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Addressing methane emissions through demand-side measures in the food system

Briefing note – August 2021

Action to reduce methane emissions can avoid 0.3°C of warming by 2045, according to UNEP. While reduction in fossil fuel methane emissions is both vital and achievable, this briefing sets out the benefits to concurrently implementing global action plans to address the role of agriculture and food systems in generating methane emissions. **Figures from the new IPCC report show that there has been faster growth of atmospheric concentrations of methane over the last 6 years from both fossil fuels and agriculture and that significantly more methane has been emitted from enteric fermentation and manure than from oil and gas in the past two decades[1].** Reducing emissions from agricultural systems through demand-side measures, such as public policy in support of more plant-based and less animal-sourced foods in diets, is a low cost, effective and shovel-ready approach, with multiple co-benefits for land use and public health. Demand-side food systems measures are also a necessary carbon mitigation action towards achieving 1.5 degrees.

This briefing sets out the case for the UK Presidency of COP26 to advocate for effective demand-side food system measures to achieve major methane reductions in the agriculture sector, bringing 1.5 degrees within reach.

The case for action

Up to 45% of human-caused methane emissions can be reduced this decade, which would avoid nearly 0.3°C of global warming by the 2040s, but these reductions cannot be achieved without looking to agriculture, which contributes 40% of anthropogenic methane emissions, overtaking fossil fuels (35%) and waste (20%)[2]. With roughly 32% of agriculture methane emissions due to livestock (i.e. emissions from manure and enteric fermentation), addressing livestock numbers represents a unique opportunity to reduce the chance of dangerous climate change, and, indeed, addressing diets is necessary to limit climate change to less than 1.5°C or even 2°C.[3] [4] [5] Ruminants are estimated to have produced enough methane to have caused a third of total global warming since the industrial revolution[6].

Health benefits at the population level of switching to diets that are lower in meat and dairy represent significant cost savings. An FAO report in 2020 found that switching to a healthier diet with lower meat and dairy intake could reduce global diet-related health costs by 95% by 2030 while at the same time reducing projected diet-related GHG emissions by 41-74%.[7] Reducing consumption and production of animal products would spare grazing land for nature-based climate solutions[8] and significantly reduce food-feed competition[9]. It is sometimes suggested that the sequestration potential of grassland grazed by pasture-fed livestock could offset the greenhouse gas emissions produced by the animals, however on a global level emissions far outweigh carbon sequestration potential[10].

It has also sometimes argued that since methane has a shorter life in the atmosphere, livestock does not contribute to the growth of the world's emissions as long as ruminant numbers are stable. This ignores that our task is not to prevent emissions increasing, but to *reduce* emissions to net zero as urgently as possible – reduction in ruminant production can yield particularly fast reductions in global temperatures in the short-term, because methane is such a potent greenhouse gas. This can buy time for more difficult decarbonisation transitions. Reducing ruminant production is also one of the most effective ways of ensuring cumulative longer-term GHG emissions are reduced – even if

methane emissions are ignored, beef and lamb production cause considerably higher emissions than most non-ruminant meat production and plant-based foods (Ritchie, 2020). Ruminant livestock is also by a considerable margin the most land-intensive form of food production (Poore and Nemecek, 2018), which means that it has the highest potential for sparing land for rewilding and planting of biodiverse woodlands, leading to long-term accumulative carbon sequestration. The comparatively small amounts of cropland that would be needed to replace this ruminant protein with plant-based protein production could be produced on cropland spared by reducing cropland used for animal feed through broader reductions in meat consumption.

Addressing agricultural methane emissions – putting food on the table

Urgency is growing for a shift to public diets aligned with the goals of the Paris Agreement: healthy diets are far lower in meat and dairy than is currently the norm in industrialised, high-income countries. According to the UNEP Global Methane Assessment "Healthy diets might achieve reductions in methane emissions in the range of 15–30 Mt/yr, with additional climate benefits from reductions in carbon dioxide and nitrous oxide".[11] The same report states that "reduced food loss and waste, improved livestock management, and change to healthier diets – is estimated here to have the potential to reduce methane emissions by up to 65–80 Mt/yr over the next few decades, the impact of behavioural change and innovative policies on agricultural methane emissions should not be ignored."

Failure to achieve this food system shift will rule out meeting Paris Agreement's target of limiting warming to 1.5°C above industrial levels[3]. As set out in the National Food Strategy and by the Committee on Climate Change, the UK must reduce meat consumption significantly by 2030, and beyond. Indeed alongside halving food wastes and eating a healthy level of calories, switching to sustainable diets delivers a reduction of 88%[12] of the total mitigation needed within the food system to bring us within a 67% chance of meeting 1.5°C. The new IPCC climate report found that continuing 'business as usual' emissions will consume the remaining carbon budget by 2030 and that cutting methane emissions could have positive benefits for health and the climate[13].

Moreover, while technological solutions to combatting methane emissions in the livestock industry, such as novel animal feed additives, are on the rise, the ambitious methane reductions necessary to meet the Paris Agreement targets cannot be achieved without scaling down production. Lynch et al. (2020) argue, "No production methods would be able to meet the ever-increasing global demand for ruminant products without significant environmental (including climate) damage."[14] Global meat production has more than quadrupled since 1961[15] – on this current trajectory, livestock may take 49% of the GHG emissions budget by 2030 allowable under the 1.5°C target.[16] [17] Now is the crucial time for attention on meat and dairy reduction initiatives, as production pathway initiatives such as animal feed additives will not be sufficient[18].[19] [20] [21] [22] [23] .

Policy levers and approaches

The COP presidency has an excellent opportunity to follow the CCC's recommendation to keep 1.5°C alive by reducing methane emissions in agriculture by 20-25%. As noted above, reduced food loss and waste, improved livestock management, and change to healthier diets has the potential to reduce methane emissions by up to 65–80 Mt/yr over the next few decades and so the opportunity of behaviour change cannot be ignored. Here are some of the actions the presidency team can take to make this the COP that tackles methane emissions:

- **Put food on the table:** Previous COPs have not included food systems among discussions of mitigation. Having just commissioned a National Food Strategy, as well as listed 'sustainable food systems' in its NDC, the UK government is in a unique position to lead discussion on

food systems mitigation, and put food and agriculture on the table as serious options for more rapid methane, and carbon, mitigation than will be possible through fossil fuel emissions levers alone. A commitment to working internationally with the World Health Organisation and the UNFCCC to quantify **economic gains** from reduced meat consumption and to establish **international dietary principles** would show great leadership. The UK government can also push for a **UNFCCC expert working group** to **national demand side targets at the COP26.**

- **Include agriculture in the methane narrative:** At every opportunity, the UK presidency should ensure that agricultural sources of methane emissions are included in technical and political narratives. For example, in discussing the low-hanging fruit of methane reduction, it is important to emphasise the enormous impact changing public diets would have on reducing the short-term warming risks posed by excessive methane emissions.
- **Make use of existing private sector momentum:** While there is political hesitancy around explicit policy to change diets, there is much private sector momentum to build on and champion, including commitments by UK food businesses, under the Courtauld Commitment, to halve their 'scope 3' emissions by 2030. This goal will not be achievable without addressing sales of animal-source foods, and are likely to deliver strong co-reductions in methane emissions. Showcasing work in the UK to deliver 'less and better meat' at COP26 is one route to normalising discussion of demand-side mitigation measures in policy circles.
- **Leverage public procurement shifts:** The COP caterers have already committed to reducing their reliance on air-freighted foods. Including 'less meat' options on COP menus and adopting a 'plant-based as the default' approach would send a clear message that diets are a crucial piece of the mitigation puzzle.

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