Nutrition Bulletin

NEWS AND VIEWS

DOI: 10.1111/nbu.12463

Peas Please: Making a pledge for more veg

P. Haydon*, R. Tobi*, G. Bridge†, I. Gurung* and C. Scott*

*Food Foundation, London, UK;
†Leeds Beckett University, Leeds, UK

Abstract

Research suggests that eating vegetables benefits both human health and the environment. However, in the UK, very few people are eating enough vegetables. This is contributing to the global burden of diet-related disease and associated costs, as well as undermining the possibility of a sustainable UK food system. The *Peas Please* initiative was launched in 2017 to encourage organisations and businesses across the food system to pledge their commitment to helping the British public increase their vegetable consumption. Since the implementation of the *Peas Please* initiative 95 organisations have pledged to support *Peas Please* and, at the time of writing, an additional 89.9 million portions of vegetables have been grown, served and sold by pledgers. This article describes the *Peas Please* initiative and its rationale, highlights some of the key outcomes of the programme, and outlines next steps for increasing commitment to the programme.

Keywords: health, healthy diet, healthy eating, obesity, public health, vegetables

Introduction

Food systems are defined as the complex combination of activities associated with the production, processing, distribution, preparation and consumption of food, the market and institutional networks for their governance, and the socio-economic and environmental outcomes of these activities (Marsden & Morley 2014; Pitt & Jones 2016). The concept goes back many decades but has gained renewed interest in recent years (Kneen 1989; Béné *et al.* 2019). This renewed interest is the result of food systems not delivering what is expected or required in order to ensure their contribution to environmental and societal wellbeing (Biel 2016; Scott 2017), with COVID-19 having also focussed attention on the UK's high rates of diet-related disease prevalence (Tan *et al.* 2020).

Correspondence: Rebecca Tobi, Project Manager, Peas Please Project Lead, Food Foundation, Rain Cloud Westminster, 76 Vincent Square, London SW1P 2PD, UK.
E-mail: Rebecca.tobi@foodfoundation.org.uk

The current food system is both a cause and a consequence of some of the 21st century's most pressing problems, with food systems responsible for around 24% of global anthropogenic greenhouse gas emissions while simultaneously vulnerable to the effects of climate change (FCRN 2016). Moreover, while 820 million people go hungry (FAO 2019), 2 billion are living with micronutrient deficiencies and a further 2 billion are living with overweight and obesity (Global Nutrition Report 2018). As such the food system's inadequacies create a number of system-wide risks for both individuals and society as a whole. These risks include yield and nutrient gaps (West *et al.* 2014; Popkin & Reardon 2018), increased inequity and inequality (Global Food Security Programme 2015) and negative impacts on the environment and natural resources (such as increased land degradation, deforestation and reduced biodiversity) (Whitmee *et al.* 2015; iPES Foods 2016). These risks are also increasing the burden of malnutrition in all its forms (undernutrition, micronutrient deficiencies and overweight and obesity), which constitute a huge economic and

societal burden. Obesity alone has an annual global economic impact of over $2 trillion, or 2.8% of global GDP (McKinsey Global Institute 2014). Such impacts have the potential to affect all actors in the food system. For example, farmers may be hit by land degradation, thus reducing productivity, while food retailers may be required to respond to changes in consumer demand or government policy.

Data from the UK's *Living Costs and Food Survey* (previously the *National Food Survey*, which ran from 1940 to 2000) show that while purchases of fruit increased between 1974 and 2014, vegetable purchases declined (The Food Foundation 2016). Although household purchases are only a proxy for consumption (and do not take into account food waste or different consumption patterns within households), these data from the *Living Costs and Food Survey* indicate divergent patterns in consumer demand for fruit and vegetables. Certainly, an increasingly globalised food supply chain has provided the UK with a diverse supply of fruits that have proved popular with consumers, while a similar trend has not been observed for vegetables. In 1987, for example, bananas had a 3% share of the UK's fruit and vegetable supply (SHEFS 2020). This had increased to a 7.8% share of the UK's fruit and vegetable supply chain by 2013, while cabbages and brassicas fell from a 7.5% share to just 2.4% during the same period of time.

Low vegetable consumption in the UK is the consequence of numerous factors in the food system with several barriers to consumption. Availability and affordability of fruit and vegetables are key issues (Miller *et al*. 2017), with vegetable consumption following a strong social gradient. Fruit and vegetables remain more expensive per kilocalorie than starchy staples and foods high in fat, salt and sugar (The Food Foundation 2020). Evidence also suggests that vegetables are not always easily available in out-of-home settings (such as in cafes, restaurants and canteens) creating a further barrier to consumption. A UK survey of 630 sandwiches offered by popular lunchtime retailers found that the vast majority (over 90%) were meat, fish or cheese-based, with just 9% of fillings being plant-based (Eating Better 2019). Also important to consider are how vegetables are marketed, current food trends, and cultural determinants such as social norms relating to the perception of vegetables as somehow less desirable than other foods (Lindgren *et al*. 2018). Just 1.2% of food and drink advertising in the UK is spent on vegetables, with research finding that children often perceive vegetables as 'boring' or 'disgusting' (Veg Power 2019). Therefore, the consumption of vegetables is unlikely to be significantly improved by increasing information provision and a focus on public health messaging and education alone. Instead, a whole system approach is required to make vegetables more available, affordable and accessible, as well as appealing.

As a result, in order to improve the UK's vegetable production and consumption the *Peas Please* initiative was launched in the UK in 2017 (The Food Foundation 2017). The initiative aims to achieve a major shift in policy and practice to drive food system change and make it easier for people in Britain to eat vegetables. It focuses on vegetables, rather than both fruit and vegetables, because intake of vegetables in the UK is stagnant, with purchases of vegetables falling between 1970 and 2014 while purchases of fruit have simultaneously increased by 50% (The Food Foundation 2016). Vegetable intakes are also a dietary component with large dietary inequalities. As a result, *Peas Please* also has a particular focus on targeting low-income groups.

Increased vegetable consumption could have a positive impact on health; helping adults achieve the recommended 30g daily intake of fibre, currently achieved by just 9% of adults (Roberts *et al*. 2018) and increasing vitamin and mineral intakes, some of which have shown a significant downward trend over the last 20 years (Bates *et al*. 2019). If everyone in the UK ate a higher fibre diet, including more fruit and vegetables as well as pulses and wholegrains, it has been suggested that the risk of diet-related diseases such as obesity and cardiovascular disease, and the premature deaths associated with them, could be reduced (Veronese *et al*. 2018; Nour *et al*. 2018; Reynolds *et al*. 2019). It is estimated that each additional portion of vegetables consumed can reduce all-cause risk of mortality by between 5% and 16% (Wang *et al*. 2014; Oyebode *et al*. 2014). In addition to improving UK diets and health, *Peas Please* could also play a role in helping the UK to contribute to achieving at least eight of the global Sustainable Development Goals (SDGs), given the cross-cutting role better nutrition and more sustainable diets play in a number of these, including zero hunger (SDG 2), ensuring healthy lives and promoting wellbeing for all at all ages (SDG 3), sustainable cities and communities (SDG 11), and climate action (SDG 13) (The Food Foundation 2018a).

Beyond health impacts, increasing vegetable consumption could also help to make diets in the UK more environmentally sustainable (Carbon Trust

2016; Meybeck & Gitz 2017). The Carbon Trust were asked to undertake analysis of the revised Eatwell Guide in 2016 to assess the environmental impacts of the Eatwell Guide's nutritional guidance when compared with the typical UK diet. They found adherence to the Eatwell Guide had a lower environmental impact compared to current UK diets across a range of measures (greenhouse gas emissions, water consumption and land use), attributing some of these beneficial reductions to the modelled increase in consumption of fruit and vegetables. Furthermore, it has been estimated that if the UK population conformed to World Health Organization recommended dietary patterns and ate an extra portion of vegetables per day and less meat, greenhouse gas emissions could decrease by 17% (Green *et al.* 2015). There are also potential economic benefits to increasing vegetable consumption given the cost of diet-related diseases to the health system in the UK, with treating obesity alone estimated to cost the NHS £6.1 billion a year with costs projected to increase to £9.7 billion by 2050. Public Health England also recommends consumption of fruit and vegetables as part of a healthy diet (PHE 2017; NHS Digital 2018).The aim of this article is to describe the *Peas Please* initiative, to highlight some of the key outcomes of the pledges and to outline next steps for the programme.

Making foods systems more nutrition focused and sustainable

To alleviate the aforementioned issues in the food system, attention needs to be paid to making food systems more nutrition focused (*i.e.* increasing the availability of nutritionally rich foods, dietary diversity and food fortification) and environmentally sustainable, in addition to considering the governance, actors and drivers of food systems themselves (GCFSI 2014). As was stated in the EAT-Lancet report, '*food is the single strongest lever to optimise human health and environmental sustainability*', and therefore food should be a key target for any country looking to make a substantial change (EAT-Lancet Commission 2019).

One potential way of making a substantial change is by increasing consumption of plant-based foods, such as vegetables (EAT-Lancet Commission 2019). The recommendation to eat at least five portions of fruit and vegetables a day is derived from the World Health Organization's advice for adults to consume a minimum of 400 g (five portions of 80 g each) every day (NHS 2018) and has been widely communicated through the UK's 5 A DAY campaign, first launched in 2003. The more recent revised Eatwell Guide, which modelled the proportions of the main food groups that form a healthy, balanced diet that would meet all current dietary recommendations in the UK, shows that 552 g of an adult's diet would need to come from fruit and vegetables and pulses, which actually amounts to almost seven portions a day (Scarborough *et al.* 2016; The Food Foundation 2016). Both amounts are based on the role that fruit and vegetables can play in improving health, largely from higher intakes helping to prevent diet-related chronic diseases such as heart disease, cancer and diabetes (Wang *et al.* 2014).

However, very few people, of any age, achieve the recommended intake of fruit and vegetables per day. The most recent *National Diet and Nutrition Survey (NDNS)* results from years 7 and 8 revealed that only 31% of adults and 8% of children achieve the 5 A DAY fruit and vegetable recommendation (Roberts *et al.* 2018). No age group is achieving the 5 A DAY recommendation, with adults consuming on average 4.2 portions of fruit and vegetables per day, 65–74 year-olds consuming 4.3 portions and teenagers (aged 11–18 years) consuming just 2.7 portions per day (Roberts *et al.* 2018). Disaggregating the data further by socio-economic status shows important dietary inequalities in fruit and vegetable intake, with those on a lower income less likely to be achieving the 5 A DAY recommendation (Fig. 1). Vegetable consumption follows a strong social gradient, with people on a low income eating half a portion less of vegetables on average per day compared to those on a higher income (The Food Foundation 2016). The highest income groups consume about 1.5 portions of fruit and vegetables per day more than the lowest income groups (Maguire & Monsivais 2015), with equivalised income

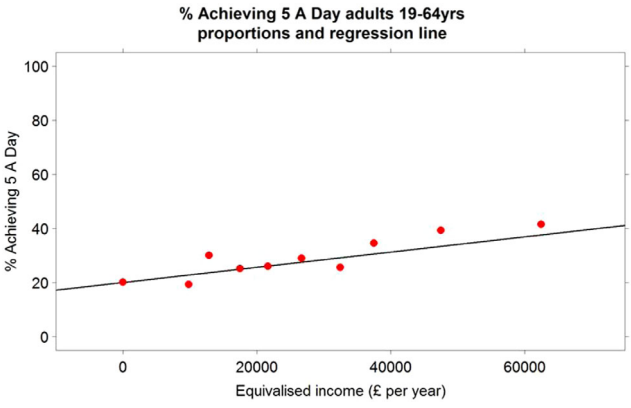

Figure 1 Percentage of adults achieving the 5 A DAY recommendation for fruit and vegetables by equivalised income (Bates *et al.* 2019).

data from the most recent *NDNS* time trend analysis showing that total vegetable intake increased in line with increasing household income (Bates *et al.* 2019).

Across the UK, the picture is equally poor. The most recent results from 2018/2019 *National Wales Survey* highlighted that less than a quarter of adults (24%) reported eating five portions of fruit and vegetables a day (Welsh Government & Statistics for Wales 2019), while in Scotland, results of the *Scottish Health Survey* revealed that only 24% of adults reported eating five portions a day in 2017 (Scottish Government 2018). Although these surveys are limited by the self-reported nature of their study designs, analysis of years 5–9 of the *NDNS* confirms that intake is low across the devolved nations, with Northern Ireland consuming the lowest average amount of vegetables – just 1.7 portions a day for those aged 11 years and over (The Food Foundation 2020).

Public health messages are necessary but not sufficient in order to change behaviour

National dietary recommendations, such as how many portions of fruit and vegetables to eat, need to be implemented at an individual level. However, there are numerous social and environmental factors that make it difficult for an individual to achieve these recommendations (Adamski *et al.* 2018). The *Peas Please* initiative recognises that improving an individual's diet requires more than public health messages in isolation and that simply providing information around eating more vegetables will not necessarily change behaviour. The 5 A DAY campaign was launched in 2003 as part of a preventative strategy aimed at improving diet and nutrition in the general population (HSCIS 2013). A key focus of the campaign itself was to raise awareness of the importance of eating five portions of fruit and vegetables per day. However, despite the campaign being widely recognised, with estimates that up to 90% of individuals are aware of the message and the importance of fruit and vegetables for a healthy diet (Rooney *et al.* 2017), vegetable consumption has barely changed since the 5 A DAY campaign launched in 2003 and the latest *NDNS* data show there has been little change since 2008/2009 (Bates *et al.* 2019).

There are a number of possible explanations as to why the 5 A DAY campaign has not achieved increased vegetable consumption in the general population. These include: confusion about what a portion size looks like, which makes it difficult to achieve the recommendations (*Food Navigator* 2017); demotivation following media and research reports that 5 A DAY is not enough and that in fact we should all be eating 7 or even 10 A DAY (Aune *et al.* 2017), barriers to purchase and consumption of fruit and vegetables including perceived and actual costs (with variations across the country), and a perceived lack of time to prepare and cook fruit and vegetables, in addition to taste preferences (Herbert *et al.* 2010; Krølner *et al.* 2011).

Pledges across the food system

Instead of focusing on information provision and public health messaging, *Peas Please* aims to make it easier for everyone in Britain to eat more vegetables via a food systems approach. This focusses on supply side drivers of vegetable consumption instead of placing the onus on individual food choice. This involves working with actors and organisations from across the food system [such as policymakers, academics, marketing professionals, retailers, caterers, manufacturers, restaurants, farmers and non-governmental organisations (NGOs)], and encouraging those involved to make a commitment to play their part in helping everyone in Britain to eat an extra portion of vegetables per day. Such multi-stakeholder action could help to overcome the diverse barriers that people in the UK face when it comes to purchasing and consuming more vegetables by acknowledging that no one sector or stakeholder alone has sole responsibility for food choice. To ensure that pledgers are aligned with such challenges, actors involved in *Peas Please* are encouraged to make pledges centred around the '5 P's' of the initiative (see Fig. 2).

As of 2020, there were 95 pledger organisations from across the food system, including eight retailers (and three of the UK's four largest supermarkets), four manufacturers and 12 high-street restaurant chains (The Food Foundation 2019) (see Table 1). The *Peas*

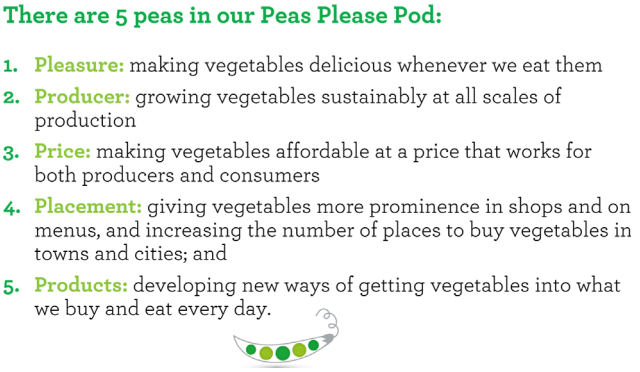

Figure 2 The 5 P's framework.

Table 1 *Peas Please* pledgers across the food system

Sector	Number of pledger organisations
Broadcasters	1
Government	3
Manufacturers	4
Out-of-home contract caterers	17
Out-of-home high-street chains	12
Public food procurers	1
Retailers	9
System Influencers	13
Veg Cities	25
Wholesalers	4
Workplace/Event Venues	6
Total	95

Please team is working to obtain commitments from 100 pledger organisations by the end of 2020, involving pledgers from across the whole food system to ensure that the programme's impact is sustainable in the long-term and utilises a number of different food system actors. The programme's core metric is assessing the number of portions grown, sold or served by *Peas Please* pledgers, obtained via sales and procurement data. This is monitored annually, with a cumulative portion total calculated to take into account *Peas Please* pledger progress since the beginning of the programme and thereafter. Direct consumption is not measured given *Peas Please*'s focus on supply side factors and organisational activities, rather than individual intake patterns.

The specific pledges are diverse and dependent on the business model of pledger organisations, but have all been made against the *Peas Please* framework of 10 commitments that relate to the purchase, provision and consumption of vegetables when shopping and eating at home, eating out-of-home, in towns and cities, at school, and during food production processes (see Fig. 3). The commitments were designed so that any pledges developed in accordance with these commitments would help address the aforementioned 5 P's in different parts of the food system (The Food Foundation 2018a). Pledges include supporting convenience stores with their vegetable offering, increasing the number of servings of vegetables in ready meals, ensuring contract caterers include two portions of vegetables in all their main meals and increasing the advertising of vegetables (The Food Foundation 2018b). Many of the companies who have signed up to *Peas Please* are now including their pledges as part of annual corporate reporting, for example the Co-operative Group and Sodexo, demonstrating the potential impact of *Peas Please* to influence commitment and accountability to more sustainable and healthy diets at an executive level.

Monitoring the pledges

An important part of *Peas Please* is monitoring the pledges to ensure commitments are accountable and that progress is sustained, with any changes in vegetable accessibility and availability achieved equitably (*i.e.* that they do not increase inequalities in health). Monitoring takes place annually and is led by the *Peas Please* partnership team comprised of civil society organisations across the devolved nations (The Food Foundation, Food Sense Wales, Nourish Scotland, Sustain and NI Good Food), through a combination of self-reporting by pledgers on their progress using quantitative and qualitative measures, in addition to the tracking of more objective measures by the *Peas Please* monitoring team. These more objective assessment measures of progress include monitoring the percentage of the retail grocery shopping basket that is made up of vegetables, the percentage of the retail grocery shopping basket that is made up of vegetables by socio-economic group (both data supplied by Kantar Worldpanel) and 'spot-check' visits to retail stores by the *Peas Please* monitoring team (The Food Foundation 2018a). The main quantitative outcome measured is additional portions of vegetables served or sold as a result of the *Peas Please* initiative.

Pledgers report how many portions of vegetables they have served/sold annually, which is then compared against a baseline period of time specific to themselves to ascertain as to whether there has been any increase since their commitment to *Peas Please* began. The catering sector measures vegetable portions served/sold through procurement data, while retail, restaurants and other pledgers keep track of portions through products/meals sold and till systems. Vegetables are defined according to the Eatwell Guide definition and visual, which places white potatoes within the starchy foods and carbohydrates group of the guide, and pulses within the protein group (counting as one portion only, regardless of how much you eat). White potatoes are therefore excluded from the *Peas Please* definition of a vegetable, with pulses only counting as a portion when part of ready meals or composite dishes. The amount defined as one portion of vegetables by the *Peas Please* programme is 80 g,

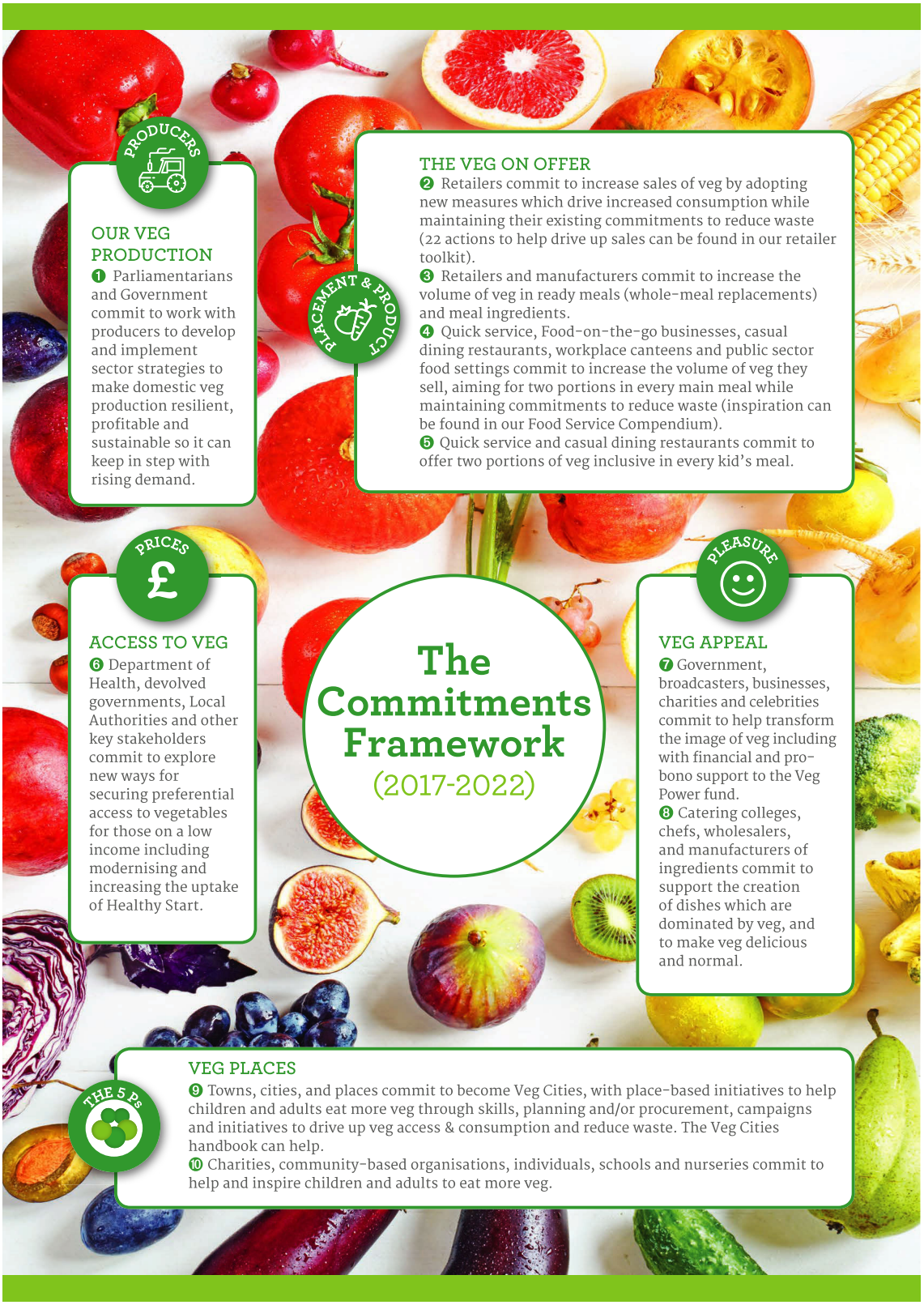

Figure 3 Graphic of Food Foundation Commitments Framework (https://foodfoundation.org.uk/wp-content/uploads/2018/12/Commitments-framework-2017-2022.pdf).

in line with government recommendations. The number of portions of vegetables sold or served is therefore typically calculated by dividing the weight of vegetables sold in kilograms by 0.08 to obtain portion figures. These calculations are checked by the *Peas Please* team who then assess each pledger using a colour coding 'traffic light' system, with black signifying no report has been received through to green, which shows that commitments have been fully implemented (The Food Foundation 2018a).

In order to ensure accountability, pledgers are excluded from the initiative if no progress data are received for two consecutive years of *Peas Please* reporting. Pledgers must also sign a disclosure form before submitting their progress report, confirming that to the best of their knowledge the data submitted are accurate and true and including a counter signature. Results of the reporting cycle are published in the *Peas Please* Annual Progress Report in order to track progress made and to ensure transparency. Each pledger organisation receives a traffic light colour rating to their progress against their commitments which is made public as a part of this report. To date, compliance has been encouraging, with 95.5% of pledgers reporting their data for the second reporting cycle in 2018–2019, up from 85% reporting in the first cycle in 2017–2018. In the second reporting cycle, three pledgers received a black rating ('no report from pledger'), six orange ('a good start'), 21 a yellow rating ('on the road to success') and 15 received a green rating, having already implemented and achieved their commitments and targets. Targets (*e.g.* increasing the amount of vegetables served by 10%) are time-bound, and reviewed and updated with pledgers once the agreed period for implementing them has been completed.

Findings from the first reporting cycle suggested that just 8 months into the start of the *Peas Please* initiative (in 2018), 41 pledger organisations had resulted in an extra 4.8 million portions of vegetables being sold or served (The Food Foundation 2018a). This increased to nearly 90 million additional portions from the 49 pledgers included in 2019's reporting cycle (The Food Foundation 2020). However, despite these promising results, further work is required. Pledgers need to take greater action if the UK is to consume the amount of fruit and vegetables shown in the Eatwell Guide. The mean intake of fruit and vegetables for adults is 298 g per day (Roberts *et al.* 2018), which means we would need to eat an additional 254 g (3.2 portions) a day to meet the almost seven portions (552 g) represented in the Eatwell Guide's modelling (including pulses), amounting to an additional 174 million portions every day for the UK's adult population (ONS 2019).

Peas Please is therefore working with existing pledgers to strengthen their pledges and to add new pledging organisations to the initiative. Strengthening pledges and increasing the ambition of pledgers in the retail and convenience store sectors in particular, could significantly increase the availability and affordability of vegetables. Recent data suggest that just 7.2% of the weight of the average shopping basket is composed of vegetables, according to data collected by Kantar Worldpanel (The Food Foundation 2018a). Collectively, the retailers involved in *Peas Please* make up more than 80% of the retail grocery market in the UK (ShareAction 2019) and thus account for much of the food that the UK public is purchasing. According to data from Kantar, as of November 2019 the four largest supermarkets in the UK have a combined 68.8% share of the total UK grocery market (Kantar Worldpanel 2019). Moreover, as retailers (and caterers and restaurants) are at the consumer-facing end of the supply chain, and thus, the channel through which most commercially produced food is funnelled, such organisations are important indicators for assessing whether shifts are taking place in direct to consumer food industry practices (The Food Foundation & FCRN 2019b). In order to encourage greater engagement with *Peas Please* objectives among stakeholders, the programme partners regularly engage with pledger organisations to review pledge progress, providing pledgers with sector-specific toolkits to support them in implementing change. The Annual Progress Report requires pledger organisations to submit progress data against pre-agreed metrics. This is intended to incentivise friendly competition and ensure continual improvement. The programme partners also run annual *Peas Please* Awards and events, incentivising and recognising success and best practice. Reviewing and renewing pledges so that they are specific, measurable, assignable, relevant and time-bound (SMART) is a key part of the *Peas Please* team's work, and critical for ensuring continuous improvement.

Making the business case for pledging

A number of initiatives have emerged in recent years that attempt to address the specific risks and opportunities in food industry sectors that are posed by food system issues. *The Access to Nutrition Initiative (ATNI)*, for example, aims to hold the food sector to account by monitoring their disclosure on actions

related to nutrition, diets and health, while *the Carbon Disclosure Project (CDP)* supports companies and cities to disclose the environmental impact of major corporations and aims to make environmental reporting and risk management a business norm.

What we eat and how we produce food contributes to system-wide risks that pose a risk to businesses both within and outside of the food system. Poor health and nutrition outcomes, for example, are estimated to result in an annual productivity loss of $506 for every worker with obesity (Gates *et al*. 2008), while the cost to the US dairy industry in 2015 of water scarcity and drought was $250 million (FAIRR 2016). Risks and opportunity areas for food system organisations therefore include regulatory changes such as mandatory nutrition or environmental impact labelling requirements, policy interventions on meat and dairy (with increased government focus on sustainable and healthy diets), changing consumer demand for healthier products and greater transparency (YouGov 2017), and the reputational risk to organisations of not being seen to respond quickly enough to emergent issues. As a result, the health and environmental benefits of more plant-based diets is an opportunity area for businesses to engage with that has cross-cutting benefits for a number of food system issues. Vegetables have a significantly lower environmental impact relative to other food categories, such as meat and dairy, with a meta-analysis of 369 life cycle assessment studies finding a clear hierarchy of greenhouse gas emissions for different food categories, with field-grown and root vegetables having the lowest environmental impact in terms of greenhouse gas emissions of all studied food categories (Clune *et al*. 2017). Moreover, increased vegetable consumption would contribute to general population dietary improvement. A study that modelled the health implications of adherence to the Eatwell Guide found that the associated dietary improvements would reduce the UK's rates of cardiovascular disease, diabetes and cancers over the lifetime of the current UK population, in addition to extending life expectancy (Cobliac *et al*. 2016).

The Food Foundation, the leading *Peas Please* partner in England, has also undertaken its own work to highlight the business and financial case for sustainability and health via its reports *Plating Up Progress Part 1 and Part 2*, both developed in collaboration with the Food Climate Research Network (FCRN) (The Food Foundation & FCRN 2019a; The Food Foundation & FCRN 2019b). *Plating Up Progress Part 1* highlights the role food systems play in many of the challenges facing society today. The report also provides a number of risks and opportunities for businesses and their investors in the light of these challenges, explaining that changes are needed to ensure continued business success (The Food Foundation & FCRN 2019a).

Plating Up Progress Part 2 highlights that strong supply chain management and alignment of revenues with healthy and sustainable food systems can enable organisations to succeed in the future. Organisations with business models based on the current food system status quo face a number of risks to future profit making capabilities; exposed as they are to shifts in consumer demand (*e.g*. increased ethical and political concerns about animal welfare and the environment), physical risks (*e.g*. changes in the supply and price of crops due to climate change) and policy interventions (*e.g*. food and drink taxes). Many of these risks and challenges have been highlighted and further added to elsewhere (CRPR 2018). *Plating Up Progress Part 2* details the findings from a study that assessed data sources and corporate reports of 11 UK-operating food retailers and 17 caterers and restaurant chains to investigate whether investors would be able to track companies' progress in terms of sustainability. The report reveals that most of the organisations were not setting targets to change their revenue streams in line with the required shift towards healthy and sustainable diets (EAT-Lancet Commission 2019), although a greater number were making changes to align their supply chains with sustainable food production (The Food Foundation & FCRN 2019b). Even for the organisations that were making changes, many do not provide adequate evidence of their actions or progress associated with sustainability. As a result, these organisations may face reduced investment opportunities given that investors are starting to concern themselves with sustainability and health (due to their links with economic success) and are increasingly recognising the importance of changing business practices in order to continue to generate profit and deliver growth (De Lange *et al*. 2012; Eccles & Klimenko 2019). *Peas Please* is therefore one way for such businesses to commit to changing business and reporting practices.

Considering food waste

An important consideration for the *Peas Please* initiative is ensuring that the increased purchase of vegetables resulting from the programme's associated campaigns does not cause increased food wastage. Parfitt *et al*. define food loss as the decrease in edible

food mass throughout the part of the supply chain that specifically leads to edible food for human consumption (*i.e.* production, post-harvest, storage, transportation and processing), while food lost at the end of the food chain (retail and final consumption) is referred to as food waste and relates to consumer behaviour (Parfitt, Barthel & Macnaughton 2010). Policymakers, NGOs and academics are all interested in food loss and waste due to concerns over food security and environmental impacts, such as resource depletion, soil erosion and greenhouse gas emissions (Schanes *et al.* 2018). Almost one-third of food produced for human consumption (the equivalent of 1.3. billion tonnes of food) is lost or wasted globally every year (FAO 2011; Glopan 2018). *Peas Please* focusses on food waste given that the majority of pledger organisations are involved at the retail and food service stages of the food chain.

Private households have been identified as key actors in the generation of this food waste. Recent data revealed that UK households produce 7.1 million tonnes of food waste every year (WRAP UK 2018). Of concern, 70% (or 5.0 million tonnes) of the food that is wasted by UK households is edible (*i.e.* food that could have been eaten) (WRAP UK 2018). Much of that edible waste is made up of fruit and vegetables, with research suggesting that of all vegetables purchased, 40% are wasted in the household (WRAP UK 2018). That waste includes fruit and vegetable peelings but also includes 'ugly' or over-ripe products (*The Independent* 2019).

Although strategies can be adopted by individuals to prevent food waste in their households, it is also important to consider that like so many other issues relating to food, the individual is embedded within wider social, economic and cultural structures that may prevent the adoption of less wasteful practices (Schanes *et al.* 2018). It is therefore important to consider the potential impacts of food waste in the supply chain beyond the consumer due to increases in the purchase of vegetables. For example, current estimates suggest that approximately 3.1 million tonnes of food loss occur in the rest of the supply chain per year (made up by retail, manufacturer and hospitality and foodservice sectors) (Wrap UK 2018). As many of the organisations involved in *Peas Please* have existing commitments to reducing food waste, the commitments framework specifically asks them to maintain these commitments, while simultaneously increasing the amount of vegetables they are serving or selling, in order to try and avoid an increase in vegetable waste. *Peas Please* is also working on food waste through the *Veg Cities* programme, which was launched in partnership with the *Sustainable Food Places* programme (previously *Sustainable Food Cities*) and works in coordination with *Peas Please*. The *Veg Cities* campaign aims to increase availability and consumption of vegetables at a local level. An additional key focus of *Veg Cities* is to reduce food waste through initiatives such as marketing campaigns and local events (Veg Cities 2017). The *Peas Please* initiative also has a pledge from WRAP, the Waste and Resources Action Partnership, who are working with businesses to reduce their vegetable waste, to help customers eat more veg and waste less by improving labelling information on fresh produce, and helping to improve measurement of food waste and consumption.

Conclusions

Population growth, a food system orientated towards producing and marketing foods high in fat, salt and sugar (HFSS), and ingrained inequities currently makes universal access to more healthy foods a challenge, especially if this is to be done without creating negative impacts for the environment, economy or society as a whole. However, there is a significant public health and business case for acting to improve diets. In the UK, as is the case in many other countries globally, no population group is currently meeting the 5 A DAY recommendation for fruit and vegetables according to *NDNS* data. This low vegetable consumption is likely to be contributing to high rates of diet-related diseases such as obesity and diabetes, creating a substantial financial burden on the NHS. Diets higher in plant-based foods can also support the transition to more sustainable diets.

The *Peas Please* initiative, launched in 2017, has to date shown promising results. The programme indicates that cross-system, multi-stakeholder action could make it easier for everyone to eat more vegetables. The initiative is unique in its food systems approach and, with time, could improve the health of the UK population while also helping to decrease the environmental footprint of the UK's food system. Increased organisational commitment to the *Peas Please* initiative with more ambitious SMART targets (specific, measurable, assignable, relevant and time-bound) for increasing the amount of veg grown, sold and served by pledging organisations could help the public to eat more vegetables, thus contributing to reducing the burden of diet-related chronic diseases, their associated costs, and the impact of diets on the environment. More action is needed, through strengthened

and more ambitious pledges from existing pledgers, and by obtaining new pledges from organisations not currently committed to increasing the amount of vegetables their businesses serve or sell. Ensuring that vegetables become a part of core business models is an important part of driving upstream changes that impact on the diet and health of the population.

References

Adamski M, Gibson S, Leech M *et al*. (2018) Are doctors nutritionists? What is the role of doctors in providing nutrition advice? *Nutrition Bulletin* **43**: 147–52.

Aune D, Giovannucci E, Boffetta P *et al*. (2017) Fruit and vegetable intake and the risk of cardiovascular disease, total cancer and all-cause mortality-a systematic review and dose-response meta-analysis of prospective studies. *International Journal of Epidemiology* **46**: 1029–56.

Bates B, Collins D, Cox L*et al*. (2019) *National Diet and Nutrition Survey: Years 1 to 9 of the Rolling Programme (2008/2009 – 2016/2017): Time trend and income analyses. Public Health England*. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/772434/NDNS_UK_Y1-9_report.pdf (accessed 30 July 2020).

Béné C, Oosterveer P, Lamotte L *et al*. (2019) When food systems meet sustainability – Current narratives and implications for actions. *World Development* **113**: 116–30.

Biel R (2016) *Sustainable Food Systems: The Role of the City*. UCL Press: London.

Carbon Trust (2016) *The Eatwell Guide: A more sustainable diet*. Available at: https://www.carbontrust.com/resources/the-eatwell-guide-a-more-sustainable-diet (accessed 30 July 2020).

Clune S, Crossin E & Verghese K (2017) Systematic review of greenhouse gas emissions for different fresh food categories. *Journal of Cleaner Production* **140**: 766–83.

Cobliac LJ, Scarborough P, Kaur A *et al*. (2016) The Eatwell Guide: Modelling the Health Implications of Incorporating New Sugar and Fibre Guidelines. *PLoS One* **11**: 1–16.

CRPR (Centre for Rural Policy Research) (2018) *Changing Food Cultures: Challenges and Opportunities for UK Agriculture*. Available at: https://www.nuffieldscholar.org/uploads/MASTER_COPY_2018_Changing_Food_Cultures_Report.pdf (accessed 30 July 2020).

De Lange DE, Busch T & Delgado-Celballos J (2012) Sustaining Sustainability in Organizations. *Journal of Business Ethics* **110**: 151–56.

Eating Better (2019) *Sandwiches unwrapped: snapshot report 2019*. Available at: https://www.eating-better.org/blog/sandwiches-unwrapped-2019 (accessed 30 July 2020).

EAT-Lancet Commission (2019) *EAT-Lancet Commission Summary: Food, Planet, Health*. Available at: https://eatforum.org/content/uploads/2019/07/EAT-Lancet_Commission_Summary_Report.pdf (accessed 30 July 2020).

Eccles RG & Klimenko S (2019) The Investor Revolution. Harvard Business Review: Brighton.

FAIRR (Farm Animal Investment Risk & Return) (2016) *Factory farming: assessing investment risk*. Available at https://cdn.fairr.org/2019/01/09115647/FAIRR_Report_Factory_Farming_Assessing_Investment_Risks.pdf (accessed 30 July 2020).

FAO (Food and Agriculture Organisation) (2011) *Global Food Losses and Food Waste*. Available at: http://www.fao.org/3/a-i2697e.pdf (accessed 30 July 2020).

FAO (Food and Agriculture) (2019) *The State of food security and nutrition in the world: safeguarding against economic slowdowns and downturns*. Available at: http://www.fao.org/3/ca5162en/ca5162en.pdf

FCRN (Food Climate Research Network) (2016) *Food systems and greenhouse gas emissions*. Available at: https://foodsource.org.uk/sites/default/files/chapters/pdfs/foodsource_chapter_3.pdf (accessed 30 July 2020).

Food Navigator (2017) *UK consumers 'confused' about portion size*. By Katy Askew, 15 November 2015. Available at: https://www.foodnavigator.com/Article/2017/11/15/UK-consumers-confused-about-portion-size (accessed 30 July 2020).

Gates DM, Succop P, Brehm BJ *et al*. (2008) Obesity and Presenteeism: The Impact of Body Mass Index on Workplace Productivity. *Journal of Occupational and Environmental Medicine* **50**: 39–45.

GCFSI (Global Centre for Food Systems Innovation) (2014) *Africa's emerging food system transformation: Eastern and Southern Africa*. Available at: https://gcfsi.isp.msu.edu/files/7214/6229/3434/w1.pdf (accessed 30 July 2020).

Global Food Security Programme (2015) *Extreme weather and resilience of the global food system*. Available at https://www.stat.berkeley.edu/~aldous/157/Papers/extreme_weather_resilience.pdf (accessed 30 July 2020).

Global Nutrition Report (2018) *Global Nutrition Report Shining a light to spur action on nutrition*. Available at: https://www.who.int/nutrition/globalnutritionreport/2018_Global_Nutrition_Report.pdf?ua=1 (accessed 30 July 2020).

Glopan (Global Panel) (2018) *Preventing nutrient loss and waste across the food system: Policy actions for high-quality diets*. Available at: http://glopan.org/sites/default/files/Downloads/GlopanFoodLossWastePolicyBrief.pdf (accessed 30 July 2020).

Green M, Milner J, Dangour AD *et al*. (2015) The potential to reduce greenhouse gas emissions in the UK through healthy and realistic dietary change. *Climate Change* **129**: 253–65.

Herbert G, Kennedy O, Lobb O *et al*. (2010) Young adults and the 5 a day campaign: Perceived benefits and barriers of eating more fruits and vegetables. *International Journal of Consumer Studies* **34**: 657–64.

HSCIS (Health & Food Supplement Information Service) (2013) *Fruit and vegetable consumption*. Available at: http://healthsurvey.hscic.gov.uk/media/1092/_7-fruit-and-vegetable-consumption_7th-proof.pdf (accessed 30 July 2020).

iPES Food (2016) *From uniformity to diversity: A paradigm shift from industrial agriculture to diversified agroecological systems*. Available at https://cgspace.cgiar.org/handle/10568/75659 (accessed 30 July 2020).

Kantar Worldpanel (2019) *Grocery market shar*e data. Available at: https://www.kantarworldpanel.com/en/grocery-market-share/great-britain (accessed 30 July 2020).

Kneen B (1989) *From Land to Mouth: Understanding the Food System*. NC Press: Toronto.

Krølner R, Rasmussen M, Brug J *et al*. (2011) Determinants of fruit and vegetable consumption among children and adolescents: A

review of the literature. Part II: qualitative studies. *The International Journal of Behavioral Nutrition and Physical Activity* **8**: 1–38.

Lindgren E, Harris F, Dangour A *et al.* (2018) Sustainable food systems—A health perspective. *Sustainability Science* **13**: 1505–17.

Maguire ER & Monsivais P (2015) Socio-economic dietary inequalities in UK adults: An updated picture of key food groups and nutrients from national surveillance data. *The British Journal of Nutrition* **113**: 181–89.

Marsden T & Morley A (2014) *Sustainable Food Systems Building a New Paradigm*. Routledge: Abingdon.

McKinsey Global Institute (2014) *How the world could better fight obesity*. Available at: https://www.mckinsey.com/industries/healthcare-systems-and-services/our-insights/how-the-world-could-better-fight-obesity (accessed 30 July 2020).

Meybeck A & Gitz V (2017) Sustainable diets within sustainable food systems. *Proceedings of the Nutrition Society* **76**: 1–11.

Miller V, Mente A, Dehghan M *et al.* (2017) Fruit, vegetable, and legume intake, and cardiovascular disease and deaths in 18 countries (PURE): a prospective cohort study. *The Lancet* **390**: 2037–49.

NHS (2018) *Why 5 A Day?* Available at: https://www.nhs.uk/live-well/eat-well/why-5-a-day/ (accessed 30 July 2020).

NHS Digital (2018) *Health Survey for England 2018*. Available at: https://digital.nhs.uk/data-and-information/publications/statistical/health-survey-for-england/2018/summary (accessed 30 July 2020).

Nour M, Lutze SA, Grech A *et al.* (2018) The Relationship between Vegetable Intake and Weight Outcomes: A Systematic Review of Cohort Studies. *Nutrients* **10**: 1–21.

ONS (Office for National Statistics) (2019) *Estimates of the population for the UK, England and Wales, Scotland and Northern Ireland*. Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/datasets/populationestimatesforukenglandandwalesscotlandandnorthernireland (accessed 30 July 2020).

Oyebode O, Gordon-Dseagu V, Walker A *et al.* (2014) Fruit and vegetable consumption and all-cause, cancer and CVD mortality: analysis of Health Survey for England data. *Journal of Epidemiology and Community Health* **68**: 856–62.

Parfitt J, Barthel M & Macnaughton S (2010) Food waste within food supply chains: Quantification and potential for change to 2050. *Philosophical Transactions of the Royal Society B: Biological Sciences* **365**: 3065–81.

PHE (Public Health England) (2017) *Health matters: obesity and the food environment*. Available at: https://www.gov.uk/government/publications/health-matters-obesity-and-the-food-environment/health-matters-obesity-and-the-food-environment-2 (accessed 30 July 2020).

Pitt H & Jones M (2016) Scaling up and out as a Pathway for Food System Transitions. *Sustainability* **8**: 1–16.

Popkin BM & Reardon T (2018) Obesity and the food system transformation in Latin America. *Obesity Reviews* **19**: 1028–64.

Reynolds A, Mann J, Cummings J *et al.* (2019) Carbohydrate quality and human health: A series of systematic reviews and meta-analyses. *Lancet* **393**: 434–45.

Roberts C, Steer T, Maplethrope N*et al.* (2018) National Diet and Nutrition Survey. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/699241/NDNS_results_years_7_and_8.pdf (accessed 30 July 2020).

Rooney C, McKinley MC, Appleton KM *et al.* (2017) How much is '5-a-day'? A qualitative investigation into consumer understanding of fruit and vegetable intake guidelines. *Journal of Human Nutrition and Dietetics* **30**: 105–13.

Scarborough P, Kaur A, Cobiac LJ *et al.* (2016) Eatwell guide: modelling the dietary and cost implications of incorporating new sugar and fibre guidelines. *British Medical Journal Open* **6**: e013182.

Schanes K, Dobernig K & Gözet B (2018) Food waste matters—A systematic review of household food waste practices and their policy implications. *Journal of Cleaner Production* **182**: 978–91.

Scott P (2017) Global panel on agriculture and food systems for nutrition: Food systems and diets: facing the challenges of the 21st century. *Food Security* **9**: 653–54.

Scottish Government (2018) *The Scottish Health Survey*. Available at: https://www.gov.scot/publications/scottish-health-survey-2017-volume-1-main-report/pages/76/ (accessed 30 July 2020).

ShareAction (2019). *Hitting the sweet spot: the investment case for solutions to childhood obesity*. Available at: https://shareaction.org/wp-content/uploads/2019/05/FoodHealthBriefing-May-2019.pdf (accessed 30 July 2020).

SHEFS (Sustainable & Healthy Food Systems) (2020) *Policy Brief 1: Is the UK's supply of fruit and vegetables future proof?* Available at: www.shefsglobal.lshtm.ac.uk/publications (accessed 30 July 2020).

Tan M, He FJ & MacGregor GA (2020) Obesity and covid-19: the role of the food industry. *British Medical Journal* **369**: 1.

The Food Foundation & FCRN (2019b) *Plating Up Progress, Part 2 'Must-Have' Metrics*. Available at: https://foodfoundation.org.uk/wp-content/uploads/2019/08/Plating-up-Progress_Report2_DIGITAL.pdf (accessed 30 July 2020).

The Food Foundation & FCRN (2019b) *Plating Up Progress Part 1*. Available at: https://foodfoundation.org.uk/wp-content/uploads/2019/07/Plating-up-Progress-FINAL.pdf (accessed 30 July 2020).

The Food Foundation (2016) *Veg Facts: A briefing by the Food Foundation*. Available at: https://foodfoundation.org.uk/wp-content/uploads/2016/11/FF-Veg-Doc-V5.pdf (accessed 30 July 2020).

The Food Foundation (2017) *Peas Please*. Available at: https://foodfoundation.org.uk/peasplease/ (accessed 30 July 2020).

The Food Foundation (2018a) *Peas Please progress report 2018*. Available at: https://foodfoundation.org.uk/wp-content/uploads/2018/10/PEASE-PLEASE-PROGRESS-REPORT-2018_digital.pdf (accessed 30 July 2020).

The Food Foundation (2018b) *Veg Pledges*. Available at: https://foodfoundation.org.uk/veg-pledges/ (accessed 30 July 2020).

The Food Foundation (2019) *Peas Please Progress Report 2019*. Available at: https://foodfoundation.org.uk/wp-content/uploads/2020/02/PEASE-PLEASE-PROGRESS-REPORT-2019_A4_Proof11.pdf (accessed 30 July 2020).

The Food Foundation (2020) *Veg Facts: in brief. The Food Foundation*. Available at: https://foodfoundation.org.uk/wp-content/uploads/2020/06/Pease-Please-Veg-Facts-2020-In-Brief-spreads.pdf (accessed 30 July 2020).

The Independent (2019) *Ugly vegetables are a major cause of food waste*. By Miriam C Dobson and Jill L Edmondson, 29 March 2019. Available at: https://www.independent.co.uk/life-style/

food-and-drink/ugly-vegetable-food-waste-fruit-vegetable-a8825311.html (accessed 30 July 2020).

Veg Cities (2017) *Veg Cities*. Available at: https://www.vegcities.org (accessed 30 July 2020).

Veg Power (2019) *Eat the to Defeat Them 2019 – Campaign Evaluation*. Available at: https://s3-eu-west-2.amazonaws.com/ifour-vegpower-uploads/wp-content/uploads/2020/02/09085158/Eat-Them-to-Defeat-Them-2019-Report.pdf (accessed 30 July 2020).

Veronese N, Solmi M, Caruso MG *et al*. (2018) Dietary fiber and health outcomes: An umbrella review of systematic reviews and meta-analyses. *The American Journal of Clinical Nutrition* **107**: 436–44.

Wang X, Ouyang Y, Liu J *et al*. (2014) Fruit and vegetable consumption and mortality from all causes, cardiovascular disease, and cancer: Systematic review and dose-response meta-analysis of prospective cohort studies. *British Medical Journal* **349**: 4490.

Welsh Government & Statistics for Wales (2019) *National Survey for Wales 2018-19: Adult lifestyle*. Available at: https://gov.wales/sites/default/files/statistics-and-research/2019-06/national-survey-for-wales-april-2018-to-march-2019-adult-lifestyle-534.pdf (accessed 30 July 2020).

West PC, Gerber JS, Engstrom PM *et al*. (2014) Leverage points for improving global food security and the environment. *Science* **345**: 325–28.

Whitmee S, Haines A, Beyrer C *et al*. (2015) Safeguarding human health in the Anthropocene epoch: Report of The Rockefeller Foundation-Lancet Commission on planetary health. *Lancet* **386**: 1973–2028.

WRAP UK (2018) *WRAP restates UK food waste figures to support united global action*. Available at: http://www.wrap.org.uk/content/wrap-restates-uk-food-waste-figures-support-united-global-action (accessed 30 July 2020).

YouGov (2017) *Over half happy to have meat-free meals*. Available at: https://yougov.co.uk/topics/politics/articles-reports/2017/04/06/over-half-happy-have-meat-free-meals (accessed 30 July 2020).