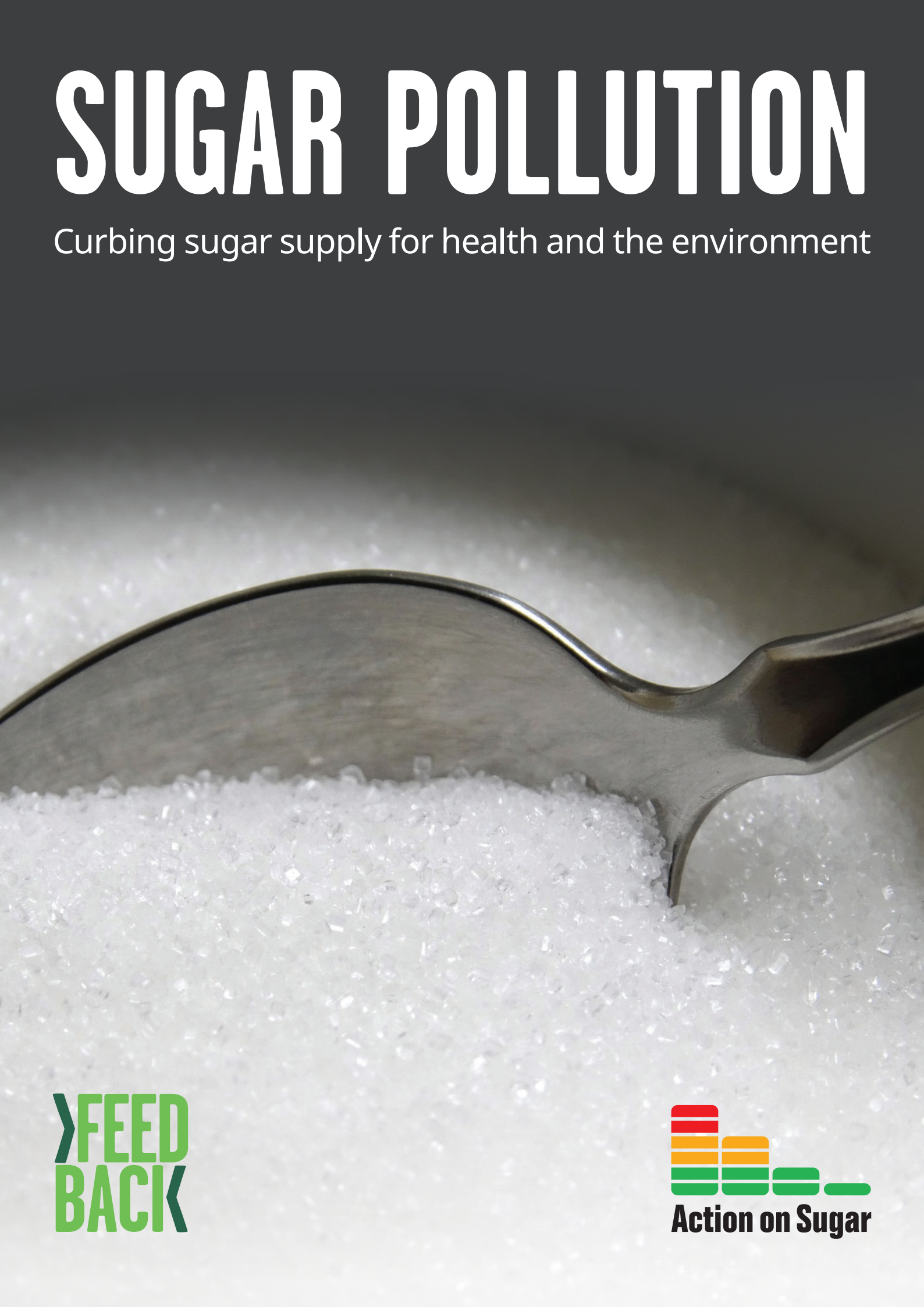
SUGAR POLLUTION

Curbing sugar supply for health and the environment



FEEDBACK

Action on Sugar

CONTENTS

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KEY MESSAGES

- The UK faces rising 'sugar pollution': the impacts on public health and the environment of producing, importing and consuming too much sugar. The UK sugar supply is equivalent to over two-and-a-half times the amount needed to meet the population's maximum recommended intake[1].
- Excessive consumption of sugar is a major cause of diet-related ill health[2]. Meanwhile, the domestic production of sugar beet – which provides the UK with over half its sugar supply[3] – is decimating UK topsoil, a non-renewable resource[4], and damaging biodiversity through the use of neonicotinoids[5].
- Agricultural and trade policies have simultaneously aimed to increase the UK's supply of sugar[7]. These policies actively undermine efforts to meet climate, environmental and public health goals[1,8].
- Demand-side policies targeting sugar consumption have so far proved largely unsuccessful in meeting their goals[6].
- The UK government should take urgent action to ensure that sugar supply drops by nearly two-thirds, in line with the UK Scientific Advisory Committee on Nutrition safe consumption recommendations. This should be done while supporting growers of sugar beet to transition to other crops, which are needed to boost the UK's supply of fruit and veg – which is currently too small to provide all citizens with the suggested serving of '5-a-day'[9,10].
- A recent public consultation facilitated by the Food, Farming & Countryside Commission shows that the UK public support policy that provides strong and visible political leadership on food, and a cross-government approach to food issues. Sugar, which causes severe harm to human health while also damaging the environment in its production, is a clear case for nutrition- and nature-sensitive public policy.

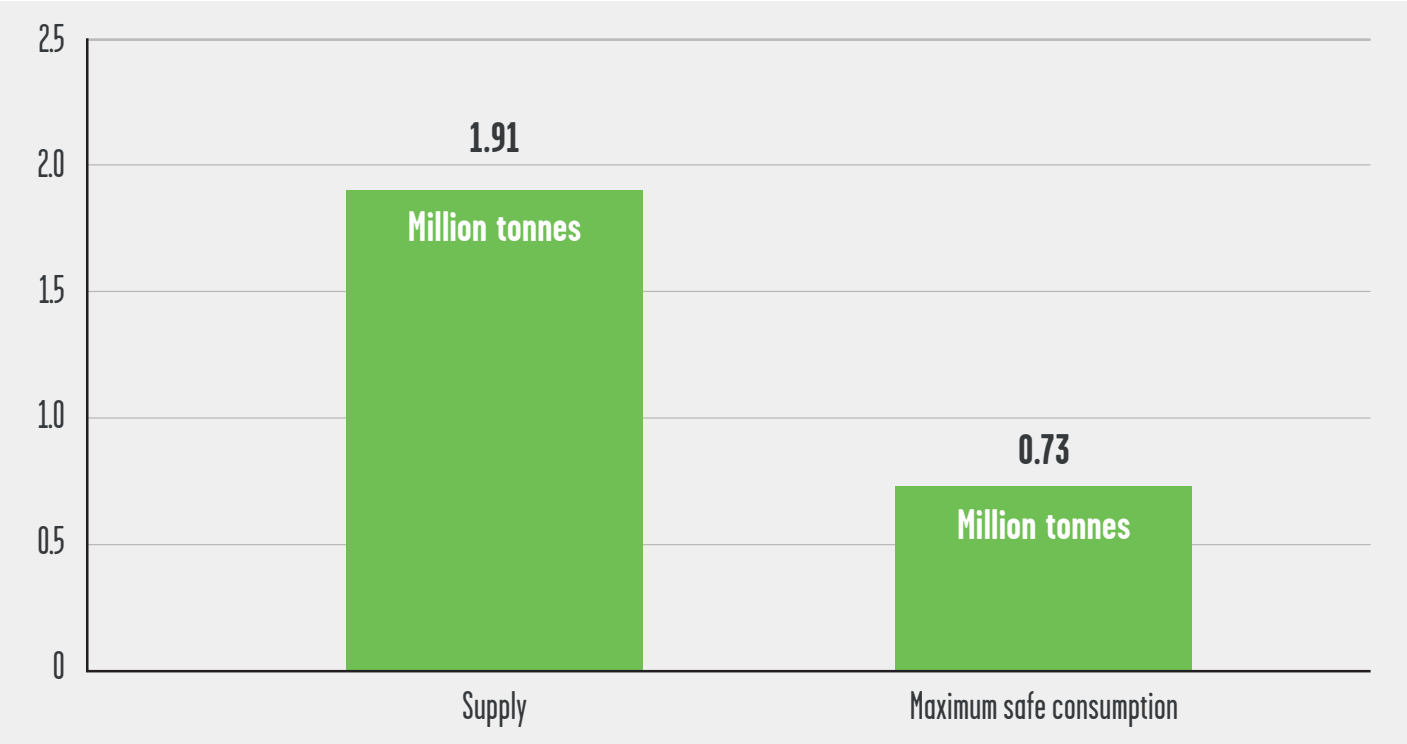
Table 1: Summary of policy recommendations

Policy goal	Policies	Rationale
Reduce the UK's sugar supply in line with maximum safe consumption figures	a. Introduce a quota on domestic sugar beet production b. Maintain or increase tariffs on imports of raw cane sugar c. Increase tariffs on imports of refined sugar (or ban imports completely) d. Increase tariffs on imports of confectionary and other high-sugar products that are key contributors to sugar intake e. Require future free trade agreements to conduct adequate environmental, equality and health assessments	The UK will not be able to reduce sugar consumption in line with maximum intake recommendations at the population level unless the supply of abundant and affordable sugar is also reduced. Reducing the supply of sugar will involve reducing domestic production of sugar beet, but also ensuring that imports of refined and raw sugar do not increase as a result. This could be achieved by implementing environment- and nutrition-sensitive trade policies. It would also require ensuring that the co-products produced alongside sugar beet are not inadvertently subsidising its production.
Ensure environment- and nutrition-sensitive agricultural and land use policy	a. Phase out subsidies to sugar beet production b. Subsidise horticultural production c. Cease to provide derogations for the use of neonicotinoids on sugar beet crops d. Provide support for some growers of sugar beet to transition to organic production	Sugar beet is an inefficient crop from the perspective of nutritional value and environmental impact. It also requires the use of harmful insecticides to grow in current conditions. The UK's high-value land should be prioritised for growing crops which offer the most nutritional value for the least environmental impact. Sugar beet growers should be supported to make this transition.
Apply the 'polluter pays' principle to sugar production and/ or sale	a. Implement fiscal measures to disincentivise sugar production and sale	The true cost of sugar, accounting for its negative health and environmental externalities, is far higher than its market price. Sugar producers and manufacturers should be required to cover these costs to society, mirroring schemes the government is currently enacting to recoup costs on product packaging.

INTRODUCTION

A little of what you fancy does you good, goes the saying: unfortunately, the UK's excessive supply and consumption of sugar demonstrates that a lot of it can do a great deal of harm. A product whose history is shaped by the legacies of colonialism and social inequality, the UK's sugar supply is today enough to provide every citizen with over two-and-a-half times the daily intake recommended by the UK's Scientific Advisory Committee on Nutrition (SACN)[11] and the NHS[a]. Without intervention, this supply is likely to grow significantly in the coming years[8,12,b]. The UK's sugar supply, and the knock on impacts this supply has both environmentally and on public health, is the subject of this report.

Figure 1: Total sugar supply in the UK vs maximum safe consumption for total population (5-year average for total supply, 2018–2022)



Source: Defra, 2018–2022; population data from ONS (2021). Maximum safe consumption based on 2021 population figure. This calculation assumes that all of the UK's sugar supply is intended for human consumption.

Overconsumption of sugar drives public health challenges such as obesity, childhood tooth decay, type 2 diabetes and hypertension[13]. Amid a food security crisis where the cost of fruits and vegetables has skyrocketed[9], the UK's supply of fruit and vegetables is insufficient to provide its citizens with the recommended five servings per day[9]. Yet domestically produced sugar beet is using high-quality farmland[1,14,15] that could be used instead to grow 3.1 million tonnes of carrots or 1.8 million tonnes of potatoes[1]. Alongside

a SACN and the NHS recommend that adults consume no more than 30 g of free sugars (sugars added to food or drinks, and sugars found naturally in honey, syrups, and unsweetened fruit and vegetable juices, smoothies and purées) per day, making up no more than 5% of daily calorie intake. Maximum recommended amount for whole of UK is 0.73 million tonnes, calculated by multiplying the estimated UK population in 2021 of 67 million by 10.95 kg (30 grams per day over the course of a year), rounded to the nearest 0.1 million tonne. Adjusting these figures for the number of young children in the country would lower this recommended amount further.

b The free trade agreement negotiated with Australia (A-UKFTA) allows Australian sugar exporters tariff-free access to the UK market, starting with 80,000 tonnes (pro-rata amount: 26,569 tonnes) in 2023 and increasing to 220,000 tonnes by 2030, after which unlimited amounts of sugar will be permitted to enter tariff-free.

this, the UK imports 260,000 tonnes of raw cane sugar – a figure that may soon increase. As this report went to press, the government was considering whether to increase the Autonomous Tariff Quota for raw cane sugar, to allow more raw sugar to be imported into the UK tariff-free[16].

No food production is totally without impact on our natural world, but the impacts of sugar production – a product which in excess is harmful for human health, and of which we eat too much – is particularly concerning. 6.9 million tonnes of sugar beet (giving around 1 million tonnes of sugar once processed) is grown in the UK each year on average[3], on some of the most fertile land[1]; this accounts for approximately 50% of the UK's sugar supply[3,8]. As a root crop harvested late in the season, sugar beet production also drives an average annual loss of 464,000 tonnes of topsoil[17] – equivalent to filling up 33,142 large dump trucks and driving them off the farm[c]. Domestic sugar beet's vulnerability to pests has meant that for three years in a row, the government has granted growers of sugar beet an emergency derogation (or suspension) of the ban against neonicotinoid pesticides[5], which are highly toxic to bees and other pollinators[18]. The crop is also vulnerable to the impacts of drought, frost and other pests like moths[3], highlighting its limited resilience in the face of global heating. These challenges have indeed led to a slight decline in sugar beet production, and it is partially as a result of this that the government is considering increasing the supply of imported cane sugar[16].

Image credit: Pixabay user distelAPPArath

c This assumes a soil tare rate of 6.5% of yield (based on Feedback's previous research at https://feedbackglobal.org/wp-content/uploads/2019/12/Too-much-of-a-bad-thing-the-use-and-misuse-of-land-and-soils-to-grow-sugar-updated-Feb-2020-002.pdf, Appendix 1) and is a five-year average calculated using Defra data for sugar beet yield and area under cultivation in 2018–2022 from Defra's *Agriculture in the United Kingdom 2022* [Data set] and Defra Agriculture in the United Kingdom 2021. Retrieved from https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2022. Total truck loads based on an average capacity of a large dump truck at 14 tonnes per load.

While public policy seeks to support the productivity of UK sugar beet with access to pesticides, and the government considers increasing the supply of cane sugar into the UK, the number of people living with diabetes in the UK topped 5 million for the first time[19]. An oversupply of sugar undermines well-intentioned public health policies on reducing sugar consumption, which to date have largely failed to achieve their goals. The UK government's voluntary 2015–2020 Sugar Reduction Programme saw a 7.1% *increase* in the total tonnes of sugar sold in applicable product categories; the introduction of 14 obesity strategies in 30 years has failed to reduce obesity rates[20]. These failures are linked to the oversupply of sugar in British diets, which so far has not been addressed by public policy in an integrated way.

This report argues that the UK's sugar supply amounts to sugar pollution and makes the case for integrated supply- and demand-side policies to curb it through action on both domestically produced and imported sugar. Using the World Cancer Research Fund's NOURISHING policy framework on promoting healthy diets[21,22] (see Figure 4, p.20), it proposes policy changes that fit into the 'H' in NOURISHING: harnessing the food supply chain and actions across sectors to ensure coherence with health. In the UK, this supply chain consists of British Sugar, the sole manufacturer of refined sugar from sugar beet in the UK, and Tate & Lyle, the only importer of cane sugar into the UK. It also includes around 3,000 sugar beet growers in East Anglia and the East Midlands (see Box 1).

The report begins by explaining the different sources of sugar in the UK and highlighting the negative impact of this oversupply before recommending policy proposals to curb sugar production and bring it in line with safe consumption guidelines[d]. It then looks at how reducing the UK's sugar supply can align with other goals such as addressing the cost-of-living crisis, reducing the burden of non-communicable diseases (NCDs), ensuring food security and supporting growers' incomes[8]. It also highlights how the type of government action required to reduce the UK's sugar supply is not without precedent – the UK has already been a world leader in phasing out coal, and a proposed ban on single-use vapes shows that policy decisions can be made on both health and environmental grounds[23].

BOX 1: WHO'S WHO IN THE BRITISH SUGAR INDUSTRY

British Sugar: The sole manufacturer of refined sugar from sugar beet in the UK, and in practice the sole buyer of the UK's sugar beet crop. Owned by Associated British Foods Plc.

NFU (National Farmers' Union) Sugar: The single entity that represents all sugar beet growers in the UK and negotiates on their collective behalf with the single processor (British Sugar).

Tate & Lyle: A British-headquartered, global supplier of food and beverage ingredients to industrial markets, responsible for importing all cane sugar into the UK.

Sugar beet growers: Around 3,000 growers in East Anglia and the East Midlands, who supply British Sugar with between 5–8 million tons of sugar beet per year[24].

d Proposals in this report relate to agricultural, land, and trade policy. Recommendations on actions for supermarkets to reduce sugar sales can be found in a joint Feedback and Action on Sugar April 2023 brief *Sugar rush: How UK supermarkets drive high sugar sales*. Recommendations on demand-side policies to reduce sugar consumption can be found in briefings by Action on Sugar, including their November 2022 report *The UK Sugar Reduction Programme: What is next*? (especially p.17).

BOX 2: A SHORT HISTORY

The history of sugar in the UK is one of injustice. In 1493, Christopher Columbus took the first sugar cane to the Caribbean – and the foundations of an industry that undergirded the growth of the British Empire were born. England founded its first colony in Jamestown in 1607, and sugar was present by 1619[25]. By the 1720s, half of the ships leaving the port of British New York were either coming from or going to the Caribbean[26], and by 1750, there were 120 sugar refineries operating in Britain[27].

Called a 'tropical drug food' by scholar Sidney Mintz[28], the British public's taste for sugar, and the sweetness once found only in rare tastes of fruits and honey, grew alongside a more plentiful and affordable supply. The UK's annual per capita consumption of sugar was 4 lbs in 1704, 16 lbs in 1800 and 90 lbs in 1901, representing a 22-fold increase that saw Britons consuming the most sugar in Europe[25]. Sugar played a key role in shoring up financing for the UK's North American colonies. This affordable supply was a product of the labour of enslaved people, brought to the Caribbean through the Atlantic slave trade. In 1800, it was estimated that for every two tonnes of cane sugar imported to England, one enslaved person had died[29]. A consumer boycott of West Indian sugar in the early 1790s in the name of abolition mobilised more than 300,000 Britons[30]. The focus turned to domestic sugar beet production in the aftermath of World War I, when shortages in sugar imports led to prohibitive costs[31], and took off in the 1930s when parliament passed the Sugar Industry Act, amalgamating all existing sugar beet factories into a single corporation partially owned by the government – the British Sugar Corporation, today known as British Sugar[32].

The legacy of the international sugar trade remains visible in contemporary trade dynamics. The 1951–1974 Commonwealth Sugar Agreement – which allowed raw sugar exported to the UK from Australia, East Africa, Fiji, Mauritius, South Africa, and the Caribbean to be subjected to lower tariffs – mirrored the British Empire's historical sugar trading routes. In 2021, the top exporters of raw cane sugar to the UK included several former British colonies, such Belize, Eswatini, Mauritius, Fiji and South Africa[8].

Image credit: Feedback

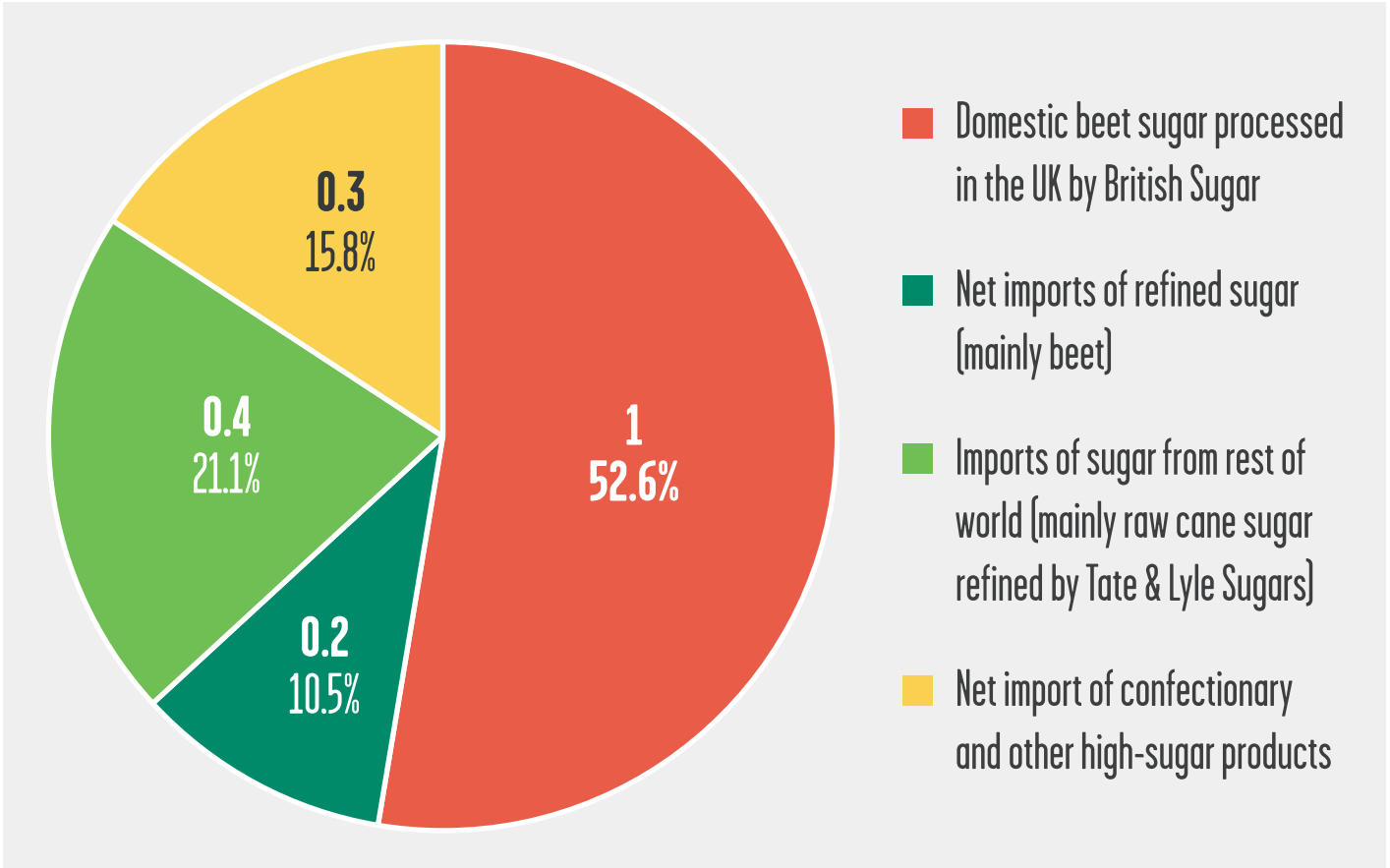
SUGAR POLLUTION: ENVIRONMENT, FOOD SECURITY AND HEALTH

The following section lays out the negative impacts on people and the planet associated with sugar consumption and production in the UK. While the focus of this report is on sugar beet rather than cane, in part because it represents over half of the overall sugar supply, cane sugar also poses considerable environmental and social challenges (see Box 5, p.15). These impacts underline the fact that continuing to grow the same amount of sugar is unjustifiable from the perspective of public health, food security and the environment.

DOMESTICALLY GROWN DOES NOT MEAN BETTER

The UK produces over 50% of its sugar supply domestically through the cultivation of sugar beet (see Figure 2).

Figure 2: Sugar supply by source, 5-year average, millions of tonnes and % share of total supply (2018–2022)



Source: Defra, 2013–2022; data on confectionary and other high-sugar products (chocolate, bread, cakes, pastries and biscuits) from Richardson and Winkler (2019, using 2017–18 data). Confectionary is based on 40% sugar content by weight, chocolate on 50%, and bread, cakes, pastries and biscuits on 20%.

SUGAR BEET STRIPS AWAY IRREPLACEABLE TOPSOIL

Growing sugar beet poses major challenges for maintaining and enhancing topsoil – the upper layer of soil that is most rich in organic matter and microorganisms that are needed to grow nutritious and healthy crops. Producing just 1 cm of topsoil takes 200–400 years – for this reason, it is considered a non-renewable resource[4].

Yet the process of harvesting sugar beet can lift hundreds of thousands of tonnes of topsoil from UK fields every year, in the form of soil tare, which is caused by the soil clinging to the beet and machinery during harvest. All root crops involve some soil loss from crop harvesting, but sugar beet is a greater culprit than comparable crops, such as potatoes, because it is harvested later in the year when soils are wetter and more prone to sticking to the crop and farm machinery.

Using data from Defra, Feedback has calculated that the amount of soil lost from UK sugar beet farms during harvest varied between around 464,000 and 507,000 tonnes in the period 2018–2022, with an average soil loss per year of 489,000 tonnes[e]. The UK already loses around 2.9 million tonnes of soil per year (excluding losses due to crop harvesting)[33], largely through the loss of silts and sands on arable and horticultural land, which, according to previous calculations by Feedback, means that sugar beet harvesting adds an additional 13–21% to the UK's annual topsoil loss per year[1]. This loss includes vital minerals that support food production – approximately 18,000 tonnes of nitrogen, 38,000 tonnes of potassium and nearly 5,000 tonnes of phosphorous are lost annually from English and Welsh soils[34].

British Sugar sells approximately 200,000 tonnes per year of this topsoil to construction and landscaping companies under the TOPSOIL brand[1]. Despite marketing their topsoil as a sustainable 'co-product', British Sugar's business model is effectively converting some of the best agricultural soils in the country into products for industries like landscaping[1]. A high-level estimate by Feedback shows that British Sugar may have an annual revenue of up to £13.5 million from this co-product[f].

The loss of topsoil comes at a heavy price to the public. Damage to soils costs the economies of England and Wales £1.2 billion every year in lost ecosystem services, such as lost agricultural output and flood damage[35]. Soil erosion affects around 17% of land in England and Wales, diminishing yields and increasing farmer costs[3]. These costs are likely to continue in the future, putting our ability to grow high-quality food at risk. As Defra says in their

"The success of UK agriculture depends upon healthy soils … In the face of a changing climate and increase in food demand, it is important to mitigate the risks to long-term productive capacity and encourage farmers to manage their soils in a sustainable way."

Agriculture in the United Kingdom 2022 (p.142)

e This assumes a soil tare rate of 6.5% of yield (based on Feedback's previous research at https://feedbackglobal.org/wp-content/uploads/2019/12/Too-much-of-a-bad-thing-the-use-and-misuse-of-land-and-soils-to-grow-sugar-updated-Feb-2020-002.pdf, Appendix 1) and is a five-year average calculated using Defra data for sugar beet yield and area under cultivation in 2018–2022 from Defra's *Agriculture in the United Kingdom 2022* [Data set] and Defra Agriculture in the United Kingdom 2021. Retrieved from https://www.gov.uk/government/statistics/agriculture-in-the-united-kingdom-2022.

f This was calculated using the cost provided by the TOPSOIL customer service team in private correspondence for approximately 18,200 kg of topsoil for landscaping purposes, which they said would have a retail cost of £1,230. This is equivalent to the cost of £0.06 per kg. Multiplied by the average of 200,000 tonnes (200,000,000 kg) of TOPSOIL that British Sugar claims to sell per year, TOPSOIL would be generating £14.5 million in gross profit.

"We have four main product categories: sugar, animal feed, biofuels and specialty products … this year the contribution from these revenue streams [non-sugar products] increased significantly and has come close to the contribution from our sugar products"

Associated British Foods 2022 annual report

2023 report *Agriculture in the United Kingdom 2022* (p.142): 'The success of UK agriculture depends upon healthy soils … In the face of a changing climate and increase in food demand, it is important to mitigate the risks to long-term productive capacity and encourage farmers to manage their soils in a sustainable way.'

Soil also plays an important role in capturing carbon, and releases stored carbon once degraded. Approximately 225,000 tonnes of carbon is lost from the soils in England and Wales each year[34], a share of which is caused by harvesting sugar beet. This is equivalent to the annual carbon footprint of 16,400 UK residents[g,36].

As a root crop, harvesting sugar beet will always involve some level of disturbance to the soil, in the same way as other root crops like potatoes. However, other, more nutritious crops have the potential to support carbon sequestration, rather than promoting carbon release. One study found that that using no-till practices in conjunction with mulching can reduce the CO_2 and N_2O emissions by 21% and 34% respectively, and increase methane uptake by 22% compared with conventionally tilled fields[37]. More conservative tillage activities can be employed with sugar beet, but the environmental damage of the crop is strongly influenced by production intensity – so the more sugar beet that is produced, the less chance growers have of providing intensive soil and seedbed care[38]. Increasing or maintaining current levels of sugar beet production, then, is likely incompatible with more environmentally friendly cultivating practices.

BOX 3: SUGAR'S MANY CO-PRODUCTS: ENABLING PRODUCTION?

In addition to TOPSOIL, British Sugar claims that 'co-products' associated with its sugar production include[39]:

- Bioethanol
- Animal feed
- Aggregate
- Renewable energy
- Electricity
- Horticulture, including medicinal cannabis

In their 2022 annual report, Associated British Foods, which owns British Sugar, stated: 'We have four main product categories: sugar, animal feed, biofuels and specialty products … this year the contribution from these revenue streams [non-sugar products] increased significantly and has come close to the contribution from our sugar products'[40].

This means that some of the UK's highest-quality lands are being used not to grow nutritious crops for human consumption, but nutritionally poor crops which also generate animal feed, fuel and other products designed to maximise British Sugar's revenue streams.

These co-products may be partially driving the production of sugar beet, particularly if they are equally or more financially lucrative than sugar beet itself. Despite British Sugar's claims to be 'no waste'[39], the use of co-products for a secondary market does not prevent the primary production model from being unsustainable. Furthermore, where a co-product market contributes to the profitability of a product, there is a risk that this creates further demand and effectively perpetuates an unsustainable system.

g This estimate uses the average annual carbon footprint for UK residents calculated by WWF and the Stockholm Environment Institute at the University of York (13.7 tonnes a year).

SUGAR BEET REQUIRES BANNED INSECTICIDES AND INCREASINGLY UNREALISTIC CLIMATE CONDITIONS TO GROW PROFITABLY

Soil loss is not the only risk posed by sugar beet cultivation. To deliver the high yields that make production financially viable, sugar beet farming is growing increasingly reliant on neonicotinoid insecticides to ward off the beet yellows virus, which is transmitted by aphids[41]. These chemicals are extremely harmful to vital wildlife such as bees and pollinators[42,43]. Over time they accumulate in soils, waterways and other plants, exposing other organisms to their effects[44,45]. Around the globe, neonicotinoid measurements taken from water have been found to exceed safe limits[45]. In the UK, neonicotinoids have been linked to increased extinction rates for bees[46]. In 2017, a study on aquatic insects found that eight rivers in England exceeded chronic neonicotinoid pollution limits, with likely impacts on mayflies, other insects, fish and birds. The worst polluted river was the River Waveney, on the Norfolk/Suffolk border, and the most likely source of the pollution was deemed to be sugar beet fields[47,48].

The use of neonicotinoids has been condemned by not only citizen-led campaigns but also the European Union (EU). In the spring of 2018, the European Commission and 76% of EU Member States decided to ban three highly bee-toxic neonicotinoid insecticides. The law was passed despite industry pressure from sugar beet growers. However, lobbying resulted in several Member States being granted derogations (exemptions from the law)[49], before the EU Court of Justice ruled in January 2023 that these exemptions should no longer be permitted[41].

Despite this indicative decision across the channel, the UK government has granted sugar beet growers a derogation on neonicotinoids for the last three years – 2021, 2022[h] and again in 2023[50]. In 2022, the UK government's derogation decision indicated that 'it [was] hoped' that the sugar beet industry would no longer rely on neonicotinoids by 2023, through the development of pest-resistant sugar beet varieties and greater use of Integrated Pest Management (IPM)[42], which some countries such as Malta report finding successful[41]. However, the UK government once again granted sugar beet growers the derogation in 2023 – a move entirely at odds with the landmark agreement on the protection of biodiversity it reached at COP15 in November 2022, where it endorsed a global target to reduce the risks of pesticides by at least 50% by 2030[51].

Repeated requests to allow the use of neonicotinoids highlight that what the sugar beet industry terms 'exceptional circumstances' are becoming standard growing conditions. In 2020, for example, French beet growers reported a decline of 30% in yield on the national level caused by the beet yellows virus and lack of access to neonicotinoids.[52] Without either using neonicotinoids or switching on a large scale to more agroecological systems, the industry will struggle to remain profitable.

h The derogation was granted in 2022 but finally was not utilised due to an improvement in conditions.

Image credit: Pixabay user Ehrecke

Additionally, sugar beet will be vulnerable to the impacts of a rapidly heating climate. East Anglia has been described as on 'the front line' of managing the impacts of climate change in the UK, including increased winter rainfall and hotter, drier summers. This is bad news for sugar beet. Sugar beet is a break crop, meaning that it is a crop used during the off-seasons of another (in this case, often wheat), generally sown in March and harvested anytime between September and the following March[53,54]. It is only moderately tolerant of drought. Prolonged dry periods are detrimental to crop development and overall yields[55], and as early as 1998, studies showed that on average 10% of sugar beet yields were being lost every year due to insufficiently moist soils[55]. Rainfall in East Anglia is already low compared to the rest of the UK[56]. Sugar beet requires approximately 300 mm of water between June and August, and the average amount of rainfall (according to a study done in 2009, when the impacts of global heating were much less apparent) in the growing area during these summer months was just 116 mm[57].

Issues related to erratic weather patterns have already come to fruition: the UK government's *Agriculture in the United Kingdom 2022* report shows that sugar beet production decreased by 18% to 6.0 million tonnes in 2022 from 2021. In addition to the issue of the beet yellows virus, the drop was driven by a severe drought in the summertime, followed by an infestation of beet moth, which thrives in dry conditions and capitalises on weakened plants[3]. In December 2022, the crop suffered a 'frost event' which triggered insurance payments for growers funded by British Sugar[3,58].

The volatility surrounding sugar beet production suggests that change in the sector is vital. If a crop which provides limited nutritional value cannot be grown profitably without the use of harmful insecticides, it's time to rethink growing it at all – particularly on the high-quality farmland found in East Anglia and the East Midlands.

BOX 4: SUGAR BEET AND GROWERS' LIVELIHOODS

Sugar beet has historically been an attractive crop for growers. An important rotational crop, its prices are set through a bargaining process between British Sugar, the monopoly buyer for the crop, and NFU Sugar, the single entity which represents all growers of sugar beet in the UK and bargains on their collective behalf[59]. This relative stability has been maintained, in part, by the tariffs of up to 100% on imported cane sugar[54] when the UK was part of the EU and subject to EU trading laws. Post-Brexit, the UK authorised a free trade agreement with Australia[60] that will allow a duty-free quota of 80,000 tonnes (pro-rata amount: 26,569 tonnes) of Australian cane sugar to enter the UK in 2023[12]. This amount will increase by 20,000 tonnes every year for an eight-year period, after which there will be no tariffs. A new Autonomous Tariff Quota also grants tariff-free access to 260,000 tonnes of additional sugar onto the UK market[61,62].

This is excellent news for British Sugar's sole competitor in the UK market, Tate & Lyle, who strongly supported Brexit on the argument that EU tariffs on sugar were inflating their raw material bill by €40 million a year[54], making it challenging to operate competitively. Now, the tables have turned, and it is growers of sugar beet who are concerned about the impact of trade on their livelihoods[63]. According to the *Guardian*, imported raw cane is often cheaper than British-produced sugar beet[63]; there have been concerns that the market would not be competitive with newly liberalised imports. Contract prices between British Sugar and the NFU have been declining for most of the last decade, but sugar beet growers negotiated a deal with British Sugar for £40 per tonne during the 2023/24 season, a 48% price increase on the previous contract[64].

A potential new free trade agreement (FTA) with India may further threaten the livelihoods of sugar beet growers[62]. India is one of the world's largest sugar producers and exported a record amount of sugar in 2021/22, despite the World Trade Organization (WTO) having ruled that its sugar subsidisation regime was illegal[65]. NFU Sugar is highly concerned about the potential of the deal, having stated that 'concessions on sugar within an FTA with India would therefore require UK sugar beet growers to compete with a production system that is propped up by an extensive, and illegal, government subsidy regime'[62], and met with government officials in June of 2023. Negotiations on a free trade agreement with Mexico are also underway.

SUGAR IS USING VALUABLE LAND THAT WE NEED TO ENSURE A NUTRITIOUS FOOD SUPPLY

Sugar beet crops are sitting on a treasure trove of some of the UK's highest-quality soils[1]. Soils across the region where British Sugar refineries are located (all sugar beet farming occurs within a certain geographical radius of a refinery, to limit transportation costs), are mostly classified as having a high or moderate likelihood of being 'the best and most versatile' agricultural land[14,15].

The productivity of sugar beet, currently defined as profit produced per acre, would look very different if re-conceptualised through a lens that accounts for public health, food security and environmental degradation. Productivity should instead be regarded as the ability to provide the highest-quality nutrition while causing the least environmental damage, with high-quality lands reserved for crops that suit this purpose.

From this perspective, growing 6.0 million tonnes of sugar beet in 2022 was a poor use of the UK's best and most versatile lands. Firstly, much of the sugar beet that is grown is wasted: higher volumes of food waste by weight occur for sugar beet than any other crop at the farm level. In 2019, 347,000 tonnes, or 3.9% of production, were ploughed back into the field[66]. For context, this is over twice the amount (144,000 tonnes) of field peas harvested in the UK in 2022[3].

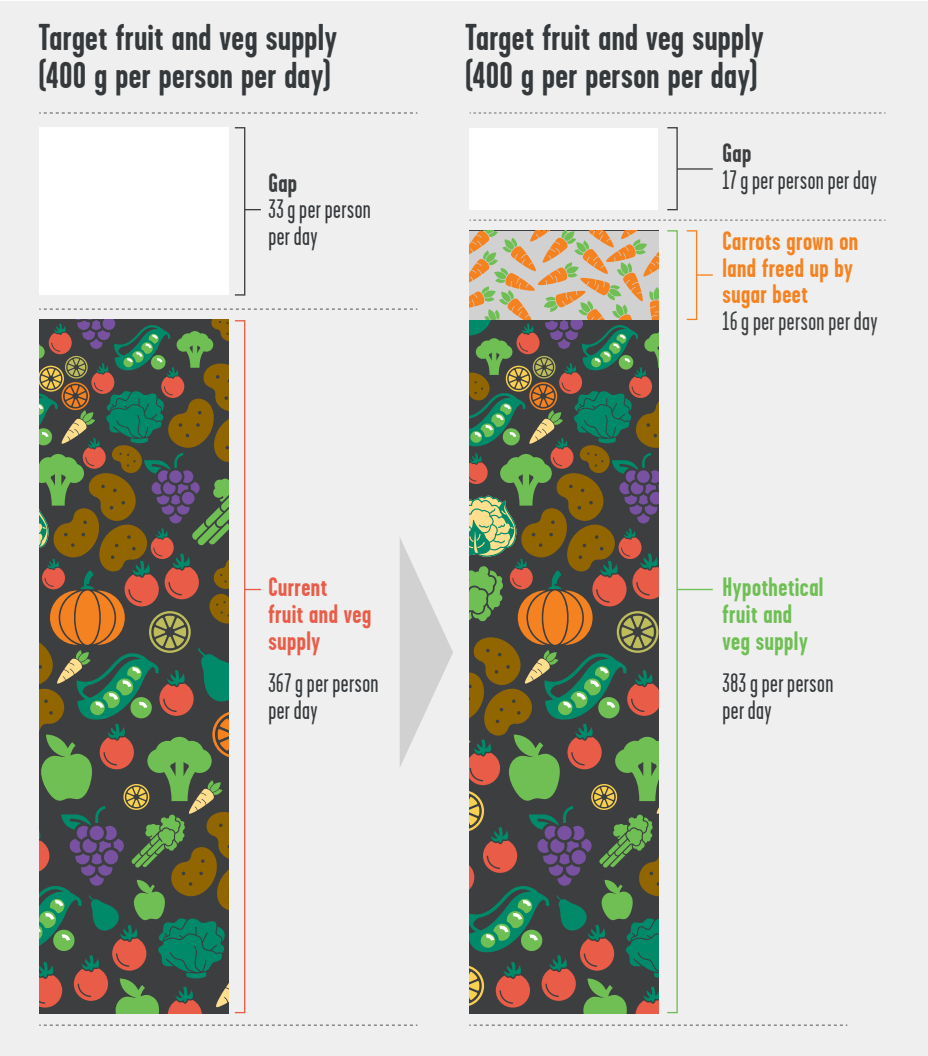
Secondly, while the UK has far more sugar beet than it needs to meet the recommended maximum intake of sugar at a population level, the country is short on fruit and vegetables. Sustainable & Healthy Food Systems (SHEFS), a global research programme led by the London School of Hygiene and Tropical Medicine (LSHTM), recently found that the total supply in the UK of fruits and vegetables is below the minimum five portions a day ('5-a-day') recommended by the Eatwell Guide: assuming no food waste, there are 367 grams of fruit and vegetables available per person per day; the recommended intake is 400 grams[67].

Furthermore, SHEFS research found that the UK has become increasingly reliant on imports to meet its fruit and vegetable supply, with 47% of vegetables and 87% of fruit produced elsewhere. Of these imported fruits and vegetables, in 2013, 32% were from areas defined as climate-vulnerable – a 60% increase since 1987, led by changing consumption patterns that favour products like tropical fruits over vegetables like cabbages, peas and carrots that are traditionally grown in the UK[9]. This demonstrates that much of the UK's access to nutritious food is currently precarious.

Increasing fruit and vegetable intake would require, in part, increasing domestic production. Successfully doing so would contribute eight months to the UK government's target of extending healthy life expectancy in the UK by 5 years by 2035[68] while reducing greenhouse gas emissions from diets by 8.2%[9]. Domestic land for growing fruit and vegetables could be freed up by converting some of what is currently used to grow sugar beet[1], as part of a managed transition that combines demand-side measures such as social prescribing of fruit and vegetables, and public procurement to ensure increased demand.

In order for sugar beet production to not exceed the maximum recommended intake of sugar for the UK population (730,000 tonnes per year; see Figure 1, p.4) the planted hectarage would need to be reduced by 50% (this assumes changes to other supply streams like imported raw cane sugar as well). Approximately 49,200 hectares of land could then be used for other purposes. To illustrate the point, Feedback has calculated that this land could theoretically be used to grow approximately 155,500 tonnes of peas, or 2.1 million tonnes of potatoes, or 3.8 million tonnes carrots[i]. This yield of carrots, for example, could provide the UK population with an additional 16 grams of veg per person per day[j] – closing the current supply gap by 47%. Other alternatives include brassicas and peas and beans, which would have the additional benefit of increasing the UK's supply of domestically grown plant-based protein.

Figure 3: Theoretical ability of carrots grown on sugar beet land to fill the gap in '5-a-day' fruit and vegetable supply



Credit: Feedback, 2023

BOX 5: CANE SUGAR ALSO HAS ENVIRONMENTAL COSTS

Much of these points focused on domestic sugar beet production, but imported cane sugar refined by Tate & Lyle (which made up 23% of the UK's supply over the last five years[3]) also has negative impacts on the climate and environment. Water use (5,200 m^3 per hectare for sugar cane compared to 40 m^3 for sugar beet) and chemical inputs (particularly nitrogen) are both greater for sugar cane than for sugar beet[69]. Soil erosion is also significant for sugar cane as well as beet and the production of cane also involves turning over new land to the crop, whereas beet tends to be farmed on existing agricultural land[70]. In terms of overall carbon impact, sugar cane consumed in the EU has a higher impact than EU-grown beet, driven by transportation, with 45–60% of the emissions of cane sugar in the EU coming from transport[71]. Therefore, it is crucial that policymakers ensure that reductions in UK sugar beet production do not merely result in an increase in imports. This would only serve to offshore environmental impacts.

i Calculated by estimating a required reduction of sugar beet production of 50%, and a reduction of 50% of planted hectarage by proxy (from a five-year average of planted hectarage of 98,400 hectares to 49,200 hectares).

j Total carrot yield converted from tonnes into grams per day per capita (2021 census).

THE OVERSUPPLY OF CHEAP SUGAR IS DAMAGING OUR HEALTH AND EXACERBATING INEQUALITIES

In producing sugar from beet, soil is being degraded and land is used inefficiently, to produce a commodity that is bad for public health. Overconsumption of sugar contributes majorly to public health challenges including obesity, childhood tooth decay, type 2 diabetes and hypertension[13]. In 2023, the number of people living with diabetes in the UK topped five million for the first time[19].

High sugar intake has a devastating impact on young people and children. In 2020, hospitals in England carried out almost 180 operations a day on children and teenagers to remove rotting teeth, costing the NHS £41.5 million per year[72]. In 2023, a survey of school nurses found that the cost-of-living crisis was worsening the dental health of many pupils due to poor nutrition[73]. High sugar consumption is associated with an increased probability of overweight and obesity among children and adolescents[74]; in the UK, around 30% of children are living with overweight or obesity[75], among the highest rates of childhood obesity in Europe[2].

Today, income inequalities and the relatively low cost of sugary processed foods compared with fresh produce continue to drive sugar overconsumption, making reducing the UK's sugar supply an urgent social justice issue. Rising food costs put pressure on low- and middle-income families. Between October 2021 and October 2022, the price of fruit rose by 10.3% and vegetables by 15.1%[9], whereas sugar, jams and confectionary prices rose by only 7%. A survey of food insecure households at that time found that 48% reported buying less vegetables, and 58% less fruit[76]. Overall, a report by The Food Foundation found that calorie for calorie, healthy food is three times as expensive as less healthy foods[77]. Accordingly, the poorest fifth of UK households would need to spend 43% of their disposable income on food to meet the cost of government-recommended healthy diets, whereas the richest fifth would need to spend just 10%[77].

Income disparities are linked to health inequalities: the rates of non-communicable diseases and conditions linked to the overconsumption of sugar, including obesity and type 2 diabetes, are higher in socio-economically disadvantaged neighbourhoods and among Black, Asian and racialised ethnic communities[78,79]. Children in more deprived areas of the UK are more likely to consume a range of products high in fat, sugar and salt (HFSS), as well as to be exposed to their advertising[80].

BOX 6: SUGAR HAS A HISTORY OF INEQUALITY

The impact of sugar has always been intertwined with poverty and gender. One reason is that for a long time, sugar has been cheap. In 19th-century Britain, women prioritised the diets of their husbands due to dependence on their wage earnings[28]. The heartiest foods, like meat and whole grains, went to the working husband; a rapidly expanding sugar supply meant that women could meet their caloric needs cheaply[28]. Cheap jam became ubiquitous on the tables of the working poor by the late 19th century, and as women also began to sell their labour for wages, it allowed them to put together quick meals rather than toiling in the kitchen[25,28]. Old food advertisements from the 1960s and 1970s show how women, as procurers of food for households, were targeted with messaging on sugar as 'good, useful' food for their families[81].

BOX 7: SUGAR'S TRUE COST IS FAR HIGHER THAN ITS PRICE

It's difficult to calculate the true cost – i.e., the cost that accounts for all negative externalities, including environmental and health impacts – of sugar due to insufficient data. However, we can safely assume that the true cost of sugar would be astronomically higher than its market price of £29.86 per tonne[3]. Sugar beet production is implicated in costs related to soil degradation (estimated at £1.2 billion every year[34] in England and Wales) and pollinator loss (£400–680 million per year)[43]. Sugar costs taxpayers in other ways, too. The NHS spends £41.5 million per year on treating tooth decay, some share of which would be attributable to sugar[72]. Public Health England estimated that achieving its sugar consumption recommendation of no more than 5% of people's energy intake coming from sugar within 10 years would save the NHS nearly £500 million per year in costs related to caries and comorbidities of obesity healthcare (and this is an estimate that they believe is relatively conservative)[82].

AN OVERSUPPLY FEEDS EXCESSIVE DEMAND

"While the government strongly supports the UK's sugar industry, it is also important to note that domestic per capita sugar consumption significantly exceeds the levels recommended by Public Health England"

Evidence in post-Brexit trade in sugar from 14 March 2018

For over 30 years, the UK government has been attempting to act on the consumption of sugar and its correlated health outcomes through a range of schemes[20], including the 2015–2020 Sugar Reduction Programme, recent and forthcoming HFSS regulations, and the Soft Drinks Industry Levy (SDIL). However, we have yet to see the dramatic (and vital) results that these strategies have promised.

The voluntary Sugar Reduction Programme saw a 7.1% *increase* in the tonnes of sugar sold in applicable product categories and managed to reduce sugar content in certain products by just 3.5%, despite its goal of doing so by 20%[6]. Meanwhile, critical elements of the HFSS legislation package, including restrictions on multi-buy offers of HFSS foods and restricting television advertising during key time periods, have been further delayed from starting in 2022, first to 2023, and now 2025 – sparking concerns that they will be scrapped completely[83]. Although total soft drink sales went up during the evaluated period, the Soft Drinks Industry Levy (SDIL) did see some success in reducing the total sugar sold in soft drinks by 34.3% between 2015 and 2019[84]. It should be noted that the most successful of these policies – the SDIL – relied on increasing costs to manufacturers who fail to reformulate products to include less sugar, a similar effect to that of increasing the overall cost of sugar by reducing supply.

These policies come at the end of a long line of other failed initiatives. From 1992 to 2020, despite 14 obesity strategies containing 689 policies being published, rates of obesity in England have not reduced[20]. A 2021 review of these strategies concluded that the failure of these policies to promote change may be driven by 'weakness in policy design … and failures of implementation and evaluation'[20]. It further highlights that the reliance of these policies on individual behaviour change, rather than factors shaping the environment and economy, makes them unlikely to be effective[20]. Indeed, calculations by Feedback using Public Health England data from 2019 show that between 2008 and 2018, the average decline in sugar consumption was just 0.2% annually[1,k].

These consistently insufficient results directly relate to the failure to act on the UK's overly robust sugar supply. In written submissions to parliament, Defra has acknowledged the tension between supporting the UK's sugar industry and meeting public health goals but has been unable to shed light on how these could be reconciled[7]. 'While the government strongly supports the UK's sugar industry, it is also important to note that domestic per capita sugar consumption significantly exceeds the levels recommended by Public Health England', says their submission to *Evidence in post-Brexit trade in sugar* from 14 March 2018[7]. In the same submission, Defra stated that it is committed to 'encouraging' the food and drink industry to reduce the amount of sugar in products popular with children, while creating 'the conditions for the sugar industries to further improve competitiveness and innovation in response to any new market challenges that arise'[7]. In September 2023, Defra opened a consultation on *increasing* the quota of raw cane sugar that can enter the UK tariff-free to compensate for 'domestic supply challenges'[16].

k See Annex 5, *Too much of a bad thing* (Feedback, 2019). Note that there is no population-level sugar consumption data available after the introduction of the Soft Drinks Industry Levy (SDIL) or the 2015–2020 Sugar Reduction Programme.

As early as 1990, the World Health Organization's expert group report *Diet, nutrition and the prevention of chronic diseases* recommended that national governments evaluate agricultural policies with regard to population risks posed by diets high in free sugars[8,85]. Yet there remains a clear tension between one area of government actively trying to reduce sugar consumption, while others grant growers of sugar beet a derogation to use neonicotinoids to produce more sugar and attempt to import increasing amounts of raw cane tariff-free[8].

This tension manifests through the laws of supply and demand, which dictate that if there is an oversupply, demand will be created to consume it. A well-known example of this is the subsidisation and expansion of corn production in the US and the creation of new markets (e.g., alcohol, animal feed, ethanol, high-fructose corn syrup) to facilitate its sale[86]. Milk in the US was a similar story, with the USDA tasked with creating a marketing arm to partner with fast-food companies on new products using surplus high-fat dairy[87]. The UK's WWII-era 'Milk in School' scheme was similarly driven by economic, rather than dietary, considerations[88].

For this reason, without concrete action on supply, it will be difficult to reduce sugar consumption. Firstly, as noted by Richardson and Winkler (2019)[8], it is difficult to promote general reductions in sugar consumption through targeted interventions on specific final products – the goal of the Soft Drinks Industry Levy and Sugar Reduction Programme – due to the ways that the industry moves sugar around its product matrix, avoiding regulations and consumer awareness[8]. One example of this is the sweetening of breakfast bars, fruit-filled muffins and ready-made sandwiches[8]. The UK dairy industry offers another example. When UK consumers began to snub whole-fat milk in the 1980s in favour of skimmed, the resulting surplus of butterfat was funnelled into processed dairy products and animal feed instead[8]. The bottom line is that if sugar is plentiful and cheaply available, there is little incentive for manufacturers not to use it to sweeten, bulk, colour and preserve other products[8,89].

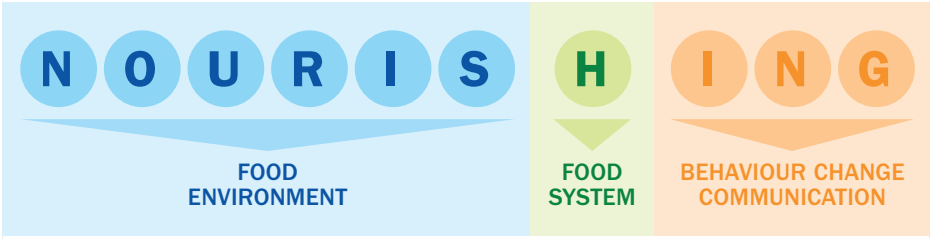
Secondly, Richardson and Winkler also point out that voluntary initiatives, like the Sugar Reduction Programme, do not provide strong enough incentives to challenge powerful commercial interests, resulting in insufficient results[8]. The experience of the SDIL demonstrates that mandatory programmes for industry are necessary to achieve significant reductions in sugar content.

AN INTEGRATED SUPPLY–DEMAND POLICY FRAMEWORK ON SUGAR

This report's recommendations are structured by the World Cancer Research Fund's NOURISHING framework (see Figure 4). This framework maintains that effective policy actions on promoting healthy diets and reducing obesity require action across the food environment (demand- and supply-side interventions), the food system (supply-side interventions) and behaviour change communication (demand-side interventions). This approach is radically different from that taken by the government in most of its strategies designed to tackle the consumption of sugar and its harmful effects.

Policies related to the 'H' of NOURISHING – harnessing the food supply chain and actions to ensure coherence with health – are the focus of the remaining sections of this brief. As we have sought to demonstrate, this element has been absent from UK sugar policy and urgently warrants action. Luckily, the UK is better positioned to act on sugar pollution now than ever.

Figure 4: The World Cancer Research Fund's NOURISHING framework



	POLICY AREA
N	Nutrition label standards and regulations on the use of claims and implied claims on food
O	Offer healthy food and set standards in public institutions and other specific settings
U	Use economic tools to address food affordability and purchase incentives
R	Restrict food advertising and other forms of commercial promotion
I	Improve nutritional quality of the whole food supply
S	Set incentives and rules to create a healthy retail and food service environment
H	Harness food supply chain and actions across sectors to ensure coherence with health
I	Inform people about food and nutrition through public awareness
N	Nutrition advice and counselling in health care settings
G	Give nutrition education and skills

Source: World Cancer Research Fund International.

THERE HAVE NEVER BEEN MORE OPPORTUNITIES FOR CHANGE ON FOOD POLICY IN THE UK

A recent public dialogue showed broad appetite for change in UK food policy. Contrary to thinking that government intervention on food would constitute the behaviour of a 'nanny state', most citizens support government action to reduce the consumption of ultra-processed foods, as well as to recoup health and environmental costs from polluting food businesses[90]. These types of policies had bipartisan citizen support, with citizens saying they wanted the government to take bold action, quickly[90]. Radical action on issues that impact public health and the environment is not without precedent. For example, the UK has been a world leader in phasing out coal – this contributed 40% of the UK's electricity mix in 2012, made up just 1.8% of it in 2020 and will be entirely phased out by 2024, a year ahead of schedule[91]. The UK has also implemented a 'polluter pays' scheme for product packaging[92], and is currently considering a ban on single-use vapes on both health and environmental grounds[23].

Meanwhile, Brexit has created an opportunity for the UK to shape a sugar market that works for people's health and the environment. The UK now has far greater autonomy in the domains of agricultural policy and trade policy than it did under the EU's Central Agricultural Policy (CAP), Common Commercial policy covering trade and Single Market legislation covering internal trade[8]. Sugar has been made easily accessible to corporations because of falling prices. Following the abolition of the EU's previous sugar quota system and minimum price guarantee prior to Brexit, the price of sugar in the EU was at a record low (€361 per tonne in 2018, as compared to €631 per tonne between 1993 and 2006)[8]. Actors in the EU were seen as having acquiesced to the demands of industry for cheap sugar[8]. Many studies have noted that EU agricultural and trade policies were not aligned with public health concerns around nutrition[8,92]. Brexit presents an opportunity for the UK to reorient its policy portfolio towards health and environmental goals.

Another opportunity for the UK to reorient its agriculture policy is the current transition from the Basic Payment Scheme (BPS) payments to Environmental Land Management (ELM) payments and the forthcoming Land Use Framework. The BPS, which provided direct payments to UK farmers, is being gradually phased out and in 2027 will be replaced by three new kinds of payments under the ELM scheme[94,95], which provides payments in exchange for environmental and climate goods and services. Theoretically, this will give the government greater flexibility in supporting farmers to transition away from environmentally harmful practices and reward those who undertake beneficial forms of agriculture, a definition which should also encompass public health goals.

POLICY PROPOSALS

With these dynamics in mind, the following policy proposals relate to three main areas of intervention:

1. Reduce the UK's sugar supply in line with maximum safe consumption figures

2. Ensure environment- and nutrition-sensitive agricultural and land use policy

3. Apply the 'polluter pays' principle to sugar production and/or sale

The scale of change required is significant. Achieving it will require bold, effective, integrated government action. The following list is a summary of policy proposals. More details are provided in the sections below.

SUMMARY

1. **Reduce the UK's sugar supply in line with maximum safe consumption figures**
    a. Introduce a quota on domestic sugar beet production
    b. Maintain or increase tariffs on imports of raw cane sugar
    c. Increase tariffs on imports of refined sugar (or ban imports completely)
    d. Increase tariffs on imports of confectionary and other high-sugar products that are key contributors to sugar intake
    e. Require future free trade agreements to conduct adequate environmental, equality and health assessments

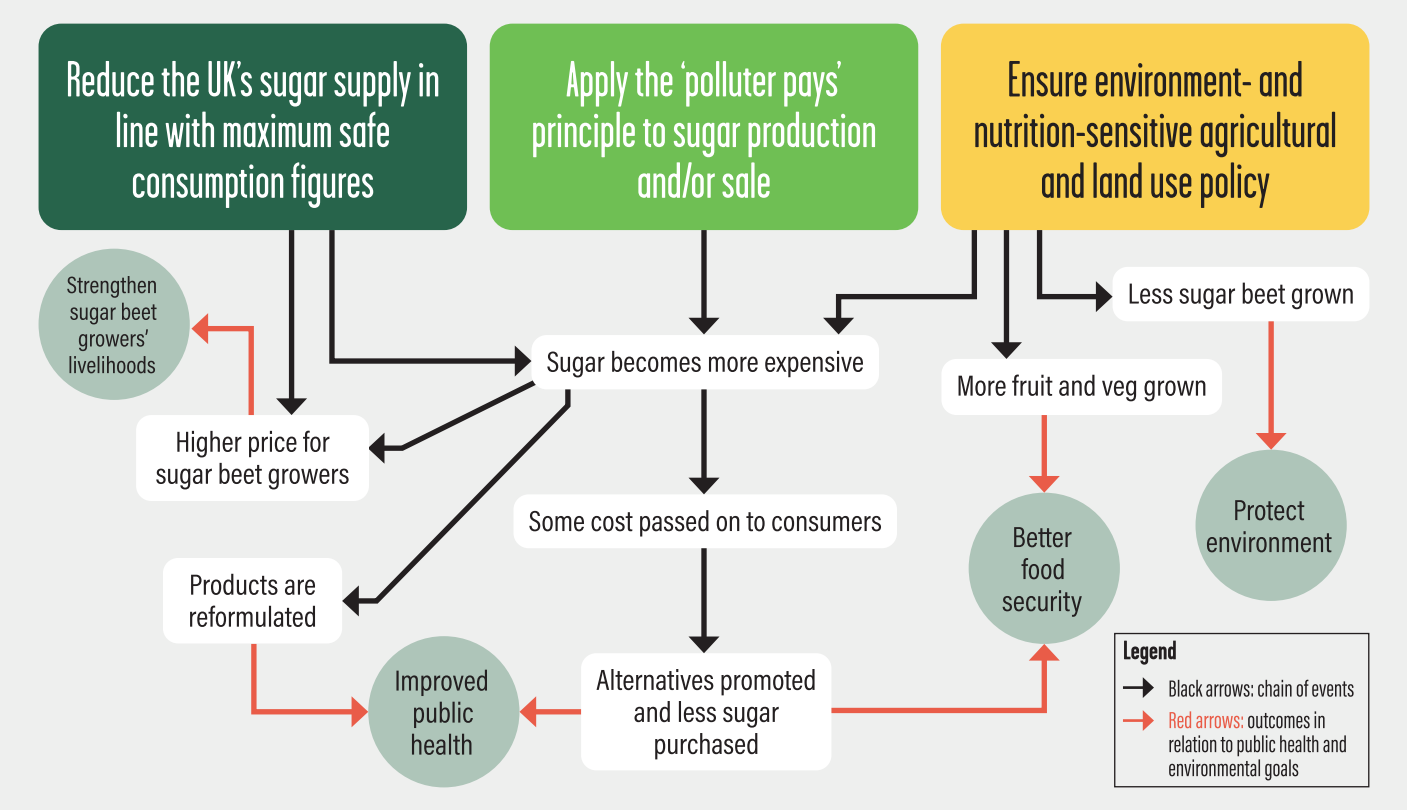
2. **Ensure environment- and nutrition-sensitive agricultural and land use policy**
    a. Phase out subsidies to sugar beet production
    b. Subsidise horticultural production
    c. Cease to provide derogations for the use of neonicotinoids on sugar beet crops
    d. Provide support for some growers of sugar beet to transition to organic production

3. **Apply the 'polluter pays' principle to sugar production and/or sale**
    a. Implement fiscal measures to disincentivise sugar production and sale

These policy proposals work together through multiple channels (see Figure 5) to achieve:

- A higher sugar price for farmers
- Reduced consumption of sugar among the British population
- Higher consumption of nutritious food
- Reduced hectarage of sugar beet in the UK, and reduced environmental impact of growing sugar beet

Figure 5: Policy proposals and intended outcomes



Credit: Feedback, 2023

1. REDUCE THE UK'S SUGAR SUPPLY IN LINE WITH THE MAXIMUM SAFE CONSUMPTION FIGURES

The UK's supply of sugar should be brought down in line with the maximum safe consumption amounts for the population – in other words, to the maximum healthy supply. Reducing the sugar supply will reduce the amount of sugar available to use in foods, with an eventual impact on rates of obesity, NCDs and tooth decay[11]. This goal can be achieved by acting on several different sources of supply (see the following section for more detail), resulting in less sugar on the market in the UK as well as a higher price for sugar, both for growers of sugar beet and companies using sugar in their products.

Importantly, consumers need not bear the burden of less sugar produced at higher prices; analysis by Richardson and Winkler (2019) demonstrates that the cost of sugar accounts for a small percentage of the retail price of even the highest-sugar food and drinks, and therefore has a negligible impact on consumer prices[8]. Instead of trying to affect consumer purchasing decisions, supply-side policies encourage manufacturers to reduce the use of sugar across their product portfolios[l]. As Richardson and Winkler (2019) note, the

l It is also important to note that the goal should not be to simply reduce sugar content in products but rather sweetness overall, given the recent WHO Guideline on non-sugar sweeteners stating that non-sugar sweeteners not be used as a means of achieving weight control or reducing the risk of non-communicable diseases[96]. For this reason, it is vital that companies are incentivised to produce products that require less sweetness in general.

hundred or so companies in the UK that purchase more than 10,000 tonnes of sugar per year will be particularly price-sensitive and likely to alter product compositions if sugar prices rise[8].

POLICYMAKERS NEED TO ACT ON MULTIPLE STREAMS OF SUGAR SUPPLY

As shown in Figure 1 (p.4), the total supply of sugar in the UK must be reduced by approximately nearly two-thirds for safe consumption (from 1.9 million tonnes to 0.73 million tonnes). Domestic sugar beet production is responsible for approximately 53% of the UK's total sugar supply; imports of raw cane from the rest of the world[m], refined sugar beet from the EU and confectionary items make up the remaining 47%. Based on these statistics, it would be impossible to intervene in merely one supply stream and see the reductions required to meet the maximum safe consumption goal.

Figure 6 shows how the UK could approach the 0.73 safe supply target by reducing UK sugar production and imports. This would bring total supply to 0.8 million tonnes.

Figure 6: Net change required from supply streams to meet safe consumption amount

	5-year average (millions of tonnes)	Required % change from last 5 years	New supply (millions of tonnes)
Domestically produced beet sugar	1.0	–50%	0.5
Refined sugar imports	0.4	–100%	0.0
Cane sugar imports	0.4	–50%	0.2
Confectionary and high-sugar product imports	0.3	–50%	0.1
Exports	–0.2	–50%	–0.1
Total supply	**1.9**		**0.8**

Source: Richardson and Winkler (2019) for confectionary and other products; all other data from Defra (2022).

Equally reducing the supply of both domestic sugar beet and imported raw cane, the UK's two largest supply streams, works towards ensuring that former British colonies whose economies depend in part on exporting raw cane sugar to the UK are not more adversely impacted than domestic growers. It would also allow the UK government to work towards its longstanding goal of equal treatment for the two companies in the UK's sugar duopoly: British Sugar and Tate & Lyle[8].

The following recommendations lay out how these reductions in each supply stream can be achieved.

m These cane sugar import figures do yet reflect the increase in raw imported cane to be seen with the commencement of the Australia–UK free trade agreement (A-UKFTA). A-UKFTA grants Australian sugar exporters tariff-free access to the UK market, starting with 80,000 tonnes (pro-rata amount: 26,569 tonnes) in 2023 and increasing to 220,000 tonnes by 2030, after which unlimited amounts of sugar will be permitted to enter tariff-free[10]. Australia is likely to therefore become a top sugar exporter to the UK, meaning that reductions in raw cane imports may have to be achieved through other market access trade regimes. As much as possible, these should seek to reduce the harm done to the economies of former colonies.

A. INTRODUCE A QUOTA ON DOMESTIC SUGAR BEET PRODUCTION

The government should introduce a quota on domestic sugar beet production as a means of capping the amount available on the market, similar to the EU sugar production quota which applied across the common market until 2017. The quota could be phased in over a period of five years, reducing the amount of planted hectarage permitted until the intended reductions (for example, 50%) are achieved. The enaction of a quota would result in higher sugar prices because of shrinking supply, ideally offsetting the costs of a smaller yield for growers of sugar beet. British Sugar and NFU Sugar could work together to determine whether current suppliers are given gradually restricted quotas, or whether certain refineries are closed altogether, meaning sugar beet production is restricted to an increasingly limited geographical area. This type of careful, gradual phasedown must be complemented by measures – as outlined in policy 1.b. below – to enable farmers to transition to other crops, or to less intensive beet production, without loss of income.

Reducing the domestic sugar supply would have the added benefit of reducing the amount of sugar beet available to produce co-products (animal feed, bioethanol and other specialty products) and prevent them from subsidising an unsustainable main product (sugar). High-value agricultural land should not be used to produce sugar, animal feed, biofuels or other products not intended for human consumption, nor should corporations profit off the resale of non-renewable resources like topsoil.

Image credit: Pixabay user Ehrecke

One option government could consider is renationalising British Sugar. The rationale for this seemingly radical proposal – although British Sugar was a nationalised entity until 1981 – would be that governments are better equipped to manage production decline and ensure a just transition to alternative livelihoods than corporations. This policy should be complemented by other policies intended to support farmers to transition towards other crops, as well as policies to prevent an influx of cheaper raw cane sugar to fill the gap in supply. These are discussed in subsequent points.

B. MAINTAIN OR INCREASE TARIFFS ON IMPORTS OF RAW CANE SUGAR

Any domestic policy to curb sugar beet production must be accompanied by nutrition-sensitive trade policies which also stem the imports of sugar produced overseas and prevent a disorderly collapse in UK sugar production which could seriously harm growers' livelihoods. While domestic sugar beet production is being gradually reduced, tariffs on the import of raw cane sugar must be maintained or increased. Otherwise, the increased price of domestic sugar risks resulting in food producers shifting to either EU refined sugar imports (see policy 1.c.) or raw cane from the rest of the world. Driving up raw cane imports would only serve to offshore the environmental impacts of sugar production while being unfair to British producers. It is therefore vital that the government cease to open new free trade agreements permitting the influx of reduced or duty-free sugar, such as the potential deals with India and Mexico. Outside of free trade agreements, it should also not increase the amount of tariff-free raw cane sugar permitted under the Autonomous Tariff Quota (ATQ), and in fact, this quota will need to gradually decrease[16].

C. INCREASE TARIFFS ON IMPORTS OF REFINED SUGAR (OR BAN IMPORTS COMPLETELY)

As part of a nutrition-sensitive trade policy, imports of refined sugar (mainly from sugar beet, originating from EU Member States) should be drastically reduced or ideally halted completely. This would allow the UK to approach its figure of maximum safe supply while safeguarding the interests of UK sugar beet growers and maintaining moral responsibilities to former British colonies to produce the majority of the UK's imported raw cane.

D. INCREASE TARIFFS ON IMPORTS OF CONFECTIONARY AND OTHER HIGH-SUGAR PRODUCTS THAT ARE KEY CONTRIBUTORS TO SUGAR INTAKE

Together, imported confectionary, chocolate, bread, pastries and biscuits are responsible for approximately 15% of the UK's sugar supply[3,8] (see Figure 2, p.8). These imports should also be subjected to increased tariffs to reduce their supply as much as possible within the parameters of external trade policy. This could potentially be achieved by enacting compositional regulations that control the sugar content of individual types of sweetened foods and drinks sold in the UK, both domestically produced and imported[8]. Existing or future trade agreements should be (re)negotiated with this objective in mind.

Image credit: Pixabay user stevepb

E. REQUIRE FUTURE FREE TRADE AGREEMENTS TO CONDUCT ADEQUATE ENVIRONMENTAL, EQUALITY AND HEALTH ASSESSMENTS

All future free trade agreements should be required to conduct an adequate environmental, equality and health impact assessment prior to enaction. Agreements that run counter to public health and/or environmental and climate goals should be adjusted to ensure that they do not undermine domestic priorities. Environmental impact assessments are already required as of 2022[1] but health and equality impact assessments would be new and have a significant impact on potential deals[97,98]. For example, the new free trade agreement negotiated with Australia will likely result in an increase in raw cane imports to the tune of 220,000 tariff-free tonnes by 2030, and an unlimited amount thereafter[12]. Given the oversupply of sugar present in the UK prior to the negotiation of the deal, this remarkable influx is entirely at odds with the UK's goal to reduce obesity rates and lower the consumption levels of HFSS foods. No new agreements that can similarly harm public health should be made. Existing agreements should be subject to the same impact assessments prior to coming up for renegotiation.

2. ENSURE ENVIRONMENT- AND NUTRITION-SENSITIVE AGRICULTURAL AND LAND USE POLICY

As mentioned in the introduction of this policy proposals section, the UK is currently reorienting its farming subsidy scheme as part of the ELM to make payments contingent on the provision of environmental and climate goods and services. The government has also pledged to deliver a Land Use Framework for England, which would detail how to handle conflicting pressures on UK land, including the need for more land for carbon sequestration and food production[99].

Both schemes should explicitly integrate goals related to both health and the environment and climate. Currently, the ELM scheme considers only environmental and climate impacts, and it is unclear what will come in the Land Use Framework for England. The lack of health integration is regrettable, given the inextricability of public health from our food system and forms of agricultural production. Truly forward-thinking strategies would integrate public health impacts, becoming nutrition-sensitive in that they consider the supply of affordable, nutritious, culturally appropriate and safe foods in adequate quantity and quality to meet the dietary requirements of populations in a sustainable manner[100].

Practically, a nutrition-sensitive ELM scheme and Land Use Framework would mean that crops which are damaging to human health, like sugar beet, are deprioritised, with regard to both subsidy payments and the provision of land[101]. Crops should be assessed regarding their nutritional value and environmental impact, and those which the most nutritional value for the least environmental impact should be prioritised and incentivised. High-quality land, such as that in East Anglia and the East Midlands, should be reserved for the growing of crops that fit the bill.

The ELM and Land Use Framework could then be used to support the following policy changes:

A. PHASE OUT SUBSIDIES TO SUGAR BEET PRODUCTION

In 2019, the government paid farmers in East Anglia and the East Midlands €29 million (approximately £25 million) to grow sugar beet[8], despite the documented, irreparable harm that sugar beet poses to the UK's best-quality topsoil[1], as well as its seeming reliance on harmful insecticides. Accordingly, subsidies to produce sugar beet should be phased out as early as possible. This is well-justified by the ELM scheme's goals of providing public money for public goods and will help reduce supply by making sugar beet a less attractive crop for growers, as well. It will also have the effect of increasing the price of sugar beet to British Sugar, and in turn increasing the price of refined sugar to food and drink companies. As part of this, the government could consider buyouts of sugar beet production machinery and subsidisation of inputs needed for horticultural crops (see policy 1.b.).

Image credit: Pixabay user pasja1000

The government should work with agronomists to identify suitable replacement break crops for beet growers, and where possible, transition interested sugar beet growers to horticultural production. In areas where land is suitable for carbon capture or other nature-based solutions – for example, in peat-land areas like the fens – farmers could be encouraged to directly put their land out of agricultural production and receive support instead for peat-land preservation and nature restoration.

B. SUBSIDISE HORTICULTURAL PRODUCTION

A nutrition-sensitive ELM scheme (and Land Use Framework) provides an impetus for subsidising the horticultural production of crops that benefit human health and the environment. This is entirely compatible with the ELM scheme's future goals and payment schemes, which include the Sustainable Farming Initiative (SFI), Countryside Stewardship (CS) and Landscape Recovery. SFI will pay farmers to adopt and maintain sustainable farming practices, CS will pay for targeted actions, and Landscape Recovery will pay for bespoke, longer-term, large-scale projects[95]. SFI payments could be used to subsidise sustainable horticultural production, including inputs and knowledge transfer. These payments could support growers of sugar beet to transition to other fruits and vegetables, which are currently under-consumed in diets in the UK. (In August 2022, the NFU submitted a response to parliament detailing that sugar beet growers were struggling to qualify for

SFI payments as their rotation was not suitable to meet soil standards[102].) As mentioned in earlier sections, the UK is a fruit and vegetable-deficient market; even with imports, it does not currently have enough supply to feed everyone their recommended portions of 5-a-day[10].

These subsidies will also help to decrease the price point of fruit and vegetables, allowing them to become more affordable to consumers and helping to make nutritious food the more price-attractive option (as opposed to HFSS foods; see 'The oversupply of cheap sugar is damaging our health and exacerbating inequalities' (p.16) for more details on the current price disparities between healthy and unhealthy food, and the relationship to social inequalities).

Alongside increasing production of fruit and vegetables, government should support the market for this growing supply through public procurement and targeted interventions such as social prescribing, or fruit and vegetable vouchers for low-income families.

C. CEASE TO PROVIDE DEROGATIONS FOR THE USE OF NEONICOTINOIDS ON SUGAR BEET CROPS

The government must immediately cease to provide any derogations for neonicotinoid use on sugar beet crops. Any agricultural policy that purports to support environmental and climate goals is incompatible with allowing the use of an insecticide that is known to harm the UK's pollinators[43] and has been declared incompatible with EU law by the European Court of Justice[41]. Restricting the use of neonicotinoids – as has been agreed to in the UK prior to the 'emergency' granting of derogations three years in a row – is imperative to reduce sugar beet supply; encourage producers to shift towards other, more sustainable and reliable forms of production; and protect the UK's pollinator population, which has already reduced by 21% between 1980 and 2019[103].

D. PROVIDE SUPPORT FOR SOME GROWERS OF SUGAR BEET TO TRANSITION TO ORGANIC PRODUCTION

It is important to note that there is no organic sugar beet cultivation in the UK, for the simple fact that processing organic sugar beet would require a separate processing facility from conventional beet. A transition path towards reducing sugar pollution in the UK food system could be to encourage the production of organic sugar beet, with at least one British Sugar factory converted entirely to organic. As organic production is less intensive than conventional production this should result in fewer environmental impacts, including notably avoiding the use of all pesticides, and the higher prices commanded by organic sugar would also mitigate the impact on farmers' incomes of producing less beet. Additionally, less intensive production would align with the overall supply reduction needed to support public health goals related to reduced sugar consumption.

3. APPLY THE 'POLLUTER PAYS' PRINCIPLE TO SUGAR PRODUCTION AND/OR SALE

Finally, the government should extend the principle of 'polluter pays' to sugar producers and manufacturers and/or food and beverage companies selling sugary products, to cover the cost of negative externalities. As highlighted in earlier sections, sugar's true cost is likely much higher than its market price – producers and sellers should be held responsible for the costs they present to UK taxpayers, including through soil loss[34], declining pollinator populations[43], obesity[104], type 2 diabetes[105] and tooth decay[72]. A precedent for enforcing the principle of 'polluter pays' has already been set by the government's Extended Producer Responsibility (EPR) scheme. EPR will come into force in 2025 and will hold producers of packaging responsible for the full cost of managing it once it becomes waste, encouraging them to use less packaging and more recyclable materials[92]. It will subject producers to modulated fees based on the environmental/recycling qualities of their products[106].

A. IMPLEMENT FISCAL MEASURES TO DISINCENTIVISE SUGAR PRODUCTION AND SALE

The 'polluter pays' principle could be applied to sugar through the creation of fiscal measures that disincentivise sugar use in food production, as proposed by a coalition of health and environmental organisations in the 'A Recipe for Change' campaign[107] as well as the National Food Strategy[108]. Building on the achievements of the Soft Drinks Industry Levy (SDIL), one option for doing this could be a levy on all sugar sold for use in processed foods, restaurants or catering, including imported products (and excluding retail sugar for household use); another would be a levy applied to certain product categories with the aim of driving reformulation[8,107]. Profits could be earmarked for specific health- or environment-related initiatives. This would have the effect of raising the price of sugar across the board, incentivising manufacturers to reduce sugar across their portfolio of product[8]. However, given that sugar constitutes a relatively small share of the cost of final products[8], this policy must be supported by agricultural changes to contract supply to ensure that manufacturers do not continue to produce the products with the same formulation[8].

CONCLUSION

This briefing has sought to make the case that the UK's oversupply of sugar is undermining policies aimed at reducing sugar demand. The World Cancer Research Fund's NOURISHING framework for promoting healthy diets and reducing obesity stipulates that action is required across the food system to complement policy changes aimed at changing the food environment and consumer behaviour. However, until now, supply-side interventions have been largely ignored in UK food policy. Most interventions have focused solely on demand and failed to reach their intended objectives.

It is imperative that the government acts to reduce sugar pollution – i.e., the harm that sugar is causing to public health as well as the damage to UK soils and pollinators – by intervening to reduce the overall sugar supply. Post-Brexit, the government has more flexibility to do so than ever. Action on supply can be taken by implementing a quota on domestic sugar beet production and reducing imports of raw cane, refined sugar, and confectionary and high-sugar products, while ensuring that agricultural policies like the ELM scheme integrate objectives related to nutrition and public health. The government should also consider extending the principle of 'polluter pays' to sugar producers and manufacturers to recoup the true cost of sugar pollution. As demonstrated by evidence in this report, this type of action would likely have broad public support[90] – and it is not without precedent. The UK has been able to act boldly on health and environmental issues such as coal[91], product packaging[92] and now potentially single-use vapes[23]. It is now time to act boldly on sugar pollution, to protect both public health and the environment.

BOX 8: FURTHER READING

Action on Sugar. *The UK's Sugar Reduction Programme: What is next?* https://www.actiononsugar.org/media/actiononsugar/sugar-awareness-week/2022/The-UK's-Sugar-Reduction-Programme-What-is-Next-(final).pdf (2022)

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Feedback works for food that is good for the planet and its people.

Action on Sugar is a group of experts concerned with sugar and obesity and its effects on health. It is working to reach a consensus with the food industry and government over the harmful effects of a high calorie diet, and bring about a reduction in the amount of sugar and fat in processed foods to prevent obesity, type 2 diabetes and tooth decay.

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