

Feedback: Evidence and Recommendations to Committee on Climate Change, 11th May 2020

Feedback is a campaign group working to regenerate nature by transforming our food system. We produce cutting-edge research on food waste and dietary change, including research commissioned by UNEP, EU REFRESH, and the Rockefeller Foundation. We also provide expert advice to governments and businesses, and are a member of the EU Platform on Food Losses and Food Waste. Our founder is a member of the prestigious Champions 12.3 group set up to champion Sustainable Development Goal 12.3 to halve global food waste by 2030.

The IPCC recently made it clear that to avoid climate crisis, demand-side measures such as dietary change and food waste reduction will be essential (IPCC, 2019). Project Drawdown lists reducing food waste and dietary change as the most important and third most important measures respectively that can be taken globally to avert climate change (Project Drawdown, 2020), as an increasing body of evidence demonstrates (Kim *et al.*, 2015). Feedback therefore submits the following recommendations for the CCC's consideration.

Modelling 50% reductions in food waste:

Feedback welcome the CCC's modelling of a 50% reduction in food waste by 2030. We recommend that the CCC use the following means of measuring the 50% per capita food waste reduction target, as a more ambitious scenario:

- 50% reduction of edible *and* inedible food waste (in practice mainly achieved through a greater than 50% reduction in edible food waste)
- 50% reduction by 2030 against a 2015 baseline (there is a strong rationale for 2015 as the baseline year, as the founding year of the SDGs, including SDG 12.3, which sets the food waste reduction target)
- 50% reduction of food waste from farm to fork
- Additional prevention of edible surplus food currently sent to animal feed

According to Feedback's calculations, this approach would mean that UK food waste from farm to fork is reduced from 11.8 million tonnes in 2015 to 5.9 million tonnes in 2030, plus some additional food surplus prevention (i.e. some food surplus currently going to animal feed is directed to human consumption or prevented from arising). A forthcoming Consequential Life Cycle Assessment commissioned by Feedback with the University of Bangor (Styles *et al.*, 2020), which models this scenario, found that a **50% reduction in UK food waste would mitigate approximately 63.4 MtCO₂eq** in the current technology context. This assumes afforestation of the land liberated by food waste reduction¹, which is projected to be **over 3 million hectares** (including land saved domestically and abroad) - with about 20% of these emissions reductions coming from direct savings from reduce food waste, and about 80% from afforestation on land saved. The total emissions mitigation diminishes to 44.5 MtCO₂eq in an 80% decarbonisation context and to 25 MtCO₂eq in a net zero context, proportionately increasing in importance

¹ Based on average values for temperate forest regeneration provided in Searchinger *et al.* (2018).

relative to total emissions². The study finds that in the current technology context, **if food waste is prevented and the land used to grow it instead afforested, this results in emissions mitigation levels over 44 times higher than sending the same volume of food waste to Anaerobic Digestion** (per tonne food waste). Without afforestation, preventing food waste still results in emissions savings approximately 9 times higher than sending it to AD. In a net zero scenario, prevention of food waste leads to emissions savings roughly 50 times higher than sending it to AD (-3,284 compared with -66 kg CO₂ eq. per tonne). In the current technology context, **sending food waste to animal feed saves over 2 times the emissions as sending it to AD**. These findings highlight the importance of prioritising food waste prevention in the UK's efforts to tackle climate change.

You will note that these national mitigation projections are **substantially higher** than the CCC's recent estimates that reducing avoidable food waste downstream of the farm-gate by 50% by 2050 would result in **1.7 MtCO₂e domestic emissions reduction** (Committee on Climate Change, 2019a, p. 200). We believe that this is probably primarily because in our study 1) emissions and land overseas are factored in, 2) emissions savings from afforestation on spared land are factored in, and 3) the CCC's net zero assumptions were previously based on projections from WRAP. Currently WRAP project a 50% reduction in *edible* food waste only, and use various baseline years from 2007 onwards for different stages of the supply chain – which in combination substantially reduces the ambition of their targets. Furthermore, there are no specific sector-wide targets yet set to reduce primary production food waste due to lack of an adequate baseline, and no specific targets to move surplus food up the food use hierarchy. In practice, WRAP's projected reductions will thus lead to reduction in post-farmgate food waste from 10.2 million tonnes in 2015 to 7.7 million tonnes in 2030, plus an unknown reduction in the 3.6 million tonnes of food waste and surplus at primary production and other supply chain surplus.

Feedback therefore recommend that WRAP's scenario is included in the CCC's modelling as a more conservative projection, which should be considered the bare minimum of action, since it is the UK's current trajectory for food waste reduction under existing voluntary commitments. The pace of change projected by WRAP is also based on a *slower* rate of food waste reduction than has been achieved historically since 2007 (a reduction of 0.16 million tonnes per year between 2015-30, compared with 0.25 million tonnes per year between 2007-15)³ and assumes limited or no interventions from government policy to speed progress. However, this assumption is false, as the government has clearly stated its ambitions to support food waste prevention: for example, there is a standalone chapter on food waste prevention in the 2018 Resources and Waste strategy; and the government appointed Ben Elliot as its cross-governmental food waste champion in 2019. Mr Elliot has publicly stated that he would be willing to push for regulatory interventions should voluntary measures not work for food waste prevention measures amongst UK businesses.

The emissions reduction potential of the more ambitious food waste reduction scenario proposed by Feedback, assumes the following interventions of government policy:

² It should be noted that this uses currently wasted food as a baseline for emissions reductions – so is based on the current composition of food waste. The potential for dietary shifts to reduce volumes of meat waste in future are not factored in here.

³ WRAP estimate that roughly 2 million tonnes of food waste was reduced in the 8 years between 2007-15 (WRAP, 2014, p. 4).

- It assumes that government regulations and fiscal tools are used to accelerate the reduction of food waste – such as binding national targets, mandatory food waste reporting, and tax penalties and incentives – whereas WRAP assume broadly a continuation of the current pace of change under voluntary commitments. Note that there is a forthcoming consultation on mandatory reporting on food waste data by large UK businesses.
- It assumes that the law is reformed to legalise feeding safely treated food waste to non-ruminant omnivores like pigs and chickens. Rigorous EU-funded research has been conducted showing that this can in principle be done safely (Luyckx *et al.*, 2019), and a test facility is being set up in the Netherlands led by the University of Wageningen and major animal feed companies, with funding from the Dutch government, to finetune the treatment procedures required for feed safety. In the UK a technical roundtable on the issues is tabled at DEFRA, at the behest of Henry Dimbleby, in the context of the National Food Strategy.

Crops as feedstocks for Anaerobic Digestion:

Feedback welcomes the fact that the CCC does not project that maize or grass are used as future AD feedstocks, and recommends that the CCC actively recommend against their use.

Feedback recommend exercising caution with regard to recommending the emissions mitigation potential of miscanthus as an AD feedstock. Styles *et al* (2015) found that when indirect land use change is factored in this can significantly reduce the emissions mitigation potential of using crops as AD feedstocks. Moreover, emissions mitigation of AD feedstocks is usually based on the current energy mix – it is highly likely that in a future decarbonisation context where the energy grid has shifted to more renewable energy, the benefits of avoided fossil fuel reduction could diminish to the point where the emissions from indirect land use change would offset or even totally outweigh the emissions savings of miscanthus for AD. The significantly diminishing emissions mitigation from using crops as AD feedstocks in future decarbonisation contexts has been modelled in Styles *et al.* (2020) for maize and grass, with the emissions mitigation potential per tonne of maize feedstock declining from -114 kgCO₂eq in the current technology context to -20 gCO₂eq in a net zero context with a power grid mainly based on renewables. In the net zero context, using grass as a feedstock for AD actually becomes a net emitter.

Using land for food production or afforestation will need to be prioritised in a world of increasing land scarcity. Furthermore, miscanthus is currently extremely economically unviable (Committee on Climate Change, 2020, p. 57), and therefore is unlikely to be scaled up significantly for some time – by which point the energy grid is likely to be significantly decarbonised. Short rotation coppice willow may also be vulnerable to similar problems.

Dietary shifts

The CCC's Net Zero report classified **50% reduction in beef, lamb, and dairy consumption by 2050** as a Speculative option, which “currently have very low levels of technology readiness, very high costs, and/or significant barriers to public acceptability” (Committee on Climate Change, 2019b, p. 156). Feedback strongly disputes the assessment that meat and dairy reduction is technologically unfeasible, costly and publicly acceptable and would welcome the evidence base on which the CCC reached their conclusion on the readiness of meat and dairy reduction as an option.

Feedback instead strongly recommends that this is reclassified into the Core or Further Ambition options, and no longer be classified as a Speculative option. Moreover, Feedback strongly recommend that more ambitious scenarios be considered, such as a 50% in all UK meat and dairy consumption by 2030.

There are few current barriers to dietary shifts in the UK. The technology for plant-based proteins to substitute for meat consumption are immediately available – for instance, legumes and pulses are widely available and could easily have production upscaled. Plant-based alternatives like myco-protein and innovative products like Impossible Burgers have already been developed and massively upscaled. The cost of a plant-based diet is also unlikely to be a prohibitive barrier – Scarborough *et al.* (2016) estimate that if UK diets shifted in line with NHS Eatwell guidelines on healthy eating, the cost of this diet would be virtually identical (actually slightly less) than the current average UK diet. Regarding public acceptability, a recent survey found that 52% of British grocery shoppers say that they either follow or are interested in a plant-based diet, whether this be vegan, vegetarian or flexitarian, and 22% would like a greater choice of more convenient vegan options, such as ready meals (IGD, 2018). Sales of meat-free foods grew an impressive 40% from £582 million in 2014 to an estimated £816 million in 2019, and are projected to reach over £1.1 billion by 2024 (Mintel, 2020). The proportion of UK meat eaters who have reduced or limited the amount of meat they consume rose from 28% in 2017 to 39% in 2019, the proportion of Britons who have eaten food containing meat substitutes has rose from 50% in 2017 to 65% in 2019 (Mintel, 2020).

Between 2008/09 to 2016/17, consumption of red and processed meat declined for all UK age groups – by 26% for adults aged 19 to 64 years (a 19g per day reduction from an average of 74g/day in 2008/19 and 2019/20), by 23% for children aged 11-18 years, and by 17% reduction for adults aged 65+ years (Public Health England, 2018, 2019). A 50% reduction in red meat consumption over the 30 years until 2050 would therefore be a *slower* decline in red meat consumption than has occurred historically over the past 9 years. Feedback believes there is no rationale to project a slower rate of decline than the rate of historical trend. Given the pace of cultural and political change, we instead strongly recommend that the CCC model a more ambitious pace of change on dietary shifts than has occurred in the last 9 years as technically feasible (given the right support from government policy to speed progress), and make a strong case for how this is highly achievable rather than categorising it as a Speculative option.

Public policy support could significantly accelerate dietary shifts. Chatham House research found that governments need to lead transitions to plant-based diets, and that policies such as expanding choice, public procurement of plant-based protein sources, investment in plant-based alternatives, taxes on meat and other measures could have significant affects at accelerating change, complemented by public awareness promotion by non-government actors like celebrities, experts and NGOs (Wellesley, Happer and Froggatt, 2015) – and this could significantly speed the uptake of current trends. Rust *et al.* (2020) also identify reducing subsidies to livestock and shifting focus to subsidising plant-based proteins more as a method for incentivising dietary shifts, which would fit well with the government’s recent proposal of a “public money for public goods” approach. It is worth noting that, in the last few weeks alone, public sector caterers have announced plans to cut meat by 20% in their school and meat catering (Public Sector Catering, 2020). Moreover, Henry Dimbleby has publicly stated his view that ‘we need to eat less meat’ and announced that the issue of meat will be covered extensively in the forthcoming National Food Strategy.

The EAT–Lancet Commission also recommends that public procurement of food in line with EAT–Lancet’s optimal diet for nutrition and health could be a strong way to incentivise change in dietary habits (Willett *et al.*, 2019). This is already beginning to happen, and could be accelerated with further government and industry ambition. Public sector caterers serving billions of meals per year in UK schools, universities and hospitals recently pledged to cut the amount of meat they serve by 20%, a target which if met will result in a reduction of 9 million kg of meat per year, equivalent to 45,000 cows or 16 million chickens (Public Sector Catering, 2020).

The availability of plant-based alternatives compared with meat currently significantly restricts their consumption – however, increasing availability has been shown to have a dramatic effect. In a study of over 90,000 meal choices, Garnett *et al.* (2019) found that doubling the proportion of vegetarian meals offered in cafeterias increases vegetarian sales by between 41% and 79%. Availability of vegan options in the UK has recently skyrocketed. Almost a quarter (23%) of all new UK food product launches in 2019 were labelled as vegan (Mintel, 2020).

In terms of the theoretical potential for change, Toby Park of the Behavioural Insights Team notes that the lack of structural barriers to dietary change (despite ongoing policy barriers such as subsidies to the meat and dairy sector) means that more rapid dietary change could occur. Recent changes in public diets, though small in the grand scheme of production, have been notable in terms of their *relative* scale, and in terms of their speed (e.g. many shops reporting a doubling of veggie sales in a year or two). Although overall shifts in behaviour often happen slowly, there is also historical evidence that diets can shift profoundly over the space of a few decades: the important question here is political will to address this issue. Here we believe the CCC has an enormous opportunity to set the tone and advance the debate.

A large number of civil society organisations backs more ambitious dietary shifts. Eating Better – an alliance of over 60 environmental organisations including Friends of the Earth, Greenpeace, Oxfam, WWF-UK, the Landworkers’ Alliance, National Union of Students, the British Dietetic Association, Pasture-fed Livestock Association and many others – supports a 50% reduction in UK meat and dairy consumption by 2030 (Eating Better, 2019). The 50by40 coalition of numerous NGOs worldwide supports reducing the global production and consumption of animal products by 2040, with faster and deeper cuts in richer countries like the UK which currently have higher meat consumption (50by40, 2020).

Numerous studies highlight the urgent need for the reduction of animal source food (Godfray *et al.*, 2010; Aleksandrowicz *et al.*, 2016; Poore and Nemecek, 2018; Van Zanten *et al.*, 2018) to keep the earth within planetary boundaries including climate change – the need to outline a path to ambitious action has never been more urgent.

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