› POLICY BRIEF ›

AUGUST 2019

From 2025 we are

FOODRISE

This document uses our old branding

› The Cow in the Room ›

A call for policy for sustainable diets

KEY TAKEAWAYS

- Reducing meat and dairy consumption, in particular of industrially-produced meat and dairy, is essential to combat the climate and biodiversity emergency.
- Robust demand-side interventions in the food system are required to actively drive down consumption of meat and dairy products in higher-income countries, in response to high levels of consumption of meat and dairy driving the climate and biodiversity emergency.
- Governments need to govern: it is time to move beyond controversy over the desirability of intervention, towards practical policy discussions on the 'how' of delivering sustainable diets.
- Policy-makers can learn from the existing body of evidence on previous transformations in agriculture and public health. This brief explores three broad options within public procurement, VAT and fiscal policy, and regulating critical drivers of meat demand, advertising and marketing.

FEED BACK

INTRODUCTION

There is now broad recognition that a global shift towards more sustainable and healthy eating patterns is urgently needed[1–5]. The food system is a leading cause of biodiversity loss and deforestation[3], drives the depletion and disruption of the nitrogen and phosphorus cycles[6] and uses up an incredible amount of water[7]. **As the IPCC Special Report on Climate and Land concludes, the global food system also generates roughly 25-30% of total greenhouse gas emissions[8].**

Changes to agricultural production alone will not address the severity of the ecological crisis we face, robust demand-side interventions in the food system are required, spanning diets, shorter supply chains and food waste[8]. For diets, the IPCC says the evidence is robust, with low uncertainty that the mixture of foods eaten can have a highly significant impact on per capita carbon emissions. Whilst the sustainability of a given diet is influenced by a variety of factors, diets high in (especially grain-fed) livestock and their products have the largest impact[8]. There is, therefore, substantial scope for reducing consumption of animal-sourced foods, primarily processed meat, red meat and dairy, with significant and tangible environmental and health benefits[8,9]. **In sum, dietary change could contribute one-fifth of the mitigation needed to keep warming below 2°C[10].**

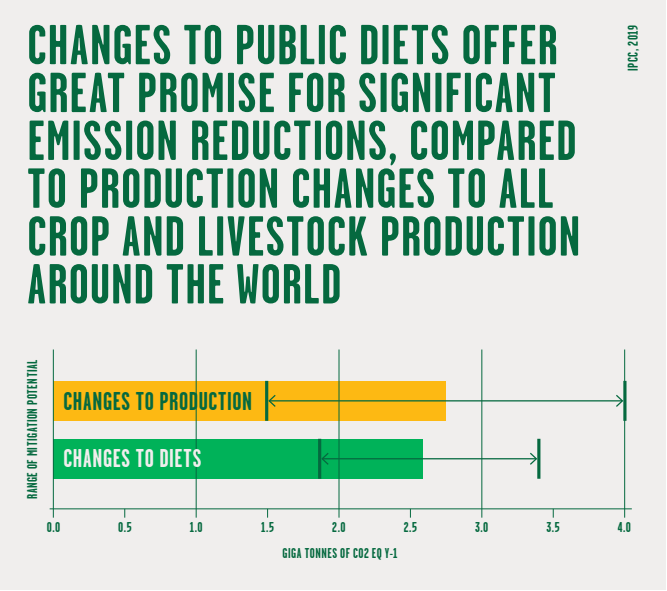
Given these overlaps, "it is surprising that politicians and policymakers demonstrate little regarding the need to have strategies to reduce meat consumption and to encourage more sustainable eating practices."[11] **The IPCC Report on Climate and Land states that dietary change presents major opportunities for adaptation and mitigation which can have multiple benefits and is low cost, and perhaps even cost negative[8].**

The question, then, is how?

This policy brief outlines what the research says about changing diets and explores consumption-focused measures that could help reduce animal-based products in diets[i]. The recommendations in the brief focus on higher-income countries that consume more than their equitable share of global meat and dairy, and where the excessive[ii] intake of red and processed meat is thought to lead to adverse health outcomes[12,13]. The brief presents an overview of the environmental impacts of meat and dairy, and by whom and where this impact is generated. It also provides a brief review of the research on changing diets, before reviewing three high-impact, practical policy ideas which are ripe for implementation. The goal of this policy brief is to move the conversation beyond controversy over the idea of intervening to shape public diets, and towards practical policy discussions on how, given the extreme urgency, this can be done.

1. THE COW IN THE ROOM: THE PLANETARY IMPACT OF EATING ANIMALS

Our current consumption of meat and dairy has a huge environmental impact[8,14]. If business as usual continues, the global livestock sector could take between 37% and 49% of the emissions budget allowable under the 2°C and 1.5°C targets by 2030[5]. In terms of temperature impact, the livestock sector accounted for at least[iii] 23% of total warming in 2010[15].



Moreover, a quarter of the world's land is pasture for livestock (2% intensive, 19% extensive) covering a land area roughly the size of Africa (32.3 million km^2). This excludes the land used to grow feed – making the actual hoofprint much higher. For example, as much as 58% of EU grain production feeds livestock, not people[16], with vast quantities of feed sourced from outside the EU-27: 69% of the EU's protein-rich animal feed[iv] is imported[17]. Together, this makes global livestock production the single most significant driver of habitat loss by far, and a leading cause

i Changes in production, and the communication, perception and valuing of these changes, can also alter demand in several ways. Production practices can affect the price, availability, accessibility, environmental impact and nutritional profile of meat.

ii Protein consumption far exceeds the average estimated daily requirements in high income nations, with up to 60% of protein intake coming from animal products in some countries67. Meat consumption in high income regions and countries: North America (113 kg/capita/year), Europe (78 kg/capita/year), and Oceania (109 kg/capita/year). The global average is 43kg/capita a year68

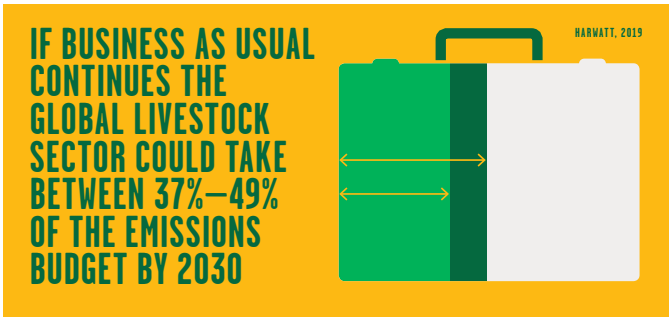
iii This figure is an underestimate, as it omits emissions relating to feed production (including land use change), fertilizer use, energy and transport

iv Figure excludes fishmeal

of soil loss and water pollution, with the impacts hitting the most biodiverse countries hardest[18,19]. The impact extends beyond the environment to humans as well: in the European Union, the livestock sector consumes more antibiotics than humans do, driving antibiotic resistence[20]. And given that about one-third of the world's cropland is dedicated to growing animal feed[14], the frequently voiced concern that bioethanol drives food insecurity also applies to meat production[21].

Whether measured as total global emissions, or by emissions intensity, cattle have the largest ecological hoofprint of livestock[2,8,14]. But the environmental impact of excessive[13] meat and dairy consumption in wealthier nations extends across animal products: higher consumption of animal products is associated with a higher emissions and a higher environmental impact[22]. In addition, diets with low embodied greenhouse gas (GHG) emissions are on average healthier and have smaller land footprints[3,8,22]. By 2050, the IPCC assesses the technical mitigation potential of dietary changes ranges from 2.7–6.4 GtCO2-eq yr^{-1}, with the current economic potential of dietary ranging from 1.8-3.4 Gt CO2-eq yr^{-1}. The economic potential for dietary shifts compares well to the IPCC's estimates for mitigation through on-farm changes to crop and livestock systems (1.5–4.0 GtCO2-eq y^{-1})[8] – though it is worth noting, a significant proportion of this effect results from consumption changes due to increased meat and dairy prices[23].

The facts above cover the enormous aggregate impact of livestock on our planet. However, these obscure significant variation in the how, and the where, of livestock production systems as well as their differing environmental impacts and socio-cultural value. For example, a pig on a small agroecological farm eating human-inedible surplus food has a very different impact from a pig eating soya in a factory[24], with our agro-ecological pig playing a positive role in nutrient recycling and generating lower-impact protein than some plant-based alternatives[25]. Issues like this are part of a vitally important discussion about the sorts of livestock farming that communities value, with what sort of ethics and underpinned by what sort of worldview. This discussion extends to what we eat in place of meat too: eating less meat will also not prevent biodiversity loss, if mono-crops of genetically-modified soya replaces livestock's pasture. **Eating less meat will not transform our unhealthy, corporate dominated food system if plant-based proteins become synonymous with processed, trademarked, burgers owned by publicly traded corporations**.



BOX 1: DEFINING 'INDUSTRIAL' MEAT AND DAIRY

Offering a comprehensive definition of 'industrial' meat and dairy is challenging. Some farming systems may have some 'industrial' features but not others, or certain 'industrial' features, such as scale, may be apt in particular geographies. Nonetheless, it is useful to identify the types of features that would characterise industrial meat and dairy.

In general, at 'its most industrial', industrial meat and dairy has the following characteristics:

- Large embedded land use for growing feed, often overseas
- High level of nutrient loss through pollution (e.g. by waste run-off)
- A low ratio of nutritional value to external resource input (i.e. significant inputs - energy, fertilisers, water etc - are needed to produce the meat and dairy products)
- High level of product specialisation (i.e. only one specific or a small number of meat and dairy products)
- Both inputs and outputs embedded in global, financialised commodity markets
- Innovation solely profit-driven (i.e. driven by a need for higher shareholder returns)
- Productivity understood as the financial value generated.

Together, these features create a system of meat and dairy production which cannot co-exist with high animal welfare standards, good human health and continued availability of vital antibiotics, and the preservation of our global biodiversity and a liveable climate.

In contrast, in a 'non-industrial' approach to livestock rearing, which, at its 'most non-industrial' is an agroecological one:

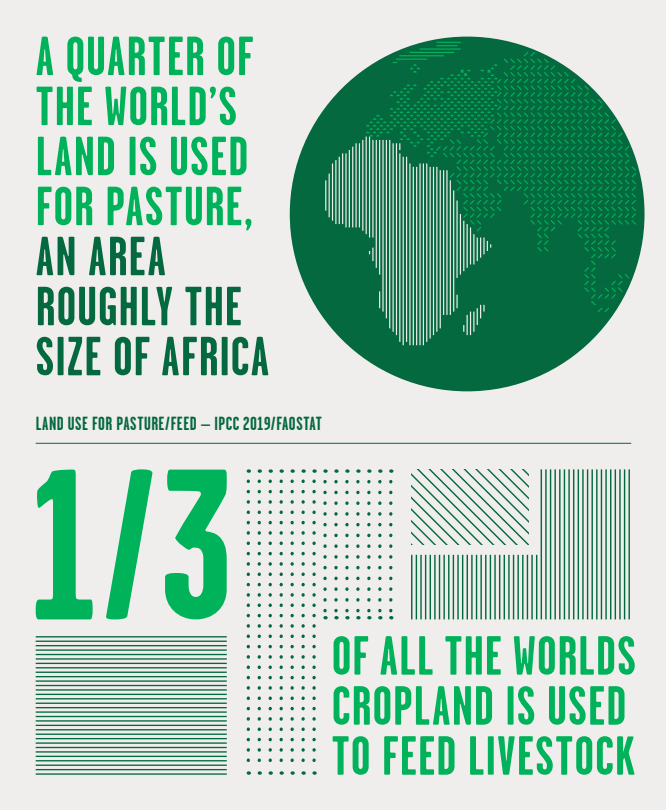
- Less embedded land use linked to imported feed (even if local land footprint may be larger due to less intensive practices)
- High levels of nutrient recycling, with soils replenished and enriched (e.g. through careful manure management)
- A high ratio of nutritional value to external resource input (i.e. few inputs such as fertilisers or energy are required to generate nutritional value)
- Diverse outputs (i.e. farms produce as well as meat or dairy)
- Both inputs and outputs embedded in a regional food economy, with short supply chains
- Innovation-driven by increasing nutritional output and environmental enhancement
- Productivity understood as the seeking of maximum nutritional value for minimal environmental damage, or maximum environmental enhancement.

But this discussion should not detract from the fact that too many people, predominantly in industrialised, higher-income countries, eat too many animal products. A few regions, home to 15% of the world's population, have both surplus production and high per capita consumption of meat and dairy: North America, the European Union (EU); Brazil, Argentina, Australia and New Zealand. Together these regions account for 43% of the world's emissions from meat and dairy production[26].

The data is clear: The world has reached "peak livestock"[5] - the current volume of production is unsustainable and needs to decline. In sum, reducing meat and dairy consumption is essential to:

- Reduce the environmental impact of meat consumption itself, whether through embodied emissions or through stopping driving land-use change;
- Spare land for other uses (forest regeneration, carbon dioxide removal etc.)[v];
- Compensate for lower yields from more environmentally friendly farming, by improving efficiency and freeing up land used to grow feed for other uses.

This is an issue of global equity and a global climate emergency. Those who consume the most meat and dairy need to reduce their consumption radically, and the losses should fall squarely on the largest producers, those most responsible for the problem.



2. DIETS: WHAT THE RESEARCH SAYS ABOUT CHANGING THEM

Diet is a lightning rod issue, "the latest front in the culture wars"[27], spanning overlapping debates on climate, health, social justice, biodiversity, animal ethics, rural livelihoods and sexual politics. Navigating the environmental and health challenge will require bold policy choices that support the mandate for intervention through informing and empowering citizens. These considerations should be central to ongoing reviews of food policy, such as the UK's forthcoming National Food Strategy.

There is limited evidence of effective policy interventions to achieve large-scale shifts in dietary choices[3,9]. However, lessons from previous transformations in agriculture and public health interventions can provide a strong starting point[3,28]. While there are enormous variations and nuance, evidence collated within large-scale and systematic reviews into dietary change generally agrees that:

- Multi-component, multi-level interventions are usually the most successful[28–30]
- **Informing, educating and empowering the public may help create a mandate for change, but is not a substitute for robust action**[28]
- Approaches aimed at getting individuals to change voluntarily have limited impact[28,30]
- Taxing or subsidising to change prices of specific foods alters their consumption, with some building evidence that they have a corresponding impact on planned health outcomes[28–30]
- **Governments need to govern: Industry agreements and voluntary certification approaches can help shift the market but make little impact without broader supportive and substantive policy environment actually to deliver on their intended results**[28].

There are some specific considerations to add to these findings for meat and dairy reduction. Firstly, the gap between values and actions for dietary change is hypothesised to be wider for environmental issues than for health issues[31]. Secondly, despite moves towards thinking about food consumers as food citizens, policymakers will need to acknowledge that both will continue to exist, that they will require different policy approaches and are not static constituencies[32]. And thirdly, civil society and government will need to be creative to overcome their hesitation on championing dietary change, building broad new coalitions to affect change[33].

v A common argument put forward by livestock industries in some countries is that they utilise land only suitable for growing grass - this argument presumes the default use for the land is agriculture, rather than, for example, rewilding or natural climate solutions[10].

BOX 2: 'LESS AND BETTER' MEAT

What is a 'less and better' approach? A less and better approach argues that while eating less meat and dairy is critical for fighting climate change, there is an imperative to think about the diverse livelihood, environmental, animal welfare and health benefits of well-managed livestock systems. In the UK this approach is supported by a wide range of civil society organisations and championed by the Eating Better coalition. For more information visit: **www.eating-better.org**

In public health, the acceptability of a measure depends on whether it is 'proportionate'. The Nuffield Intervention Ladder shows the different ways in which public health interventions can affect people's choices[34]. Table 1 outlines demand-side interventions into diets to reduce meat against the Nuffield Intervention Ladder.

TABLE 1 INTERVENTIONS TO REDUCE MEAT AND DAIRY IN DIETS, MAPPED AGAINST THE NUFFIELD LADDER OF POLICY INTERVENTION[34]

	Example interventions
Eliminate choice	• Ban sale of (types of) meat and dairy • Ban import of (types of) meat and dairy
Restrict choice	• Ration (types of) meat and dairy
Alter choices by disincentives	• Meat tax, either through VAT, a flat tax or a broader carbon tax
Alter choice through incentives	• Subsidy/voucher programmes targeted at plant-based proteins
Guide choice by changing the default	• The requirement for % of meat and dairy-free offer in food service and retail • Public procurement guidelines, regulation
Enable choice	• The requirement to provide meat and dairy-free option(s)
Provide information	• Dietary guidance • Public awareness campaigns
Do nothing	

Interventions lower down the ladder are considered "softer" policy options, as they are less intrusive. So, for example, while rationing would be arguably the most equitable and effective way to reduce meat consumption, there is limited evidence that it would currently be considered proportionate[vi]. On the other hand, the research summarised above demonstrates that despite the popularity of "soft" measures among politicians, reducing meat and dairy consumption at scale will require a range of interventions ranging from the more substantial, to the more incremental.

Therefore, in the last section of this brief, we present three practical, but impactful, policy ideas to reduce meat and dairy in diets. For more policy pointers for transitioning to less and better meat and dairy, see also Eating Better's Better by Half: A Roadmap For Less and Better Meat and Dairy"[35].

3. THREE POLICY PROPOSALS

ONE: PLANT-BASED PUBLIC PROCUREMENT

Governments spend substantial amounts of public money on food procurement in public institutions. In the UK, for example, £2.4 billion is spent annually on food and catering services by public institutions, which equates to 5.5% of total UK food sales[36]. Public institutions, therefore, can and should take a leading role in mainstreaming lower meat and dairy in our diets.

Reductions in meat and dairy are already happening in public institutions - for example, a review of 31 green public procurement initiatives across Europe showed 30% already have criteria around reducing meat and dairy[37]. The rollout of meat-free days in public canteens is also increasingly common, including in schools[38]. The Scottish Government announced limits on the amount of red and processed meat served in schools in June 2019[39] and New York public schools will halve their red meat purchases and phase out processed meat entirely by 2030[40]. Providing options is also becoming mainstream in public institutions with, for example, Portuguese public canteens now required by law to have vegan and vegetarian options[41]. On the health side, countries are also using quality criteria and nutritional guidelines to ensure that price is not the sole driver of food procurement in public institutions[37]. Health and environmental goals have huge overlaps: the Eatwell guidance in the UK represents a 78% reduction in red meat consumption[42].

Public procurement targets, guidelines, limits and legislation, could mainstream lower meat and dairy (and ensure high quality, local produce for the rest)[35] and represent a minimum standard of government action. There are multiple benefits that such progressive public procurement could bring; these are covered in detail within Feedback's policy brief 'Re-regionalising food economies: public procurement for shorter supply chains' (forthcoming).

vi It is perhaps more conceivable that this could be envisaged as part of a broader policy of carbon rationing, an idea that has a longer history as a policy idea[69].

TWO: UTILISING CREATIVE AND AMBITIOUS FISCAL POLICY FOR THE PUBLIC GOOD

A step up in ambition from procurement approaches, the evidence from public health initiatives shows that financial instruments have a role to play in dietary transition, alongside broader policy approaches[28,30,43]. Conversely, however, the evidence is clear that information and education are not enough to support a dietary transition alone[28,44]. What role could fiscal policy play in reducing consumption of meat and dairy? This section looks at both fiscal incentives and disincentives, raising ideas for consideration.

Fiscal carrots

There is substantial opportunity to use monetary incentives to drive change through initiatives such as subsidies and voucher systems. For example, the UK Healthy Start Scheme introduced vouchers for fruit, vegetables and milk for low-income households. The scheme increased spending on fruit and vegetables, was more effective than an equivalent value cash benefit and improved the nutritional composition of household shopping baskets[45]. Options that combine climate, social and health justice could look to an expanded programme, available to all families receiving child benefit. In the US, government food vouchers are redeemable for double the value if spent at a local farmers market[46]. The coupons, therefore, support local, sustainable farming businesses and could be an approach used for healthy, sustainable diets.

Health-focussed programming is likely to bring environmental benefits too. Explicitly embedding sustainability criteria as a matter of course and increasing investment in such programmes could offer a high impact value for money approach. The Food and Farming Commission's recently proposed "Beetroot Bond", which would provide a monthly dividend to every adult and child to spend on fresh, locally produced food is one such ambitious and exciting proposal[1].

Fiscal sticks

Taxing food for health or the environment is controversial. There are complicated political and ethical arguments around the role of the state in imposing food values on its citizens. Every politician fears to be an architect of the "nanny state". Consumption taxes are widely regarded as regressive, meaning their use must be linked to other policies to offset their effects. Food policy needs to pick its way through these knotty issues.

Different forms of taxation would have different effects, despite using a common theory of change: price drives choice and would bring the price of meat closer to its true societal cost[21]. A fossil fuel, or a carbon tax, applied broadly across the economy would behave differently to taxes targeted specifically at meat. States are also not entirely free to set their climate taxation strategies, but there is a broad legal scope for climate-related animal product taxes[47].

But despite the rhetoric around a meat tax, in Europe, the argument about taxing food is already settled: Value Added Tax is targeted at luxury goods and excludes staple foods. This begs the question, in the middle of a climate crisis, is meat a luxury or a staple? Our VAT systems are already values-based and incentivise some foods over others: in the UK, beef, lamb, pork and chicken are all excluded from VAT. Shelled nuts are not. Taxation should not be dismissed out of hand and is an issue worth further consideration[48]. As an illustration, a 500g pack of Tesco Beef Steak Mince (currently £2.50) would cost £3.00 with the standard rate of VAT added.

Implementing a standard rate of VAT on the most-environmentally and health-damaging foods would be simple, it would work, and it would be quick to implement. It would send a clear signal about the form of society we want. This makes it mutually supportive of other initiatives. There are optimal levels of taxation for different products depending on their emissions footprint[49], and various VAT/GST systems have different levels, but a standard rate would be most easily and rapidly implemented. Taking a worse-first approach, charging a standard rate of VAT on other products most detrimental to health and the environment could also be considered[vii]: vegetable oils, processed meat products, ultra-processed foods etc.[50]. Other suggestions include charging VAT linked to the form of production (i.e. exemptions for government-backed sustainability labels)[51], or more ambitiously, fundamental changes to VAT itself to embed sustainability[52].

Those on lower incomes would need linked support through concrete, visible initiatives for sustainable eating (see, for example, "fiscal carrots"). So, while consumption taxes are regressive, policies are more than one individual measure. As well as directing revenue back to those affected by any individual changes, broader progressive taxation, such as a carbon usage tax[53] could also generate revenue to offset effects. Policymakers in Germany considering applying the standard VAT rate of 19% (up from 9%) onto meat products are also discussing revenue being redirected to farmers to support agricultural transitions or improved animal welfare[54].

vii Dairy is slightly more complex

Against other measures, VAT is a progressive and proportional response. Small farms would remain exempt, with many falling below the thresholds in European countries (£85,000 in the UK, for example). They could sell meat to citizens more cheaply than supermarkets or large farms[55]. Further afield, as enshrined within the Paris and Kyoto agreements[47], it is unfair that the costs of (predominantly) Western meat consumption are born not by those who consume it, but those who are harmed by its effect on the global climate[56].

THREE: GOOD GOVERNANCE TO STOP DRIVING DUMB DEMAND

In the face of growing global interest in sustainable diets, large segments of the industrialised agricultural sector are acting to protect existing investments. Trade deals are opening up new markets, with the EU's Mercosur agreement swapping cars for cows[57], government quangos are fighting to defend meat industry products through information campaigns defending red meat[viii], and agribusiness in both the EU and the USA is lobbying for a ban on use of meat and dairy terms (such as 'burger') for plant-based products[58]. In short, "less" is a challenging message for the industry to swallow. In the UK, the National Farmers Union has already made it clear it sees its net-zero targets as independent of demand[59]: increased export opportunities will combine with improved efficiency to somehow meet net-zero.

On the production side, a just transition[60] towards healthy diets that mainstream less and better meat will require broad changes in the way farmers are incentivised[1,35,61]. Action could also be taken on the consumption side. In short, good governance can stop driving dumb demand.

The EU has made commitments to policy coherence that would not be detrimental to the environment or development[62], yet it has spent over 30 million euros on promoting beef exports alone, often to lower-income countries[ix]. Given the overlap between healthy and environmentally beneficial diets, and the vast disparity in advertising spend between healthy and unhealthy food[1], regulating the advertisement and promotion of the forms of meat and dairy most harmful to health and the environment seems proportionate. Spending on junk food advertising by industry is 30 times what governments spend on healthy eating programmes[63], and research from public health shows the enormous volume of food advertising children and adults see, as well as the impact this advertising has on our food choices[30,63,64]. Coalitions of health and environmental organisations could work to achieve mutually beneficial health and environmental goals to improve our food environments: Ideas could include plain packaging (a la cigarettes) for the worst food products, advertising bans (particularly for children) and the use of watchdogs to regulate the frequent use of potentially misleading advertising around meat[x].

BOX 3: THE BIGGEST BULL ON OUR SUPERMARKET SHELVES

Feedback's campaign Total Bull responded to a growing awareness that food marketing is enormously powerful, and that brands and retailers spend millions on marketing to sell high volumes of food which is bad for both human and planetary health, including cheap, industrially produced meat. From packaging designs which hint at green fields to brand name referencing traditional, 'family farm' styles of animal production, labelling conjures an idealised image of bucolic production. One particularly egregious example identified by the campaign was the supermarket practice of branding their cheapest meat products with farm names: for example, Tesco's 'Woodside Farms' for pork products or Lidl's 'Birchwood Farm' – neither of these farms exists, but they are useful corporate marketing nudges that conjure associations of small-scale, 'traditional' farming, and obscure the unpleasant reality of industrial farming which lies behind very low meat prices. Retailer and brands' control of almost every aspect of our shopping experience demonstrates their power over our dietary choices, and the difficulties in shifting consumption towards 'better' meat. This is explored further in our report 'Meat Us Halfway: A scorecard assessing how UK supermarkets are supporting a shift to healthy, low meat diets' (2019).

Governments need to inform, educate and empower citizens to drive a progressive reimagining of the role of meat and dairy within public diets[35]. Mainstreaming sustainability alongside health goals within dietary guidance and public procurement are two obvious places to start. Utilising progressive democratic process to do so would be better: For example, using citizen's assemblies to collectively define future food priorities (see UK's National Food Strategy) or providing community shares in local food systems are two such approaches hypothesised to build food citizenship and increase a sense of ownership[1].

While national initiatives are essential; international leadership would help prevent changes in national food systems having unintended global effects. Utilising existing frameworks, such as including modifying food demand in Nationally Determined Contributions (NDC's) under the Paris Agreement, would be a good step. Currently, none of the top 30 carbon-emitting countries includes

viii See, for example, https://ahdb.org.uk/knowledge-library/red-meat-and-the-environment

ix Figure covers programmes funded through The Consumers, Health, Agriculture and Food Executive Agency (CHAFEA) excluding those focusing on organic produce70

x See, for example: https://www.ciwf.org.uk/news/2011/10/Telling-porkies

meat reduction in their Intended Nationally Determined Contributions to meeting the Paris Agreement goals. More ambitiously, there have been calls for existing, or new, supra-national bodies to embrace the grand challenge of sustainable and healthy food for all[3]. At a global level, one potential source of inspiration for such grand ambition is found within public health. In 2003 the World Health Organization Framework Convention on Tobacco Control (WHO FCTC) became the most quickly ratified treaty in United Nations history[65]. The agreement enacts a series of worldwide standards and limits to tobacco use in order "to protect present and future generations from the devastating health, social, environmental and economic consequences of tobacco consumption and exposure to tobacco smoke". The programme provides the overarching framework for reducing tobacco consumption ranging from excise taxes, to prevention programmes, smoking bans to labelling. A similar international approach for the environmentally catastrophic, diet-inequality driving, big livestock industry could be fruitful.

4. CONCLUSION

We can argue until the cows come home about how to fix the broken food system. But as the UK's Committee on Climate Change starkly outlined in July this year, urgent action on climate change is needed, and targets are not the same as practical climate change policies[66]. This policy brief has started to plug that gap by highlighting such policies around public procurement, fiscal policy, and regulating critical drivers of meat demand, advertising and marketing. These demand-side approaches are intended to continue to build the momentum of the less and better debate. To be genuinely fruitful, however, they should be considered as part of a broad-based, comprehensive policy platform around healthy and sustainable food for all, one that includes farmers, citizens, businesses and producers. Otherwise, we risk aiming for the heart but hitting the stomach.

REFERENCES

1. Food Farming and Countryside Commission. *Our Future in the Land*. (2019).
2. Ranganathan, J. *et al. Shifting Diets for a Sustainable Future*. *Creating a Sustainable Food Future* (2016). doi:10.2499/9780896295827_08
3. Willett, W. *et al.* Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems. *Lancet (London, England)* **393**, 447–492 (2019).
4. Godfray, H. C. J. *et al.* Meat consumption, health, and the environment. *Science* **361**, (2018).
5. Harwatt, H. Including animal to plant protein shifts in climate change mitigation policy: a proposed three-step strategy. *Clim. Policy* **19**, 533–541 (2019).
6. Rockström, J. *et al.* A safe operating space for humanity. *Nature* (2009). doi:10.1038/461472a
7. Vermeulen, S. J., Campbell, B. M. & Ingram, J. S. I. Climate Change and Food Systems. *Annu. Rev. Environ. Resour.* (2012). doi:10.1146/annurev-environ-020411-130608
8. IPCC. *IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems*. (2019).
9. IPCC. Impacts of 1.5°C of Global Warming on Natural and Human Systems. *Global Warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change,* (2018).
10. Griscom, B. W. *et al.* Natural climate solutions. *Proc. Natl. Acad. Sci.* **114**, 11645–11650 (2017).
11. Dagevos, H. & Voordouw, J. Sustainability and meat consumption: is reduction realistic? *Sustain. Sci. Pract. Policy* **9**, 60–69 (2013).
12. Godfray, H. C. J. *et al.* Meat consumption, health, and the environment. *Science (80-.).* **361**, eaam5324 (2018).
13. EPHA. *Transforming European food and drink policies for cardiovascular health*. (2016).
14. Steinfeld H, Gerber P, Wassenaar T, Castel V, Rosales M, D. H. C. Livestock's long shadow, environmental issues and options. *Food Agric. Organ. Rome* (2006).
15. Reisinger, A. & Clark, H. How much do direct livestock emissions actually contribute to global warming? *Glob. Chang. Biol.* **24**, 1749–1761 (2018).

16. IPES Food. *Towards a Common Food Policy for the European Union*. (2019).

17. de Visser, C. L. M., Schreuder, R. & Stoddard, F. The EU's dependency on soya bean import for the animal feed industry and potential for EU produced alternatives. *OCL* **21**, D407 (2014).

18. Machovina, B., Feeley, K. J. & Ripple, W. J. Biodiversity conservation: The key is reducing meat consumption. *Sci. Total Environ.* **536**, 419–431 (2015).

19. Kehoe, L., Reis, T., Virah-Sawmy, M., Balmford, A. & Kuemmerle, T. Make EU trade with Brazil sustainable. *Science (80-.).* **364**, 341.1-341 (2019).

20. ECDC/EFSA/EMA. ECDC/EFSA/EMA second joint report on the integrated analysis of the consumption of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from humans and food□producing animals. *EFSA J.* **15**, (2017).

21. Kenny, C. The Economic Case for Taxing Meat. *Bloomberg Business* (2014).

22. Nelson, M. E., Hamm, M. W., Hu, F. B., Abrams, S. A. & Griffin, T. S. Alignment of Healthy Dietary Patterns and Environmental Sustainability: A Systematic Review. *Adv. Nutr. An Int. Rev. J.* **7**, 1005–1025 (2016).

23. Frank, S. *et al.* Structural change as a key component for agricultural non-CO2 mitigation efforts. *Nat. Commun.* **9**, 1060 (2018).

24. Feedback. *Feeding surplus food to pigs safely: A win-win for farmers and the environment*. (2018).

25. Van Zanten, H. H. E., Van Ittersum, M. K. & De Boer, I. J. M. The role of farm animals in a circular food system. *Glob. Food Sec.* **21**, 18–22 (2019).

26. GRAIN & ITAP. *Emissions impossible: How big meat and dairy are heating up the planet*. (2018).

27. Anthony, A. How diet became the latest front in the culture wars. *The Guardian* (2019).

28. Garnett, T., Mathewson, S., Philip, A. & Fiona, B. Policies and actions to shift eating patterns: What works? A review of the evidence of the effectiveness of interventions aimed at shifting diets in more sustainable and healthy directions. *Food Clim. Res. Netw.* 85 (2015). doi:10.1186/s12889-016-3988-7

29. Pearson-Stuttard, J. *et al.* Comparing effectiveness of mass media campaigns with price reductions targeting fruit and vegetable intake on US cardiovascular disease mortality and race disparities. *Am. J. Clin. Nutr.* **106**, 199–206 (2017).

30. Mozaffarian, D. *et al.* Population Approaches to Improve Diet, Physical Activity, and Smoking Habits. *Circulation* **126**, 1514–1563 (2012).

31. Sanchez-Sabate, R. & Sabaté, J. Consumer Attitudes Towards Environmental Concerns of Meat Consumption: A Systematic Review. *Int. J. Environ. Res. Public Health* **16**, 1220 (2019).

32. de Bakker, E. & Dagevos, H. Reducing Meat Consumption in Today's Consumer Society: Questioning the Citizen-Consumer Gap. *J. Agric. Environ. Ethics* **25**, 877–894 (2012).

33. Laestadius, L. I., Neff, R. A., Barry, C. L. & Frattaroli, S. "We don't tell people what to do": An examination of the factors influencing NGO decisions to campaign for reduced meat consumption in light of climate change. *Glob. Environ. Chang.* **29**, 32–40 (2014).

34. Nuffield Council on Bioethics. *Public health: ethical issues.* (2007).

35. Eating Better. Better by half: A roadmap to less and better meat and dairy. *Eating Better* (2019). Available at: https://www.eating-better.org/betterbyhalf. (Accessed: 19th July 2019)

36. Bonfield, P. *A Plan for Public Procurement: Enabling a healthy future for our people, farmers and food producers*. (2014).

37. Sjögren, P., Lee, P., Neto, B., Quintero, R. R. & Wolf, O. *Revision of the EU GPP Criteria for theProduct Group Food and Catering Services*. (2015).

38. Criss, D. New York public schools to have 'Meatless Mondays' starting this fall. *CNN* (2019).

39. BBC. Processed red meat to be limited in Scotland's schools. *BBC Online* (2019).

40. City Hall Press Office. Action on Global Warming: NYC's Green New Deal. *NYC.gov* (2019). Available at: https://www1.nyc.gov/office-of-the-mayor/news/209-19/action-global-warming-nyc-s-green-new-deal#/0. (Accessed: 24th July 2019)

41. Henriques, J. G. Já é lei: obrigatório um prato vegetariano em todas as cantinas públicas. *Publico* (2017).

42. Scarborough, P. *et al.* Eatwell Guide: modelling the dietary and cost implications of incorporating new sugar and fibre guidelines. *BMJ Open* **6**, e013182 (2016).

43. Springmann, M., Mason-D´Croz, D., Robinson, S., Wiebe, K., Godfray, C., Rayner, M. and S. Health-motivated taxes on red and processed meat : a modelling study on optimal tax levels and health and climate-change co-benefits. *Glob. Trade Anal. Proj.* 1–20 (2018). doi:10.1080/00102209808924174

44. Wellesley, L., Happer, C., Froggatt, A. & Philo, G. Changing Climate, Changing Diets Pathways to Lower Meat Consumption. *Chatham House Rep.* 64 (2015).

45. Griffith, R., von Hinke, S. & Smith, S. Getting a healthy start: The effectiveness of targeted benefits for improving dietary choices. *J. Health Econ.* **58**, 176–187 (2018).

46. Schumacher, A., Briggs, S. & Krumbhaar, G. *Supporting SNAP (Food Stamp), WIC and Senior Farmers Market Nutrition Programs*. (2009).

47. Bähr, C. C. Greenhouse Gas Taxes on Meat Products: A Legal Perspective. *Transnatl. Environ. Law* **4**, 153–179 (2015).

48. Lang, T. & Rayner, M. A meat tax need not hit the poor. *The Guardian* (2019).

49. Springmann, M. *et al.* Mitigation potential and global health impacts from emissions pricing of food commodities. *Nat. Clim. Chang.* **7**, 69–74 (2017).

50. Vega Mejía, N., Ponce Reyes, R., Martinez, Y., Carrasco, O. & Cerritos, R. Implications of the Western Diet for Agricultural Production, Health and Climate Change. *Front. Sustain. Food Syst.* **2**, (2018).

51. Scott-Cato, M. Green MEP calls for VAT on processed and factory farmed meat post-Brexit. *www.mollymep.org* (2019). Available at: https://mollymep.org.uk/2018/01/29/vat-processed-factory-farmed-meat-post-brexit/. (Accessed: 19th July 2019)

52. Timmermans, B. & Achten, W. M. J. From value-added tax to a damage and value-added tax partially based on life cycle assessment: principles and feasibility. *Int. J. Life Cycle Assess.* **23**, 2217–2247 (2018).

53. Murphy, R. *The Joy of Tax*. (Bantam Press, 2015).

54. Chambers, M. Sausage-loving Germans chew over meat tax plan. *Reuters* (2019).

55. Fairlie, S. *Farming Policy After Brexit: A report for the Greens*. (2017).

56. The Danish Council on Ethics. *The Ethical Concumer Climate Damaging Foods*. *The Danish Council of Ethics* (2016).
57. Millan, C. & Rosario, J. Do. From Agriculture to Industry, the EU-Mercosur Deal's Main Points. *Bloomberg* (2019).
58. Keller and Heckman LLP. National Milk Producers Federation Petitions FDA on Non-Dairy Alternative Labels. *The Daily Intake* (2019).
59. Morrison, O. Cutting meat and dairy consumption 'won't help the environment', says NFU. *Food Navigator* (2019).
60. ITUC. *Just Transition - Where are we now and what's next? A Guide to National Policies and International Climate Governance*. (2017).
61. New Economics Foundation. *Grow Green: Solutions for the farm of the future*. (2019).
62. European Union. *Policy Coherence for Development*. (2019).
63. O'Dowd, A. Spending on junk food advertising is nearly 30 times what government spends on promoting healthy eating. *BMJ* j4677 (2017). doi:10.1136/bmj.j4677
64. Garnett, T. *et al.* Grazed and confused? Food Climate Resarch Network Report. (2017).
65. Nikogosian, H. WHO Framework Convention on Tobacco Control: a key milestone. *Bull. World Health Organ.* **88**, 83–83 (2010).
66. Comittee on Climate Change. UK credibility on climate change rests on Government action over next 18 months. *Comittee on Climate Change* (2019). Available at: https://www.theccc.org.uk/2019/07/10/uk-credibility-on-climate-change-rests-on-government-action-over-next-18-months/. (Accessed: 19th July 2019)
67. Searchinger, T. *et al. Creating a Sustainable Food Future: A Menu of Solutions to Feed Nearly 10 Billion People by 2050*. (2018).
68. Loboguerrero, A. M. *et al.* Food and Earth Systems: Priorities for Climate Change Adaptation and Mitigation for Agriculture and Food Systems. *Sustainability* **11**, 1372 (2019).
69. Wilby, P. Carbon rationing: a modern morality tale. *New Statesman* (2007).
70. CHAFEA. Campaigns map and statistics. *CHAFEA* (2019). Available at: https://ec.europa.eu/chafea/agri/campaigns/map-and-statistics-target-countries. (Accessed: 16th July 2019)

Feedback regenerates nature by transforming the food system. To do this we challenge power, catalyse action and empower people to achieve positive change.

From 2025 we are **FOODRISE**

This document uses our old branding

Published August 2019

Author: Daniel Jones and Jessica Sinclair Taylor

Suggested citation: Feedback. 2019.
The Cow in the Room: a call for policy for sustainable diets.
London: Feedback.

www.feedbackglobal.org
@feedbackorg

Registered in England and Wales,
charity number 1155064

FEED BACK
FEEDING PEOPLE, BACKING THE PLANET