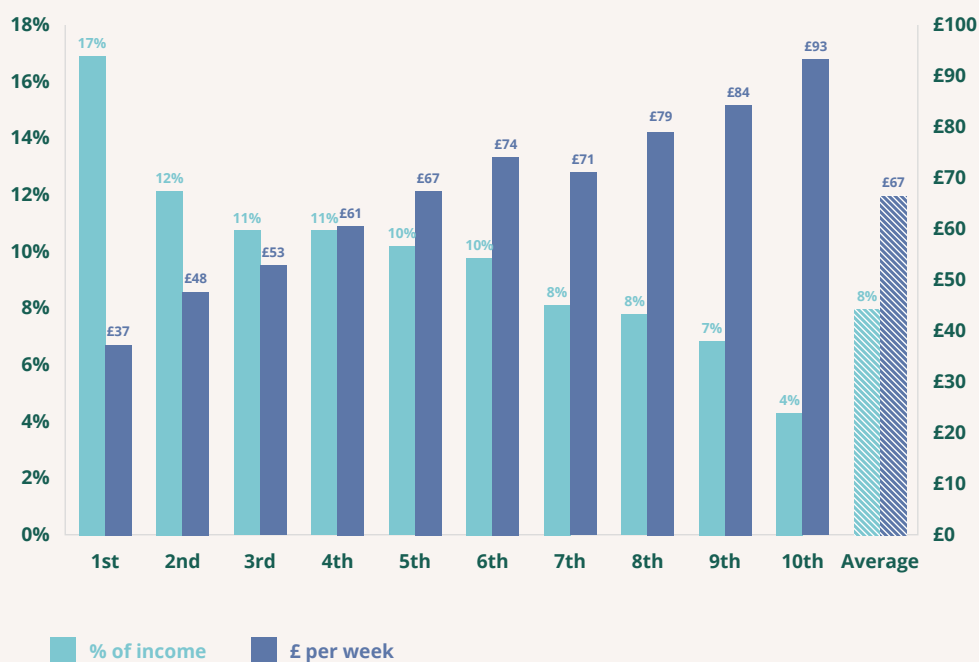
Hundreds of citizens, representing all socio-demographic groups, have taken part in more than eighteen hours of workshops. National polling has reached thousands more. The results are surprising and hold the key to an abiding paradox. Why is that we are seemingly locked into unhealthy and unsustainable diets?

What emerges consistently from these data is that neither lack of interest nor lack of will is the key issue. In a survey carried out by More in Common, almost half (49%) of respondents said that financial pressures had led them to cut back on the quality of food they eat and two thirds (66%) agreed that healthy food is something that only some or a few people can afford. On the other hand, four out of five respondents (80%) felt that healthy food is a basic right – something everyone should be able to have – second among basic needs only to healthcare (87%) and well above home ownership (52%). What is clear from these data is that people are locked out of affordable, healthy food, by necessity – financial and time pressures – and not by choice or lack of interest.

Respondents also registered a high level of concern about the unfairness of a food system that squeezes farmers at one end and food consumers at the other.¹⁹ As farmers in the UK strike over what they perceive to be a ‘tax raid’ on farms in the Autumn budget,²⁰ deep inequalities persist among UK households. The poorest households spend less than £40 a week on food (Figure 1). The richest spend over £90 a week. Food spending represents 17% of equivalised disposable income for the poorest households. It represents only 4% for the richest.²¹

Figure 1: Household spending on food by income deciles

Note: author’s calculations using ONS Family Spending Tables (see note 21); income is measured as median equivalised disposable income; % share of income is shown on the left-hand axis; absolute spending is shown on the right-hand axis.



These numbers reveal persistent food inequalities across UK society. But the question of fairness is not restricted to the provision of affordable food to poorer households. Nor is it simply about the punitive economic conditions faced by farmers. Nutritious and affordable food is essential to health. The link between diet and health is now widely acknowledged and virtually unassailable (Section 2).²² Food inequalities are inextricably linked to deepening health inequalities.²³ Healthy life expectancy for the poorest in society is almost two decades lower than it is for the richest.²⁴

So whatever the truth behind those two stories about Big Food, there is clearly a need to address the fundamental issue. Farmers are squeezed at one end of the food chain and households are squeezed at the other. Healthy, sustainable food may look unaffordable at both ends of the system. But people are dying sooner and living more of their lives with chronic disease because of a food system which is fundamentally dysfunctional. And the healthcare costs associated with food-related chronic disease are rapidly becoming unpayable.²⁵ Doing nothing is no longer an option.

In this report we turn confused assumptions about the ‘unaffordability’ of healthy food on their head. Instead, we ask two very simple questions. How much does food-related chronic disease cost the UK? And how much would it cost to ensure access to healthy, affordable and nutritious food for every person and every household in the UK, without exception, as a basic right?

The core of our analysis is an economic comparison between the health and social care costs attributable to unhealthy food on the one hand (Section 3) and the incremental (ie additional) costs of ensuring universal access to a healthy diet on the other (Section 4). We address briefly (Section 5) the role played by Big Food in the current food system and the dangers it poses to consumers, other food producers and the public purse. Finally (Section 6), we discuss the policy implications of these findings and present three clear principles – and a number of underlying policy directions – that could form the foundations for a new food economy.

By way of caveat, it is worth pointing out that the exploration in this paper is not intended as a comprehensive economic analysis of the situation. Key elements of that task remain to be fulfilled. Nor does it propose a definitive set of policy solutions. That must ultimately be the responsibility of government working in close collaboration with a wide range of stakeholders.

Nonetheless, it is our contention that the evidence gathered here establishes sufficient grounds to reject what turns out to be the ‘false economy’ of Big Food and to establish in its place a right to affordable and healthy food that is not simply a moral imperative – but a profoundly prudential one.

2. The rising burden of chronic disease

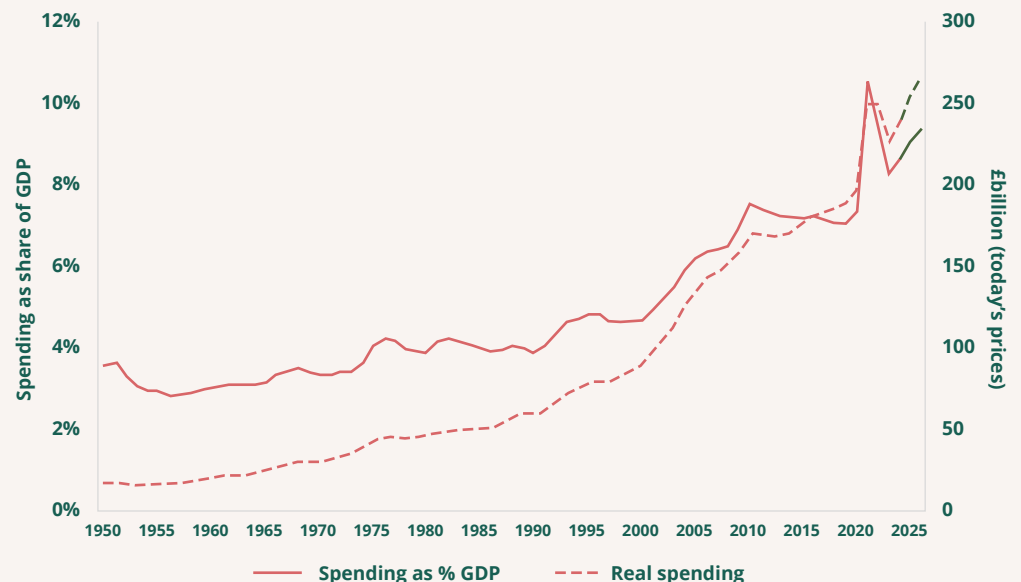
Lord Ara Darzi's 'rapid investigation of the state of the NHS', commissioned by the Starmer government earlier this year, makes for deeply uncomfortable reading.²⁶ Hospital waiting times have 'ballooned'.²⁷ Accident and emergency departments are 'in an awful state'.²⁸ Falling health sector productivity is having a devastating effect on staff. It 'crushes their enjoyment of work' and depresses morale, leading to a 'reduction in discretionary effort across the health service'.²⁹ Staff sickness absence rates are rising. Recruitment and retention rates are falling, particularly in primary care. Public satisfaction, which stood at an all-time high in 2009, is 'now at its lowest ever'.³⁰ The health service is in 'serious trouble' concludes the independent peer, with characteristic understatement.³¹

Some of what's happened is the result of underinvestment. The NHS is now chronically 'starved of capital', according to Lord Darzi. Of particular concern is a shortfall of £37 billion in capital investment. That sum could have 'prevented the backlog [in] maintenance, modernised technology and equipment and paid for the 40 new hospitals that were promised'. It could have 'rebuilt or refurbished every GP practice in the country' says Darzi.³²

Some of what's happening is political. Government spending on health rose at its fastest level (as a share of national income) when the last Labour government was in power between 1997 and 2010 (Figure 2). It then declined as a share of GDP during the austerity years, rose during the pandemic (partly as a result of the contraction in the size of the economy) and has subsequently fallen again both as a share of GDP and in real terms.³³

Figure 2: Government health spending (1950–2023)

Note: the solid line (values on left axis) shows government health spending as a share of GDP; the broken line (values on right axis) shows real spending on health at today's prices; green lines incorporate projections from the October 2024 budget; source data: IFS 2024 and author's calculations.



But the state of the NHS is not entirely the result of shifting political priorities or the ‘sticking plaster politics’ of the last 14 years.³⁴ As the Institute for Fiscal Studies has pointed out, aside from the pandemic years, government health spending is higher today both in real terms and as a share of GDP than at any time since the NHS was founded. The Department for Health and Social Care’s day-to-day budget rose ‘dramatically’ from 26% of departmental spending in 1999 to 43% in 2023.³⁵

Healthcare spending in 2023 was just over £290 billion, representing 10.9 per cent of GDP.³⁶ Of this amount, government spending (primarily through the NHS) amounted to £239 billion, around 82% of the total.³⁷ In the October 2024 budget the government announced a cash injection over the next two years of £22.6 billion for the NHS and a £3.1 billion addition to its capital budget.³⁸ That’s clearly not enough to offset even the capital shortfall identified in the Darzi report. But in real terms (at today’s prices) it means that government health spending will be more than 16 times higher by 2026 than it was in 1950.³⁹

Despite this vast increase in day-to-day spending on health, Darzi’s investigation concluded that the health of the nation has deteriorated significantly in the last decade and a half. The proportion of our lives spent in ill-health has increased. The mortality rate for cardiovascular conditions is rising. Cancer mortality rates are higher than in other countries. There has been a ‘surge’ in the number of people who suffer from multiple long-term conditions.⁴⁰

The number of people in the UK who are ‘economically inactive’ as a result of these long-term conditions has increased by 40% over pre-pandemic levels. Many of the social determinants of health ‘have moved in the wrong direction over the last 15 years’, says Darzi. The result, he concludes, is that the NHS is facing ‘rising demand for healthcare from a society in distress’.⁴¹

This ‘distress’ takes the form of a rising burden of chronic (noncommunicable) diseases such as cardiovascular, metabolic and neurological disorders.⁴² The World Health Organization estimates that chronic disease now accounts for almost three quarters (74%) of all deaths worldwide.⁴³ Data from the most recent Global Burden of Disease study reveal that chronic disease is responsible for more than 80% of the burden of disease in the UK.⁴⁴

Some of this rise in the relative burden of chronic disease is a result of a decline in the burden from infectious disease. But there has also clearly been an increase in the incidence and prevalence of many chronic conditions. To take just one example, Type 2 diabetes⁴⁵ has risen so fast in recent decades that it has been described as a ‘pandemic of unprecedented magnitude’.⁴⁶ Incidence of the disease doubled every 20 years in the decades following the foundation of the NHS.⁴⁷ And the rate of growth seems to be accelerating. In the UK, the most recent doubling took only 15 years.⁴⁸ It is estimated that around one in ten (10%) of all UK adults are now diabetic.⁴⁹ As many as one in three adults (33%) are likely to be pre-

diabetic, with blood glucose readings above the normal range (a condition known as hyperglycaemia) but below the diabetic threshold.⁵⁰

Hyperglycaemia is one biomarker for what is known as metabolic dysfunction – a breakdown in the mechanisms through which energy is used, stored and transformed in the body.⁵¹ Metabolic dysfunction has been associated with a wide range of chronic conditions, including obesity, hypertension, cardiovascular disease, chronic respiratory disease, diabetes, musculoskeletal disorders, cancer, infertility and even neurological disorders such as depression and dementia.⁵²

Metabolic dysfunction is now widespread in western countries and increasingly common elsewhere.⁵³ Researchers at Oxford Population Health found that 42% of a sample of adults over 60 from the UK Biobank exhibited metabolic syndrome – a condition in which three or more symptoms of metabolic dysfunction are present.⁵⁴ Around 70% of adults over 65 suffer from one or more metabolic condition.⁵⁵ In the United States, a staggering 90% of the entire adult population exhibit some level of metabolic dysfunction.⁵⁶

The principal causes of metabolic dysfunction are dietary.⁵⁷ The modern diet overloads the body with sugars, salt and saturated fats and is low in wholefoods, seeds, nuts, legumes and fruits. Intensive agriculture is heavily reliant on pesticides and fertilisers which leave chemical residues in food products. Modern food processing removes dietary fibre. It tends to strip out essential nutrients. It also relies heavily on chemical additives and preservatives. Over the last seven decades such ingredients have been increasingly favoured by the food industry.⁵⁸ What's becoming clear is that they are the result of deliberate decisions in food processing aimed at capturing market share or reducing price.⁵⁹

Particular concerns have been raised – both in the medical literature and in the public – over the impact of what has been called ultra-processed food (UPF).⁶⁰ These are characterised as 'industrial formulations' manufactured by dismantling agricultural products into their component parts, altering them and recombining them.⁶¹ UPFs tend to contain artificial additives such as colouring, sweeteners, flavours, preservatives, thickeners and emulsifiers in order to enhance the appearance or the palatability of food and increase its shelf life. They rarely contain any intact or unprocessed whole food. In other words, they incorporate many of the dangerous characteristics of modern food-processing practices.

UPFs were far less prevalent in 1948 than they are today. They now constitute over half (57%) of the adult diet and almost two thirds (66%) of the adolescent diet.⁶² The UK has one of the highest proportions of UPF in its diet among western nations after the US.⁶³ The medical consequences of this relatively recent and almost entirely uncontrolled experiment are already becoming abundantly clear.

There is now convincing evidence of the links between UPF and obesity,⁶⁴ metabolic syndrome,⁶⁵ diabetes,⁶⁶ cancer,⁶⁷ reproductive disorders⁶⁸ and various neurological conditions such as Alzheimer's disease and depression.⁶⁹ These associations appear to hold even after adjusting for socio-demographic factors and other health-related behaviours.⁷⁰

A recent 'umbrella' review with a massive sample size of 9.9 million people collated the findings from 14 previous meta-reviews and 45 'pooled analyses'. It found 'direct associations' between consumption of UPFs and more than 30 adverse health impacts.⁷¹ Significant dose-response relationships have also been established. For instance, every 10% increase in absolute UPF intake has been associated with 12–15% greater risk of developing Type 2 diabetes.⁷² Another meta-study found a pooled risk of 'all-cause mortality' that was 25–28% higher for the highest consumers of UPF relative to the lowest.⁷³

In short, the crisis in our healthcare system, the rapid rise in chronic long-term conditions, the crisis in overweight and obesity and the increasing prevalence of hyperglycaemia and metabolic syndrome are all related. Our food system – which should be keeping us well – is not just making us sick. It is killing us.

3. The costs of unhealthy food

In this section, we estimate the costs of the UK's unhealthy food system. Our estimate is a baseline for understanding what is at stake if we fail to address the risk factors associated with chronic disease. It is also the foundation for thinking about what we can and cannot afford in terms of transforming the food system.

The starting point for the exercise is to understand and assess the costs associated with chronic disease itself. For the purposes of this report, we identify five such categories.

- First, there are the costs of managing, treating and caring for chronic disease. These costs fall primarily on the public purse either through the healthcare budget or through private expenditure on health.
- Second, there are the costs of social care for those with long-term conditions. The direct costs fall partly on the local authorities responsible for social care provision in England (and the devolved governments in Scotland, Wales and Northern Ireland) and on the families who pick up the remaining care bill.
- Third, there are the costs associated with state provision of welfare or income support payments to people incapacitated through long-term illness or disability. These costs fall on the public purse.
- Fourth, there are the economic losses (or 'hidden costs') arising from the loss of productivity associated with morbidity and economic inactivity from long-term health conditions. These costs fall on the economy as a whole and by implication on the living standards of the entire country. They also impact on the tax revenues of government.
- Finally there are the human costs that arise from the years of healthy life lost to a 'society in distress'. These human costs fall on ordinary people: the victims of disease, their carers, their families, their friends, their communities.

This final category may be difficult to assess in an objective fashion, depending as it does on placing some value on the quality of human life. But the first four categories are all to some extent measurable costs. Getting a handle on them still remains tricky for various reasons. But it is an essential first step in understanding how large the impact of a broken food system is on the national economy. We address each of the categories in the following subsections.

HEALTHCARE COSTS

The starting point here is to understand how much of the UK's healthcare spending is attributable to managing and treating chronic disease. Unfortunately, there's no ready answer to this question. In the US, the government estimates that 90% of the \$4.5 trillion spent on healthcare in the country is for chronic conditions.⁷⁴ Using the same proportion of healthcare spending for the UK would suggest that healthcare for chronic disease accounts for something close to £260 billion (or around 9.8% of GDP).

The incidence of chronic disease is certainly higher in the US than it is in the UK. But this estimate may not be massively inconsistent with a statement made by David Cameron, early in the Coalition government. Back in 2011, the former Prime Minister announced that the healthcare costs associated with long-term conditions 'like asthma, arthritis or diabetes' already absorbed '70% of spending on health' in the UK.⁷⁵

It turns out that he was citing a 2010 report from the then Department of Health. The report's 'best estimate' at that time was that the treatment and care of people with 'long-term conditions' accounts for 70% of the total health and social care costs in England.⁷⁶ The inclusion of social care spending in that assessment slightly complicates things, since the costs per person for social care can sometimes differ markedly from the costs for primary or secondary care.⁷⁷

But it is also clear that there's been a substantial increase in the number of people suffering from long-term conditions. At the time of the Department of Health report, there were 15.4 million people in England living with chronic disease. The forecast at the time was that by 2025 that number would reach 18 million. In point of fact, there are already 25 million people in England living with at least one long-term condition, and of these, more than half (13.4 million) suffer from two or more conditions.⁷⁸

In other words, two in every five people (43% of the population) are now living with chronic disease and more than one in eight people (13%) are living with at least two chronic conditions. It is also worth noting here that the prevalence of chronic disease is 60% higher in the poorest social class than it is in the richest.⁷⁹

Given these considerations, the 70% proportion may now be an underestimate. Nonetheless, for the purposes of this study, we adopt that proportion as our central estimate. It implies that the direct healthcare costs of chronic disease in the UK are now a little over £204 billion at current prices.

This doesn't necessarily imply, of course, that the costs attributable to unhealthy food are of the same order of magnitude. Diet is not the only risk factor which leads to chronic disease. Lack of exercise, poor sleep, non-diet related environmental toxins and chronic stress are all known contributors to metabolic dysfunction and thence to chronic disease.⁸⁰ We address that question at the end of this subsection.

SOCIAL CARE COSTS

Healthcare is primarily funded through central government in the UK. But public spending on adult social care is devolved to local authorities in England and through the devolved governments in Scotland, Wales and Northern Ireland. It is notoriously difficult, as the Institute for Government has pointed out, to get consistent data across the four nations of the UK for public services that are devolved.⁸¹

However, the Institute for Fiscal Studies (IFS) reports that local authorities have budgeted £24.5 billion for social care spending in the current financial year.⁸² To estimate public spending on social care across the UK, we used a calculation by the Nuffield Foundation of costs per person in each of the four devolved nations for 2020/2021. Assuming that the proportions of spending in each nation have remained the same, we estimate that public spending on social care in Scotland (£3.2 billion), Wales (£1.9 billion) and Northern Ireland (£1.3 billion) now add an additional £6.4 billion to the total for England. This gives us an estimate for total public expenditure on adult social care across the UK of just under £31 billion.⁸³

More than 80% of healthcare costs are borne by the public purse. But private spending on social care is a considerably larger proportion of overall spending than private spending on healthcare. Robust estimates are again difficult to find. The IFS report indicates that only around half of adults in care received state support for their care costs.⁸⁴ This suggests an estimate for the public and private provision of social care across the UK in the region of £62 billion.

Once again, it is not clear that assigning all of these costs to the impacts of chronic disease is appropriate. Some social care costs will arise from inherited disabilities and some from acute incapacities due to injury or to infectious disease. We assume here, as we did for healthcare costs and in line with the 2010 Department for Health assessment, that 70% of the costs from social care are attributable to chronic disease. This gives us a conservative estimate of £43 billion for this category of costs.

WELFARE SUPPORT

In addition to the direct costs of social care, the government also provides benefits and allowances to those who are out of work through ill-health or who are suffering from disabilities. During 2023–24, the government spent £24.9 billion on incapacity benefits to provide income replacement for those who found it difficult to work due to ill-health. It also spent £19 billion on disability benefits to cover the extra costs of living with disability or long-term health conditions. The total welfare spend for long-term incapacity and disability is therefore estimated at £44 billion.⁸⁵ As with healthcare and social care costs we attribute 70% of these costs to chronic disease, giving a total of £31 billion.

PRODUCTIVITY LOSSES

Long-term conditions associated with chronic disease have a knock-on effect on the economy. Preventable morbidity and mortality reduce the productivity of the workforce and lower economic output both in the current year and into the future. This has a knock-on effect both on living standards and on the public purse (lower tax yields). The scale of these 'hidden' costs can be very substantial, as both the Food and Agriculture Organization (FAO)⁸⁶ and the Food System Economics Commission (FSEC) have pointed out.⁸⁷

The FSEC calculates that the global hidden costs associated with productivity losses are in the region of \$11 trillion each year. Since the Paris Agreement in 2015, they say, losses of more than \$131 trillion have been accumulated by the global economy.⁸⁸ Using a slightly different methodology, the FAO arrives at a very similar number.⁸⁹ They calculate global hidden costs of \$11.6 each year (measured in 2020 dollars at purchasing power parity). Of these hidden costs, the FAO finds that those associated with health are by far the largest and amount to \$8.1 trillion a year.⁹⁰

As the FAO points out, productivity losses are also incurred as a result of the climate and environmental impacts of the food and agriculture system. They estimate that globally these environmental losses lie in a range between \$2 trillion – \$6 trillion with a central estimate of \$2.95 trillion per year.⁹¹

In this report, we focus primarily on the health costs associated with the food system and have not explored the environmental costs in detail. But it is worth noting here that some of the changes needed to improve health – reduced red meat consumption for example – may also have knock-on benefits in terms of avoided climate and environmental impacts. These 'co-benefits' of food system transformation are again likely to be substantial.⁹²

For the UK specifically, we identified several studies which calculated estimates of the hidden healthy costs attributable to food and diet in a range between just under \$129 billion to \$227 billion a year (measured in 2020 dollars at purchasing power parity). Each study employs slightly different base data and makes slightly different assumptions. For the purposes of our exercise in this paper we adopt the most recent and the most conservative of these estimates. The FAO's most recent The State of Food and Agriculture report (SOFA 2024) calculates that the hidden health costs from the UK food system are \$128.7 billion dollars a year. That's equivalent to £116.4 billion at today's prices.⁹³ We adopt this figure as our central estimate for the health-related productivity losses attributable to the food system in the UK.

HUMAN COSTS

Chronic disease shortens life expectancy and reduces our quality of life. The human costs of this are not ‘tangible’ in the sense of being directly measurable in the market or even in the national accounts. They lie beyond both the direct health and social care costs and the question of the productivity losses associated with poor health. They’re about the human suffering entailed in lost chances, lives lived in pain, sick relatives and the untimely loss of our loved ones.

They may have no definable value in the market, but there is clearly a grim reality to what are sometimes called ‘shadow costs’.⁹⁴ And there have been useful attempts to put an economic value on these costs. Most recently, for instance, Frontier Economics carried out an analysis of the costs of obesity and overweight for the Tony Blair Institute. That study estimated the total costs in the UK at £98 billion.⁹⁵ Of that total, more than half of the costs (£56.6 billion) were attributed to the loss of ‘quality-adjusted life years’.⁹⁶ In other words it was quite precisely an attempt to calculate a shadow cost for the human suffering caused by obesity and overweight.

Obesity is very highly correlated with certain kinds of chronic disease – specifically diabetes, cardiovascular disease, osteoarthritis and depression. It is also largely preventable and potentially reversible through dietary change. The shadow cost of obesity and overweight is therefore a reasonable proxy for the value of human suffering associated with chronic disease. In current prices the Frontier Economics estimate would be equivalent to £60 billion. That’s the value we adopt here as a component of our overall cost profile.

ASSESSING THE OVERALL COST

In the previous subsections, we have identified the specific costs associated with various aspects chronic disease in the UK. Some lie in the market. Some outside the market. Some are borne by private citizens. Others by the state – and by implication the taxpayer. They all matter.

The results of the calculations are striking. Our central estimate of the total cost of these different components in the UK is £455 billion. Of these costs, £278 billion are costs directly incurred in the economy through health and social care and through welfare payments. The remainder are incurred in the form of productivity losses (£116 billion) and human suffering (£60 billion).

The next stage in our analysis is to work out how many of these costs are attributable to unhealthy food. Diet is widely recognised as one of the most important risk factors for chronic disease.⁹⁷ But as we have seen, it is not the only one. In order to get a handle on the economic burden of a toxic food system, we need to work out what proportion of the costs we have identified are attributable to diet.

That task is not entirely straightforward. We spoke to clinicians with very optimistic scenarios for reducing the burden of chronic disease through diet. Some suggested that it is responsible for around 75–80% of chronic disease.⁹⁸ Others virtually discount the potential for reducing chronic conditions through diet – even when they accept that it plays some causative role in disease. More often than not, this latter position comes from a well-entrenched view that it is impossible to shift dietary patterns at scale, so there's little point in considering it.

That position is no longer tenable when the costs of chronic disease are becoming unpayable. Nor is it borne out by the scientific evidence we have summarised in the previous section. But the question of attributing a proportion of the overall costs of chronic disease to diet is not entirely trivial. For the purposes of this study, we used data for the UK from Global Burden of Disease (GBD) study to carry out that task. Specifically, we identified the values of various diet-related 'risk factors' to ascertain the proportion of chronic disease attributable to food and diet and applied these to the costs calculated above.⁹⁹

It turns out that the impacts of the GBD risk factors vary quite widely, according to both the specific disease and the nature of the risk factors themselves. Some of the values are clearly in the region of those claimed by the more enthusiastic clinicians. For instance, the proportion of diabetes and kidney disease attributable to the risk factor of hyperglycaemia is in the range 74% to 83%.¹⁰⁰ The proportion of cardiovascular disease associated with the broad category 'metabolic risks' is in the range 52% to 65%.¹⁰¹

But there were also surprisingly low attributions of disease to some diet-related risk factors. No association at all is indicated, for instance, between the overall category of 'dietary risk' and neurological disorders – despite the medical evidence of this link that we have already highlighted. And even in the case of diabetes – which is well known to be related to diets high in sugar¹⁰² – the proportion attributed to the entire category of 'dietary risk' was in the range 12.4% to 48% with a central value of only 33.1%.¹⁰³

This is in part a construction – and perhaps a limitation – of the risk factor categorisations in the GBD. The category of 'dietary risk' includes a variety of factors – such as 'a diet low in fibre' and 'a diet high in trans fatty acids' – which are certainly contributors to the metabolic dysfunction that underlies diabetes. But strangely there is no category to reflect a diet high in sugar or one high in refined grains and carbohydrates. So perhaps it is not surprising that the association doesn't emerge in the GBD data.

A better reflection of the link between diet and diabetes is offered by the GBD's category of 'metabolic risk' – which includes a range of factors – such as high fasting plasma glucose – known to be associated with diets high in sugar and closely linked to Type 2 diabetes. Not surprisingly the database returned a value

of 99% for the proportion of the burden of disease from diabetes attributable to metabolic risk. In short, the Global Burden of Disease database has an almost overwhelming amount of detail related to a very complex issue. But it appears to be missing or misconstruing some massively important relationships between diet and disease.¹⁰⁴

For the purposes of this study, we decided to adopt the number provided by the GBD database for the proportion of all noncommunicable disease attributable to metabolic risk (33%). This is clearly substantially lower than some of the more optimistic clinician estimates. It remains unsatisfactory from the point of view of identifying dietary risk as a whole. But as it happens, this is the central estimate returned by the GBD for the proportion of diabetes and kidney disease attributable to diet. It also happens to be the percentage reduction in ill-health deemed possible through dietary measures according to Professor John Deanfield's recent report UK for the government on preventive health.¹⁰⁵ Accordingly we have adopted this factor as a (conservative) estimate of the proportion of chronic disease-related health costs that are attributable to diet.

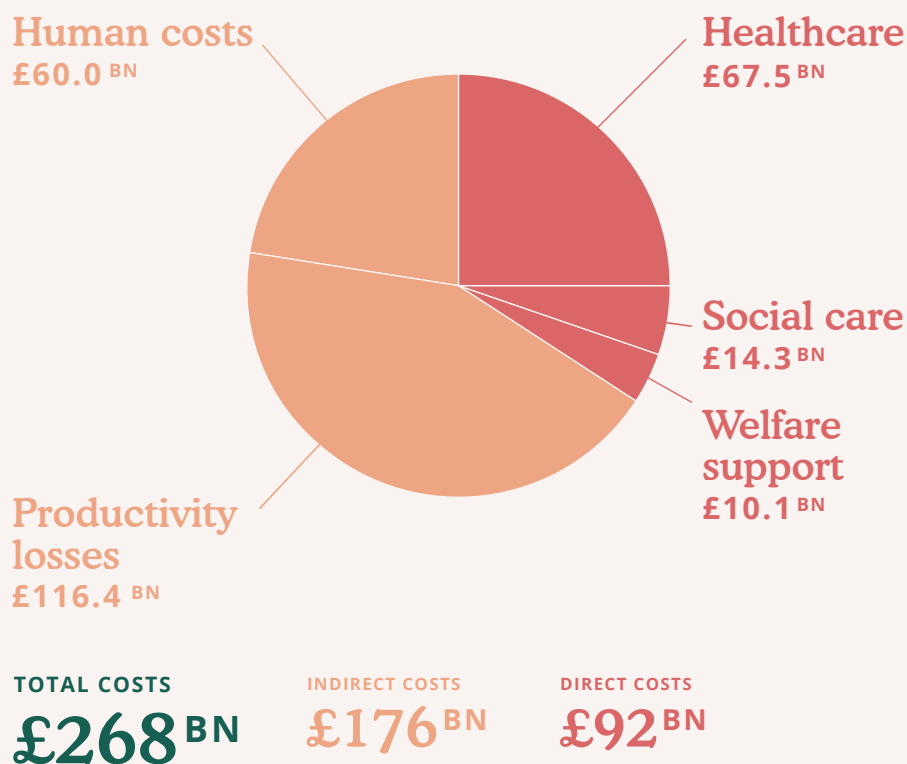
We then applied this factor to the healthcare costs, social costs and welfare support associated with chronic disease, which we calculated in the previous subsections. This allowed us to arrive at values for the costs from these elements that should be attributed to the food system itself. Specifically, we calculate healthcare costs attributable to the food system at £67.5 billion, social care costs attributable to the food system at £14.3 billion and welfare support attributable to the food system at £10.1 billion.

We have not applied the same proportionality to the productivity losses (£116.4 billion), because the FAO study had already used the GBD risk factors in order to calculate these losses.¹⁰⁶ Nor did we adjust the number (£60 billion) that we adopted for the costs of human suffering brought on by chronic disease. Obesity is highly correlated with chronic disease and this estimate already under-represents the suffering associated with a wider array of long-term conditions. So the Frontier Economics estimate is already a conservative estimate of the human suffering unleashed by the food system as a whole.

In summary then, the total costs that we attribute directly to our diet and to the food system amount to £268.3 billion (Figure 3) at today's prices. That sum is more than the 90% of the entire healthcare spend in the UK (£292 billion) in 2023 and considerably higher than government spending on health has ever been (see Figure 2 above). These overall costs could more than cover the annual budget of the NHS.

Figure 3: The health-related costs attributable to food in the UK

Note: figures are from calculations and sources as described in this report; red indicates direct costs incurred through the health and social care system and through welfare support; orange indicates indirect costs in the form of 'shadow costs' (the human suffering associated with lost life quality) and 'hidden costs' (the productivity losses associated with morbidity and long-term economic inactivity in the workforce).



Just under two thirds (£176.4 billion) of the total cost shown in Figure 3 is attributable to 'indirect' costs. Though very substantial, these costs don't appear in any account of spending in the UK. They are not transacted in the market. Nor are they spent by government. They are felt in the form of lost productivity on the one hand (£116.4 billion) and human suffering on the other (£60 billion). The remainder (£91.9 billion) are direct costs. These latter costs arise from real financial exchanges in the economy. They are incurred year after year in the economy in an attempt to manage the ill-health brought on by our dysfunctional food system. They represent almost 40% of government's entire expenditure on health in 2023.

The ability to finance these direct costs must be found from Treasury coffers, extracted from the taxpayer, dispensed from local authority budgets or spent from the pockets and savings of ordinary citizens. They are a direct drain on household spending and on the public purse. But they have become essential in order to pay for the healthcare, social care and welfare allowances associated with the increasing burden of food-related chronic disease.

4. The costs of eating well

The next step in our analysis was to ask how much it would cost to fix the nation's diet. Specifically, we compared current spending by UK households on food and non-alcoholic beverages with the costs of a healthy diet. Our aim was to work out the incremental cost associated with the healthy diet. How much would need to be spent to ensure that everyone has access to affordable healthy food?

For now we take a relatively pragmatic approach to this calculation. It is a 'thought experiment'. We're looking for a reasonable estimate of the current market price differential between people's food spending at the moment and what they would need to spend in order to eat a balanced, healthy diet.

This analysis here is subject to the caveat that changes to the provision of different foodstuffs of the magnitude envisaged here are likely to change the cost of production of those foods and therefore to impact on the market price. For the most part though, such changes are likely to mean that our estimates are conservative. Typically, economies of scale tend to reduce the market price of food-based commodities. Costs for healthier alternatives are likely to fall as demand for them increases.

Nonetheless, there is now a general recognition that, under current market conditions, healthy food is more expensive than the average diet. In their influential Broken Plate report from 2023, The Food Foundation found that healthy nutritious food is more than twice as expensive (at £10 per 1000 calories) as obesogenic, unhealthy food products (at £4.45 per 1000 calories).¹⁰⁷ They also found that the price differential between healthy and unhealthy food was increasing.

Comparisons per calorie can be a useful rule of thumb. But focussing solely on cost per calorie represents a somewhat problematic way of accounting for the difference between healthy and unhealthy eating. A part of the problem of an unhealthy diet lies in the quantity of calories consumed. A higher cost per calorie may well be less problematic when fewer calories are consumed, particularly if the outcome in terms of nutrition and health is better.

On the other hand, insights from nutrition science suggest that the quality of calories consumed matters almost as much as the quantity. Calories consumed in the form of refined carbohydrates and (particularly) sugars are more problematic for the metabolism and more damaging to the gut biome than calories consumed in starchy carbohydrates, legumes, nuts and seeds.¹⁰⁸

A more relevant cost comparison for our purposes is to assess the difference between the daily cost of an average diet and the daily cost of a balanced healthy

diet, constructed according to some clear nutritional guidelines. The Nuffield Department of Primary Care Health Sciences at Oxford University has carried out such a study. The researchers compared the costs of achieving the government's Eatwell Guide¹⁰⁹ against a 'baseline diet' based on typical food consumption purchases.¹¹⁰

When they first carried out the study in 2016, they found that the costs of the two diets were broadly comparable. When they recalibrated the costs in 2023 they found that the cost of the Eatwell diet was more expensive (£7.48 per adult per day) by comparison with their 'baseline' diet (£6.82 per adult per day), supporting the Food Foundation's claim that the differential is increasing.¹¹¹ Taking food price inflation into account, these costs would be £9.07 and £8.27 per adult per day respectively at today's prices.¹¹²

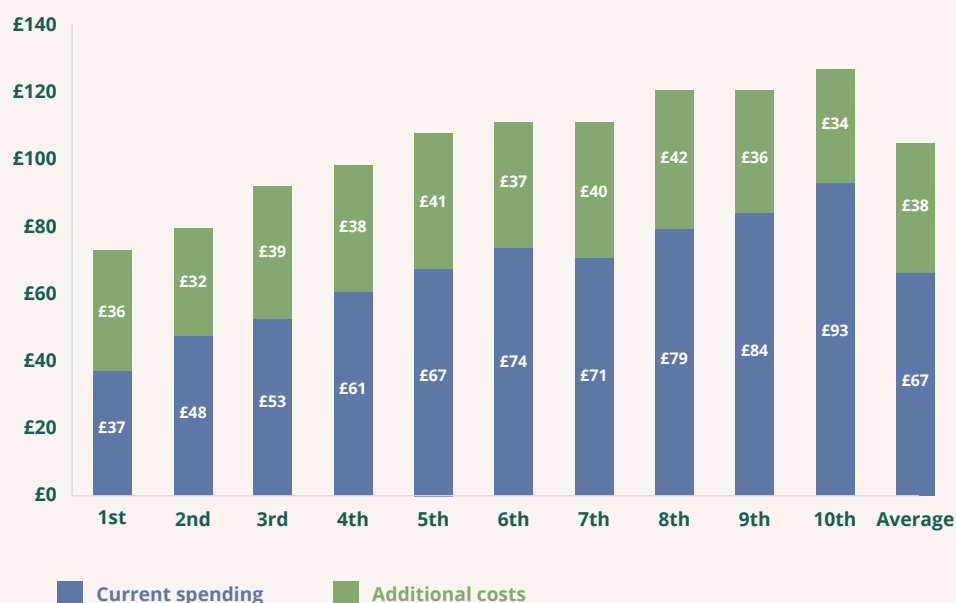
The baseline diet in the Oxford study is not particularly representative of an average household in the UK. The average household currently spends about £67 a week on food and non-alcoholic drinks. That represents around 8% of the average (equivalised)¹¹³ household disposable income (Figure 1). But when we adjusted the cost of the Oxford baseline diet for inflation¹¹⁴ and calculated the equivalised weekly household expenditure,¹¹⁵ we found that it was very close to the current weekly food expenditure of the richest decile – and almost 50% higher than the average household expenditure.

That discrepancy doesn't matter excessively here. Our principal aim in this study is to use the Oxford study's calculation of the costs of the Eatwell diet and estimate the incremental costs associated with achieving that diet – not only at the household level but also across the nation. After adjusting the price of the Eatwell diet for inflation, we found (Figure 4) that the average household cost would rise by £37 from £67 per week to just under £105 per week – an increase of 55%.

This is a substantially higher increase than foreseen by the Oxford study. But the uplift is significantly lower than the 'cost per calorie' calculation reported by The Food Foundation. That's in part because we are making a different comparison here. The Broken Plate report was comparing the healthiest to the least healthy foods – on a per calorie basis. Here we are interested in comparing the costs of a healthy diet (as characterised by the Eatwell Guide) against the costs of current spending patterns.

Figure 4: Additional weekly costs of the Eatwell Guide diet by income decile

Note: author's calculations of the weekly cost per household to achieve the Eatwell Guide diet, using ONS data on family spending (note 21) and costs per person for the Eatwell diet from the Oxford study (note 7).



The increases in weekly spending are of course much larger (as a percentage of current food spending) for the poorest income decile (97%) than they are for the richest (36%). That's because poorer households currently spend much less on food than richer ones. Costs are also higher as a percentage of disposable income for the poorest households (33%) than they are for the richest (6%). Interestingly though, the absolute value of the increase per household is about the same size – between £32 and £42 per week per household – across all income deciles.¹¹⁶

The ultimate aim of this part of our study was to work out what it would cost to make up the difference between current spending patterns and the expenditure required to maintain a healthy diet based on the Eatwell Guide for everyone – no matter how rich or poor.

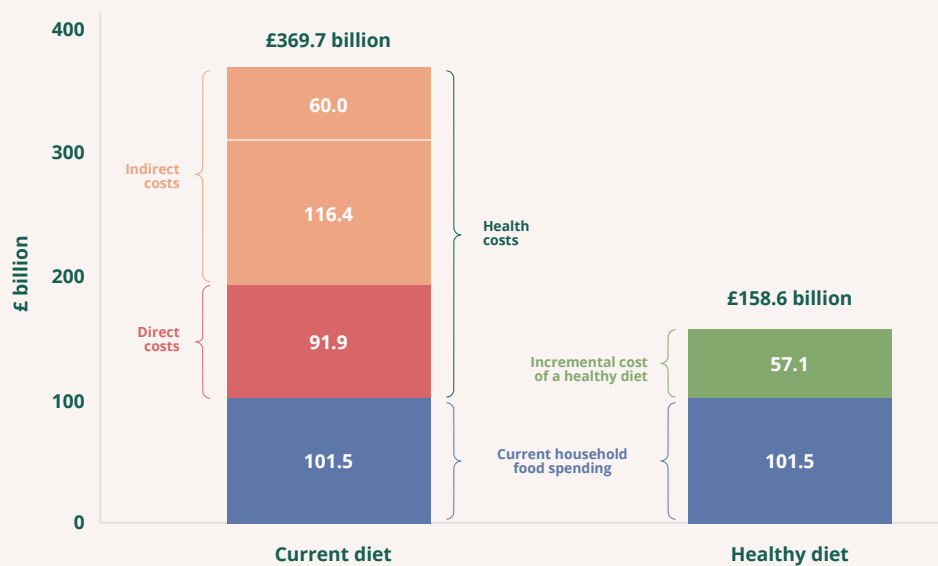
This isn't yet an exercise in designing a policy to achieve that end. It is not an attempt to decide whether subsidies to households are better or worse than subsidies to firms and farms who produce healthier food. It is not, at this point, even an argument that subsidies are the best way to achieve the goal. It is simply a part of our 'thought experiment'. To ask explicitly: what is the cost differential between the UK's current food expenditure and the expenditure needed to achieve a healthy diet for everyone?

The answer to that question is shown in Figure 5. Total household expenditure on food and non-alcoholic drink across the UK is currently £101.5 billion. But the true cost of current diets – including both the direct and indirect¹¹⁷ health-related costs attributable to food – amounts to £369.7 billion. By contrast, the cost of providing a healthy diet in line with the Eatwell Guide would be £158.6 billion.

Eating healthily is more than £210 billion cheaper than the true cost of current diets. In other words, there is a powerful economic case to shift the food system away from the false economy of Big Food – and towards a new food economy.

Figure 5: The costs of current diets v. the costs of a healthy diet

Note: summary of calculations as detailed in this report.



5. The power of Big Food

There is, at first sight, something puzzling about these numbers. How is it even possible to spend £101 billion a year on food and incur £92 billion a year in health-related costs as a result? It seems to imply that more than 90% of our food spending contributes directly to ill-health – a far greater proportion even than the proportion spent on UPFs. That conclusion is unlikely to be accurate. Much more likely is that we are looking at an accumulated burden of chronic disease, arising from years or even decades of unhealthy eating.

But even this conclusion is slightly puzzling. It suggests a systematic tendency to turn a blind policy eye to the critical links between diet and health. It certainly represents a chronic lack of regulatory oversight over the behaviours of enormous transnational industrial food conglomerates – the Big Food of our title. These enormous and powerful corporations have profited massively over many decades from selling food that is making people sick.

The rise in the global market for ultra-processed food (UPF) exemplifies this danger. The global UPF industry is now worth at least \$2 trillion in revenues.¹¹⁸ That already represents more than a fifth (22%) of the global food market of \$9.1 trillion and that proportion is increasing rapidly. By 2019, the UPF industry was already 1.6 times larger in terms of revenue than the ‘production and primary processing’ subsector of the food industry. It was also twice as big in terms of assets and 4.7 times larger in terms of market capitalisation.¹¹⁹

Between 2018 and 2024 the market for UPF grew at a compound annual growth rate of 6.7%.¹²⁰ In the next few years, it is forecast to grow even faster (8.4%).¹²¹ That’s considerably higher than the forecast growth rate for food as a whole (6.5%)¹²² and almost three times the forecast rate of growth for global GDP (3%).¹²³ If costs for UPF production were rising at the same rate, this would not necessarily lead to the accumulation of profits or the concentration of economic power. But there is no evidence that that is the case. In fact, between 1993 and 2019, the ratio of shareholder returns to total revenues for the eight largest UPF companies increased from just 3.4% to almost 14%, indicating that shareholders are extracting more and more profit from the proceeds of unhealthy food.¹²⁴

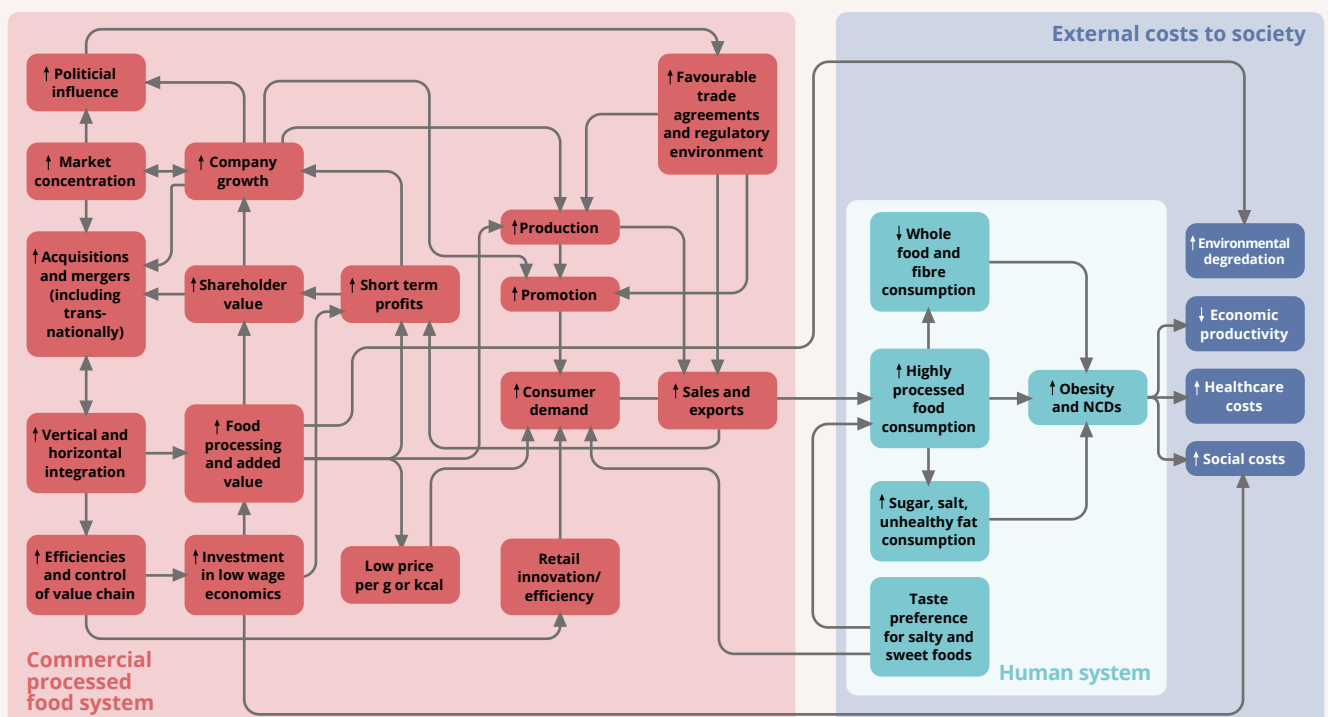
These eight companies now control more than half of the UPF market.¹²⁵ Not surprisingly they wield enormous economic power and exert considerable influence over food policy. There is clear evidence that the industry as a whole follows a well-defined path of financialisation which involves a series of now familiar strategies and tactics designed to maintain and grow market dominance and to ‘capture’ the processes of governance that might restrain oligopolistic power.¹²⁶ These strategies include:

- aggressive advertising to children;
- hijacking the neurobiology of human taste preferences;
- marketing UPFs with spurious health claims (or 'health halos');
- avoiding or side-stepping regulations;
- lobbying against taxes on specific ingredients;
- using debt to engage in share buybacks and boost share prices;
- engaging in huge mergers and acquisitions to enhance market power and thwart competition;
- funding 'scientific' research to support corporate messaging;
- coopting media campaigns to influence public sympathy for the supposed 'benefits' of UPF reformulation.¹²⁷

The complex but systematic nature of these tactics is illustrated in Figure 6. Broadly speaking the process internalises the financial benefits of concentrated food production in the form of returns to shareholders and externalises the costs in the form of damage to society.¹²⁸ It is a form of 'extractive capitalism'.¹²⁹ It represents a systematic attempt to maximise short-term profit – regardless of the societal impact. It has been described aptly by health researcher Ben Wood and his colleagues as a form of 'creative destruction'¹³⁰ – the creation of shareholder wealth at the expense of the destruction of global health.

Figure 6: The impact of Big Food market strategies on human health

Note: reproduced from White et al 2020; 'NCDs' refers to noncommunicable diseases or what we have referred to in this report as chronic disease; upward/downward arrows within individual boxes indicates an increase/decrease in that factor from the strategies engaged in.¹³¹



This brief overview of the Big Food illustrates why it has been difficult for policy to influence public health, in the face of strong vested interests. But there is another dimension to the rise in chronic food-related disease which is even more problematic for government – and for the process of transforming a dysfunctional food system. Even as Big Food was pump-priming an epidemic of chronic disease, Big Pharma was offering the healthcare profession and the government what appeared to be a ready-made solution.

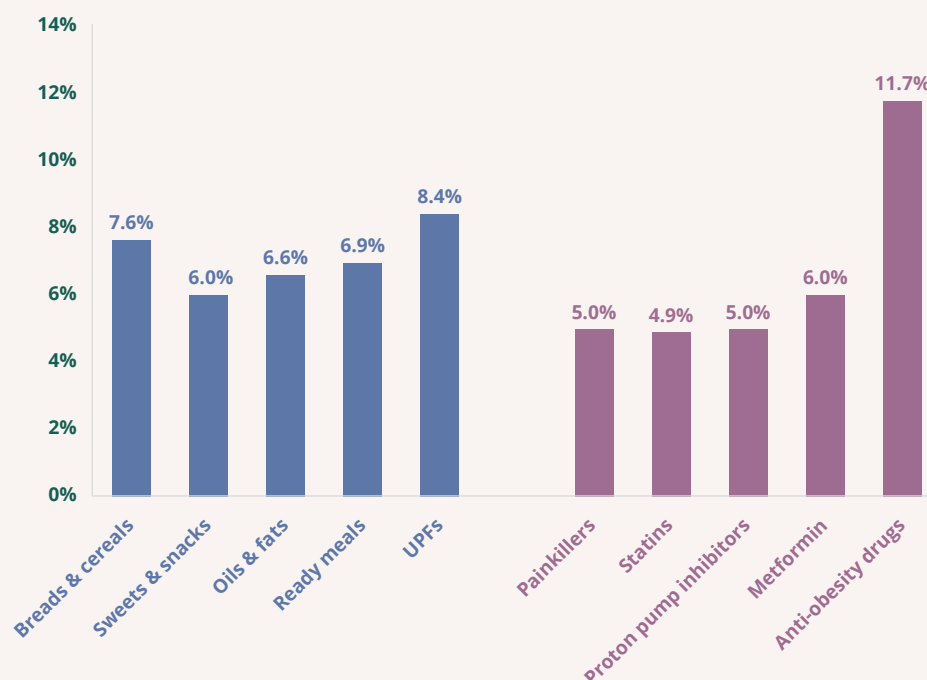
In the absence of strategies to prevent its onset or to reverse its progress, chronic disease demands treatment. Pharmaceutical companies have deployed a panoply of prescription (and non-prescription) medications designed for that purpose: pain killers and analgesics to combat chronic inflammation; antacids and proton-pump inhibitors to counter digestive problems from eating badly; statins to lower cholesterol; metformin to reduce blood glucose levels; and most recently, the anti-obesity drugs semaglutide (eg Ozempic) and tirzepatide (eg Zepbound) to induce satiety and suppress appetite.

All pharmaceutical products have side effects.¹³² Some of those side effects are serious.¹³³ Most prescription drugs are dietary toxins and almost all of them are known to interfere with metabolic function.¹³⁴ Some of them act in ways that appear to alleviate short-term problems but exacerbate health conditions in the long run. To be effective they require long-term usage and expose patients to a sometimes debilitating 'rebound' when they are withdrawn.¹³⁵ But for the pharmaceutical companies, these are massively profitable characteristics.

Chronic long-term disease is a gold-mine for drug companies. Big Pharma – like Big Food – generates huge profits. It is no surprise to find that the growth in prescription drugs follows closely on the heels of the growth in unhealthy foods (Figure 7). But both industries are locking us into ill-health. They are also coopting government policy into a dysfunctional dynamic, in which the promise of an easy fix to chronic disease obscures a long-term lock-in to costly medical strategies.

Figure 7: An unhealthy alliance between Big Food and Big Pharma

Note: the figure shows the forecast compound annual growth rates for five food products implicated in chronic disease and five pharmaceutical products designed to 'treat' the impacts of poor diet; author's presentation using market data from various sources.¹³⁶



The story of the current government's partnership with US pharmaceutical giant Eli Lilly illustrates the dangers of this dynamic. The government is looking for a quick fix to three wicked problems: a crisis in obesity, the problem of long-term economic inactivity in the working population and a huge deficit in NHS funding. Lilly is looking for profit. But they appear in the negotiation dangling a seductive financial incentive: £279 million for a three-year large-scale trial of Zepbound in cash-strapped Manchester. What the government has offered to Lilly in return is not entirely clear. But the Prime Minister announces the partnership at an investment summit designed to show that Britain is 'open for business'. It looks like a win-win for everyone.¹³⁷

But tirzepatide is unproven as a long-term management strategy for obesity. Its side effects include nausea, diarrhoea, vomiting, constipation, abdominal pain, dyspepsia, injection-site reactions, fatigue, hypersensitivity reactions, eructation, hair loss and gastroesophageal reflux disease.¹³⁸ Not to mention the joy of almost complete appetite loss. In the US, Zepbound carries a 'boxed warning' from the FDA because tirzepatide has been known to cause thyroid cancer in animals.¹³⁹ From a health perspective this strategy is already suspect.

From an economic point of view it is dubious at best and disastrous at worst. In the US, the drug retails for around \$1,000 (£780) per patient per month.¹⁴⁰

It is being offered to children as young as 6. To be effective against weight gain, particularly in an obesogenic environment, you have to stay on the drug for life. That is a projected cost of around £200,000 for a middle-aged patient with an average life expectancy and over £650,000 per patient for an early starter.¹⁴¹ In the UK, 64% of the adult population and 21% of children are overweight or obese. There is a potential market of around £12.5 trillion over the lifetime of the current population. It is a gold-mine for Eli Lilly.

If the Manchester trial 'works' and with an estimated 1 billion people worldwide living with obesity, the global market will be enormous. No wonder the company is prepared to put up a few million for a trial. But who, ultimately, is going to pay for that? As a solution to the funding problems of the NHS, or the lost productivity in the UK economy, or the pandemic of chronic disease that's causing immense human suffering and loss it makes absolutely no sense. Particularly when it does nothing whatsoever to solve the underlying problem.

In short, the profitable co-dependency between Big Food and Big Pharma is not a feasible solution to a 'society in distress'. Rather it is locking us into an unjust, unsustainable, dysfunctional food system which has enormously expensive consequences.

6. Conclusions: the case for a new food economy

The economy of Big Food is a false economy. Unhealthy diets contribute significantly to the burden of chronic (noncommunicable) diseases such as diabetes, heart disease, cancer, depression and dementia. These long-term conditions impose rising health and social care costs on governments and households and lead to high levels of economic inactivity in the population. They also impose heavy costs on society in the form of human suffering and loss. None of this is new.

The principal aim of this report was to put some numbers on these costs and to compare those numbers against the costs of ensuring that every person in every household in the country has sufficient, affordable, healthy food. Our analysis found that the health-related costs attributable to the UK food system are in the region of £268 billion a year. That sum exceeds the total budget of the NHS by some margin. It is equivalent to more than 90% of all government spending on health.

Some of those costs are indirect costs incurred through the productivity losses and the human suffering associated with chronic disease. Both of these are real losses. But they appear in the national accounts only as the absence of income. They are not spent into the economy but rather drained from it in lost potential. Together they account for just under two thirds (£176 billion) of the total. More than a third (£92 billion) of the total sum occurs in the form of direct costs associated with day-to-day spending by governments and households on healthcare and social care; and with the welfare payments needed to support people living with long-term health conditions.

The main aim of this study was to compare these sums against the cost of providing every citizen in every household in the country with healthy and nourishing food. Our analysis confirms previous evidence that eating healthily is more costly than the average diet. The cost of providing a diet defined by the government's Eatwell Guide would raise average household spending on food by more than half. It would almost double the household spending of the poorest decile. The cost of providing this diet to every household in the land would amount to around £57 billion.

That is clearly non-trivial as a Treasury ask in the current economic context. It is more than twice the uplift in day-to-day spending for the NHS announced in Rachel Reeves' Autumn 2024 budget. On the other hand, it is less than two thirds (62%) of the direct health and social care-related costs of unhealthy eating and just over one fifth (22%) of the total (direct and indirect) costs of chronic disease attributable to the UK food system. In other words, it is considerably lower than the economic burden imposed on society by a dysfunctional food system.

This cost-benefit comparison does not exhaust the questions that need to be asked about organising a new food economy or financing the transition to it. However it does support an almost unassailable case for a principle similar to the polluter pays principle that operates in environmental policy.¹⁴² Profiting from foods that undermine health is a particularly pernicious form of pollution and one that is immensely costly to society. Using financial instruments (taxation, fees, penalties) both to disincentivise that behaviour and to recover some of the costs of it has a clear logic.

It is also clear that the proceeds of those financial mechanisms should be invested in the new food economy. The precise design of those investments must be the subject of careful scrutiny. That is ultimately the responsibility of government. But in the short term, there is a clear case that it should include funding for preventive health.¹⁴³ There's an urgent need to increase the spending aimed at preventing chronic disease. Currently, less than 3% of the NHS budget is dedicated to that task.¹⁴⁴ Clearly the money to improve preventive health can't be found simply by raiding the NHS budget for cash. It makes much more sense to finance it through penalties for the products that undermine health.

There is also a strong argument for subsidising both the consumption and the production of healthy food. This is particularly true when it comes to the food consumption of poorer households and the food production of local, small-scale farmers. As we noted at the outset, this 'squeezing' of households and farmers at each end of the food supply chain is one of the most difficult dynamics standing in the way of change. And as we saw in Section 5, that dynamic is mediated by the disproportionate power exercised by Big Food. In short, redirecting financial flows from unhealthy food to healthy food is going to be essential.

Unfortunately, a formidable problem is encountered as soon as we begin to take this idea seriously. The costs of the damage to human health caused by the current food system now vastly exceed the year-on-year profits associated with it. The entire value added of the agri-food chain is in the region of £150 billion a year.¹⁴⁵ Profits represent a significant proportion of that sum. In 2021, the eight largest food manufacturers in the UK made profits of £23 billion.¹⁴⁶ A 40% tax on those profits (say) would yield around £10 billion in revenues. It is not an insignificant sum. But it pales in comparison even to the direct food-related health costs (£92 billion) associated with chronic disease. More significantly it is less than 20% of what would be needed to subsidise the costs of a healthy diet for every household in the country.

The problem is that the damage to human health from Big Food was built up over time. The burden of chronic disease we now face has accumulated over decades. Many of the profits were made long ago. The dividends have long since been spent. That does not negate application of the polluter pays principle. It does not mean we should ignore or condone the continuation of 'polluting' behaviour. But when the boat is sinking, there are three tasks. The first is to identify the leak. The second is to plug the hole. The third is to bail out the hull. All three of those tasks matter. We need to do more than tinker with the tax system.

What is needed now is bold, ambitious leadership aligned across government. With the arrival of a new government, there is a unique opportunity to establish

a mission to create a new economy for food. That mission should be to ensure everyone has enough healthy, nourishing and affordable food, through viable, sustainable farm businesses, in a resilient and prosperous economy. The mission itself should be anchored in three key principles (Figure 8):

- the right of every citizen – irrespective of class, income, gender, geography, race or age – to sufficient, affordable, healthy food;
- a regulatory environment which curtails the power of Big Food, promotes dietary health and halts the rise of chronic disease;
- a financial architecture that redirects money away from perverse subsidies and post-hoc damage limitation, towards preventive healthcare and the production of sustainable, nutritious food.

Figure 8: A policy framework to transform the UK food system

Root the right to healthy food in policy

- Enshrine the right to healthy food in law
- Embed leadership across government
- Empower local producers

Regulate the food environment to prevent harm

- Regulate Big Food
- Protect consumers
- Enforce penalties

Redirect the money

- Tax the bad
- Resource the good
- Lead by example

The Food Conversation has consistently demonstrated public support for these ideas.¹⁴⁷ Citizens views align closely with the views of policy experts. Both agree that the current food system is unfair, unhealthy and unsustainable. Both want the government to take the lead in creating a resilient, healthy affordable and sustainable food system. They are asking for a food economy that creates greater autonomy and power for farmers and for citizens. An economy that prizes diversity, equity, affordability, access, connectivity, biodiversity and flexibility. A food system that doesn't destroy the land or undermine our health.

In summary, we have shown in this report that the costs associated with food-related chronic disease vastly outweigh the increased spending that might be needed to achieve a healthy diet. Creating a legal, fiscal and regulatory framework to achieve the transition is the only strategy that makes financial sense. The case for a new food economy in the UK is unassailable.

References

- Araújo, J, J Cai and J Stevens 2019. Prevalence of optimal metabolic health in American adults: national health and nutrition examination survey 2009–2016. *Metabolic Syndrome and Related Disorders* 17(1): 46–52.
- Chang, K, M Gunter, F Rauber et al 2023. Ultra-processed food consumption, cancer risk and cancer mortality: a large-scale prospective analysis within the UK Biobank. *eClinicalMedicine* 56, 101840. Online at: [https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370\(23\)00017-2/fulltext](https://www.thelancet.com/journals/eclinm/article/PIIS2589-5370(23)00017-2/fulltext).
- Chavez-Ugalde, I, F de Vocht, R Jago et al 2024. Ultra-processed food consumption in UK adolescents, and sociodemographic correlates using the National Diet and Nutrition Survey 2008/9 to 2018/19. *European Journal of Nutrition* 63: 2709–2723. Online at: <https://link.springer.com/article/10.1007/s00394-024-03458-z>.
- Chen, X, Z Zhang, H Yang et al 2020. Consumption of ultra-processed foods and health outcomes: a systematic review of epidemiological studies. *Nutrition Journal* 19: 86. Online at: <https://nutritionj.biomedcentral.com/articles/10.1186/s12937-020-00604-1>.
- Cobiac, L, P Scarborough, A Kaur and M Rayner 2016. The Eatwell Guide: Modelling the Health Implications of New Sugar and Fibre Guidelines. *PLoS One* 11(12): e0167859. Online at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC5173361/>.
- Darzi, A 2024. Investigation of the National Health Service in England. (The Darzi report). Online at: <https://assets.publishing.service.gov.uk/media/66f42ae630536cb92748271f/Lord-Darzi-Independent-Investigation-of-the-National-Health-Service-in-England-Updated-25-September.pdf>.
- Deanfield, J 2024. Making prevention everyone's business: a transformational approach to personalised prevention in England. London: Department of Health and Social Care. Online at: <https://www.gov.uk/government/publications/making-prevention-everyones-business/making-prevention-everyones-business-a-transformational-approach-to-personalised-prevention-in-england>.
- Denham, A 2023. In defence of the supermarket. *The Spectator*. 11th March 2023. Online at: <https://www.spectator.co.uk/article/in-defence-of-the-supermarket/>.
- DH 2010. Ten things you need to know about long-term conditions. London: Department of Health. Online at: <https://webarchive.nationalarchives.gov.uk/ukgwa/+/www.dh.gov.uk/en/Healthcare/Longtermconditions/tenthingsyouneedtoknow/index.htm>.
- FAO 2024a. The State of Food and Agriculture 2024. Rome: Food and Agriculture Organization. Value Driven Transformation of Agri-Food Systems. Online at: <https://openknowledge.fao.org/items/5c02d590-5016-4cde-90f3-44619864d221>.
- FAO 2024b. The State of Food Security and Nutrition in the World. Financing to end hunger, food insecurity and malnutrition in all its forms. Rome: Food and Agriculture Organization. Online at: <https://openknowledge.fao.org/server/api/core/bitstreams/06e0ef30-24e0-4c37-887a-8caf5a641616/content>.
- FFCC 2023. So what do we really want from our food? London: Food, Farming and Countryside Commission.
- FFCC 2024. Changing the Conversation. London: Food, Farming and Countryside Commission.
- FSEC 2024. The Economics of the Food System Transformation. Oslo: Food System Economics Commission. Online at: <https://foodsystemeconomics.org/wp-content/uploads/FSEC-GlobalPolicyReport-February2024.pdf>.
- Food Foundation 2023. The Broken Plate 2023. London: Food Foundation. Online at: https://foodfoundation.org.uk/sites/default/files/2023-10/TFF_The%20Broken%20Plate%202023_Digital_FINAL_.pdf.
- Future Health 2024. The forgotten majority? A new policy framework for improving outcomes for people with long-term conditions. London: Future Health. Online at: <https://www.futurehealth-research.com/site/wp-content/uploads/2023/12/Long-Term-Conditions-Report-FINAL-DECEMBER-2023.pdf>.
- Frontier Economics 2023. Unhealthy numbers: the rising cost of obesity in the UK. London: Tony Blair Institute. Online at: <https://institute.global/insights/public-services/unhealthy-numbers-the-rising-cost-of-obesity-in-the-uk>.
- Gao, M, S Jebb, P Aveyard et al 2021. Associations between dietary patterns and the incidence of total and fatal cardiovascular disease and all-cause mortality in 116,806 individuals from the UK Biobank: a prospective cohort study. *BMC Med* 19:83. Online at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC8061025/>.
- Gondek, D, D Bann, K Ning, E Grundy and G Ploubidis 2019. Post war (1946–2017) population health change in the United Kingdom: a systematic review. *PLoS One* 14(7):e0218991. Online at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC6608959/>.
- Guo, H, J Ding, J Liang and Y Zhang 2021. Associations of Whole Grain and Refined Grain Consumption With Metabolic Syndrome. A Meta-Analysis of Observational Studies. *Frontiers in Nutrition* 8:695620. Online at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC8280517/>.
- Hardman, I 2024. *Fighting for Life – the twelve battles that made our NHS and the struggle for its future*. London: Penguin.
- HM Treasury 2024. Autumn Budget 2024 – Fixing the Foundations to Deliver Change. London: HM Treasury. Online at: https://assets.publishing.service.gov.uk/media/672232d010b0d582ee8c4905/Autumn_Budget_2024__web_accessible_.pdf.
- HoC 2024. Rising Cost of Living in the UK. House of Commons research briefing. London: House of Commons. Online at: <https://researchbriefings.files.parliament.uk/documents/CBP-9209/CBP-9209.pdf>.
- HoL 2024. Recipe for Health – a plan to fix our broken food system. House of Lords' Food Diet and Obesity Committee. London: House of Lords. Online at: <https://publications.parliament.uk/pa/ld5901/ldselect/ldmfd0/19/19.pdf>.
- Hyman, M 2020. *The Food Fix – how to save our health, our economy, our communities and our planet – one bite at a time*. New York: Little Brown Spark.
- IDF 2021. Diabetes is a 'pandemic of unprecedented magnitude' now affecting one in 10 adults worldwide. *Diabetes Research and Clinical Practice* 18: 109133.
- IFS 2024. Adult social care in England – what next? London: Institute for Fiscal Studies. Online at: <https://ifs.org.uk/publications/adult-social-care-england-what-next>.
- Jackson, T 2025. *The Care Economy*. London: Polity. (Forthcoming)
- Kaur, A and P Scarborough 2023. The cost of achieving the Eatwell Guide diet: 2023 update. Online at: <https://ora.ox.ac.uk/objects/uuid:943422e2-3e8d-4738-98a5-30f60a42d2e1/files/sxd07gv315>.
- King, P, I Peacock and R Donnelly 1999. The UK Prospective Diabetes Study: clinical and therapeutic implications for Type 2 diabetes. *British Journal of Clinical Pharmacology* 48(5): 643–648. Online at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC2014359/#b2>.
- Labour Party 2023. A 'mission-driven' government to end 'stickling plaster politics'. London: Labour Party. Online at: <https://labour.org.uk/wp-content/uploads/2023/02/5-Missions-for-a-Better-Britain.pdf>.
- Lane, M, J Davis, S Beattie et al 2020. Ultraprocessed food and chronic noncommunicable diseases: a systematic review and meta-analysis of 43 observational studies. *Obesity Reviews* 22: e13146. Online at: <https://onlinelibrary.wiley.com/doi/10.1111/obr.13146>.
- Lane, M, M Lotfaliany, A Hodge et al 2023. High ultra-processed food consumption is associated with elevated psychological distress as an indicator of depression in adults from the Melbourne Collaborative Cohort Study. *Journal of Affective Disorders* 335: 57–66. Online at: <https://pubmed.ncbi.nlm.nih.gov/37149054/>.
- Lane, M, E Gamage, S Du et al. 2024. Ultra-processed food exposure and adverse health outcomes: umbrella review of epidemiological meta-analyses. *BMJ* 384: e077310. Online at: <https://www.bmj.com/content/384/bmj-2023-077310>.
- Lansley, S 2021. *The Richer, The Poorer: how Britain enriched the few and failed the poor. A 200-year history*. Cambridge: Polity Press.
- Levy R, F Rauber, K Chang K 2021. Ultra-processed food consumption and type 2 diabetes incidence: A prospective cohort study. *Clinical Nutrition* 40(5): 3608–3614. Online at: <https://pubmed.ncbi.nlm.nih.gov/33388205/>.
- Lord, S 2024. Hidden costs of agrifood systems: an update to the methodology for The State of Food and Agriculture 2024. Background paper for the State of Food and Agriculture 2024. Technical note. Rome, FAO.
- Lustig, R 2014. *Fat Chance: the hidden truth about sugar, obesity and disease*. London: Harper Collins.
- Lustig, R 2017. *The Hacking of the American Mind: The Science behind the Corporate Takeover of Our Bodies and Brains*. New York: Penguin Random House.
- Lustig, R 2021. *Metabofix – the truth about processed food and how it poisons people and planet*. London: Hodder and Stoughton.
- Mambrini, S P, F Menichetti, S Ravella et al 2023. Ultra-Processed Food Consumption and Incidence of Obesity and Cardiometabolic Risk Factors in Adults: A Systematic Review of Prospective Studies. *Nutrients* 15(11): 2583. Online at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10255607/>.
- Marmot, M, J Allen, T Boyce, P Goldblatt and J Morrison 2020. Health Equity in England: the Marmot review 10 years on. London: Institute of Health Equity. Online at: <https://www.instituteofhealthequity.org/resources-reports/marmot-review-10-years-on>.

Means, C 2024. *Good Energy – the surprising connection between glucose, metabolism and limitless health*. London: Thorsons.

Mendrick, D, A Diehl, L Topor et al 2018. Metabolic Syndrome and Associated Diseases: From the Bench to the Clinic. *Toxicological Sciences* 162(1): 36–42. Online at: <https://academic.oup.com/toxsci/article/162/1/36/4585010>.

Moodie, R, E Bennett, E Kwong et al 2021. Ultra-Processed Profits: The Political Economy of Countering the Global Spread of Ultra-Processed Foods – A Synthesis Review on the Market and Political Practices of Transnational Food Corporations and Strategic Public Health Responses. *International Journal of Health Policy and Management* 10 (12): 968–982. Online at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC9309965/>.

Nestle, M 2013. *Food Politics – how the food industry influences nutrition and health*. Tenth Anniversary Edition. Berkeley: University of California Press.

OBR 2024. Welfare Trends Report. London: Office for Budgetary Responsibility. Online at: https://obr.uk/docs/dlm_uploads/Welfare-trends-report-October-2024.pdf.

O'Hearn, M, B Lauren, J Wong, D Kim and D Mozaffarian 2022. Trends and Disparities in Cardiometabolic Health among US Adults, 1999–2018. *Journal of the American College of Cardiology*. 80(2): 138–151. Online at: <https://pubmed.ncbi.nlm.nih.gov/35798448/>.

Pagliai G, M Dinu, M Madarena, et al. 2021 Consumption of ultra-processed foods and health status: a systematic review and meta-analysis. *British Journal of Nutrition* 125(3): 308–318.

Public Health England 2020. The health and social care costs of a selection of health conditions and multi-morbidities. London: Public Health England. Online at: https://assets.publishing.service.gov.uk/media/5f04447be90e075c4e144cfd/The_health_and_socialcare_costs_of_a_selection_of_health_conditions_and_multi-morbidities.pdf.

Qureshi, D, J Collister, N Allen, E Kuźma and T Littlejohns 2024. Association between metabolic syndrome and risk of incident dementia in UK Biobank. *Azheimers and Dementia* 20(1):447–458. Online at: <https://alz-journals.onlinelibrary.wiley.com/doi/10.1002/alz.13439>.

Rao, D, S Dai, C Lagace et al 2014. Metabolic Syndrome and Chronic Disease. *Chronic Dis. Inj. Can* 34(1): 36–45. Online at: <https://pubmed.ncbi.nlm.nih.gov/24618380/>.

Scarborough P, A Kaur, L Cobiac et al 2016. Eatwell Guide: modelling the dietary and cost implications of incorporating new sugar and fibre guidelines. *BMJ Open* 2016;6:e013182. Online at: <https://bmjopen.bmj.com/content/bmjopen/6/12/e013182.full.pdf>.

Shoaibinobarian, N, G Eslamian and M Noormohammadi 2022. Association between ultra-processed foods and polycystic ovary syndrome: a case control study. Conference paper at the 13th international conference of endocrine disorders. Online at: https://www.researchgate.net/publication/364224910_Association_between_ultra-processed_foods_and_polycystic_ovary_syndrome_a_case-control_study.

Slater, S, M Lawrence, B Wood et al 2024. The rise of multi-stakeholderism, the power of ultra-processed food corporations, and the implications for global food governance: a network analysis. *Agriculture and Human Values*. Online at: <https://link.springer.com/article/10.1007/s10460-024-10593-0>.

Sonneville, K, M Long, Z Ward et al 2015. BMI and Healthcare Cost Impact of Eliminating Tax Subsidy for Advertising Unhealthy Food to Youth. *American Journal of Preventive Medicine* 49(1): 124–134. Online at: [https://www.ajpmonline.org/article/S0749-3797\(15\)00130-0/abstract](https://www.ajpmonline.org/article/S0749-3797(15)00130-0/abstract).

Steele, E, F Juul, D Neri, F Rauber and C Monteiro 2019. Dietary share of ultra-processed foods and metabolic syndrome in the US adult population. *Preventative Medicine* 125: 40–48. Online at: <https://pubmed.ncbi.nlm.nih.gov/31077725/>.

Trussell Trust 2024. Emergency food parcel distribution in the UK. London: Trussell Trust. Online at: <https://cms.trussell.org.uk/sites/default/files/wp-assets/EYS-UK-Factsheet-2023-24.pdf>.

Twohig, H 2018. Prediabetes – opportunity or overdiagnosis. Editorial. *British Journal of General Practice*. April 2018. Online at: <https://bjgp.org/content/bjgp/68/669/172.full.pdf>.

Valicente, V, C-H Peng, K Pacheco et al 2023. Ultraprocessed Foods and Obesity Risk: a critical review of reported mechanisms. *Advances in Nutrition* 14(4): 718–738. Online at: <https://pmc.ncbi.nlm.nih.gov/articles/PMC10334162/>.

Van Tulleken, C 2023. *Ultra-processed people. Why do we all eat stuff that isn't food and why can't we stop*. London: Penguin Random House.

White, M., E. Aguirre, D. Finegood, C. Holmes, G. Sacks and R. Smith 2020. What role should the commercial food system play in promoting health through better diet? *BMJ* 368: m545. Online at: <https://www.bmj.com/content/368/bmj.m545>.

WHO 2002. Diet, nutrition and the prevention of chronic diseases: report of a joint WHO/FAO expert consultation. Geneva: World Health Organization. Online at: <https://www.who.int/publications/i/item/924120916X>.

WHO 2023. Noncommunicable diseases – fact sheet. Geneva: World Health Organization. Online at: <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>.

Wood, B, O Williams, P Baker and G Sacks 2023a. Behind the 'creative destruction' of human diets: An analysis of the structure and market dynamics of the ultra-processed food manufacturing industry and implications for public health. *Journal of Agrarian Change* 23(4): 811–843. <https://doi.org/10.1111/joac.12545>.

Wood, B, E Robinson, P Baker et al 2023b. What is the purpose of ultra-processed food? An exploratory analysis of the financialisation of ultra-processed food corporations and implications for public health. *Globalisation and Health* 19: Online at: <https://globalizationandhealth.biomedcentral.com/articles/10.1186/s12992-023-00990-1>.

Yudkin, J. 1972. *Pure, White and Deadly: How Sugar Is Killing Us and What We Can Do to Stop It*. London: Penguin

Notes

- 1 A Recipe for Health: HoL 2024.
- 2 Darzi report: Darzi 2024.
- 3 Deanfield 2024.
- 4 Gao et al 2021; Guo et al 2021.
- 5 Big Food is a term used to describe the domination of the market for food by a few very large companies, leading to a lack of market competition and the emergence of oligopolistic practices.
- 6 Deanfield 2024.
- 7 Daily costs for the Eatwell diet were provided by the Nuffield Department of Primary Care Health Sciences at Oxford University (Kaur and Scarborough 2023).
- 8 Those eight corporations are: Nestlé, PepsiCo, Unilever, Coca-Cola Co, Danone, Fomento Económico Mexicano (an operator of Coca-Cola Co's largest bottling plant), Mondelez and Kraft Heinz Co. Aside from Fomento, all of those corporations are based in western countries and one of them has its headquarters in the UK.
- 9 White et al 2020; Wood et al 2023a; 2023b.
- 10 Big Food: see note 4.
- 11 See for example: Denham 2023.
- 12 See for example: Lustig 2021, Means 2024, Nestle 2013, van Tulkeken 2023.
- 13 Denham 2023.
- 14 ONS Consumer food price index: <https://www.ons.gov.uk/economy/inflationandpriceindices/timeseries/d7bu/mm23>
- 15 DWP 2024. Households Below Average Income; <https://www.gov.uk/government/statistics/households-below-average-income-for-financial-years-ending-1995-to-2023/households-below-average-income-an-analysis-of-the-uk-income-distribution-fye-1995-to-fye-2023#sources-of-income>.
- 16 Food insecurity: HoC 2024.
- 17 Food Banks: see Trussell Trust 2024.
- 18 The Food Conversation is online at: <https://ffcc.co.uk/so-what-do-we-really-want-from-food>.
- 19 Data from the More in Common survey: <https://ffcc.co.uk/publications/so-what-do-we-really-want-from-food-summary>.
- 20 Farmers strike: <https://www.theguardian.com/environment/2024/nov/08/tax-changes-in-budget-last-straw-for-uk-farmers-after-years-of-being-squeezed>.
- 21 Data on median disposable income by deciles from Table 14 in the ONS spreadsheet on The Effects of Taxes and Benefits on Household Income, UK, 2022/23 – Reference Tables. Online at: <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/datasets/householddisposableincomeandinequality>; data on food expenditure from ONS Family Spending Tables: online at: <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/expenditure/datasets/familyspendingworkbook2expenditurebyincome>; adjusted to 2024 prices using GDP deflator: <https://www.gov.uk/government/statistics/gdp-deflators-at-market-prices-and-money-gdp-september-2024-quarterly-national-accounts>.
- 22 Links between diet and health, see: HoL 2024; WHO 2002; Lustig 2021; Means 2024; see also: <https://www.who.int/initiatives/behealthy/healthy-diet>; <https://www.gov.uk/government/publications/healthy-eating-applying-all-our-health/healthy-eating-applying-all-our-health>.
- 23 Marmot et al 2020.
- 24 Healthy life expectancy: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthinequalities/bulletins/healthstatelifeexpectanciesbyindexofmultipledeprivationimd/2018to2020>.
- 25 See HoL 2024; Darzi 2024; Deanfield 2024; Jackson 2025 (forthcoming).
- 26 Darzi 2024.
- 27 Darzi 2024, p4.
- 28 Darzi 2024, p3.
- 29 Darzi 2024, p9.
- 30 Darzi 2024, p1.
- 31 Darzi 2024, p1
- 32 Darzi 2024, p8.
- 33 Time series data for Figure 2 from IFS 2024. See also <https://www.bma.org.uk/advice-and-support/nhs-delivery-and-workforce/funding/health-funding-data-analysis>.
- 34 Labour Party 2023.
- 35 IFS 2024, p2.
- 36 Healthcare expenditure: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthcaresystem/bulletins/ukhealthaccounts/2022and2023>; see also: <https://www.statista.com/statistics/317708/healthcare-expenditure-as-a-share-of-gdp-in-the-united-kingdom/>.
- 37 The rest was from private consumer expenditure on hospital treatments, medical goods and other health services and products.
- 38 HM Treasury 2024.
- 39 A part of this increase is due to population growth.
- 40 Darzi 2024, p2.
- 41 Darzi 2024, p2.
- 42 Post-war trends in chronic disease, see: Gondek et al 2019.
- 43 Chronic disease as proportion: WHO <https://www.who.int/news-room/fact-sheets/detail/noncommunicable-diseases>.
- 44 Global Burden of Disease study: <https://www.thelancet.com/gbd/about>; the burden of disease is measured in terms of Disability Adjusted Life Years (DALYs) which are a measure of the years of life lost due to premature mortality and the years spent living with disability: see <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/158>.
- 45 Diabetes is characterised by elevated levels of blood glucose. Type 1 diabetes is an inherited, autoimmune condition in which the pancreas is unable to produce insulin – which regulates blood glucose. Type 2 diabetes is not inherited. It arises primarily from diets overburdened with refined carbohydrates (particularly sugars) and low in dietary fibre. These dietary conditions disrupt the insulin response and lead to a condition known as insulin resistance. Type 2 diabetes now accounts for 90% of diabetes cases in the UK and almost all of the increased prevalence of the disease: <https://www.diabetes.org.uk/about-us/about-the-charity/our-strategy/statistics>.
- 46 Diabetes as a pandemic: IDF 2021. Diabetes is diagnosed in the UK by high blood glucose (HbA1c) readings of 48 mmol/mol and above.
- 47 King et al 1999.
- 48 Doubling in 15 years: <https://www.diabetes.org.uk/about-us/news-and-views/diabetes-diagnoses-doubled-prevalence-2021>.
- 49 Diabetes in the UK: <https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2021-part-2/adult-health-diabetes>. See also: <https://www.diabetes.org.uk/about-us/about-the-charity/our-strategy/statistics>.
- 50 Prevalence of pre-diabetes: Twohig 2018; pre-diabetes is diagnosed through blood glucose (HbA1C) readings of 42–47 mmol/mol.
- 51 Metabolic dysfunction is usually identified through five biomarkers: high waist circumference, high triglycerides, high blood pressure, high blood glucose and low high-density lipoprotein (HDL) cholesterol, sometimes known as 'good' cholesterol. The presence of three or more indicators of metabolic dysfunction is often denoted as metabolic syndrome.
- 52 For a summary of the evidence on the links between metabolic dysfunction and chronic disease see Lustig 2021; Means 2024; Qureshi et al 2024; Rao et al 2014; Mendrick et al 2018; see also: <https://www.hopkinsmedicine.org/health/conditions-and-diseases/metabolic-syndrome>.
- 53 Prevalence of metabolic dysfunction, see: Lustig 2021.
- 54 Qureshi et al 2024.
- 55 Metabolic conditions in this sample include high cholesterol, hypertension, obesity, thyroid condition, diabetes (Type 1, 2 or gestational) and latent autoimmune diseases. <https://www.statista.com/statistics/420379/metabolic-conditions-by-gender-and-age-in-the-united-kingdom/>.
- 56 O'Hearn et al 2022; see also Araújo et al 2019; Lustig 2021, p149; Means 2024; p21
- 57 For accessible, accurate and highly readable summaries of the evidence see: Hyman 2020; Lustig 2014, 2017, 2021; Means 2024; Nestle 2013; Van Tulkeken 2023. Factors such as sleep deprivation, stress and the disruption of our circadian rhythms are also implicated (Means 2024, p15–19). Genetics plays a relatively minor role (Lustig 2021, p119).

- 58 See references in note 57; see also Wood et al 2023a; White et al 2020.
- 59 White et al 2020.
- 60 The respondents in The Food Conversation were well versed in these concerns.
- 61 UPFs definition: see for example Lane et al 2020, p1; see also Van Tulleken 2023, p8.
- 62 Proportion of UPFs: Chavez-Ugalde et al 2024; see also: <https://sphr.nihr.ac.uk/news-and-events/blog/beyond-taste-and-nutrient-content-ultra-processed-foods-and-their-impact-on-adolescent-health-in-the-uk/>.
- 63 UPF Fact Sheet on Ultra-processed foods: A global threat to public health. Global Food Research Program. Online at: https://www.globalfoodresearchprogram.org/wp-content/uploads/2021/04/UPF_ultra-processed_food_fact_sheet.pdf.
- 64 UPF obesity link: Mambrini et al 2023; see also: Valicente et al 2023.
- 65 UPF and metabolic syndrome: Steele et al 2019.
- 66 Levy et al 2021.
- 67 UPF and cancer risk: Chang et al 2023.
- 68 UPF and PCOS: Shoaibinobarian et al 2022.
- 69 UPF and depression: Lane et al 2023.
- 70 UPF and chronic disease: Lane et al 2020.
- 71 UPF umbrella review: Lane et al 2024.
- 72 UPF and diabetes: Levy et al 2021.
- 73 UPF metastudy: Pagliai et al 2021; see also Chen et al 2020.
- 74 CDC factsheet on The Impact of Chronic Diseases in America: <https://www.cdc.gov/chronic-disease/data-research/facts-stats/index.html>.
- 75 Cameron speech: <https://www.gov.uk/government/speeches/pms-speech-on-the-nhs>.
- 76 DH 2010.
- 77 See for instance Public Health England's 2020 study on the per capita costs of health and social care for multi-morbidity.
- 78 DH 2010; Future Health 2024, p4.
- 79 Future Health 2024, p8.
- 80 Means 2024, p15 et seq.
- 81 Institute for Government 2021. Devolved Public Services: the NHS schools and social care in the four nations. London: Institute for Government. Online at: <https://www.instituteforgovernment.org.uk/report/devolved-public-services>.
- 82 IFS 2024; see also <https://digital.nhs.uk/data-and-information/publications/statistical/adult-social-care-activity-and-finance-report/2022-23>.
- 83 Nuffield Foundation estimates of social care spend per person: <https://www.nuffieldtrust.org.uk/news-item/how-much-social-care-does-each-country-fund-draft>; we have used these per person estimates to estimate the total spend in 2020/2021 and thence to calculate the relative proportions of spending across the four nations. Assuming that these have not changed massively since 2021, we calculate the spending across the four nations based on the estimate for England.
- 84 IFS 2024, p8.
- 85 OBR 2024, p12.
- 86 FAO 2024a.
- 87 FSEC 2024.
- 88 See the real time cost accumulator at: <https://foodsystemeconomics.org/>.
- 89 The FAO methodology uses estimates of the Disability-Adjusted Life Years (DALYs) from the most recent (2021) Global Burden of Disease study to estimate the burden of chronic disease; one DALY represents the loss of the equivalent of one year of full health. DALYs for a disease or health condition are the sum of the years of life lost to due to premature mortality (YLLs) and the years lived with a disability (YLDs) due to prevalent cases of the disease or health condition in a population (see <https://www.who.int/data/gho/indicator-metadata-registry/imr-details/158>); for more on the GBD see: <https://www.thelancet.com/gbd/about>; data can be accessed and compared online at: <https://vizhub.healthdata.org/gbd-results/>; specifically, uses the Global Burden of Disease study to establish the proportion of DALYs attributable to 'dietary risk'; the study then assigns an economic value to the loss of economic productivity associated with these lost years of healthy life: for methodology see: FAO 2024a; Lord 2024.
- 90 FAO 2024a, p xix.
- 91 FAO 2024; Lord 2024; Lord, personal communication.
- 92 See Lord 2024, Figure 1.
- 93 Today's prices: calculated by adjusting for the conversion from US\$2020 PPP to £2020 (conversion factor 0.8) and for inflation from 2020 to 2024 (using the GDP deflator). For comparison, the FSEC study's estimates hidden health costs of \$227 billion using a different methodology; but when these are adjusted for the difference in methodology the costs would be \$160 billion (personal communication, Steven Lord).
- 94 A shadow cost is the monetary value assigned to an abstract or intangible commodity which is not traded in the marketplace.
- 95 Frontier Economics 2023.
- 96 One quality-adjusted life year (QALY) is equal to one year of life in perfect health. One QALYs is calculated by 'estimating the years of life remaining for a patient following a particular treatment or intervention and weighting each year with a quality-of-life score (on a 0 to 1 scale). It is often measured in terms of the person's ability to carry out the activities of daily life, and freedom from pain and mental disturbance'; <https://www.nice.org.uk/glossary?letter=q>.
- 97 Hyman 2020; Lustig 2021; Means 2024; van Tulleken 2023; WHO 2002.
- 98 As an example of this perspective, see: <https://health.clevelandclinic.org/5-healthy-habits-that-prevent-chronic-disease>
- 99 Global Burden of Disease study: <https://www.thelancet.com/gbd/about>.
- 100 Data from the most recent Global Burden of Disease study are available at: <https://vizhub.healthdata.org/gbd-results/>; for this calculation we looked at the proportion of DALYs lost attributable to various risk factors.
- 101 The risk factor grouping 'metabolic risks' includes factors such as high fasting plasma glucose, high body mass index and high LDL cholesterol, which are all known to be closely related to diet.
- 102 See for example: Hyman 2020, Lustig 2021, Means 2024.
- 103 The risk factor grouping 'dietary risk' includes: diets low in fruit, vegetables, nuts, wholegrains, calcium and protective fats, and diets high in sodium, sugar-sweetened beverages, trans fatty acids and processed meat.
- 104 This impression was confirmed by conversations with other users of the GBD database and is to some extent underlined by studies such as Gao et al 2021; Guo et al 2021.
- 105 Deanfield 2024.
- 106 FAO 2024a; Lord 2024.
- 107 Food Foundation 2023; see also: <https://foodfoundation.org.uk/press-release/major-report-highlights-impact-britains-disastrous-food-policy>.
- 108 Lustig 2021, p66-7; Gao et al 2021; Guo et al 2021; see also Hyman 2020.
- 109 Eatwell Guide: <https://www.gov.uk/government/publications/the-eatwell-guide>.
- 110 Oxford study: Scarborough et al 2016; Kaur and Scarborough 2023.
- 111 Kaur and Scarborough 2023.
- 112 For purposes of comparison, the FAO has developed an indicator on the Cost and Affordability of a Healthy Diet (CoAHD). They estimate (FAO 2024b) an average cost for a healthy diet in European countries at \$3.57 per person per day (measured in 2020 dollars at purchasing power parity). In current UK prices that would be around £4 a day, considerably lower than the Oxford estimate. Given the nature of our exercise here, the Oxford estimate represents a conservative assumption.
- 113 The process of equivalisation is a way of accounting for household costs for households of different sizes, taking into account the fact that it is cheaper to feed (eg) two people in the same household than it is to feed two people in separate households.
- 114 The price point for the updated costs in the Oxford study was May 2022. According to the ONS consumer food price index (see note 14), food inflation between May 2022 and September 2024 was 21%. For the purposes of this study we used that figure to calculate an updated cost for the 'baseline diet' of £8.27 per adult per day.
- 115 The equivalisation scale used here counts the costs for the first person in a household fully and multiplies subsequent household members by a factor of 0.5: <https://www.ons.gov.uk/peoplepopulationandcommunity/personalandhouseholdfinances/incomeandwealth/compendium/familyspending/2015/chapter3equivalisedincome#equivalisation-methodology>.
- 116 It is important to note that this result arises because (on average) poorer households have smaller family sizes. It is also vital to point out that it only holds at level of the decile as a whole. It could not be used to determine any precisely targeted policy for household subsidy, which would have to be based on actual rather than average household size within each decile.
- 117 By indirect here, we are referring to both 'hidden' and 'shadow' costs.
- 118 Wood et al 2023a, p13.

- 119 Wood et al 2023a, p7.
- 120 Growth since 2018: <https://www.technavio.com/report/ultra-processed-food-market-industry-analysis>.
- 121 Market growth in UPFs: <https://www.marketresearch.com/Infiniti-Research-Limited-v2680/Global-Ultra-Processed-Food-35671918/>.
- 122 Market size and forecast growth rate of global food industry: <https://www.statista.com/outlook/cmo/food/worldwide>.
- 123 Global growth forecast: <https://www.imf.org/en/Blogs/Articles/2023/04/19/world-economic-outlook-shows-economies-facing-high-uncertainty>.
- 124 Wood et al 2023a.
- 125 Those eight corporations are: Nestlé, PepsiCo, Unilever, Coca-Cola Co, Danone, Fomento Económico Mexicano (an operator of Coca-Cola Co's largest bottling plant), Mondelez and Kraft Heinz Co. Aside from Fomento, all of those corporations are based in western countries and one of them has its headquarters in the UK.
- 126 White et al 2020; Wood et al 2023a, 2023b.
- 127 These strategies have been well documented in the literature for at least a decade and arguably a lot longer; see Lustig 2017; Moodie et al 2021; Nestle 2013; Slater et al 2024; van Tulleken 2023; Wood et al 2023b; but see also: Yudkin 1972.
- 128 White et al 2020; see also Slater et al 2024.
- 129 Extractive capitalism: Lansley 2021: see also: <https://blogs.lse.ac.uk/politicsandpolicy/extractive-capitalism-britain/>.
- 130 Wood et al 2023a.
- 131 White et al 2020.
- 132 Side effects of semaglutide: <https://withinhealth.com/learn/articles/semaglutide-ozempic-weight-loss-risks>; side effects of Zepbound: <https://www.healthline.com/health-news/mounjaro-zepbound-changes-after-stopping>.
- 133 Thyroid cancer is a risk of both semaglutide and tirzepatide: <https://www.mskcc.org/cancer-care/patient-education/medications/adult/tirzepatide>.
- 134 Pharmaceutical drugs as toxins: Lustig 2021, p44–46; Means 2024, p17–8.
- 135 Rebound from Zepbound and Ozempic: <https://www.healthline.com/health-news/mounjaro-zepbound-changes-after-stopping>; <https://www.healthline.com/health-news/weight-regain-after-stopping-ozempic>.
- 136 Market for statins: <https://www.databridgemarketresearch.com/reports/global-statin-market>. Market for ready meals: <https://www.statista.com/outlook/cmo/food/convenience-food/ready-to-eat-meals/worldwide>. For bread and cereal products: <https://www.statista.com/outlook/cmo/food/bread-cereal-products/worldwide>. For oils and fats: <https://www.statista.com/outlook/cmo/food/oils-fats/worldwide>. For confectionery and snacks: <https://www.statista.com/outlook/cmo/food/confectionerysnacks/worldwide>.
- 137 UK Government and Eli Lilly: <https://www.gov.uk/government/news/landmark-collaboration-with-largest-pharmaceutical-company>.
- 138 Side effects of Zepbound: <https://investor.lilly.com/news-releases/news-release-details/fda-approves-lillys-zepboundtm-tirzepatide-chronic-weight>;
- 139 Boxed warning see: https://www.accessdata.fda.gov/drugsatfda_docs/label/2024/217806s003lbl.pdf; see also: <https://www.mskcc.org/cancer-care/patient-education/medications/adult/tirzepatide>.
- 140 Cost of Zepbound: <https://pricinginfo.lilly.com/zepbound>.
- 141 We assume here that a middle-aged patient is on the drug for 20 years and the 'early starter' is on the drug for 70 years.
- 142 Polluter pays: <https://www.gov.uk/government/publications/environmental-principles-policy-statement/environmental-principles-policy-statement>.
- 143 Funding for prevention: Darzi 2024; Deanfield 2024.
- 144 Funding for prevention: <https://www.health.org.uk/news-and-comment/blogs/nhs-funding-has-to-translate-into-improvements-the-public-can-see>.
- 145 Value added from food sector: <https://www.gov.uk/government/statistics/food-statistics-pocketbook/food-statistics-in-your-pocket>.
- 146 Profits from food producers: <https://www.unitetheunion.org/media/5452/unite-investigates-profiteering-across-the-economy-its-systemic-march-2023.pdf>.
- 147 The Food Conversation: <https://ffcc.co.uk/so-what-do-we-really-want-from-food>; see also FFCC 2024.

**Food, Farming &
Countryside Commission**

1-3 Gloucester Road
Bristol BS7 8AA

t: +44 (0) 20 7118 1870

w: ffcc.co.uk

Registered in
England and Wales

Company no. 12562770

Charity no. 1195790

© FFCC 2024

The Food Farming and Countryside Commission is helping to shape a more sustainable future for food, farming and the countryside – a fairer, greener, healthier future, tackling the climate and nature crises, improving health and reducing inequalities. We bring together leadership across sectors and communities, involving and listening to citizens, seeking out innovative initiatives and seldom-heard perspectives. Partnering with governments, businesses and civil society, we deal with the difficult issues, exploring both the radical ideas and the practical actions that will make a real difference in communities.