

Climate change and diets: a CCC discussion meeting

Summary paper by Professor Tim Benton, Research Director, Energy, Environment and Resources, Royal Institute of International Affairs, Chatham House.

In September 2019, the Committee on Climate Change (CCC) organised a discussion meeting to think through the policy potentials for how dietary change could reduce emissions from the food system and contribute towards zero-net carbon land use. This piece summarises some of the discussions.

Background.

The Paris Agreement created ambition to limit climate change to “well below two degrees”. This implies the need for deep-seated, systemic change, and, as the IPCC Special Report on 1.5 degrees highlights, it creates significant urgency to act now. This systemic and urgent agenda has several substantial implications for the food system. First, food production is a major emitter of GHG, being responsible for approximately one third of emissions, of which just over half come from livestock production, with dietary change and agricultural change having similar mitigation potentials: thus, dietary change is likely to be an important instrument of decarbonising food systems.

Second, any overshoot in emissions before we reach a zero net emissions scenario, will have to be clawed back from the atmosphere. Whilst there is a lot of optimism about carbon capture and utilisation/storage, biomass growth is a known, scalable way to capture atmospheric carbon. However, with some likely emissions trajectories, the land-use requirements for Biomass Energy Carbon Capture and Storage suggest a land requirement equivalent to well over half the land used for arable production globally.

Livestock produce provide 18% of calories (and 37% of protein) but uses over 80% of farmland, as well as producing over half of the GHGs. Given that, changing diets to reduce livestock consumption has the potential to radically change both emissions, and potentially “free up” land that could be used for biomass and carbon capture. Reducing food waste has the same potential.

Diets and land

But here is no simple mapping from “changing diets” to changing UK land use, because the food we eat is a combination of what we grow here and what we import. So, depending on how our food system evolves over the next decade or two, it is possible to imagine two extremes: the UK diet could change extensively and UK farming not at all (or vice versa), with diets reflecting imports and UK agriculture geared more towards exports; or UK diets and UK agriculture change hand in hand – which may arise through the, perhaps unlikely, case of greater self-sufficiency, or more likely, through a national food strategy to align nutritional, trade and agricultural policy.

From a public health perspective, there is a considerable need for the UK to address diet, independently of sustainability concerns, as poor dietary health is increasingly driving health-care spend via non-communicable diseases like diabetes, heart disease and a range of dietary-related cancers. To a first approximation, eating a healthy diet (more fruit and vegetables, plant-based not livestock-based protein, less processed grains, and fewer calories) is one that would have a lower environmental benefit. In principle, the healthcare savings from switching to healthier diets may exceed any transition costs arising from changing farming practice and supply chains.

No silver bullets

It is clear, when thinking about dietary change at the level of the population, there are no silver bullets, yet lots of barriers to change. In any such transition there are also likely to be losers, particularly in terms of livestock farmers, manufacturers and retailers (threatened with overall falling sales volumes – as people eat less but better, and waste less) and the poor – for whom the prospect of changing food availability will be a matter of concern. Healthy, sustainably produced, food is typically more expensive and less available than calorie-dense, processed food (including meat and dairy).

Behaviour change is sometimes envisaged as encouraging people to exercise the right choices, but diets are often not made from active purchasing choices rather constrained by issues to do with availability (can I find a shop that sells what I want?) and affordability. Too often, the food environment reduces the ability to choose to a range of calorie-rich, nutrient-poor, ultra-processed but affordable and available food.

Behavioural change should not be seen therefore as something for which individuals should be told to take responsibility for, and the knowledge deficit model (“if people only knew they’d do differently”) rarely applies. Awareness and education may be necessary, but they are not enough. In particular, “labelling” is not a panacea: it can have some effect, but often not as large as imagined, and it can be costly to implement.

Instead, there are a wide range of other policy levers (see table 1) that can potentially be applied to make “better” food more available and cheaper, and “worse” food more expensive and less available.

Evidence gaps

There is a somewhat limited **evidence base**, especially in four areas:

- First on understanding the interplay between dietary change and its impacts. If people eat differently, how will it affect the UK environment, or the overseas’ environment through supply chains (including for feed and other inputs).
- Second on the potential for meat alternatives at scale (and their acceptability, as well as health impacts).

- Third, on the effectiveness of different interventions to drive change at scale; particularly with respect to spill-over and indirect effects.
- Fourth, on the transparency of the food system and how to measure the environmental impacts associated with supply chains. Without good metrics, and a requirement for reporting them, it is difficult to assess progress and create accountability either at the country- or food-system level or for individual institutions (like farmers, retailers, or even households). To establish carbon pricing requires being able to deal with the context-dependencies of individual farms: a steak is not a steak as its broad-sense environmental impact will vary with farm location and production system, as well as what may be good for one measure of sustainability (emissions) may be less good on different measures (e.g. water/air quality, or biodiversity).

Routes to action

There is a momentum for change, especially amongst certain groups (e.g. young consumers), and people are demanding more plant-based foods. There is also recognition that the IPCC Special Report on Land, as well as the Special Report on 1.5 degrees, and the Sustainable Development Goals more broadly, provide a strong rationale for action towards “sustainable and healthy diets”.

There is some evidence that policy developments (or lack of them) incentivises people to realise an issue’s importance. One area where policy development could have real and meaningful impact, quickly, would be in the area of public procurement of food – for schools, hospitals, government departments, prisons etc. This would of course require initially making concrete guidelines for “sustainable and healthy eating”. Public procurement as a lever for change has been used in other countries as a means of stimulating broader changes in markets and society and would signal the issue’s importance more broadly.

In conclusion, it is not entirely clear how dietary change would contribute to the UK’s commitments towards zero net carbon land use, under current GHG national accounts – as it depends on many imponderables, including the post-Brexit trade environment. However, dietary change would be important under consumption-based accounting. If the fall-back situation, the “worst” that could happen, was UK agriculture didn’t change, we’d still be in the situation that any potential dietary change would enhance public health.

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Table 1: Potential policy levers for changing the food system in a “climate smart way” (after Table 5.6, IPCC SRCCL)

| family | Intervention |
|--|---|
| <i>Increasing agricultural efficiency and yields</i> | Agricultural R&D |
| | Supporting precision agriculture |
| | Sustainable intensification |
| | Improving farmer training and sharing via extension services, online access, field schools, farmer-to-farmer, etc |
| | Targeting public money invested in production towards pro-environmental/pro-nutrition outcomes |
| <i>Smarter land use</i> | Land use planning underpinned by remote sensing and/or ILK |
| | Agri-environment schemes |
| | Payment for ecosystem service schemes |
| <i>Market</i> | Mandated reporting of company externalised costs in supply chains. Market-led, or government-subsidised, insurance products to drive behaviour Stimulating “premium markets” e.g. organic food |
| <i>Trade</i> | Liberalising trade flows under socio-ecological principles to drive comparative advantage (WTO rules; trade agreements) |
| <i>Reducing waste</i> | Regulations to reduce and taxes on food waste |
| | Awareness campaigns/education |
| | Improving shelf life (biological intervention, packaging, cold-storage etc) |
| | Circularising the economy to use waste to produce goods which substitute |
| <i>Reducing consumption of products associated with externalised costs</i> | Changing food choice through nudge |
| | Changing pricing through Pigouvian taxes e.g. carbon pricing, or sugar/fat taxes to reduce excess consumption |
| | Changing food choices through money transfers |
| | Changing food environments through planning |
| | Changing subsidies/standards/regulations to promote healthier foods (fruit vs cereal bars) or more sustainably produced foods |
| | Preventative vs curative public health care incentives: health insurance reductions through better diets (including lower consumption) |
| | Personalised nutrition |
| | Creating greater transparency of food’s impacts as a means of changing consumption |
| | Nutrition and sustainability education and awareness campaigns |
| | Investment in disruptive technology to encourage switch to food with lower environmental footprint (e.g. “clean meat”) |
| | Public procurement to stimulate new ways of producing food, or different types of diet. Whilst most commonly for health reasons, there are examples of mandated procurement of “sustainably produced foods” |

Table 2. Attendees at the CCC diets workshop

Professor Tim Benton (Chatham House) - Chair
Judith Batchelor (Sainsbury's)
Simon Billing (Eating Better Alliance)
Hazel Culley (M&S)
Mike Hanson (Baxter Storey)
Professor Susan Jebb (University of Oxford)
Professor Dame Theresa Marteau (University of Cambridge)
Professor Susan Michie (University College London)
Richard Sheane (3Keel)
Kieron Stanley (Defra)
Ana Svab (Sodexo)
Dr Alison Tedstone (Public Health England)
Kené Umeasiegbu (Tesco)
Daniel Vennard (World Resources Institute)