PLANT-BASED CATERING MOTION

supplementary material

PLEASE READ THIS PAGE, EVEN IF YOU SKIP EVERYTHING ELSE

The core of this issue is extremely simple; here are the facts:

- **Food systems account for *a quarter* of global greenhouse gas emissions.**[1]
- **Left unchecked, *our diets alone* will emit enough greenhouse gases to warm the earth well past 1.5 degrees, using up 75% of our carbon budget for 2.0 degrees.**[2]
- ***What we eat* has a huge impact on our emissions.**[3,4,5,6]
- **The impacts of climate change will be massive and widespread, and we need to act at *speed* & *scale* to reduce our emissions.**[7,8]

So, we need to change what we eat to help save the planet. Plants are much more efficient than animals, as they are further down the food chain, and so emit much less carbon dioxide and methane and take up much less space[9]. In the UK, a plant-based diet would reduce emissions from the average person's diet by as much as 84%[10], so **the thing we must do to ensure our diets emit less is eat more plants and fewer animals.**

By not transitioning to plant-based catering, we neglect ~25% of global emissions and condone the effects of climate change.

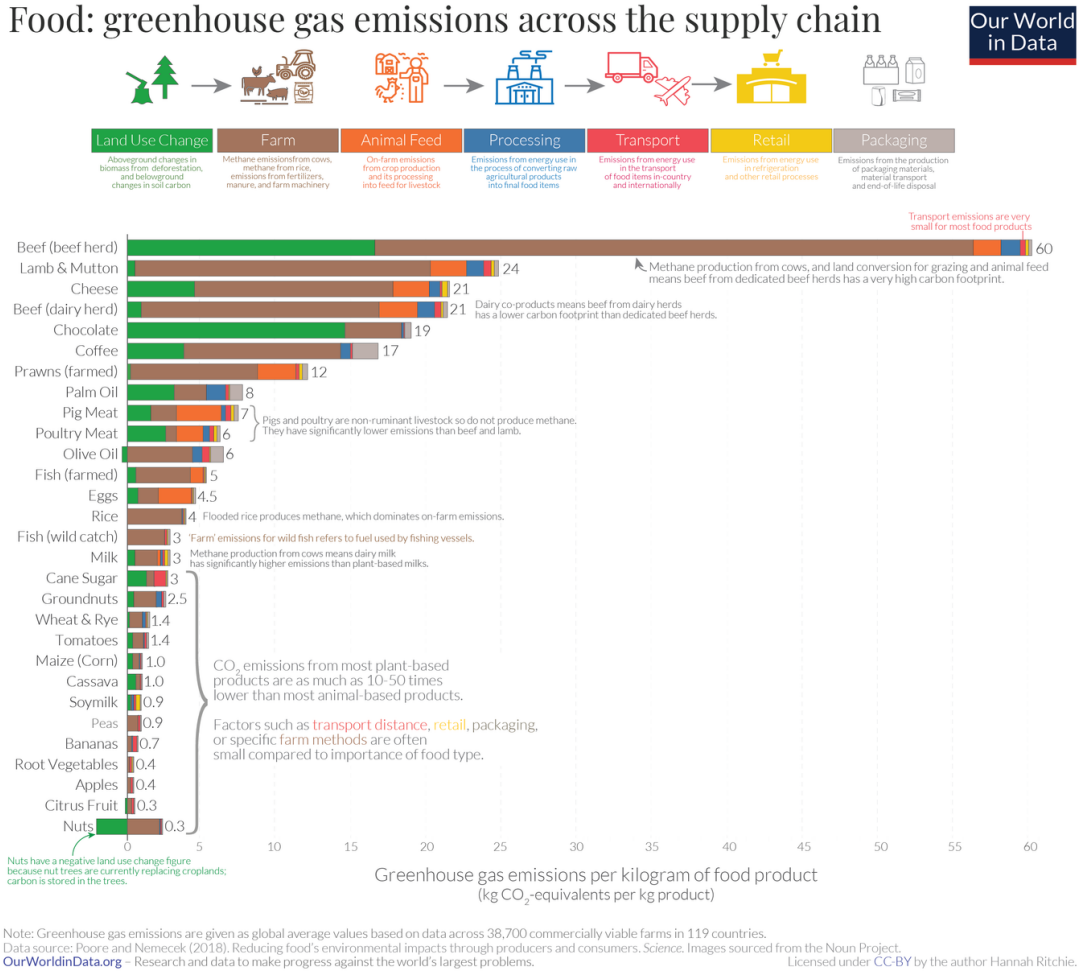
There are so many co-benefits to eating more plants, including benefits to health, biodiversity, and pollution. Our argument is strong from any of these perspectives, but we hope the above is especially clear. There really is no alternative but to act on this. Our diets must change, and our habits must change, and our cultures must change. It will not be easy, but plant-based catering is a good start.

In the rest of this document we address concerns raised when we presented our motion in April in FAQ format. Where concerns remain, we return to our core argument: the urgency of action required to address the planetary crises.

WHY IS A PLANT-BASED FOOD SYSTEM NEEDED?

The consumption of *animal products* alone accounts for around 20% of global greenhouse gas (GHG) emissions.[11] Without radical systems change, our current dietary choices will use the planet's remaining 1.5 °C carbon budget within 30 years. Plant-rich diets could reduce those emissions by 50% and these along with systemic changes are required to get to net zero.[2-1]

The graph below shows how emissions vary by food accounting for their emissions across the supply chain. We see that meat and dairy emits much more than plant-based foods and that tackling transport, retail, and packaging emissions only addresses a small portion of the emissions of most foods.



Note: Greenhouse gas emissions are given as global average values based on data across 38,700 commercially viable farms in 119 countries.
Data source: Poore and Nemecek (2018). Reducing food's environmental impacts through producers and consumers. *Science*. Images sourced from the Noun Project.
OurWorldinData.org – Research and data to make progress against the world's largest problems. Licensed under CC-BY by the author Hannah Ritchie.

77% of agricultural land is used for animal agriculture[12], and in fact, animal agriculture is the primary driver of deforestation, accounting for three quarters of tropical deforestation[13]. Plant-based catering would relieve pressure on forests across the world and is essential to maintaining these ecosystems.

The world is facing a water crisis. Bovine meat uses at least 50 times more water than vegetables[14] while freshwater provision is increasingly an issue even here in the UK[15].

Health

Antimicrobial medicines are a cornerstone of modern medicine, not only in their treatment of illnesses, but also in their use in preventing infections post-surgery. The rise of antimicrobial resistant (AMR) 'superbugs' has been recognised as a major threat to human health by leading health organisations[16], with their use in animal agriculture being the major driver of this[17].

Zoonotic viruses (such as COVID-19, bird flus, swine flu, ebola), are also a major threat to human health, risking another pandemic. Animal agriculture exacerbates the risk and severity of viruses through (1) the pervasive use of crowded and unhygienic factory farms and (2) the increased human and wild-animal contact as a result of deforestation to produce more agricultural land for grazing or feed-crops.[18]

Lastly, we should remember that processed meat causes cancer, and red meat probably causes cancer.[19] In 2019, 900,000 additional deaths were caused by red meat.[20] Evidence indicates that whole-food plant-based diets are effective at reducing the risk of prevalent diseases such as cancer, strokes, heart-disease and diabetes.[21] Plant-based diets not only avoid health issues caused by meat, but also reduce the risk of other non-communicable diseases.

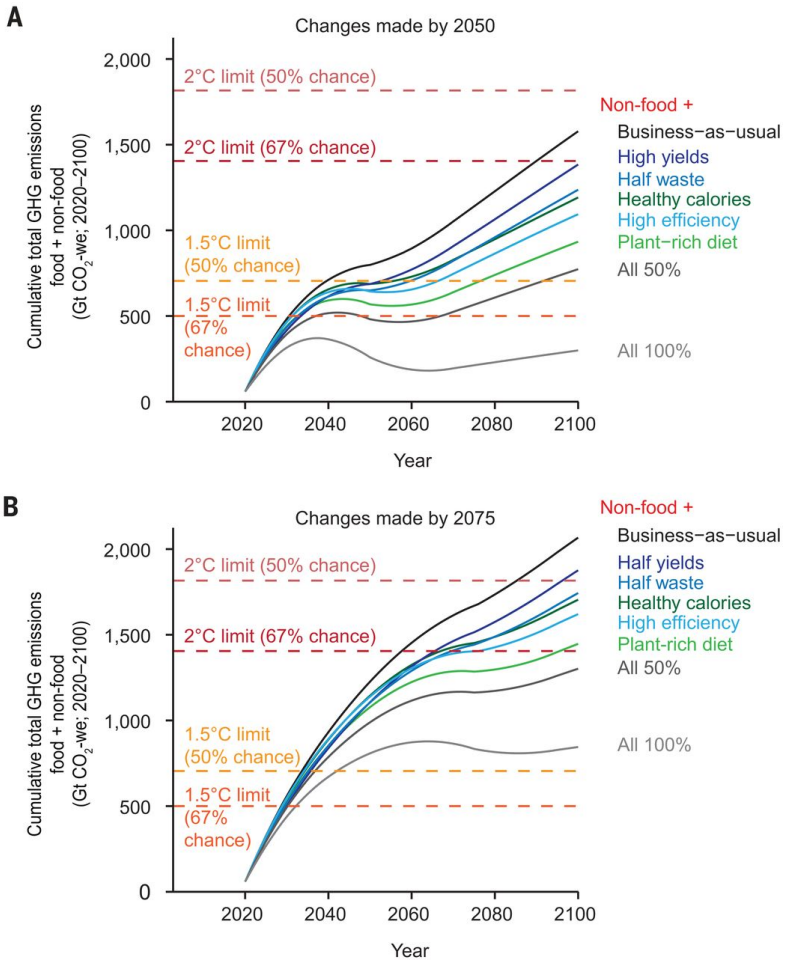
Many organisations, such as the WHO and the UN FAO, endorse plant-based diets as healthy and nutritionally complete when properly implemented.[22] Just like it is possible to be unhealthy and eat meat, it is possible to be unhealthy and eat only plants, but it is certainly possible to eat a healthy plant-based diet.

Inequality & discrimination

Overconsumption of animal products disproportionately harms low- and middle-income countries. Industrial fishing has depleted fishing stocks around the world, driving fishermen and their communities to poverty, starvation, and migration. Droughts and flooding due to climate change disproportionately affect the Global South. By wasting calories through inefficient animal agriculture, people in the UK consume less than half as many calories as we actually grow, since most of our crops are fed to animals[23], in a world where more than 800 million people (1 in 9) are affected by hunger[24].

WHY ENTIRELY PLANT-BASED?

A fully plant-based system is a proportional response to the climate catastrophe. Even if we completely ban fossil fuels right now, we still won't be able to reach the 1.5 °C goal set by the Paris Agreement if animal agriculture persists.[2-2]



In the specific case of Imperial, a UROP found that removing meat and dairy from catering would reduce our catering's emissions by 40%. It also found that plant-based protein was cheaper and less emitting than meat protein (except game, which was the cheapest but emits more than plants) and that meat and dairy make up 56% of our catering's emissions. Note this study only covers Taste Imperial and events catering.[25]

Transitioning to a fully plant-based catering system within Imperial College London is not about taking away anybody's personal choice. Indeed, individuals can still follow whatever diet they wish and eat whatever food they want in their daily lives. The College has stated this themselves, saying in an interview "we're not telling people what they can eat across the week or across the year. It's just what do we make available and that we're responsible for in our catering outlets? What people choose is up to them, but what we make available is up to us."

Instead, the proposed change needs to take place on an institutional level. Imperial College London, as a world-leading centre for academic research, must take the lead in promoting a fair and sustainable food system. When the scientific research so overwhelmingly shows that moving towards a plant-based future offers the best chance to avoid the worst impacts of climate catastrophe, powerful institutions become complicit by failing to take decisive action.

By only serving plant-based foods in Imperial-owned and -managed eateries, the College can once more prove itself the pioneering institution it aims to be. A fully plant-based menu would align with the University's existing sustainability ambitions and showcase its environmental and social credentials to the world.

What about locally sourced food?

At Imperial, the UROP mentioned above found that sourcing food locally would increase catering's emissions by 4% rather than decrease them, so this should not be a priority.[25-1]

In general, GHG emissions from transportation make up a very small amount of the emissions from food. The type of food is far more important than where the food comes from.[26] The first figure (above) shows, in red, the emissions from transport compared to total emissions for several products and illustrates this point very clearly. We can see that the portion is generally very small, but since this portion of the supply chain is quite visible, consumers tend to overestimate its significance.

Contrary to popular belief, air-freighted food only accounts for 0.16% of food miles.[27] It is difficult for consumers to identify which foods arrive this way: out-of-season asparagus, green beans and berries are common air-freighted goods, since they are highly-perishable. Avocados are not flown, and even when shipped over great distances, their emissions are much less than locally-produced animal products.

What about grass-fed, free-range, red tractor, etc.?

Ignoring the various issues around the integrity of these kinds of accreditation, they do not mean a product is sustainable. Animals that have been farmed *extensively* - that is with more space available (e.g. grass-fed) - are less efficient than those farmed *intensively* so they emit more.[28] However, there are ethical issues around intensive, factory farming of animals, and since these extensive methods increase emissions and land use, the only ethical and sustainable option is simply to eat less animals.

IS PLANT-BASED CATERING ACCESSIBLE?

Can plant-based catering provide all the nutrients I need?

Yes! An appropriately planned plant-based catering is adequate (and beneficial) to the health of people of all stages of life, including infancy and pregnancy and for athletes.

> *"With appropriate expertise and planning, there is no reason why a vegan diet should not be well balanced and sufficient to meet the nutritional needs of any individual."* - British Dietetic Association

Plant-based diets are more than sufficient for protein and improve upon the status-quo with regards to *"fibre, folate, vitamin C, and phytochemicals [...] all essential factors for disease prevention, and optimal health and well-being."*[29]

Education of staff is essential to ensure the correct provision of Vitamins B12 and D, iodine, iron, selenium and Omega-3 fats[30] via plant-based foods which are rich in these or fortification. For example, iron is readily available from legumes and leafy greens paired with citrus; omega 3 can be digested from flaxseed, chia seeds, walnut or rapeseed (oil) and selenium occurs naturally in brazil nuts. Vitamins B12 and D and iodine require fortification or supplementation: both plant and animal products must be fortified with (or fed) B12 and iodine; and NHS UK recommends all adults supplement vitamin D (in winter) anyway.[21-1] However, Imperial currently conducts no

nutritional analysis of its catering provision and we don't see a novel need for such analysis with the transition to plant-based catering.

Is plant-based catering more expensive?

Absolutely not! A common misconception surrounds plant-based catering due to higher prices of boutique plant-based meat alternatives, such as the Beyond Burger. In fact, in high-income countries, plant-based catering could reduce food costs by up to one-third.[31,32]

Plant-based proteins such as lentils, chickpeas and beans are far cheaper than meat products. Indeed, a series of cheap recipes from UK Charity The Hunger Project called 'Live Below the Line' is almost entirely plant based.

WHAT ABOUT...

The economics of our catering outlets?

As we know from "Is plant-based catering more expensive?" above, ingredients for plant-based catering are cheaper to buy than for one with meat. This means costs would be lower for our catering outlets. One field study found that serving vegetarian meals did not have a negative impact on the number of meals sold or the turnover compared to previous years. It also notes that existing catering tends to cater primarily to male meat-eaters and that veg-meals are preferred particularly by women and those prone to flexitarian habits. Vegan meals which did not use meat-substitutes were particularly popular and vegetarian dishes sometimes sold out even when priced higher than the other options.[33]

There is economic uncertainty involved in making any change. The time span over which the transition to plant-based catering would take place and flexibility in how this is managed gives catering the opportunity to adapt where necessary.

The opinions of students?

As outlined immediately above, veg catering tends to be about as popular with students as meat catering. The primary factor is the individual dish, and not the diet.

Our survey shows that a supermajority (68%) of respondents feel positive or neutral about Imperial switching to entirely plant-based catering and 78% would like more plant-based options on campus.

Intolerances/allergies?

Adopting plant-based menus eliminates 5 (milk, eggs, crustaceans, fish, molluscs) of the 14 common allergens.[34] Allergy & sensitivity rates for allergens are difficult to know (estimates overleaf[35]), though 67% of the global population are lactose-intolerant, with non-European ethnicities being the worst affected.[36] Whilst gluten (found in wheat, barley, rye, and some oat varieties) sensitivity may be a concern, many plant-based dishes are naturally gluten free, and commercial availability of gluten-free ingredients and foods have increased rapidly in recent years.

Food	Lifetime self-reported prevalence (95% CI)	Point prevalence (95% CI)
Cow's Milk	5.7% (4.4-6.9)	3.1% (2.4-3.8)
Egg	2.4% (1.8-3.0)	1.8% (1.4-2.3)
Wheat	1.6% (0.9-2.3)	1.4% (1.0-1.8)
Soy	0.5% (0.3-0.7)	0.5% (0.4-0.6)
Peanut	1.5% (1.0-2.1)	2.1% (1.7-2.5)
Tree Nuts	0.9% (0.6-1.2)	2.4% (1.8-3.1)
Fish	1.4% (0.8-2.0)	0.8% (0.6-1.1)
Shellfish	0.4% (0.3-0.6)	1.0% (0.6-1.5)

ACKNOWLEDGMENTS

Thanks to the Cambridge University plant-based universities team for providing the structure and much of the content for this document.

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The NHS "With good planning and an understanding of what makes up a healthy, balanced vegan diet, you can get all the nutrients your body needs”

British Dietetic Association “a well-planned vegan diet can support healthy living in people of all ages”; “With appropriate expertise and planning, there is no reason why a vegan diet should not be well balanced and sufficient to meet the nutritional needs of any individual.”

World Health Organisation “a diet that is predominantly plant-based ... is recommended as part of a healthy lifestyle”

American Dietetic Association “vegan diets are healthful, nutritionally adequate, and may provide health benefits in the prevention and treatment of certain diseases”

British Nutrition Foundation “Vegetarian and vegan diets can be nutritious and healthy”

Academy of Nutrition and Dietetics “These diets are appropriate for all stages of the life cycle, including pregnancy, lactation, infancy, childhood, adolescence, older adulthood, and for athletes”

John Hopkins centre for a liveable future “A strong body of scientific evidence links excess meat consumption, particularly of red and processed meat, with heart disease, stroke, type 2 diabetes, obesity, certain cancers, and earlier death. Diets high in vegetables, fruits, whole grains and beans can help prevent these diseases and promote health in a variety of ways.”

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