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Re-fashioning food systems with sustainable diet guidelines: towards a SDG^2 strategy

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for Friends of the Earth

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Summary

The paper outlines the current state of policy thinking on sustainable diets.¹ It reports on some national, international and local attempts to chart new policy directions to tackle growing evidence that food consumption has immense impact on environment, health, society and economy. A model of food consumption and production carefully put in place in the 20th century now needs reform. The paper argues that some criteria for sustainable diets are already clear. They need to be low carbon, low in embedded water, biodiversity protecting, nutritious, safe, available and affordable to all; they must also be high quality and culturally appropriate and derived from labour processes which are just and fairly rewarded without dumping external costs elsewhere in the economy.

These criteria are both reasonable and evidence-based. Why then does the pursuit of food systems which deliver sustainable diets meet such strong resistance? The US meat and dairy industry flexed its muscles, for example, throughout 2015 and attacked the proposal from scientific advisors to inject an environmental dimension into the latest mandatory revision of the official Dietary Guidelines for Americans. Such opposition to formalising sustainable diets has been documented elsewhere. Despite this, the paper argues that the UK, like all countries, must clarify what it wants from its food system, and that this cannot duck – indeed has to start from - consumption. A good food system must centre on sustainable diets. Just as the US Government closed down its own scientific communities' call for more coherent, integrated dietary advice, so other forums emerged. In 2016, for instance, The Lancet and the Nordic EAT Forum collaborated to launch the EAT-Lancet Commission on Healthy Diets from Sustainable Food Systems. This reports in draft later in 2017 and finally in early 2018.²

Politicians and food industries alike seem reluctant to engage with consumers about the need to change. Partly this is because they are aware of how radical a departure this is. A tweak or nudge here or there will not alter food's catastrophic impact on health or climate change. And partly this is because politics is currently held back by (naïve neoliberal) consumerist thinking that whatever consumers want must be right. Meanwhile companies are undertaking change by stealth by 'choice-editing' beneath the radar, and then note the fury when consumers detect less content or bumps in favourite chocolates. Reformulation has its limits.

How, the paper asks, can policy be unlocked from this lock-in? A heartening process of democratic experimentation points the way. Countries, cities, localities, sectors are developing new policies, practical initiatives and overt rather than covert choice-editing to reduce the impact of unsustainable diets. Democratic engagement is the key. These attempts need clear new population guidelines to help frame the process. A good diet is not simply a cheap one, nor even a healthy one. Sustainable diets have multiple rather than single criteria. The paper calls this a SDG² strategy: Sustainable Dietary

¹ This paper focuses on the UK, but within a global food system, and its findings and proposals are more widely applicable.

² Rockström, Stordalen & Horton, 2016

Guidelines to deliver on the UN's 2015 Sustainable Development Goals. These are needed at national and local levels, not just internationally. A SDG² strategy would both operationalize current industry thinking such as circular economies and engage with food cultural change. It would genuinely put consumer interests first.

Introduction

There is overwhelming evidence that we consumers in rich societies must change what and how we eat. Our diets distort public health.³ They burden the environment.⁴ They reflect and entrench inter and intra-societal inequalities.⁵ They add huge external costs to the economy.⁶ Unsustainable diets load unnecessary and costly burdens onto us all. They also rob the future. Continued damage from over-consumption today looks set to reduce choices for today's children in their lifespans, let alone future generations. Study after study suggests rich countries such as the UK are over-consuming not just in health terms but in land use, ecosystems services and with regard to climate change.⁷ Food is a major threat to all of these. If countries like the UK continue to eat with such disregard to impact, our consumption patterns will add to dislocation and possibly scarcity. We need new signposts and new aspirations to reshape our food systems and our food choices.⁸

In a food economy which celebrates the unprecedented choice offered by modern societies, many consumers and businesses find the idea of change for sustainability's sake very threatening. For good reason: it is threatening to the status quo, if by that we mean the broadly neo-liberal view that markets are the prime mechanism for resolving society's problems. This neo-liberal perspective is a halter on policy makers – by which we mean not just governments but civil society, industry, science, anyone who shapes the conditions under which the food system currently operates. Decision-makers are reluctant to see change through any lens other than consumer choice. This is folly, not least since it makes more likely that structural change will come from crisis later. Market dynamics have their place but they are not the only form of governance available; nor do they need to be left rudderless. Markets can be reshaped, given moral and environmental direction, in which desirable changes can be charted, negotiated and pursued democratically.

This paper reviews what is meant by sustainable diets, why it is becoming a widely cited policy term, and why it is both useful and challenging. Part of its value is that it focuses more policy attention onto consumption. Over time, as evidence of food system unsustainability has grown, policy makers and many in the food industries and sciences have remained focused on considering changes in how food is produced or processed, but their assumption remains that a good food system is one which continues to pour out food as cheaply as possible. This 'productionist' policy focus has been the default policy position in the UK and rich economies for decades. Although seductively simple – the answer to coming shortage is to produce more - it is dangerously simplistic, indeed

³ Newton, Briggs et al, 2015

⁴ UNEP, Nelleman, et al., 2009

⁵ Fabian Commission, 2015; Lambie-Mumford et al, 2014

⁶ TEEB, 2015

⁷ Springmann et al, 2016

⁸ Mason & Lang, 2017

wrong and wholly inappropriate for the 21st century.⁹ In the 20th century, the successes of productionism largely came from increasing chemical use (particularly artificial fertilisers) and from extending humanity's share of global bio-productivity.¹⁰ The result is that agriculture and land use has been a major driver of biodiversity loss and essential ecosystem depletion. As a result, there is now competition between our demands for food, timber and other essential products and protecting ecosystems on which the planet depends. Transforming the way we use productive land, as suggested by Mark Huxham and colleagues in a previous paper for the Big Ideas project,¹¹ would help ameliorate, but not eliminate these pressures, especially in the face of growing global population. But with healthy diets for all – particularly with lower overall consumption of meat and dairy products - we could free up productive land for other needs, and for other species. At present, the UK's food system is quietly using ever more of other people's land. A recent study showed how UK food is increasingly reliant on external land sources.¹² Another estimated that 85% of the UK's total land footprint is associated with meat and dairy production.¹³

A more sophisticated approach is needed to weld human health and ecosystem sustainability into one framework. Despite hard work at the UN level on the 2015 Sustainable Development Goals,¹⁴ such a framework has yet to emerge at the UK level. England is the problem, with a policy vacuum at the centre, while Wales has its Well-being of Future Generations Act 2015,¹⁵ and Scotland is debating the case for a Good Food Nation Bill.¹⁶ Unless the UK is to break up radically in the Brexit process, these initiatives need a common framework, championed at Westminster. Our food system requires better integration of health and environmental concerns. This is where the pursuit of sustainable diets could be important and must win support from different powerful stakeholders, not just from campaigners and activists. It is an issue genuinely in the public interest. Such 'symbiotic' or 'subversive' policy interventions could deliver both material benefits and help shift values in ways that can be transformative.¹⁷

This ought to be on the policy makers' agenda. But what should they do? Hang out a vague 'wish list'? Wag fingers at rich over-consuming societies? Put 'don't eat too much' on labels? Or be subtle and leave it all to market relations, instantaneous choices at the check-out, micro signals between consumers and retailers which miraculously transform (or fail to transform) the food system? There is currently not enough thought in how to tackle unsustainable consumption except rather trivially. 'Nudge' thinking is probably the

⁹ Lang & Heasman, 2015

¹⁰ Global land use, and chemical cycling are two of the dimensions in which scientists suggest humanity has already exceeded planetary boundaries (Steffen et al, 2015)

¹¹ Huxham et al, 2014

¹² de Ruiter et al, 2016

¹³ de Ruiter et al, 2017

¹⁴ United Nations, 2015

¹⁵ Welsh Government, 2015

¹⁶ Nourish Scotland, 2016

¹⁷ Wright, 2010; McLaren, 2011

only serious offer.¹⁸ This draws on behavioural economics and implies that soft control will suffice. It has been criticised as appealing to ‘below the radar’ thinking which is inappropriate if extensive or systemic change is needed – which is the case for dietary change.¹⁹

I am not alone in being dubious about the scope for market mechanisms alone to shift the food system – production, infrastructure, processing, logistics, retail, food service and consumption - as significantly as the data suggest now needs to happen. Yet, some argue that a tweak here or there is all that is necessary. Eat healthily and the rich world’s environmental food footprint will fall. It does,²⁰ but not enough, as a recent modelling study shows.²¹ Making the UK’s diet meet WHO nutrition guidelines would shave 17% off food related greenhouse gas emissions; useful but far short of the UK’s binding 2008 Climate Change Act commitment to cut overall emissions by 80% from 1990 levels by 2050. Cutting pretty drastically back on animal products within those goals takes the reduction to 40%; useful but still not nearly enough. This is clearly tricky policy territory. There is limited scope for ‘choice-editing’ diet without consumers noticing it. Thus such policies must have sufficient citizens’ support. As a food industry insider said to me a few years ago, recognising this problem, ‘we can shave carbon without consumers noticing so far, but ultimately consumers will have to change.’

Of all the policy packages offered to address the twin problems of continued scarcity in the poor world, and overconsumption in the rich, a ‘contract and converge’ policy approach perhaps offers most potential. In this model proposed in a thoughtful and under-discussed 2012 Royal Society report chaired by Nobel Prize winner Sir John Sulston,²² rich populations eat less but better, while poorer ones eat both more and better. This recognised that the era of ‘ever more consumer choice’ and ‘eat what we like’ is coming to an end, and proposed replacing it with policy frameworks that guide producers and consumers alike towards sustainable diets.

This sounds simple, but is the notion of let alone delivery of sustainable diets too hot to handle? Some think so. I want to argue the opposite. It has become more useful and more discussed precisely because it raises a central question: what is a good diet for the 21st century? It counterbalances the current dominant policy emphasis on raising food output as the best route to a sustainable food future. Moreover, a process of democratic experimentation is underway, suggesting even if some people want to put the lid on discussions, it is too late. As I show below (and at more length in a book co-written with Pamela Mason),²³ some official guidelines have been proposed in some countries, only to be ignored or beaten back in the policy process. This happened here in the UK with

¹⁸ Thaler & Sunstein, 2008

¹⁹ Rayner & Lang, 2009; Mols et al, 2015

²⁰ Sustainable Development Commission, 2009

²¹ Green, Milner, Dangour, 2015

²² Royal Society, 2012

²³ Mason & Lang, 2017

the advice spawned by the Defra Green Food Project.²⁴ Principles for dietary change were spelled out by an expert committee only to be shelved. But the genie is out of the bottle; the evidence and pressure continue to mount. Beyond government, some civil society and academic formulations of what a sustainable diet is or should be have been proposed in the UK and elsewhere.²⁵

This paper argues that these processes of debate and experimentation are actually quite normal. Rarely does progress happen quickly or easily. But a new food policy framework is urgently needed, one which puts consumer change to the fore. This requires multi-sector, multi-level action. There is no 'silver bullet' or quick fix, but it does require governments to face up to their responsibilities and set new sustainable dietary guidelines. These would provide clear advice for consumers, and could catalyse action by producers and retailers. The policy question we need to pose is: what would the food system as a whole look like if it serviced sustainable diets? This cannot be resolved by government alone, any more than we can expect market relations to do so. Nor can individual consumers be held responsible even though each of our tiny choices add to the burden. Many academics, such as myself, are now convinced that a long-term process of systems change needs to begin.

²⁴ Defra, 2012; Defra, 2013; Garnett & Strong, 2015

²⁵ Garnett, 2014; Bartlett & Garnett, 2016

Section 1 - Sustainable diets mean better and smarter consumption

The notion of sustainable diet proposes that a good diet in the 21st century is one which is health-enhancing, has a low environmental impact, is culturally appropriate and economically viable. Applying a variety of indicators – land use, biodiversity loss, water use, climate change gas emissions, health, economic costs, and more - the trends in world diet are not in a sustainable direction. Diets in rich countries like the UK are amongst the least sustainable.

The unsustainability of our diets will not be simply solved by cutting food waste, or eating less meat and dairy – although both are necessary as part of the transition. The sustainability or unsustainability of a diet is a product of everything we all eat. Our health depends on getting an adequate supply of the right mix of nutrients, vitamins and minerals from diet as a whole. The stress our diets put on our environment depends on the implications of everyone's consumption added together. So sustainable diets must be defined on a whole population and whole diet level. Yet they will also need to encompass cultural diversity, so that ethical, religious, ethnic and national differences in diet do not lead to rejection of sustainability.

For the last half century, a gradual process of marketization of the food system has been underway, marking the triumph of neo-liberal thinking, but brilliantly tracked and analysed by a strand of critical social science observing the emergence of this new food system.²⁶ In this unfolding neo-liberal world, a good diet, health and progress was to be provided by investments in technology and science, and the free flow of foods and goods in markets, generating increased surplus, reducing waste, enhancing convenience, expanding choice and lowering prices.²⁷ This has been a remarkably influential policy package in the 20th century. Its negative impacts, however, have created escalating pressures to reconfigure what is meant by a good diet for the 21st century.²⁸

The English word 'sustainable' is a fluid one, yet it captures the new complexity and multiple criteria for what must be delivered by the food system everywhere. Today, this productionist paradigm is in distress; more sophisticated and multi-faceted policy goals are needed. Better and clearer public guidelines are required. Dietary advice can no longer be framed around delivery of nutrient mix and price alone. Methods of production and distribution shape impact; so does what is eaten. Rising consumption of unhealthy meat and dairy and salty, sugary, fatty processed foods typify the challenge of food in an

²⁶ McMichael, 1994; Goodman & Watts, 1997

²⁷ Lang & Heasman, 2015

²⁸ there is a mountainous literature, e.g. Green, Milner, Dangour, 2015; Garnett, 2013; Garnett, 2014; Lang & Barling, 2014; Carlsson-Kanyama & Gonzalez, 2009; Burlingame & Dernini, 2012; Fanzo, Cogill & Mattei, 2012; Macdiarmid, Kyle, Horgan et al 2012; van Dooren, Marinussen, Blonk, Aiking & Vellinga, 2014; Jones Hoey, Blesh et al, 2016; Public Health England & Carbon Trust, 2016

urbanising world of rising incomes. This is the public policy challenge to which the notion of sustainable diet can make a powerful contribution.

Why it is needed

From the 1970s to today, evidence has mounted about modern food systems' impact on the environment, public health and social justice. This evidence of the downside of the much trumpeted success of raised food production did not just suddenly emerge.²⁹ It was the result of decades of change throughout the entire food system, from farming and its inputs to consumer service industries; and these spawned decades of studies which began to document the impact. We should not forget, however, that industrialised agriculture has been very effective in facilitating the production of vast quantities of highly processed foods and the emergence of mass scale food retailers and food service companies. But nor should we be too dazzled by this. It only feeds an estimated 30% of the world's population; the majority of production is in smaller scale peasant or subsistence agriculture feeding much simpler and (it has to be said) restricted diets.³⁰ Indeed, an important argument has been raised by nutritional epidemiologists that the move from restricted and highly localised diets to ones with a wider range of foods was broadly beneficial, but did not stop at that point. Cheaper commodities enabled a transition to diets characterised by 'ultra-processed' foods with cheap nutrient poor profiles.³¹

Fast foods are one outcome of industrialised agriculture, a model of eating associated with 'Western' or affluent lifestyles, but also symbolic of the dietary shift known as the 'nutrition transition'.³² This transition happens when populations change from simpler diets, initially to a better range (because they can afford it), but then to mass consumption of foods high in fats, sugars and salt (because they are ubiquitous and cheap). This new abundance of pre-processed foods has reshaped culinary traditions in older rich societies and is in the process of doing the same in newly affluent middle-income societies today. The result is already deeply troubling: a world with vastly more people overweight and obese (1.5bn) than hungry (0.9bn), and a mismatch of people, physiology, health, and food economy which has created new complex forms of inequality, a mix of over-, mal- and under-consumption. This complex picture and set of criteria is why the term 'sustainable diets' has emerged into the policy lexicon. Sustainable diets must tick multiple boxes, from health to climate change, from land use to nutrient flows, from water availability to affordability, from food security to people's security, and so on.³³ Sustainable diets must be multi-criteria: good quality, healthy, socially appropriate, economically viable and just, environmentally benign, and the

²⁹ Lang & Heasman, 2015

³⁰ ETC, 2009

³¹ Monteiro 2009; Monteiro et al, 2011

³² Popkin, 2009; Popkin, 2002

³³ Millward & Garnett, 2009; McMichael, 2001; Smith, 2012

outcomes of reasoned decision-making. This package is surely not beyond the capacity of humans to achieve.

Old roots, new context

The term sustainable diet has old roots. It dates back in some respects to an element of the questions posed by Malthus in his *Treatise on Populations* of 1798 about carrying capacity, right through to Frances Moore Lappé's 1971 world best-selling *Diet for a Small Planet*.³⁴ But it emerged in the modern meaning in the 1980s,³⁵ and entered serious policy discussion in the 2000s.³⁶ In 2010, the Food and Agriculture Organisation (FAO) and Biodiversity International (part of the UN affiliated CGIAR agricultural research network) saw the need to clarify the agenda. They hosted a large scientific conference which formulated this much cited – if dry - definition:

“Sustainable Diets are those diets with low environmental impacts which contribute to food and nutrition security and to healthy life for present and future generations. Sustainable diets are protective and respectful of biodiversity and ecosystems, culturally acceptable, accessible, economically fair and affordable; nutritionally adequate, safe and healthy; while optimizing natural and human resources.”³⁷

This definition (the production process of which I co-chaired) implies a better alignment of consumption with ecosystems.³⁸ Its creation came after a few years of financial turmoil caused by the 2007-08 commodity price spike when developed economies were destabilised by rocketing oil and food prices.³⁹ Rich world policy makers began to realise that their food systems were fragile.⁴⁰ Tensions began to emerge about the direction food systems might go: more intensive or less? More food or better food? Priorities to national food security or globally? The G8 warned of systemic tensions.⁴¹ For a few years, there was genuine reflection, as many countries conducted reviews.⁴² But by 2010-11, they were once again reluctant to intervene too strongly in consumption. Indeed, a core message from conventional economics for tackling the Great Recession (as the post 2007-08 period became known) was to urge consumers to re-kickstart the business-as-usual economy, nurturing consumer confidence while bailing out the financial system and taking the opportunity to pare back the state. The short-lived interest in rich country consumption faded. The policy focus reverted to production, with

³⁴ Malthus, 1798; Lappé, 1971

³⁵ Gussow & Clancy, 1986; Herrin & Gussow, 1989; Gussow, 1995; Lang, Barling & Caraher, 2009

³⁶ Garnett, 2014; van Dooren, Marinussen, Blonk, Aiking & Vellinga, 2014; Macdiarmid, 2012; Lang & Barling, 2012; Carlsson-Kanyama, 1998; Carlsson-Kanyama et al, 2012

³⁷ Burlingame & Dernini, 2012

³⁸ FAO, 2010

³⁹ OECD, 2009.

⁴⁰ Lang, 2011

⁴¹ G8, 2008; G8, 2009

⁴² eg PMSEIC, 2010 for Australia; Paillard, Treyer & Dorin, 2011 for France;

neo-Malthusian prognoses calling for 'sustainable intensification' and warning of production deficit ahead unless there was a vast investment in new Research and Development and agricultural efficiency. That agriculture and food industries might be better tailored to healthy and low impact diets (particularly lower in resource-intensive meat and dairy) was downplayed.⁴³

Something important was left behind in policy as the tide of interest in sustainable consumption retreated. Farming had crept back up the agenda in the guise of food security. This came despite a gradual erosion of its political leverage over the late 20th century. Food power had left the land. Massive food manufacturers, retailers and food service sectors vied for influence, market share and profits. Yet here were urban and rich world power élites once again recognising that food came from the land and the seas – primary production.

These dynamics are particularly visible in the UK, a country which had been the first to industrialise in the late 18th century, and the first to experiment with sourcing its food not from its own lands but from an Empire, in order to deliver cheap food for the urban mass. This strategy, as is well known, came unstuck in the 20th century through world wars, but the desire for cheapness and a disinterest in the land nevertheless returned in a powerful strand of policy criticism of the European Common Agricultural Policy from the 1980s.⁴⁴

In 2015, UK agriculture contributed only £8.5bn of the gross added value of the £105 bn gross added value across the entire food supply chain, about 8%. Consumers spent £201bn on food and drink that year. Meanwhile manufacturers contributed £26.9bn GVA, fishing and aquaculture a tiny £0.8bn, wholesalers £11.9bn, retailers £30.2bn and caterers £29.1bn.⁴⁵ The sectors closest to consumers make the most. Even in employment terms, farmers and growers are proportionately small. Farming and primary production employs 476,000, fishing a mere 10,000, manufacturing 422,000, wholesalers 225,000, retailing 1,157,000 and catering the most with 1,658,000 employed.

Unsustainable consumption from unsustainable food systems: the problem of scale

We must remember that the current system has delivered on some challenges laid down in the past. It massively increased production post World War 2. At present, there is no world shortage of food, but there is a problem of mal-distribution. There might be a major shortage, however, in a few decades hence if current consumption patterns and climate trends continue.⁴⁶ Large-scale scientific reviews have repeatedly concluded that trends in the food system are unsustainable, whether we look at food through the lens of health

⁴³ Foresight, 2011

⁴⁴ such as the work of Sir Richard Body MP, e.g. Body 1982

⁴⁵ Defra, 2016

⁴⁶ Foresight, 2011

or the environment or socio-economic development or human rights.⁴⁷ Hence the importance of addressing diet. Consumption is the 'pull' in the food system.

Over the last decade what debate there has been about the sustainability of diets has been led from mainly by health and environmental perspectives, but with both operating in silos. Food's health and environmental impacts are connected. The environmentally destructive pressures for overproduction in industrial agriculture are what give the world a surfeit of inappropriately processed, unhealthy diets. The health toll is clear. According to the WHO, worldwide obesity has rocketed since 1980.⁴⁸ By 2008, 35% of adults aged 20 and over (or more than 1.4 billion people) were overweight, and 11% were obese. Over 200 million men and nearly 300 million women were obese. 65% of the world's population lives in countries where overweight and obesity kill more people than underweight. More than 40 million children under the age of five were overweight in 2011.

Health problems from over-, under- and mal-consumption and non-communicable diseases (i.e. those significantly affected by diet), now co-exist even in low income countries.⁴⁹ Rates of death due to non-communicable diseases in sub-Saharan Africa, for instance, are predicted to rise 17% in the next decade.⁵⁰ The most recent global burden of disease review (an approach pioneered by WHO with the World Bank) summarised the effect of mal- and over-consumption as resulting in over 18 million premature deaths annually. These are caused by diverse food-related factors: high blood pressure (9.4 million), high body-mass index (3.4 million), high fasting blood glucose (3.4 million), and high total cholesterol (2.0 million).⁵¹ In the WHO's global assessment of health risks in all income levels of society, diet featured centrally in 10 out of the top 19 factors.⁵² Much of this coincides with the spread of what the Brazilian epidemiologist Carlos Monteiro and colleagues have termed 'ultra-processed' foods and drinks – fatty, salty, sugary.⁵³

The financial cost of this ill-health is immense. A review by Harvard University and the World Economic Forum estimated that over the two decades to 2030 non-communicable diseases would result in a cumulative economic loss of output of US \$30 trillion, with costs growing faster in low income countries of the global South.⁵⁴ As the spiralling costs of health care challenge policy makers and public budgets across the world, sustainable

⁴⁷ Foresight, 2011; PMSEIC, 2010; Paillard, Treyer & Dorin, 2012; Beddington, Asaduzzaman, Clark et al. 2012; Conway, 2012; De Schutter, 2015

⁴⁸ WHO, 2013

⁴⁹ WHO, 2011

⁵⁰ Scott, Ejikeme, Noone, et al, 2013

⁵¹ Moodie, Stuckler, Monteiro et al, 2013

⁵² WHO, 2009

⁵³ Monteiro, 2009; Monteiro, Levy, Claro et al, 2011

⁵⁴ The cumulative figure of \$30 trillion applies to the aggregate losses due to cancer, cardiovascular disease, diabetes and respiratory diseases. It is equivalent to 48% of global GDP in 2010. see: Bloom, Caffiero, Jané-Llopis, et al, 2011.

diets should become an attractive policy fix for the health system, yet so far, resistance to 'interfering in consumption choices' appears immovable. This political block must be faced.

Alongside this human and economic toll, the environmental impact of agriculture is also immense. Globally, agriculture currently contributes around 14% of direct greenhouse gas emissions with methane from livestock accounting for almost 40% of that total.⁵⁵ The food system as a whole – including land-use impacts, manufacture of fertilisers, food processing and distribution etc - is estimated to account for a third⁵⁶ to a half⁵⁷ of all emissions. The drive to produce grains to feed animals as well as humans plays a significant role in the immense impact of modern food systems on biodiversity loss, water use, and land use.⁵⁸ Including wider impacts, meat and dairy production accounts for around 14.5% of global emissions,⁵⁹ or one-third to one half of all food system emissions. The UN Millennium Ecosystem Assessment calculated that, of 24 of the world's ecosystem services, five are already being degraded or used unsustainably, and that food is a major source of this degradation.

Climate change has understandably dominated what discourse there is on food unsustainability but it is not the only environmental threat. Global agriculture consumes 70% of all freshwater extracted for human use;⁶⁰ and intensive livestock production is probably the largest sector-specific source of water pollution.⁶¹ Modern diets consume significant 'hidden' water; for instance, one Netherlands study found 200 litres of water were used to produce a 200 millilitre glass of milk, and 2400 litres of water to produce a 150 gram hamburger.⁶² In the 20th century as a whole, an estimated 75% of the genetic diversity of domestic agricultural crops inherited from the 19th century was lost.⁶³ While nutrition guidelines worldwide encourage the consumption of fish and fish oil, a decade ago FAO had calculated that over half (52%) of global wild fish stocks were already 'fully exploited'.⁶⁵ Overall, food production is a critical factor in pressure on key sustainability measures such as the rate of biodiversity loss, the nitrogen cycle and climate change. In

⁵⁵ FAO, 2014

⁵⁶ Vermeulen, Campbell & Ingram, 2012

⁵⁷ UNCTAD, 2013

⁵⁸ Millennium Ecosystem Assessment, 2005; UNEP, Nelleman, MacDevette, et al, 2009

⁵⁹ Gerber, Steinfeld, Henderson, et al, 2013

⁶⁰ WWF, 2006

⁶¹ UN, 2011

⁶² Chapagain & Hoekstra, 2006

⁶³ FAO, 1995

⁶⁴ At the same time there has been increasing concentration on particular crops. By the end of the 20th century, 12 plant species accounted for 75% of global food supply, and only 15 mammal and bird species accounted for 90% of animal agriculture (Khoury, Bjorkman, Dempewolf, et al. 2014; FAO & Bioversity International, 2010; FAO, 1998)

⁶⁵ FAO, 2007

these areas, researchers calculate that some planetary boundaries have already been exceeded and others are approaching crucial limits.⁶⁶

The problems of this excess and distorting production are exacerbated by food waste. Never has so much food been produced in all human history, yet 220 million tonnes of food is globally wasted each year, equivalent to the total food production of sub-Saharan Africa.⁶⁷ In low-income countries, food waste mainly occurs on or near the farm, while consumers waste very little. In high income countries like the UK, by contrast, consumers waste up to a third of what they buy. In 2015, UK household food waste was 7.3 million tonnes. According to the Waste Resources Action Programme (WRAP), UK household food waste was 960,000 tonnes lower in 2015 compared to 2007, a 12% reduction, but improvement levelled off in 2012-15.⁶⁸

In the European Union, an estimated 89 million tonnes of post-farm-gate food waste was generated in 2006, with a monetary value of about £950 (US\$1,500) per tonne per household.⁶⁹ This is estimated to be growing at around 2.5% per year. Unchecked it will rise to 126 million tonnes by 2020. Cutting waste is one way in which smart sustainable diets can save money for consumers, but making a significant dent in total waste will require re-engineering the food system.

Across the world, growing populations and changing dietary demands which follow from rising incomes exacerbate competing demands on land use for housing, fuel, food, water, wood, and amenities everywhere. The United Nations Environment Programme (UNEP) estimates that, even if more land is made available for food growing, only 0.2 hectares (1,970 m²) of crop-land per person will be available by 2030.⁷⁰ Such figures have fuelled the intense debate about the effect of rising meat and dairy consumption and about the inefficiency of feeding animals approximately half of all cereals grown globally.⁷¹ Globally, 36% of the calories produced by the world's crops are used for animal feed, and only 12% of those feed calories ultimately contribute to the human diet as meat and other animal products.⁷² Eliminating grain-fed livestock production could free up so much productive land for crops that an additional four billion humans could be fed.

In the UK, as was cited earlier, an estimated 85% of usable land is focussed on meat and dairy production.⁷³ We have made animals our competitors. Meat and dairy products

⁶⁶ Rockström, Steffen, Noone, et al, 2009 (a); Rockström, Steffen, Noone, et al, 2009; (b) Steffen, Rockström, et al, 2015

⁶⁷ Gustavsson, Cederberg, Sonnesson, et al, 2011

⁶⁸ WRAP, 2015.

⁶⁹ BIO Intelligence Service, 2010

⁷⁰ UNEP, 2014

⁷¹ Steinfeld, Gerber, Wassenaar, et al, 2006; UNCTAD, 2013; Lymbery & Oakeshott, 2014

⁷² Cassidy, West, Gerber, et al, 2013

⁷³ de Ruiter, Macdiarmid, Matthews, et al, 2015

account for 24% of European consumers' greenhouse gas emissions.⁷⁴ If all livestock management was as efficient as the best – according to the FAO – its environmental impacts could be reduced significantly – cutting greenhouse gas emissions by about a third, for example.⁷⁵ But the FAO also conceded that if global consumption of meat and dairy continue to rise, all those efficiency gains would be neutralised. In short, whether policy makers like it or not, we have to talk about consumption. Burying our heads about sustainable diets is folly.

Policy responses to demands for sustainable diets

So far, this paper has sketched the problems of unsustainable diets. It now turns to explore some of the attempts to sketch sustainable diets and to consider the fissures exposed when policy makers have tried to formalise what they are. At least seven strands of policy response are discernible (summarised in Table 1).⁷⁶

The first has been to question whether this issue can or should be tackled at all. Some say it is too complex. Others are frankly in denial – it's not an issue. Climate change deniers see no problem in food's greenhouse gas emissions. Others downplay the rise of non-communicable diseases as consumers' self-inflicted harm, or not the responsibility of the state anyway. Still others argue that, even if there is a problem, the cost of tackling this all is simply too great,⁷⁷ that technology will offer solutions, or that this is nobody's responsibility but the consumer's. This category is the Old Guard in policy circles. We ignore it at our collective peril.

The second has been to see this as interesting but not the priority for food policy makers whose main task should be preventing and resolving hunger. This position sees sustainable diets as a deviation from the true path of late 20th century food policy: to feed the poor. Adherents are mindful that it could even be a figleaf for rich society protectionism. 'Here we are spreading Western diets and choice to the world, and suddenly this new elite view emerges which says: don't eat as we have done'. The motives here are ostensibly honourable; the priority of development, it is argued, is surely to feed the hungry, and to do this with urgency, whether by raising incomes or applying technical fixes. This is a policy insiders' position. 'We note your concern, but it's not our priority.' They do not necessarily oppose the juxtaposition of health and environment as a food policy. It's just that there are other priorities; hunger eradication is the most frequently cited counter.

The third position takes a different tack. This puts responsibility onto consumers, by promising (if not fully providing) tools for change within the market model such as food labelling. It argues that there is no need for regulation; soft policy measures such as information and labelling will be sufficient to make consumers responsible. In 2007, for

⁷⁴ Tukker, Bausch-Golbohm, Verhijden, et al, 2009; Tukker, Huppes, Guinée, et al, 2006

⁷⁵ Gerber, Steinfeld, Henderson, et al, 2013

⁷⁶ These are discussed at length in Mason & Lang, 2017

⁷⁷ Dietz & Stern, 2008

instance, the Carbon Trust, a UK government body set up to champion carbon reduction experimented with snack manufacturers Walkers (part of Pepsico) and put a carbon label onto some products; others followed. The scheme met fierce criticism and Tesco, for one, withdrew in 2012.⁷⁸ From a sustainable diet perspective, the carbon labelling experience is interesting. On the one hand, it showed the limitations of labelling; no significant consumer behaviour change followed; the British continued to munch crisps. On the other hand, it persuaded companies to audit their own carbon footprints.⁷⁹ Could a labelling system cover everything needed with regard to sustainability? Only if it was huge and complex,⁸⁰ or backed by a powerful auditing scheme, probably national or even international, something like the Nordic keyhole scheme, a national logo to signify sustainability. But this still misses the point of sustainable diets. It is not so much a matter of individual products as about the impact of the whole diet. Logos and labels are not the way to go, or certainly not if they were to be the only or leading policy lever.

The fourth response is to apply 'choice editing' below the consumer radar. Choice editing constrains the range of choices on the shelves or the manufacturer reformulates the ingredients. It gives the consumer no option to reverse how the choice is structured other than to purchase elsewhere.⁸¹ In practice this means change is led by food companies and advisors who are concerned about aspects of sustainability. It is hidden control, a strategy which can backfire, as it doesn't shift or speak to citizen values, only consumer behaviours. As one recent study of choice-editing in fish concluded, it's unlikely to be used when a company sees no added brand value from doing so.⁸² In extreme models, reformulation implies technological fixes such as genetic modification of the foodstuff to alter its health or environmental impacts (see Box *Food Technology: Saviour or Threat?*). Overall, choice editing and product reformulation can be changed without consent, without tackling or engaging consumer consciousness and choice. It can be effective in changing what is consumed, but it does not challenge consumption *per se*. People can continue to eat too much of a 'sustainable' product and their diets as a whole can continue to be unsustainable.

The fifth response is to focus on one topic or 'magic bullet'. This is a reductionist approach but it has in part been encouraged by some arguments within the sustainable diet discourse. Two hotspots have dominated attention: meat and dairy, and food waste. Data making the case for rich societies to reduce their meat and dairy consumption is strong,⁸³ but meets fierce farmer and meat trade opposition. It is also unlikely to convince those on fashionable meat-rich paleo diets, for instance. On the other hand,

⁷⁸ Quinn, 2012

⁷⁹ Carbon Trust, 2007; Carbon Trust, 2008; Carbon Trust & Coca-Cola, 2012

⁸⁰ Practically, if there were to be labels for all the issues requiring consumer action, firstly all foods would have to be packaged to carry the labels (and almost certainly meet opposition from brand owners, let alone meet the need to cut packaging waste, or big investment in information flows would be necessary, and shopping would become nirvana for app-fiends.

⁸¹ National Consumer Council & SDC, 2006

⁸² Gunn & Mont, 2014

⁸³ Audsley, Brander, Chatterton, et al, 2012

there are also strong ethical arguments for eliminating or reducing livestock production. For some consumers ethical or religious arguments for animal welfare are more significant than concerns over the environment or even health.

A fashionable way to make sustainable diets more palatable to policy makers – and consumers – is to align them with the contemporary vogue for ‘smart innovation’: using technology to help meet social goals in ways that enhance economic productivity. This has some potential. Sustainable diets are smart in many ways. They constitute smart thinking for health, smart thinking for the planet, and the chance to make smart - appropriate and effective - use of both new technology and indigenous and cultural knowledge. That means using new technologies where they contribute to the goals and support the behaviour changes needed, so that smart sustainable diets would also be affordable and convenient.⁸⁴ But we should be cautious about allowing technology to dominate thinking about dietary change. Sustainability requires social and cultural engagement, not passivity on those fronts.

Public health nutrition suggests our aim should be to reduce the amount of meat; to take it from the centre of the plate to its edge or, Chinese style, as flavouring and in slivers. In many cultures levels of meat consumption are already sustainable, although high meat eating cultures would have to cut back considerably. The global average of 100g per person per day disguises a ten-fold variation between high-consuming and low-consuming populations.⁸⁵ A European Union level study estimated that halving the consumption of meat, dairy products and eggs would achieve a 40% reduction in EU nitrogen emissions, 25–40% reduction in greenhouse gas emissions and 23% per capita less use of cropland for food production, and at the same time reduce health risks.⁸⁶ The environmental arguments don’t necessarily advocate vegetarian or vegan diets, however: meat from land which otherwise cannot yield food – highlands, wetlands, marsh – may actually be ecologically efficient. Grass-fed meat is generally better in ecological, health and animal welfare terms, as long as consumers are prepared to pay the higher prices involved.⁸⁷ New approaches utilising novel technologies to produce healthier and more sustainable meat substitutes might also help here in weaning consumers off high-meat, high fat diets (see Box: *Food Technology: Saviour or Threat?*).

Cutting food waste is another ‘single issue’ with wider as well as policy maker appeal.⁸⁸ Yet there are important tensions about why there is waste and how to tackle it. Some waste campaigners see waste as systemic and as a case where rich consumers need to

⁸⁴ Research into ‘sustainable consumption’ suggests that public concerns for ‘sustainability’ and ‘health’ are typically only, or more strongly expressed once more ‘conventional’ qualities of ‘cost’ and ‘convenience’ are in place (eg Radjou and Prabhu, 2015).

⁸⁵ McMichael, Woodruff & Hales, 2006

⁸⁶ Westhoek, Lesschen, Rood, et al, 2014

⁸⁷ Of course, some grassland might be more valuable converted to cropping, or reverting to forest.

⁸⁸ House of Lords EU Committee, 2014; Lipinski, Hanson, Lomax, et al, 2013; Stuart, 2009; European Commission, DG Environment, et al, 2010

eat differently.⁸⁹ Others see it as an opportunity for engineering and managerial interventions to create new standards of technical efficiency.⁹⁰ Others see waste merely as an opportunity to generate biogas and to recycle.⁹¹ The analysis varies, although the term waste is common. In fact, it is all of these, and more. Policy appetites are whetting by estimates that reducing consumer food waste globally could save \$300 billion yearly by 2030.⁹² In the UK, WRAP was established in 2000 to deliver reductions in food waste.⁹³ The combination of WRAP's three 'Courtauld' partnership agreements with industry and its high profile public-facing *Love Food Hate Waste* campaign reputedly halved UK food waste between 2009 and 2014 to 4.4 million tonnes. The UK is still wasting around 15% of total edible food and drink purchases, valued at £480 per year per household.

The sixth policy response is an appeal not to dilute the health message with environmental concerns and to remain focussed on health because that yields what's needed. This is a subtle position. It does not downplay the environment; rather it suggests that broadly, if consumers in developed world were to follow current official health advice, the food system's environmental impact would fall; on this, there is sound evidence.^{94 95} But taken alone this falls short of the environmental improvements needed. Moreover it misses the significance of the changing cultural consumption norms that have fuelled the nutrition transition and its diet-related burden of ill-health: eating frequent snacks not meals, switching from water or infusions to sugary soft drinks, and so on. Those cultural drivers of unsustainable consumption remain. In addition, although this policy position has some resonance for high income societies it has less relevance for low or middle income countries or even for low income consumers in wealthy countries. Everything is reduced to health.

The seventh and final approach to sustainable diets has been to take them seriously, to model them and to explore how their pursuit is a useful policy goal both for consumers and to send different signals through the food supply chain.⁹⁶ Sustainable diets clarify the need for redesign of food systems, land use and production, but do not spurn the prospects of technological progress (see Box).

Table 1 summarises the seven broad responses. The next section charts different attempts to identify and promulgate sustainable dietary advice.

⁸⁹ Stuart, 2009

⁹⁰ Institute of Mechanical Engineers, 2013

⁹¹ Defra, 2013

⁹² Global Commission on Economy and Climate, 2015

⁹³ WRAP, 2008

⁹⁴ Carlsson-Kanyama, Ekström & Shanahan, 2003; Sustainable Development Commission, 2009; Green, Milner, Dangour, et al, 2015

⁹⁵ van Dooren, Marinussen, Blonk et al, 2014.

⁹⁶ Carlsson-Kanyama, 1998; Carlsson-Kanyama, Ekström & Shanahan, 2003; Carlsson-Kanyama & Gonzalez, 2009; Smith, Haberl, Popp, et al, 2013; Blake, 2014; US Dietary Guidelines Advisory Committee, 2015.

Food Technology: Saviour or Threat?

Technological innovation in food and agriculture has historically been directed mainly in the service of productionism, with fertilisers, pesticides, equipment and plant-breeding harnessed to the end of increasing yields, and reducing crop losses and waste in harvest and distribution. The benefits have been significant, although some unexpected or unintended consequences – such as the impacts of pesticides on birds, and pollinators; or where irrigation triggered salinization - have required dramatic changes in practice, and the industry's record for targeting innovations such as GM in line with public interests rather than commercial ones is poor. This history suggests that 'responsible innovation'⁹⁷ - which both attempts to foresee potential problems and misapplications, and seeks to engage the public to help understand how the new technology might be perceived, developed and used in practice - is needed in this sector too.

There is a wide range of existing and emerging technological innovations which could be applied in the service of sustainable diets. From better preservation of foods to reduce waste – most imaginatively in the form of feedstock for 3-D printers⁹⁸ - to advanced plant-breeding to reduce waste or improved nutritional qualities of foodstuffs (such as soy oil low in trans-fats, or rice fortified with beta-carotene), the potential is considerable. But a key factor is what frames the problem for which the technology is the answer?

An illustration of how a narrow pursuit of technical fixes might not help the unsustainability of diets is what is happening in the high impact issue of meat and dairy. Novel food processing techniques are being used by companies such as Plenti and Beyond Meat to manufacture 'high moisture meat analogues' from plant protein.⁹⁹ Others focus on algae, fungal mycoprotein, or insects to produce alternatives to meat and dairy produce: Muufri and Solarzyme, for example are using synthetic biology techniques to produce vegan 'cheese' and algal 'butter'.¹⁰⁰ And even lab-grown meat is no longer science fiction, although currently prohibitively expensive.¹⁰¹

All such designer foods offer significant scope for nutritional benefits, as well as enabling reduced environmental impacts. At the same time they hand greater control over the food chain to commercial interests and potentially introduce new and unknown risks to the food system. Delivering benefits for sustainable diets through technology will require a sound ethical approach, the right policy context, careful regulation, and public support – all of which could prove challenging in many parts of the world. Above all, the development of substitute analogy foods does little to alter the cultural demand. It's a bit like seeing the solution to excess sugar consumption by simply selling more artificially sweetened colas. The 'sweet tooth' remains in place. Indeed, a product grown on the land (sugar) is replace by an industrially contained product. This may offer rich pickings to industrial capital but should not be confused with the transition to an ecologically sound consumption pattern.

⁹⁷ Owen, Bessant, Heintz, 2013

⁹⁸ McEachran, 2014

⁹⁹ Zorpette, 2013

¹⁰⁰ Garthwaite, 2014

¹⁰¹ McEachran, 2014

Table 1 Seven broad policy responses to dietary (un)sustainability

<i>Policy position</i>	<i>How it manifests</i>	<i>Example(s)</i>	<i>Rationale</i>	<i>Comment</i>
There is no problem (or if there is, it's 'not your business')	Marginalisation of the agenda associated with sustainable diets	Downplay food and climate change; or stress the costs of action	This is progress; broadly neo-liberal trust in market dynamics	Business-as-usual. This is tantamount to 'this is none of your business'
This is a rich society problem	A persistent focus on under-consumption / hunger	The focus is on hunger; down-playing complex health and environmental implications	Retain western model of eating as the ideal; choice, if one has little, would be progress	Ignores growing evidence of nutrition transition and food-related environmental problems in global South
It is a consumer responsibility	If consumers are to make informed choices, they need help	UK carbon labelling of selected food products	Consumer choice depends on education; self-interest	This assumes food markets work with maximum flow of full information
Choice-editing	Product reformulation; new supply chain efficiency goals	Smaller product size to cut carbon, packaging or calories	Corporate responsibility	Brand protection; prevention of future litigation; 'below the radar' actions
Focus on high risk issues / hotspots	Particular issues are championed as 'the key'	Cut waste, or reduce/contain meat & dairy consumption	Data on impact is strong whether measured by science or finance	This is critical control point thinking borrowed from HACCP in food safety. It misses the systemic nature of the challenge
Stick to the health message	Follow health advice and the environmental will fall	Reduce meat and dairy	There is no need to confuse signals to consumers with environmental or cultural norms	It ignores the cultural dimension of food. It also assumes consumers are driven by health
Sustainable diets	National guidelines	National eg Sweden (2011), Germany (2013); intergovernmental eg Nordic Council (2012)	Food citizenship should replace consumerism	Has cost implications; requires changed policy frameworks beyond diet, too

Section 2 - Democratic experimentation for sustainable diets

Dietary guidelines are a standard policy device supported by health ministries across the world and by the UN system. They give evidence-based population level advice, and provide useful benchmarks against which to judge national consumption patterns. Most countries provide dietary guidelines in terms of nutrient intake, but they are also increasingly produced as food-based dietary guidelines (FBDGs). These were recommended by the UN's WHO and FAO in 1992,¹⁰² and a formal Scientific Opinion was given by the European Food Safety Authority in 2002.¹⁰³ Many countries have plates, pyramids or other simplified guidance based on their scientific review bodies' recommendations.¹⁰⁴ FBDGs send signals to supply chains, as well as being the basis for public advice. The call to create Sustainable Dietary Guidelines (SDGs) in effect is a call to modernise FBDGs by integrating health and environmental evidence to reduce confusion for consumers and supply chain alike. This is good governance.

In the 2000s, responding to the evidence about food's impact on the environment, some countries and other policy actors began to produce sustainable dietary advice. At last the policy space began to be occupied. Table 2 provides examples of some official advice from six government bodies: Sweden, Germany, Netherlands, UK, Brazil and Qatar.

The Swedish 2008 inter-agency advice was the first in-depth position given by any country.¹⁰⁵ ¹⁰⁶ Subsequently a 'thinner' more general guidance was given, replacing this science-based first document (on which more, below). Germany's is provided in its Council for Sustainable Development (CSD) 2014 advice to shoppers.¹⁰⁷ Not given in great detail, it was nonetheless important for being clear in appealing to consumers to shop differently and more responsibly. It is specific: buy organic, choose Marine Stewardship Council approved fish, etc. It endorses logos. The CSD advice has also noticeably hardened and deepened since its first formulation in 2003.¹⁰⁸ The Netherlands' advice comes from its National Nutrition Council, the key science body. It is simple and stark: cut waste and snacks, eat less but better and choose sustainable fish.

The UK explored the potential of principles for consumption. An initiative was proposed by the Green Food Project - a stakeholder group created by the Department for

¹⁰² WHO & FAO, 1998

¹⁰³ EFSA, 2002

¹⁰⁴ WHO & FAO, 1998

¹⁰⁵ National Food Administration & Environment Agency, 2008

¹⁰⁶ Although the advice was officially withdrawn over a procedural issue - said by some to be triggered by US meat industry pressure, but officially cited as infringing the EU's free movement of foods by recommending to eat locally and seasonally where possible (Lang, 2012; Boyle 2012) - Sweden has tacitly retained its position.

¹⁰⁷ German Council for Sustainable Development (RNE), 2014

¹⁰⁸ German Council for Sustainable Development (RNE), 2003

Environment, Food and Rural Affairs (Defra) under the Coalition Government reporting in 2013. A follow up process agreed some useful principles for sustainable and healthy diets. Defra was sadly reluctant to publish this document, and it was ultimately published by the Food Security champion.¹⁰⁹ There has been a sad lack of interest in either disseminating or pursuing them by the current Government, although the concern about childhood obesity and sugar could be a policy opportunity to make amends. The Brazilian government's advice is the most recent of those given in Table 2 and had a strong focus on cultural appeal to consumers. Urging Brazilians, a people in the midst of the nutrition transition,¹¹⁰ to eat fresh and simply, and to avoid unnecessarily processed foods. Its warnings about advertised foods and fast foods are particularly noteworthy. The Diet Guidelines of Qatar's Supreme Council of Health are also of great interest. Coming from a country with serious burdens on both health and environmental fronts, this is a bold step to recognise that new direction is needed. Like the Brazilian advice, the evidence base was developed within the state, and the advice given in both scientific and cultural 'everyday' terms.

Table 3 gives the original table of policy advice from the UK's Sustainable Development Commission 2009 report, based on work done by Oxford University's Department of Public Health. This sparked the first bout of policy engagement within the British state, and initiated the project to provide an integrated platform of advice for consumers, through the Food Standards Agency. This work was stopped by the Coalition Government in 2010. The Sustainable Development Commission was also abolished in 2011 under the 'bonfire' of quangos.¹¹¹

¹⁰⁹ Garnett & Strong, 2015

¹¹⁰ Monteiro, Levy, Claro, et al, 2011

¹¹¹ 'quango' = quasi-autonomous non-governmental organisation

Table 2 Six examples of government recommendations on sustainable dietary advice

Source/ country	Environmentally effective food choices (Sweden) ¹¹²	Sustainable Shopping Basket (Germany) ¹¹³	Guidelines for a healthy diet: the ecological perspective (Netherlands) ¹¹⁴	UK Green Food Project, 8 principles ¹¹⁵	Brazilian Food Based Dietary Guidelines ¹¹⁶	Qatar National Dietary Guidelines ¹¹⁷
Date	2009	1990s →2013 (4 th edition)	2011	2013	2014	2014
Lead Body	National Food Administration & Environmental Protection Agency	German Council for Sustainable Development	Health Council of the Netherlands	UK Government working party	Ministry of Health. Brazil	Supreme Council of Health, Health Promotion and Non- Communicable Diseases
Prime concerns	Pro health and environment to reduce climate change and promote non-toxic environment	To integrate advice from many sources for daily food shopping	Linking gains in public health nutrition to lower ecological impact	To combine health and environmental advice	To promote public health; and to realign health and food culture	To integrate principles of sustainability into the Qatar Dietary guidelines

¹¹² National Food Administration & Environment Agency, 2008

¹¹³ German Council for Sustainable Development (RNE), 2014

¹¹⁴ Health Council of the Netherlands, 2011

¹¹⁵ Defra, 2012, Garnett & Strong, 2015

¹¹⁶ Ministry of Health (Brazil), 2014

¹¹⁷ Qatar Supreme Council of Health, 2014; Seed B, 2014

Actual Advice	Eat less meat. Replace it with vegetarian meals; choose local meats or organic if available	Follow the food pyramid	Move to a less animal-based, more plant-based diet – this is the key advice	Eat a varied balanced diet to maintain a healthy body weight	1. Prepare meals from staple and fresh foods	1. Emphasize a plant-based diet, including vegetables, fruit, whole grain cereal, legumes
	Eat fish 2-3 times a week from sustainable sources	Eat less meat and fish but savour them	Lower energy intake, and eat fewer snacks	Eat more plant based foods, including at least five portions of fruit and vegetables per day.	2. Use oils, fats, sugar and salt in moderation.	2. Reduce leftovers and waste
	Eat Fruit, vegetables, berries: a good rule of thumb is to choose seasonal, local and preferably organic products	Follow 5-a-day on fruit and vegetables	Eat two portions of fish a week but from sustainable sources	Value your food. Ask about where it comes from and how it is produced. Don't waste it.	3. Limit consumption of ready-to-consume food and drink products	3. When available, consume locally and regionally produced foods
	Choose locally grown potatoes and cereals rather than rice	Eat seasonally and regionally as your first choice	Reduce food waste	Moderate your meat consumption, and enjoy more peas, beans, nuts, and other sources of protein.	4. Eat regular meals, paying attention, and in appropriate environments	4. Choose fresh, home-made foods over highly processed foods and fast foods
	Choose pesticide-free or organic when possible	Eat organic products		Choose fish sourced from sustainable stocks. Seasonality and capture methods are important here too.	5. Eat in company whenever possible.	5. Conserve water in food preparation
	Choose rapeseed oil rather than palm oil fats	Choose fair trade products		Include milk and dairy products in your diet or seek out plant based alternatives, including those that are fortified with additional	6. Buy food at places that offer varieties of fresh foods. Avoid those that mainly sell products	6. Follow the recommendations of the Qatar Dietary Guidelines

				vitamins and minerals	ready for consumption.	
	Eat fish 2-3 times a week from sustainable sources	Choose drinks in recyclable packaging		Drink tap water	7. Develop, practice, share and enjoy your skills in food preparation and cooking.	
	Eat Fruit, vegetables, berries: a good rule of thumb is to choose seasonal, local and preferably organic products	Use designated certification schemes (many are cited in the document)		Eat fewer foods high in fat, sugar and salt	8. Plan your time to give meals and eating proper time and space.	
	Choose locally grown potatoes and cereals rather than rice				9. When you eat out, choose restaurants that serve freshly made dishes and meals. Avoid fast food chains.	
					10. Be critical of the commercial advertisement of food products.	

Source: Mason & Lang, 2017

Table 3: The UK Sustainable Development Commission’s ‘Setting the Table’ advice

<i>Changes with significant and immediate impact, where health, environmental, economic and social impacts are more likely to complement each other</i>	<i>Changes likely to have a significant positive sustainability impact, but where gains in one area might have a more negative impact in other areas</i>	<i>Changes which will make a smaller contribution to making our diets sustainable, with largely complementary effects across key areas</i>
Reducing consumption of meat and dairy products	Increasing consumption of fruit and vegetables, particularly seasonal and field grown	Reducing energy input by shopping on foot or over the internet, and cooking and storing food in energy conserving ways
Reducing consumption of food and drink of low nutritional value (i.e. fatty and sugary foods)	Consuming only fish from sustainable stocks	Drinking tap water instead of bottled water
Reducing food waste	Increasing consumption of foods produced with respect for wildlife and the environment e.g. organic food.	

Source: SDC, 2009 ¹¹⁸

The scientists who develop dietary guidelines for their countries (or sectors) do not assume consumers immediately leap to attention to follow such nutrition advice! Experience suggests otherwise. Guidelines do, however, offer notional ‘directions of travel’ for the food system, and provide useful evidence-based yardsticks by which progress can be measured. Food companies can be held to account for their contribution. Audits can be conducted of how their products sit in relation to the ideal. One can, for example, identify how advertising spend is mostly way off track. Companies spend fortunes on marketing and advertising enticing consumers to drink sugary drinks and consume confectionary or ultra-processed foods.¹¹⁹ In many countries, cultural norms for food behaviour have been eroded, mixed up and made more flexible. Guidelines offer better norms.

¹¹⁸ Sustainable Development Commission, 2009

¹¹⁹ Public figures on food advertising spend are hard to get but most suggest £0.5 bn - £0.7 bn per year.

In the currently messy world of food, for sustainable dietary guidelines to work, governments would need to help consumers join up the dots. The UK has commitments under the Climate Change Act which could easily be linked to diet but they are not. For the UK to shift its diet in a more sustainable direction, Government would also have to be prepared to use a full range of methods and policy instruments. Guidelines would be a waste of time, unless backed up. They really must get a grip on commercial marketing, for example.¹²⁰ The claim that companies are resistant is a bit thin; many actually would accept or even want new frameworks, regulation and consumer guidance, as long as they can operate on the beloved 'level playing field'. Indeed, there are role models for more sustainable companies collaborating with consumers and regulators to enable systemic change.¹²¹

What should a government or other body charged with helping shift the UK towards more sustainable diets do? Much depends on what is meant by 'sustainable'. The Sustainable Development Commission's *Setting the Table* report (Table 3) went beyond the famous Brundtland triple emphasis on economy, society and environment; instead, it suggested a six heading approach for sustainability, arguing that this was more appropriate for food matters. This grouped behaviour changes according to their potential scale of impact.¹²² The SDC, abolished in 2011, used these findings to convince the then Government that the UK's food policy ought to include sustainable diets as a key goal. To its credit, the then Government agreed, and the goal of achieving sustainable diets was written into the *Food 2030* strategy document published in January 2010.¹²³ Alas, the Coalition Government elected in May that year shelved *Food 2030*, but a year later, Defra created the Green Food Project,¹²⁴ only, as was noted above, to distance itself from those recommendations too. The Principles from the Green Food Project (see Table 2) were belatedly published on the website of the Global Food Security champion.¹²⁵

Addressing and harnessing the cultural dimension

Few people set out to eat food carrying a copy of their national dietary guidelines. They are unlikely to do so for sustainable dietary guidelines, either. The most innovative and potentially powerful guidelines are surely those which link health and environment to cultural norms. One of the strengths of the former SDC's six headings approach to sustainable food was that it designated two of the six to cover Quality and Socio-cultural

¹²⁰ In a companion think-piece in the 'Big Ideas' series, Victoria Hurth and colleagues discuss the scope for a paradigm shift in marketing which shifts corporate marketing to an approach of 'guide and co-create' in which sustainability informs both the practice and goals of marketing (Hurth et al, 2015).

¹²¹ Hurth, Peck, Jackman & Wensing, 2014; Radjou & Prabhu, 2015

¹²² Sustainable Development Commission, 2009

¹²³ Defra, 2010

¹²⁴ Defra, 2012

¹²⁵ Garnett & Strong, 2015

aspects of food. Dietary choices reflect people's tastes and culture often more than health. The Brazilian scientists charged with revising their most recent national dietary guidelines took this into account when framing their approach (see Table 2). They also took account of diet's environmental impact, although this was not the lead feature of the public messages that the scientific committee produced. Instead, culture was the main message, appealing to familiarity, tradition, family, local tastes. The Brazilian report was shaped by an exhaustive national consultation which saw requests to advocate social rather than individualised (and all-day) eating, the sharing of cooking skills, and giving adequate time to eating.

One of the most heartening features of the contemporary international debate about sustainable diets is how a process of experimentation is emerging. All over the world, groups, scientific bodies, communities are offering their versions of the ideal. I welcome this, while being aware that at some point, coherence and consistency of message and data must surely be applied. Table 4 provides some examples of academic bodies appealing to consumers to adopt sustainable diets in line with cultural understandings. The Nordic Diet has been particularly effective in its societal positioning. It was created in a collaboration of academics and chefs in Copenhagen.¹²⁶ It has become a significant cultural meme not just in Denmark but in the Nordic countries, influencing, for example the 2014 Nordic Council of Ministers' Nutrition Advice, which integrated not only health and environmental concerns in sustainability, but the importance of physical activity alongside diet.¹²⁷ The Barsac Declaration given in Table 4 is interesting as it originated with nine research groups uniting out of concern about the nitrogen cycle – not the usual concern of environmentally conscious consumers.¹²⁸ But these scientists are correct in their concerns; the nitrogen cycle is one of the planetary boundaries being surpassed, according to the much-cited work by Rockström, Steffen and colleagues co-ordinated by the Stockholm Resilience Centre.¹²⁹ The Barsac Declaration scientists recognised the importance of eating out, calling on social gatherings always to offer clear categories of choice: including 'demitarian' (half the 'normal' meat), vegetarian, and vegan. That scientists working on nitrogen should do this is significant. Here were scientists saying 'enough is enough', seeing the case for proffering cultural advice to tackle the problem they research.

We at the Centre for Food Policy also entered the fray with our eco-nutrition tips, which were a deliberate attempt in the 2000s to formulate new cultural norms suitable to the 21st Century. First presented at an academic conference in Australia, they sparked furious debate! Some argued that these were the kind of everyday formulation much needed, whereas others feared they would undermine the integrity of public health nutrition. If Westerners followed health guidelines, indeed, their greenhouse gas emissions would fall; so would their land use. But why restrict the case for dietary

¹²⁶ OPUS, 2009.

¹²⁷ Nordic Council of Ministers, 2014

¹²⁸ Barsac Declaration Group, 2009

¹²⁹ Rockström, Steffen, et al, 2009; Steffen, Richardson, Rockström, et al, 2015

change to health if there are other bodies of knowledge, other data and other arguments for doing so?

Policy makers' good intentions can easily fail to engage with the realities of consumers' lives. A 2013 Australian study, for instance, reminds us how diets are determined more by household budget and family nourishment practices (with items such as processed foods chosen for their convenience and appeal to children) rather than nutrition and sustainability.¹³⁰ If the evidence suggests many reasons for dietary change, why restrict our avenues for influence? Cultural messages can reach further than nutritionists or environmentalists typically do. It's why advertisers trade on emotions not just 'facts' about their wares.

Lacking the deep pockets of the food industry to shape food culture, civil society activists have to be more resourceful. There is room, surely, for innovation in collaborative consumption such as promoting food sharing in every way imaginable - from pop-up restaurants and supper clubs, to providing dinners for elderly neighbours and sharing left-over food - and of course also sharing gardens and kitchens?¹³¹ Why shouldn't we harness the enthusiasm of consumers for exploring and celebrating different ethnic and national food cultures alongside our calls for more social eating? Why not recognise the power of counter-cultures to shift values in diets as they do in arts and music? For young people the frissons of freeganism, skipping and dumpster-diving are perhaps better placed to challenge the McDonaldisation of diets than academic nutritionists – not that their interests need to be antithetical. There is no reason why freegan diets cannot be sustainable in health terms as well as in terms of waste reduction. There is so much unexplored potential to promote sustainable diets that are not just environmentally sound but socially and culturally inclusive – unlike all too many middle-class farmers markets and local food projects.¹³² Such novel sustainable diet and food sharing projects are perhaps best promoted at the city scale, as we shall see in the next section.

¹³⁰ Dixon & Isaacs, 2013

¹³¹ McLaren & Agyeman, 2015

¹³² Alkon & Agyeman, 2011

Table 4: Some cultural ‘principles’ from academics for sustainable eating compared

Source/ country	New Nordic Diet’s 10 principles ¹³³	Barsac Declaration: Principles ¹³⁴	Centre for Food Policy Tips for Eco-Nutrition ¹³⁵
Date	<i>2010</i>	<i>2009</i>	<i>2007</i>
Lead Body	<i>University of Copenhagen project</i>	<i>9 Research Groups of scientists</i>	<i>Centre for Food Policy discussions</i> ¹³⁶
Prime concerns	<i>To combine health and environmental advice</i>	<i>To reduce nitrogen emissions</i> ¹³⁷	<i>To formulate new 21st Century cultural ‘rules’ (norms)</i>
Actual Advice	More fruit and vegetables every day (berries, cabbages, root veg, legumes, potatoes & herbs)	Encourage the availability of reduced portion sizes of meat and animal products, compared to local norms	Eat a plant-based diet, eat flesh sparingly, if at all
	More whole grain, especially oats, rye and barley	Eat ‘demitarian’ meals containing half the amount of meat or fish compared with the normal local amount	Eat simply as a norm and eat feasts as celebrations i.e. exceptionally
	More food from the seas and lakes	Eat a correspondingly larger amount of other food products	Drink water not soft drinks; if you drink alcohol, use it moderately
	Higher-quality meat, but less of it	In social situations (eg public eating or conferences) always	Celebrate and eat biodiversity (from inside the field to your plate)

¹³³ OPUS, 2009

¹³⁴ Barsac Declaration Group, 2009

¹³⁵ Defra, 2013

¹³⁶ Lang & Heasman, 2015; Rayner & Lang, 2012

¹³⁷ Sutton, Howard, Erisman, et al, 2011

		offer 'demitarian', vegetarian and vegan alternatives	
	More food from wild landscapes	Ensure clear labelling of menu options, especially in buffet meals	Eat locally where possible to support local suppliers and resilience
	Organic produce whenever possible		Eat seasonally if possible to keep embedded energy in the food low
	Avoid food additives		Choose your diet carefully and beware of hidden ingredients in food, especially salt and sugars
	More meals based on seasonal produce		Eat equitably: (a) Eat no more than you expend in energy; (b) build exercise into your daily life
	More home-cooked food		Eat less but better: Go for quality, not quantity; be prepared to pay the full (sometimes hidden) costs of producing and transporting the food
	Less waste		Enjoy Food ... in the short-term but think about its impact long-term

The actors

Collectively, the examples given in the text and tables above suggest the emergence of what I term ‘democratic experimentalism’ about Sustainable Dietary Guidelines. They indicate the beginnings of policy engagement with what could ultimately (but do not currently) replace FBDGs as they have been developed by governments since 1992. Who are the actors in this democratic process? At least five sources of input are identifiable so far. These range from *informal* private attempts to articulate new ‘cultural rules’ or principles, to *semi-formal* nutrition guidelines with the weight and approval of official processes and *formal* such as Sweden’s in 2008. The actors include:

- Activists. Arguably this was the first type of public sustainable dietary advice. The 1971 *Diet for a Small Planet* is nearly half a century old, but good for all that.¹³⁸ Newer articulation of dietary norms or ‘rules’ might include those of the Vancouver 100 Mile Diet from British Columbia,¹³⁹ or the Fife Diet in Scotland, developed by a group of households who from 2007 committed to eat 80% of their diet from food grown in Fife, their county.¹⁴⁰ Many are localist or bio-regionalists and locavores, putting a premium on plant-based locally sourced food, such as the Food Assembly, a cross between farmers’ markets and buying groups, an idea spawned in France,¹⁴¹ or Hackney Growing Communities.¹⁴² Others are more focussed on meat reduction and eating better.¹⁴³ While early local food projects often overlooked cultural and ethnic diversity, projects such as City Growers and City Fresh Foods in Boston¹⁴⁴ helping produce and deliver fresh, locally sourced, nutritious, and culturally appropriate food for a range of community institutions, are demonstrating the possibilities for inter-cultural approaches.
- Government advisory bodies. These are bodies formally advising Ministries and Ministers but whose advice can be downplayed or politically gerrymandered, as happened to the Swedish advice and most recently the US Guidelines. The earliest such actor appears to have been Germany’s Council for Sustainable Development, which since 2003 has produced advice on food and other consumer expenditure, giving common principles and guidance (see Table 2). Sweden’s 2008 advice was produced jointly by its National Food Administration and the Environmental Protection Agency, the result of a few years of collaboration. The UK’s Sustainable Development Commission’s (2009) *Setting the Table* (see Table 3) was a similar, if ultimately unsuccessful, effort.

¹³⁸ Lappé, 1971

¹³⁹ Smith & Mackinnon, 2007

¹⁴⁰ Kinross, Small & Small, 2012

¹⁴¹ Food Assembly, 2015; O’Connell, 2014

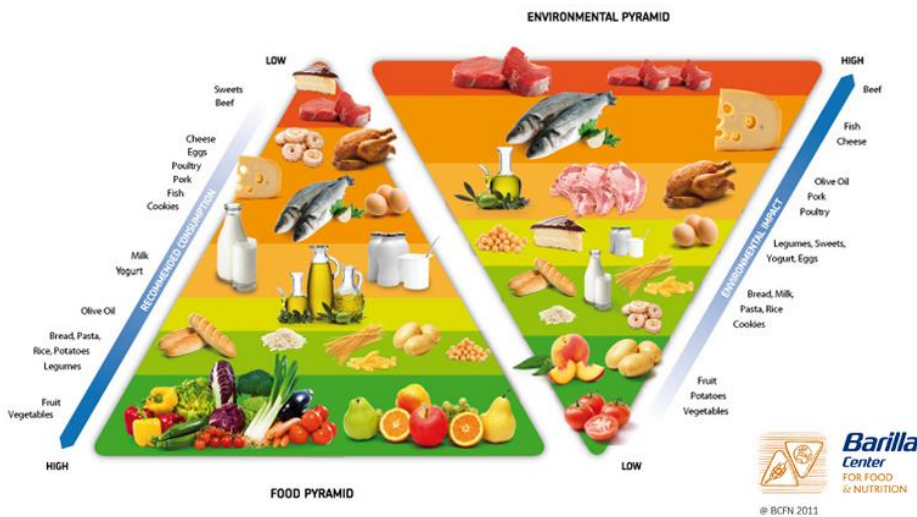
¹⁴² Growing Communities, 2015

¹⁴³ Eating Better, 2013

¹⁴⁴ McLaren & Agyeman, 2015

- Central government. Table 2 above illustrated several formal sets of advice, including initiatives from both global North and South. Sweden’s advice remains the most comprehensive, while Brazil’s 2014 nutrition guidelines demonstrate the best understanding of food as a cultural commodity. Issued by Brazil’s Ministry of Health, and the result of a long process with unprecedented public consultation, the advice was distilled to just three ‘golden rules’: (a) Make fresh and minimally processed foods the basis of your diet; (b) Use oils, fats, sugar and salt in moderation when preparing dishes and meals; and (c) Limit consumption of ready-to-consume food and drink products.¹⁴⁵
- Industry. Although some sectors of industry are deeply hostile to sustainable diets, others see the value and also opportunities. Barilla, the world’s biggest pasta company, has funded a Centre for Food and Nutrition at Bocconi University, Milan. In 2011 this produced the oft-cited and elegant double pyramid (see Figure 1)¹⁴⁶ which puts health and environment advice together in one graphic. Barilla took an active role in build up to the Milan Urban Food Policy Pact launched in October 2015 at the World Expo which took sustainable food as a main theme.¹⁴⁷ This Pact was signed by 100 World Cities, and included a commitment to develop local sustainable dietary guidelines.

Figure 1. The Barilla Double Pyramid



Source: Barilla Centre for Food and Nutrition 2011

Other food companies and their advisors are edging into this territory. The IGD, a big UK food industry membership research organisation, created a sustainable diet working

¹⁴⁵ Ministry of Health (Brazil), 2014

¹⁴⁶ Barilla Center for Food and Nutrition, 2010

¹⁴⁷ Commune di Milano, 2015

group which reported in 2013.¹⁴⁸ This adopted a multi-criteria approach (not reducing 'environment' to climate change, for example), and argued that although consumers are becoming engaged with sustainability for food, they still want industry to take the lead and to inspire them. WRAP too has promoted multi-criteria analysis of embedded energy, waste, water footprints, and material use, publishing a landmark analysis of in 30,000 food items in 2013.¹⁴⁹ Nutrition was not included, unfortunately, but this approach suggests some useful foundations for future standards.

○ Academics. Some academics have begun to offer their own formulations of SDGs, frustrated by the deficit in public advice. Academic writings mostly face 'inwards' within disciplinary boundaries but increasingly academics are speaking up and out. Table 4 above gave three examples. Who a decade ago would have expected nitrogen specialists such as those who united around the Barsac Declaration to call for mass dietary change? Or for the Royal Society to back a 'contract and converge' position on consumption?¹⁵⁰ The Food Climate Research Network created in 2005 at the University of Surrey, but now based at Oxford University, has become a significant academic force, clear about the need to tackle climate change but open about the data and how.¹⁵¹ Initially focused on climate, FCRN now produces, charts and debates across the gamut of sustainable diet issues and has thousands of members globally. It produces excellent briefings as well as leading debates itself. A similar academic influence has been achieved by the Copenhagen University academics who co-created the New Nordic Diet, which is being used to benchmark academic work and inform school meals provision in Scandinavia.¹⁵²

¹⁴⁸ IGD, 2013; IGD ShopperVista, Arnold & Pickard, 2014

¹⁴⁹ WRAP Product Sustainability Forum, 2013

¹⁵⁰ Royal Society, 2012

¹⁵¹ Garnett, 2005

¹⁵² OPUS, 2009

Section 3 - Next steps in delivering sustainable diets

Beyond Brundtland: smart and sustainable

What is the common thread that binds these simple words ‘sustainable’ and ‘diets’ together to create this powerful notion of eating better? The classic Brundtland approach to sustainability suggested equal and overlapping emphasis to only three factors or criteria: environment, society and economy. None on its own would deliver security to future generations, Dr Brundtland’s report argued. Hence the report’s much-cited definition:¹⁵³

“Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs. It contains within it two key concepts:

- *the concept of **needs**, in particular the essential needs of the world's poor, to which overriding priority should be given; and*
- *the idea of **limitations** imposed by the state of technology and social organization on the environment's ability to meet present and future needs.”*

Admirable though it is, the Brundtland triple focus (and its business adaptation into the ‘triple bottom line’) does not generate sufficiently sophisticated or realistic analysis for the complexity of the modern food world. Food sustainability cannot easily be reduced to just those three overarching characteristics or criteria. To capture the richness and diversity of what food means, as well as the goals and drivers of food policy, I think that sustainability needs to be understood more broadly. It ought to include explicitly, for example, important features such as culture, quality, taste and health – which Gro-Harlan Brundtland, herself a doctor, ironically omitted. Many people, myself included, have argued that a multi-criteria framework is required to give policy makers and implementers a more detailed and specific set of indicators to aim for. That is why the UK’s Sustainable Development Commission (SDC) proposed a six point approach for policy makers, supply chains and consumers (see Table 5). This set of multi-criteria characteristics was offered to include natural and social scientific data, and to operationalize sustainability for policy-makers. Pamela Mason and I used this to structure our book looking at the evidence on and for sustainable diets.¹⁵⁴

Who or what now might lead the change that evidence suggests?

¹⁵³ Brundtland, 1987

¹⁵⁴ Mason and Lang, 2017

Table 5: Multi-criteria standards for food sustainability

Quality	Social values	Environment
<ul style="list-style-type: none"> • Taste • Seasonality • Appearance • Freshness (where appropriate) • Authenticity 	<ul style="list-style-type: none"> • Pleasure • Identity • Animal welfare • Equality & justice • Cultural appropriateness • Skills (food citizenship) 	<ul style="list-style-type: none"> • Climate change • Energy use • Water • Land use • Soil • Biodiversity • Waste reduction, reuse and recycling
Economy	Health	Governance
<ul style="list-style-type: none"> • Food security & resilience • Affordability (price) • Efficiency • True competition • Fair return to primary producers • Jobs & working conditions • Fully internalised costs • Circular economy (full recycling) 	<ul style="list-style-type: none"> • Safety • Nutrition • Equal access • Availability • Social determinants of health eg affordability • Information & education • Protection from marketing 	<ul style="list-style-type: none"> • Science & technology evidence base • Transparency • Democratic accountability • Ethical values (fairness) • International aid & development • Trust

Source: modified from SDC 2011 ¹⁵⁵

The new leaders

We live in a multi-level world: global, regional, national, sub-national, local. Just as sustainable diets imply the need to negotiate a multi-criteria food system, so progress on sustainable diets requires action across the modern multi-level world. A country might set guidelines on sustainable diet, but food and consumers cross borders. Sustainable diets are an international challenge not just a UK one. That is why many actors in the world of food had hoped to see global leadership emerge in the build-up to the 2014 UN

¹⁵⁵ Sustainable Development Commission, 2011

Second International Conference on Nutrition (ICN2). This did not happen, alas. ICN2's prime focus remained on hunger. Concern was expressed about obesity but sustainable diets was pushed to the fringe despite pressure for it in prep-coms.¹⁵⁶ Historically, FBDGs and public health food advice have been national responsibilities. National governments, however, are so far slow or reluctant to pronounce on sustainable diets, despite growing evidence and rising pressure for them to do so. Sceptics suspect industry influence. There is certainly heavy resistance from the meat and dairy industries worldwide, most overtly in the recent battles over the Dietary Guidelines for Americans 2015-2020.¹⁵⁷ This was closely monitored and fought by many US NGOs and academics, with a flood of information about the ebbs and flows in the run-up to US Secretaries of State making a decision on what the new Dietary Guidelines for Americans would contain through a well-organised US dietary guidelines network. When they finally emerged, the US Guidelines advised consumers about the temperature for cooking their food but not the impact it might have on the temperature of the planet! The evidence submitted by the US Government's own scientific advisory committee was ignored. The meat and other trade interests won; ecological public health lost.¹⁵⁸ Alongside these entrenched partisans, an ideological reluctance was also exposed. Yet Brazil's open cultural advice shows that to give sustainable diet advice is possible. And the default timidity on sustainable diets by official bodies is being increasingly questioned by civil society activists and scientists, as we've seen. Although the neo-liberal globalising project has accelerated the creep of power 'upwards' and towards corporate interests and 'market' dynamics, away from the local,¹⁵⁹ it would be erroneous to conclude that national and sub-national levels of food governance are powerless. Indeed, there is a wave of anti-state rejection flowing through Western politics – Brexit in the UK, the election of President Trump in the USA, the rise of radical politics (of Left and Right) across Europe.

Table 1 above summarised some positions on sustainable diets. I think we should see these as opening gambits not final positions. Rome wasn't built in a day. The sustainable diet issue is on the long-term agenda. Although pressure on national governments and their official advisory processes must and will continue, there is more room for action at the local state level. Why don't towns and cities use local expertise to generate Sustainable Diet advice? This was called for in the Milan Urban Food Policy Pact. Local bodies frequently have important food responsibilities through institutions and services created in earlier periods of public and environmental health reform. These often include responsibilities for air quality, water, sanitation and sewerage, food safety monitoring, and more. Could they become change agents for sustainable diets?

Brazil's third largest city, Belo Horizonte, suggests the potential here is huge. Known as 'the city that ended hunger', Belo Horizonte combined responsibilities for food access,

¹⁵⁶ Brinsden & Lang, 2015

¹⁵⁷ DHHS & USDA, 2015

¹⁵⁸ See for instance: <http://americanagnetwork.com/2016/01/reaction-to-usda-dietary-guidelines/>

¹⁵⁹ Hirst & Thompson, 2001

nutrition, and producer livelihoods in one municipal department in 1993. Food is treated as a human right, not a commodity, with the aim that everyone should be able to access and afford to eat healthy, nutritious food. Nutrition is understood as a vital component of public and personal health; and the need of producers for fair marketing opportunities and wages is also recognised. The city requires key supermarkets to sell subsidised quality and healthy food ingredients, and provides 'food with dignity' by supporting '*restaurantes populares*' – open to all-comers - which serve thousands of low cost, regionally sourced, healthy meals every day.¹⁶⁰ Belo Horizonte illustrates neatly the potential to address both need and sustainability. It doesn't just have the right guidelines, but actively intervenes to ensure that good food is available even to those on a low income. This policy commitment contrasts starkly with how the UK has drifted into accepting 'food banks' and 'food deserts' where low income communities have no local access to affordable fresh food. It is, as a recent paper suggested, both morally and economically dubious to use the poor for waste disposal.¹⁶¹

In the UK and across the EU, there is a growing Sustainable Food Cities movement, bringing together local food projects which tackle problems of both hunger and sustainability. The follow-up to the Urban Food Policy Pact signed at the Milan Expo has been subsumed by the C40 group of now 70 'world cities' committed to CO₂ reduction.¹⁶² City organisations across political divides can see the point of protecting their populations from dietary damage. They are rekindling the pioneering strand of policy action on food and sustainability spawned in Local Agenda 21 work following the 1992 Rio Declaration.¹⁶³ Mayors everywhere see city administrations carrying the burden of unsustainable diet – in waste disposal, healthcare costs, and logistic pressures (millions of tonnes of food freight coming into clogged urban road systems) – and are learning from each other that this need not and must not remain so. Copenhagen for example, the city which spawned the Nordic Diet (see Table 4), is now enthusiastically nurturing a policy mix of food service and tourism industries, citizens groups, and public health to chart a new direction for sustainable food.¹⁶⁴ The vast majority of its schools are now feeding organic food, as a contribution.

Bringing the public along

These successful initiatives motivate education and learning about food, in ways that can shift norms, but they all start from where the local public is on food. In Brazil, hunger was the key issue; in Denmark it was about reinventing traditional food for health in the modern age. Health and food safety typically are stronger motivators for the public than environmental factors, but cost, convenience – and bluntly, fashion – are all powerful influences on diet, too, arguably more so. Improving knowledge of the health and

¹⁶⁰ World Future Council, 2009

¹⁶¹ Caraher and Furey, 2017

¹⁶² Milan Food Policy Pact, 2015

¹⁶³ Girardet, 2008; Chartered Institute of Environmental Health, 1997; UNCED, 1992

¹⁶⁴ Kobenhavns Madhus, 2015

environmental impacts of food can change behaviour, but unless food is affordable and dietary recommendations are both convenient and culturally appropriate, sustainable diets will not gain purchase.

Public attitudes show bubbling concern. In the UK, the 2015 Food Standards Agency Tracker Survey found the most frequently mentioned wider food issues of concern were food prices (50%), food waste (48%) and the amount of sugar in food (47%).¹⁶⁵ Of food safety concerns, the biggest were: hygiene when eating out (39%), food poisoning (32%), the use of additives in food products (29%) and date labels (29%). Others have found sympathy for environmental concerns. For example a *YouGov* survey in 2013, undertaken for the Eating Better coalition reported public concern about meat quality and impact, and a large increase in awareness of the significant environmental impacts of producing and eating meat from just one in seven people (14%) in 2007 to nearly one in three (31%) in 2013.¹⁶⁶

Such surveys are hopeful, but one should be wary of the gap between reported and actual behaviour, which is also strongly influenced by food fashions such as meat-heavy Atkins and 'paleo' diets. A Chatham House report international survey in 2014 found that consumers everywhere were relatively unaware of meat and dairy's impact on climate change, but that the more aware of this they were, the more likely they were to be prepared to change their behaviour.¹⁶⁷ These findings echo a 2012-13 *Which?* study in all four regions of the UK, which found that the more consumers were presented with facts on food, health and environment, the more they became perplexed and then angry: why didn't we know this? Something needs to be done.¹⁶⁸

Rather than see consumers as lacking interest, I think we could emulate the New Nordic Diet approach and build a coalition with chefs, restaurateurs and food opinion formers to champion sustainable diets. In this way cultural food fashions – such as street food, small plates and even super-foods - might be harnessed to health and environmental goals rather than disconnected. The cultural tussle over sustainable diets is about values in everyday life.

¹⁶⁵ Food Standards Agency, 2015

¹⁶⁶ Eating Better, 2013

¹⁶⁷ Bailey, Froggatt & Wellesley, 2014

¹⁶⁸ Which?, 2013

Section 4 - The way forward: a SDG2 framework

The UK still lacks any formal sustainable diet guidelines. Not even Scotland or Wales - which are ahead of England on charting an overt food policy - have sustainable dietary guidelines. England did take an important step however when Public Health England – the official source of the Eatwell Plate – added advice to reduce red and processed meat to the 2016 version of the Plate, now named the Eatwell Guide. This came after publication of joint work on diet with the Carbon Trust.¹⁶⁹

Hopes that the EU might provide an overall framework through the development of a *Sustainable Food Communiqué* in 2012-14, building on policies such as the 2011 *Roadmap to a Resource Efficient Europe*, were dashed when incoming EU President Juncker dropped it in 2014; this remains a scandal to be unpicked.¹⁷⁰ Yet the evidence for addressing consumption change in relation to health, environment and culture has grown in the UK, as elsewhere, and scientific and civil society concern has got louder. New alliances such as the Eating Better coalition are lobbying, organising, and building recognition. Getting engagement within the UK state has not been helped by serious cuts and restructuring. The Food Standards Agency, Defra and the Department of Health have all been reorganised. The NHS has taken over the nutrition role of the much weakened Food Standards Agency (FSA). After a decade of pressure (initiated by the Royal Commission on Environmental Pollution, also abolished by the Coalition), first the FSA and now NHS' Public Health England now acknowledge the thorny issue of environmental impacts of fish consumption, suggesting “[w]here possible, buy fish and shellfish from sustainable sources”.¹⁷¹ This is not exactly deep environmentalism but is a step in the right direction. It's certainly an acknowledgment of the power of TV chefs such as Mr Fearnley-Whittingstall's Fish Fight campaign!¹⁷² And there's the point: when evidence is strong, yet the state is equally reluctant to do the right thing, it often needs outside pressure to create room for manoeuvre.

At the global or international scale, one big door opened with the 2015 Paris Climate Change Accord. Here was an agreement, albeit with few or no targets. Even better are the 17 new UN Sustainable Development Goals which do have 169 targets, many of which have a food element. Even the grim and 'nerdy' matter of the intercontinental trade talks between the USA and Far East (the Trans Pacific Partnership, TPP) and Europe (the Transatlantic Trade and Investment Partnership, TTIP) opened up opportunities for stronger academic and civil society liaison and campaigns. The lesson

¹⁶⁹ Public Health England, 2016; Public Health England and Carbon Trust, 2016

¹⁷⁰ The Commission launched a consultation in 2012 on sustainable food, with a plan to publish a Sustainable Food Communiqué as part of the so-called “Roadmap to a Resource-Efficient Europe” in late 2013. Although some limited measures on food waste were included in the Circular Economy package of 2015 (European Commission, 2015), the Communiqué and debate on sustainable diets remains in limbo.

¹⁷¹ NHS Choices, 2016

¹⁷² Fearnley-Whittingstall & Fish Fight, 2014

is that the promotion of sustainable diets requires vigilant and confident attention from scientists and civil society.

In the UK, although national policy development on public health and sustainability is currently on the back foot, this is not the case in the devolved nations and cities. And some such spaces are vibrant. Bristol, for example, is not only a Sustainable Food City, but Britain's first Flexitarian City, with the FlexiBristol project working with restaurants and local businesses to extend and publicise non-meat choices in diet.¹⁷³ Elsewhere in the UK Sustainable Food Cities Network, cities are holding food festivals, promoting pop-up markets, providing community access to land for growing, and using procurement powers to ensure healthy sustainable meals in schools and public services amongst many other practical projects.¹⁷⁴ New city food partnerships are well placed to evolve into local Food Policy Councils such as have emerged over recent decades in North America, bringing together representatives and stakeholders from all across the local food systems: producers, processors, distributors, consumers and recyclers.¹⁷⁵ These gain influence and survive if parented by the local authority or at least are well integrated into their workings. Their strength and attraction to elected politicians lie in bringing a combination of actors into town halls. They are building food democracy.¹⁷⁶ Of particular note is that this new generation of food bodies inevitably has to work with older institutions such as planning departments, health and environment bodies if they are to gain leverage. This city scale offers a second critical opportunity for the promotion of sustainable diets, alongside the international through the SDGs.

Reviewing this whole policy terrain, I keep returning to the core fact that modern diets' multiple impacts are so severe that integrated and coherent sustainable dietary guidelines are essential. Companies and growers might be gradually engaging with the need to shave carbon or embedded water out of food supply chains, or building better biodiversity protection, or injecting some kind of 'ethical' standards into work processes or trading relationships, but unless these experimentation is drawn together and given an overall coherence, it could add to rather than harmonise policy cacophony.¹⁷⁷ A new strategy is needed to help consumers engage with sustainable dietary change.

The UN Sustainable Development Goals (SDGs) are supported by the UK government. A policy symmetry could emerge if the SDGs were complemented by sustainable dietary guidelines at the national and local levels. This 'SDGs squared' / SDG² strategy would deliver a policy 'win-win'. Sustainable dietary guidelines could win support from different stakeholders for different reasons, even as they transform food systems. In most countries national and local governments should support them as a key way to tackle burgeoning healthcare costs. Food businesses should support them as a way to

¹⁷³ Flexitarian Bristol, 2015

¹⁷⁴ Sustainable Food Cities, 2016

¹⁷⁵ Hatfield, 2012

¹⁷⁶ See the discussion of food democracy in Lang & Heasman, 2015 and Lang, Barling & Caraher, 2009

¹⁷⁷ Lang & Rayner, 2007

overcome the pressing environmental and resource scarcity problems that threaten existing global business models. Consumers should back them for the convenience they can bring to eating a tasty, healthy and sustainable diet in the face of misleading advertising and ill-informed food fads. This makes them potentially transformative, as once in place, sustainable diet guidelines would be a signpost for a values shift across the food system.¹⁷⁸

Of course, there is resistance to the SDG² strategy. Some might oppose it as a constraint on choice; this is an ideological position to be confronted and outmanoeuvred. The argument that accelerating consumption of meat and dairy globally reflects an extension of choice is an outmoded position, not one that considers the wellbeing or suffering generated by that choice. Failure properly to inform consumers for fear of 'restricting choice' has constrained food policy for too long. The sugar and childhood obesity campaign is already denting that logic.

Anyone familiar with the food industry also knows that many product managers are already engaged with sustainable diets by applying 'choice-editing'.^{179 145} Measures such as product reformulation, size reduction and ingredient substitution are being systematically applied to retain sales and brand loyalty. But this approach can only be taken so far. There is a limit to how much a 'below the radar' policy approach can transform a wasteful food system; extensive change is needed to consumer behaviour and aspirations, yet current policy initiatives are still tip-toeing around consumer choice. Yet critically, well-informed consumers – understanding the cognitive biases and temptations of real life, seem to welcome choice editing as a modern expression of convenience. Over-reliance on choice-editing also carries the danger of creating a parallel system of governance. With the state reluctant to be nanny – as though parental guidance is a sin – nanny corporations are stepping into the gap.

Choice is not the great god it is sometimes said to be. In a world with zero choice, it of course represents progress. But in a food world of 30,000-40,000 items in the hypermarket, there can be too much choice. Of course, the right to choose a culturally appropriate diet is a critical part of people's identity. But, especially with growing quality of meat and dairy substitutes, a wide range of cultural identities can be accommodated within sustainable diets - even including strict forms like halal and kosher. Still, even if every foodstuff on the supermarket shelves had a healthy and environmentally friendly option, choice-editing alone won't prevent an obesity epidemic, for example, nor ensure that food production as a whole falls within climate constraints.

There is much policy support at present in the developed economies for the 'circular (food) economy'.¹⁸⁰ Applied to food, this sees food as a material or biological entity, and loses the social and cultural aspects of sustainability. The ideal of a low carbon, low eco-impact, zero waste, pro-health diet – adequate at an aggregate level to tackle problems

¹⁷⁸ In other words they could be symbiotic or subversive in Wright (2010) or McLaren's (2011) terms.

¹⁷⁹ Marks & Spencer, 2009

¹⁸⁰ Ellen Macarthur Foundation & McKinsey, 2013; European Commission, 2015; WRAP, 2014

of climate change and embedded water for example - almost certainly also requires significant behaviour change on a mass scale and population level.¹⁸¹

Policy makers should now recognise that less choice is appropriate in rich societies, while promoting more choice in low-income countries with restricted diets. A dietary contract-and-converge policy approach was advocated by the Royal Society.¹⁸² This does not mean an end to choice, with everyone eating the same. Sustainable dietary guidelines don't imply globally uniform diets, but culturally appropriate expressions of the same ecological and nutritional baselines. Indeed, they would be a vehicle to promote seasonality and biodiverse and culturally diverse diets, appropriate to conditions. Nor – fortunately - do such guidelines need to be agreed through tortuous intergovernmental negotiations: in this area (ironically, unlike climate) the current 'bottom-up' model of policy shift is both more appropriate and actually emerging. It allows for flexible and cultural and ethnic diversity, and preserves choice across generations.

I see great potential for sustainable dietary guidelines. They could help narrow the evidence-policy-behaviour gap. They could address the real problem of choice that consumers meet in the market place: what to eat as a rational consumer-citizen.¹⁸³ They bring diverse bodies of science – natural and social – together to help policy makers, producers and consumers. They could help reset the moral and political drivers for future food systems, and provide new, exciting, practical work for institutions, governance and commerce. They could provide a new basis for *public* advice, making the clarification of sustainable diets a frontline policy issue. This is what the UN ICN2 conference in Rome in November 2014 ought to have addressed.¹⁸⁴ Even without that, I have sought to show that a process of democratic experimentation is underway with citizen activists, city authorities and purpose-based businesses, as indicated in this paper.¹⁸⁵

Let me raise and responds to another obstacle thrown at sustainable diet. Ok, say critics, it could become the norm. But it would be such a boring, monocultural diet. Not true. As the *Menus of Change* programme by the Culinary Institute of America (the other CIA!), a catering industry education body, has shown, sustainable diets need not be 'culinary hair-shirts'. The positive attributes of sustainable diets - pleasure, health, taste – are its prime rationale; this does not need to be over-moralised. A positive consumer message exists.¹⁸⁶ Consumer attitudes to behaviour change are complex but pleasure has to be at its heart.¹⁸⁷ Sustainable diets do, however, question the continued influence over culinary taste by commercial marketing and advertising budgets which too often

¹⁸¹ Blake L, 2014

¹⁸² Royal Society, 2012

¹⁸³ See Gabriel & Lang, 2015 chapter 10.

¹⁸⁴ Brinsden & Lang, 2015

¹⁸⁵ Methodologies, models and indicators are emerging from academia, agencies and industry but must be brought into a coherent framework, and moved from informal to formal policy processes.

¹⁸⁶ Culinary Institute of America & Harvard School of Public Health, 2013

¹⁸⁷ Defra, 2007; Gabriel & Lang, 2015

promote unsustainable food products and unsustainable dietary patterns.¹⁸⁸ We need to create nuanced and realisable messages which are both pro-consumer and help their transition to a 21st century food citizenship. Like parenting (and nannies), the messages on sustainable diet are inevitably a mix of tough and kind. This transition is a shared process.

¹⁸⁸ Victoria Hurth and her colleagues (Hurth et al 2015) argue in a companion Big Ideas paper, for the transformation of marketing with a new paradigm which would reflect real human needs.

Conclusions

The simple notion of sustainable diet poses a rich, live and tricky challenge to affluent (yet divided) societies like the UK, from which we cannot run away. We need all our citizens to eat a better diet for health, environment and cultural reasons. If this is our goal – and surely it is a sign of a decent society - there are profound political economic implications currently not being faced. I see no quick fix solutions, but no government will benefit by burying its head in the sand. This demands multi-level actions by multiple actors, a combination which is currently hindered by inexcusably silent (or is it weak?) leadership by Government. The rising debate in Britain about the impact of Brexit on UK food is an opportunity to go back to basics, and to ask: what sort of food system, what kind of mix of consumption and production do we want?

I have argued here that the debate emerging about sustainable diets is central to this process. Within that, I, like others, see the case for new sustainable diet guidelines. I have proposed here that we should adopt the multiple criteria, 6 heading approach that was set out only a few years ago by the Sustainable Development Commission. Other frameworks are possible, of course, but they should only be taken seriously if they link the range of issues which dietary choice and food consumption can so seriously affect. I have argued that sustainable dietary guidelines should be informed by modern science, and developed with social science input and substantial public engagement to ensure the integration of cultural, identity and social values.

If national government will not engage, then civil society, city authorities and purpose-led businesses must step into the vacuum, while we maintain pressure on government to come to its senses. Other levels of and actors in food governance can effectively promote and implement such guidelines through policies and practices including choice editing, sustainable marketing and positive, value-shifting messages about health, pleasure, convenience, social interaction, taste, and ethical policies. We can see this as a new SDG² strategy and approach, one which links the pursuit of sustainable diet as helping deliver the Sustainable Development Goals. This is a radical but reasonable strategy, both ambitious and pragmatic, allowing for specificity while also being sufficiently broad. One thing is certain: if policy attention stays mainly on the production end of food systems, unsustainable consumption will continue to be the elephant in the food policy room. There is enough evidence for society to act.

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