THINK PIECE

# A food systems approach to policy for health and sustainability

Global Food Security

Sustainable, healthy food for all

This think piece was written from the outputs of an academic workshop that was organised by the Global Food Security programme, in partnership with the Centre for Food Policy, City, University of London. It will help to inform policy and practice, which is based on a wide variety of factors, including evidence from research. This think piece does not necessarily reflect the policy positions of individual programme partners.

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# Executive summary

A food systems approach would have significant benefits in policy-making, whether in businesses or governments. Thinking systemically and at an interdisciplinary level can help ensure that challenges are tackled from multiple perspectives and in a holistic way, which more closely matches the on-the-ground reality of policy-making. The first step is identifying the problem, then working back into the food system as necessary to identify the causes, before developing policies to tackle these.

A food systems approach considers the activities, outcomes and actors involved in agriculture, storage, processing and manufacture, distribution, retail and consumption, alongside the various pressures and drivers. It is important to frame issues in this way because the food system is highly interconnected and this approach avoids unintended consequences from interventions in one part of the system adversely affecting another.

Such an approach also provides a way of identifying win-wins, managing trade-offs and mitigating less desirable outcomes. It recognises that there are positive outcomes from our food system such as food availability and livelihoods, but also negative outcomes such as environmental degradation and non-communicable diseases.

Globally there are now more people who are overweight and obese than underweight, which when combined accounts for more than half of the world population: malnutrition, in all its forms, is the new normal. There is by good approximation no new land for agriculture, which currently uses 70 % of all fresh water, produces around a third of all greenhouse gas (GHG) emissions, and contributes to biodiversity loss and soil degradation. Given the urgency of the food security challenge, there is a need for a food systems framework to enable stronger policy coherence across agriculture, nutrition, health, trade, climate and the environment in both businesses and governments around the world.

Potential areas for a more joined-up approach include:

- Public procurement and systems of provision, setting minimum standards on produce for health and sustainability
- End-to-end data approaches and the use of smart labels that provide information on health and sustainability of products
- Better labelling with overall indicators for health and sustainability respectively
- True cost accounting to drive systemic behaviour change, taxing and incentivising where there might be co-benefits for health and environment
- Re-balancing of subsidies from energy-rich to nutrient-rich crops
- Decoupling profitability from productivity and selling less but better
- Transforming obesogenic food environments, working back into the food system for solutions
- Aiming for prevention rather than cure, for example in obesity, balancing short term and long term costs
- Focusing on food system efficiency - healthy people fed per unit input, rather than yield per unit input

Underpinning all of these potential areas is a need for more interdisciplinary food systems research, bringing together researchers from across the whole supply chain to enable healthy people and a healthy planet.

# The food security challenge

The prevalence rates of overweight, obesity and diet-related non-communicable diseases (NCDs) such as cardiovascular disease, stroke, certain cancers and type II diabetes[1], are increasing in every region in both developed and developing countries. Globally there are now more people who are overweight and obese than underweight, collectively accounting for more than half of the world population: malnutrition in all its forms is the new normal.[2] The estimated cost to the world economy of disease and death from overweight and obesity is $2 trillion, and in the UK diet-related chronic disease accounts for £6.1 billion of annual NHS spend.[1]

At the same time, around 795 million people face hunger on a daily basis and more than two billion people lack vital micronutrients (e.g. iron, zinc, vitamin A), affecting their health and life expectancy. Nearly a quarter of all children currently under the age of five are stunted with diminished physical and mental capacities, and less than a third of all young infants in 60 low- and middle-income countries meet the minimum dietary diversity standards needed for health.[3]

Given the projected increase in world population and that rising incomes will continue to change diets, it has been estimated that we will need to produce more food in the next 40 years than we have ever produced in human history. However, there is by good approximation no new land for agriculture and water scarcity is increasing. Food production is ultimately dependent on other ecosystem services so it is essential that these are maintained. The food system provides our food, contributes to the economy and underpins livelihoods.

Climate change will only make things worse as elevated levels of $CO_2$ reduce the nutritional content of grains, tubers and legumes, affecting key nutrients such as zinc and iron.[4] The estimated impact of undernutrition on gross domestic product (GDP) is 11% every year – more than the annual economic downturn caused by the global financial crisis.[3] It has been estimated that on the current trajectory, the food system will account for most of the GHG emissions budget for 2°C, leaving very little space for other sectors, and making it difficult to meet the Paris Agreement.[5]

Climate change can also alter weather patterns and the distribution and severity of pests and diseases in crops and livestock. Furthermore, it can severely impact food production and animal welfare. Around a third of the food produced in the world for human consumption every year gets lost or wasted, whether early in the supply chain through pests, diseases and post-harvest losses, or late in the supply chain at retail and consumption. This impacts on how much food we might need to produce in the future.

There are many interconnected challenges for food security and the next section highlights why we need a food systems approach to address these.

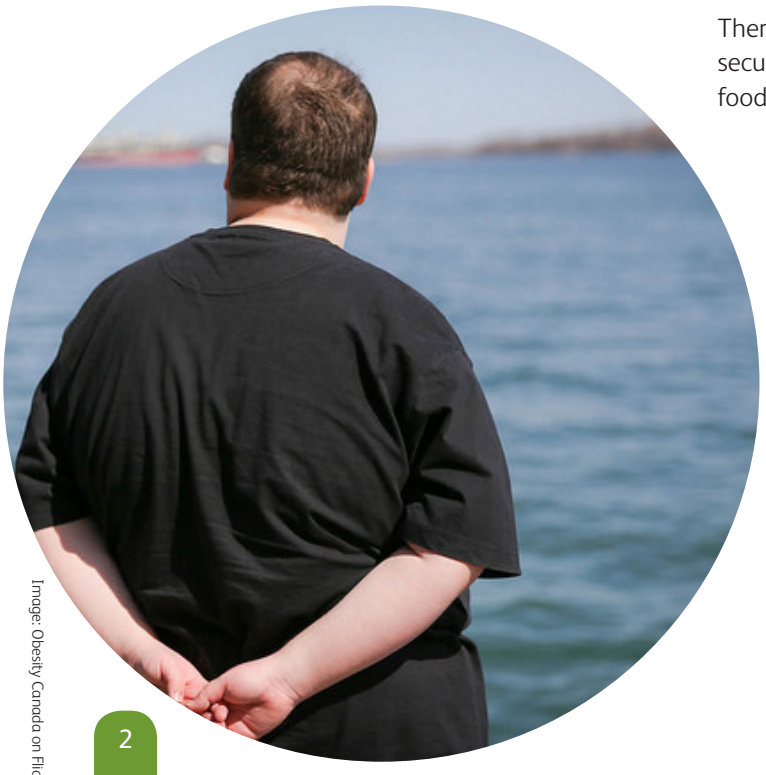

Image: Obesity Canada on Flickr

# A food systems approach

A system can be described as a set of things working together as part of an interconnected whole.

A food systems approach considers the activities, outcomes and actors involved in agriculture, storage, processing and manufacture, distribution, retail and consumption, alongside the various pressures and drivers. Operating at a macro level, it recognises that there are positive outcomes from our food system such as food availability and livelihoods, but also negative outcomes such as environmental degradation and non-communicable diseases.

It is important to frame issues in this way because the food system is highly interconnected and it helps to avoid unintended consequences from interventions in one part of the system adversely affecting another (for example simply growing more vegetables for health that people might not want to eat and that might end up perishing; or tackling hunger by simply growing more food, without consideration of the environmental impact of this and our ability to produce food in future). It provides a way of identifying win-wins, managing trade-offs and mitigating less desirable outcomes.

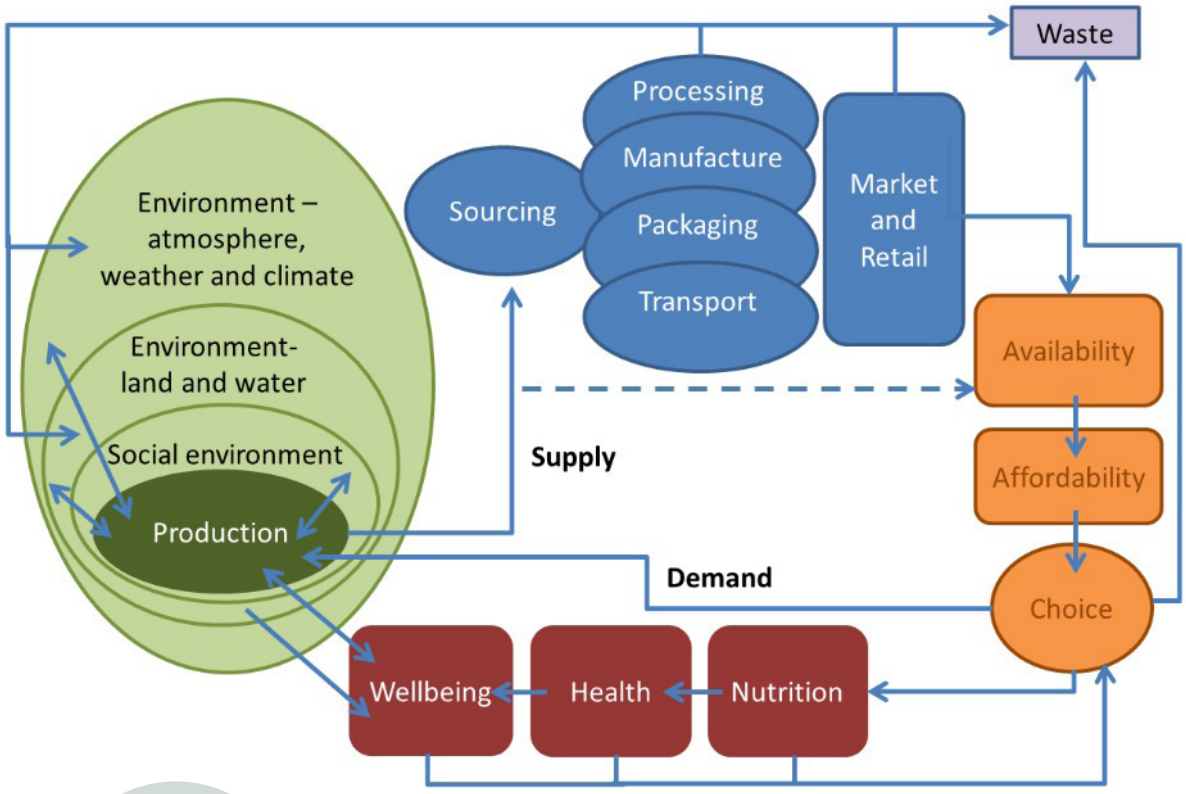


Image: GFS

# Food systems and policy-making

Thinking about problems in a systemic way and at an interdisciplinary level can help ensure that challenges are tackled from multiple perspectives and in a holistic way, which more closely matches the on-the-ground reality of policy-making.

A food systems approach can identify both the proximate and root causes of problems as well as the different levers to pull to ensure policy solutions don't have unintended consequences elsewhere (or identify the trade-offs that need managing where this is not possible). The first step is identifying the problem, then working back into the food system as necessary to identify the causes, before developing policies to tackle these.

A central pillar of this approach is that policy-making whether in businesses or governments should be joined up. Governments around the world often have separate departments looking at, for example, agriculture, health, climate change, education and food safety. This inherently brings challenges in ensuring a connected approach to food policy, and this is where a food systems approach can help.

That is not to say that mechanisms to join up policy are not already in place; rather there is a need ensure that a food systems approach underpins those mechanisms with new ways to build on these to further connected policy-making.

The food system provides a useful framework for policy-making that ensures due consideration of the knock-on effects of an intervention on other parts of the system, working collaboratively with others to maximise the win-wins and manage the trade-offs.

# Food and its relationship with health and sustainability

There are many factors that contribute to the prevalence of non-communicable diseases, but poor diet is one of the major causes.

The food system has an important role in improving health outcomes, not least through changes in the food environment. As the Foresight report on obesity highlighted[6].

"At the heart of the issue of excess weight lies a homeostatic biological system, struggling to cope in a fast-changing world, where the pace of technological revolution outstrips human evolution. Research clearly indicates how human biology gives many people an underlying propensity to accumulate energy and conserve it because of genetic risk, the influence of early life experiences and the sensitivity of the appetite control system."

"However, except in very rare cases, these factors alone can't explain the rapid increase in the prevalence of obesity in the population over the last three decades. Rather, changes in the external environment have revealed this underlying tendency to gain weight in more of the population. Obesity is linked to broad social developments and shifts in values, such as changes in food production, motorised transport and work/home lifestyle patterns. The technological revolution of the 20th century has left in its wake an 'obesogenic environment' that serves to expose the biological vulnerability of human beings."

The abundance of affordable but unhealthy foods that are typically high in salt, sugar or fat and appeal to our underlying biology can lead to over-consumption. There are many business models that centre on selling more calories in foods that are readily available, convenient and heavily promoted, and food accessibility for the poorest is often limited to energy-dense foods with little nutritional value.[1] However, there are also new business models emerging that promote healthy and sustainable foods and a shift is needed in this direction, alongside other measures to make this food affordable.

Image: Ralph . on Flickr

In terms of sustainability, it has been estimated that we need to produce more food in the next 40 years than we have ever produced in human history, given the projected increases in world population, and on the basis that rising incomes will continue to change diets.

Food production is ultimately dependent on other ecosystem services so it is essential that these are maintained. For example, agriculture uses 70% of all fresh water, produces around a third of all GHG emissions, and contributes to biodiversity loss and soil degradation (around 69% of agricultural land is degraded). In addition, there is by good approximation no new land for agriculture,[7] with increasing competition from urbanisation (the world will be 70% urbanised by 2050), sea level rise reducing land availability, and the growing need for land for bioenergy, carbon capture and storage to remove greenhouse gases (GHGs) from the atmosphere. This implies sustainable intensification of agriculture on the land that is available (i.e. produce more without expanding the agricultural area).

However, if food demand continues to grow as projected, by 2050 we would need more water, more cropland, lose more forest, and produce more GHG emissions, even with yield gap closure.[8] It is clear that we will need to use every technology available, alongside best practice farming to sustainably increase production, but this has to be accompanied by changes to food demand including measures on both consumption and waste.[9]

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# What might connected food policy look like on healthy and sustainable food?

Food is a critical determinant of health but also has a significant impact on the environment. A food systems approach provides a useful framework for joined up policy-making in these areas, with many potential ways that food policy can be more connected in relation to health and the environment. The following areas emerged from an academic workshop – whilst not a comprehensive list, they provide a number of potential areas for further exploration:

- **Public procurement and systems of provision.** This is broader than simply which food items are purchased, extending to what is provided in public and private spaces. Government intervention can positively impact on the private sector, for example in setting minimum standards on produce for health and sustainability. Many businesses are considering 'plant-forward foods' that contain meat but have plants at the heart of the product. These products can be healthier and more sustainable, but also cheaper to produce which can maximise profitability. For example the WRI suggests that a 'blended burger' of 30% mushroom and 70% beef would have the following environmental benefits whilst retaining the taste.

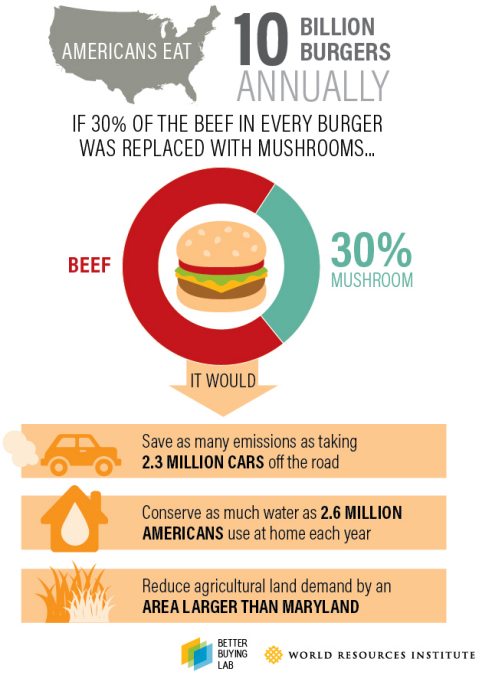


Image: World Resources Institute

- End to end data. With the advent of big data, there is a drive to map and integrate data from across the whole food supply chain, from weather and remote sensing in agriculture, to tracing where raw ingredients have been sourced from, to the nutritional content of foods, to tracking how food has been produced and handled. This end-to-end data approach has great potential for decisions-makers, whether government monitoring adherence to agricultural and environmental policies; small-scale producers being able to sell directly to the public through Amazon-like platforms; retailers being able to combine purchasing data with weather patterns to understand expected demand to reduce food waste; or greater transparency through consumers being able to see exactly where their food has come from. This could in turn lead to smart labels on food that can be scanned to reveal a whole host of information about a product, which would allow consumers to differentiate between products on health and sustainability grounds.

- **Better labelling.** Labelling could be improved, given the short amount of time consumers spend making purchasing decisions. Labels need to be easy to understand and allow for comparison of products at a glance. The NutriScore labelling system has the advantage of providing one overall indicator of how healthy a product is. Studies conducted during the consultation process have shown the benefits of NutriScore in terms of consumer perception, objective understanding and the labels' impact on the nutritional quality of purchases in a range of experimental and real-life designs.[10] The results of these studies are consistent and show a greater efficiency of NutriScore, both for the general population and for disadvantaged subgroups of the population. Could a single indicator be developed for sustainability as well?

- **True cost accounting.** Recognising that the true costs of food production to both health and the environment are currently externalised, can we transform the food system so these costs are internalised? The rationale is that by presenting the consumer with the true cost of food production this might change consumption patterns, and businesses or consumers would pay directly for the health and environmental impacts that the products they are producing or consuming generate. This is challenging as food is the UK's biggest manufacturing sector and hence economic growth could be affected. The counter-argument is that the costs of obesity and NCDs are rising and are becoming a significant proportion of GDP alongside environmental clean-up costs. In addition, food needs to be affordable for all including the poorest in society, suggesting social protection would need to be put in place with this approach. There needs to be a mix of carrots and sticks, taxing and incentivising where there might be co-benefits for health and environment.

- **Re-balancing of subsidies from energy-rich to nutrient-rich crops.** Around £600bn is spent annually to produce starches, sugars and free protein. In a stable world, it makes sense for a country to grow what's best suited to its local environment, export the excess at competitive advantage, and import what it can't grow itself. This combined with subsidies drives the scales and concentration of production so that some areas become "bread baskets" for the rest of the world, and this in turn leads to efficiencies and lower food prices. However this is leading to a global homogenisation of food production, and there is now a mismatch between what we produce in the world and what we should be consuming for health. Can we incentivise agricultural production for both environmental benefits and positive health outcomes, e.g. by increasing the production of fruit and vegetables? It is worth noting that this will only be viable if there is both consumer pull and an industry push.

- **Decoupling profitability from productivity.** Selling less but better could reduce input costs which could be an attractive business model, noting the small margins involved in agriculture. Could new business models that deliver for both health and the environment be incentivised through subsidy and taxation?

- **Transforming obesogenic food environments.** The food environment, encompassing the influence of the wider food system beyond individual food choice, can have a significant role in shaping consumption decisions. This might include the provisioning of food in public places, the convenience food that is available in a town, or the labelling of calories in restaurants and takeaways. The influence that the food environment has on food choices needs to be evidenced and demonstrated, working back into the food system to find solutions.


- **Prevention rather than cure.** The degree to which a long-term saving to the NHS, for example, becomes worth the short-term cost depends on what the short-term costs are, who is paying for these, whether these are politically palatable and whether people believe in the long-term benefits. In this example, what is really needed is evidence for how changes in diet would save public money and on what timescale.

- **Food system efficiency.** On a global scale we are producing food that is inconsistent with healthy diets, wasting food and externalising the costs associated with health and the environment. Therefore, it could be argued that our food system is not efficient. If policy was to focus on making the food system efficient (healthy people fed per unit input) rather than focusing on productivity (yield per unit input), this would set a broader agenda for thinking about outcomes from the food system that encompass health and the environment. This 'systemic efficiency' approach would implicitly require policy coherence across agriculture, nutrition, health, trade, climate and the environment.

Image: Lynn Friedman on Flickr

# Conclusion

There is a strong need to better engage those involved in policy-making with food systems thinking, whether in businesses or governments. Such an approach ensures due consideration of the knock-on effects of an intervention on other parts of the food system and collaboration with others to maximise the win-wins and manage the trade-offs. It would have significant benefits in helping to enable positive outcomes for health and sustainability.

Alongside this, there is a need for more interdisciplinary research to generate the evidence and help embed a food systems approach across policy-making. Other potential research questions might include the following:

- Can we develop a model or broadly agreed framework for food systems bringing together the available data? This would allow us to understand food system behaviour and how it changes under different conditions, the benefits and disbenefits for systemic efficiency, and which drivers should be targeted for interventions.

- As a case study, can we pick two areas and bring those together for increased coherence, identifying both the alignment and the trade-offs with consistent evidence (e.g. health and GHGs)?

- Can we develop key performance indicators and targets for progress on healthy and sustainable food systems for increased accountability?

- Can we develop balanced systematic reviews on promoting healthy and sustainable diets including interventions and how they have worked?

- Can we develop a scoping review on emerging technologies that will impact the food system, focusing on the promise and the potential downsides, and including a health and environmental impact assessment for each?

The Global Food Security programme provides thought leadership on the challenges surrounding food security and the need for more interdisciplinary research. We will consider how food systems thinking can be further embedded in policymaking whilst ensuring future evidence needs are met.

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