2025 consultation

Submission type	Upload
Submitter	Sam Shaw
Response ID	277503

Disclaimer

Net Zero Commission Consultation – July 2025

Sam Shaw's Submission

General remarks

Diet is an essential game changer for climate change, biodiversity, water, and health, as recognised by the United Kingdom (UK) Climate Change Committee (CCC) who have recommended the UK reduce meat consumption by 25% by 2040 and 35% by 2050 (red meat 40% by 2050) and dairy consumption by 20% by 2035[1].

The climate, biodiversity, water and health impacts of the average NSW diet are huge (responsible for at least 15.8 million tonnes of CO2-e every year[2], almost 1000 threatened species and communities[3], regular water shortages, and a large portion of the $16.2billion in national diet related health costs every year[4]). Emissions, biodiversity conservation, water availability and health improvement goals mean we need a bold and substantial diet change. Evidence shows a **transition towards plant-based diets would help address all these issues**.

Other key points:

- At a time when we need all solutions on the table, ignoring this potent opportunity would be a major failure. **No single other climate change solution has such broad and significant benefits**.
- Policy and programs can take a staggered approach, that eases businesses and community members into the transition.
- Aligning with the recent CCC diet recommendation to the UK Government above, collaborative work between Imperial College London and the CCC stated **"government will need to take a pragmatic approach, begin now and learn by doing"[5]**.
- Experiments at Cambridge University showed "including more plant-based options on catering menus was found to greatly increase their sales, especially among meat-eaters".[6]
- Portugal legislated the requirement that all public-sector catering outlets include at least one fully plant-based (vegan) menu option that is available for everyone every day without special request.[7]

[1] UK Climate Change Committee, Seventh Carbon Budget, February 2025, Section 7.4.2, https://www.theccc.org.uk/publication/the-seventh-carbon-budget/#post-49721-_Toc187753762
[2] NSW Net Zero Emissions Dashboard, 2022 Snapshot by IPCC Sector, accessed July 2025, https://www.seed.nsw.gov.au/net-zero-emissions-dashboard
[3] NSW Environment & Heritage, Threatened Species, accessed July 2025, https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species
[4] Dietitians Australia, AIHW report confirms unhealthy eating has become the new smoking, https://dietitiansaustralia.org.au/aihw-report-confirms-unhealthy-eating-has-become-new-smoking-media-release#:~:text=Of%20the%20top%2020%20most,diet%2C%20costing%20Australia%20%2416.2billion.&text=Chief%20Executive%20Officer%20of%20Dietitians,against%20the%20nation's%20ailing%20health
[5] Richard Carmichael, Behaviour change, public engagement and Net Zero, 2019, page 10, https://www.theccc.org.uk/wp-content/uploads/2019/10/Behaviour-change-public-engagement-and-Net-Zero-Imperial-College-London.pdf
[6] Ibid., page 52.
[7] Ibid., page 8.

- **Livestock emission reporting needs some significant updates to properly reflect large sources of emissions currently missing, miscalculated, or misattributed**, e.g. livestock respiration, methane global warming potential and deforestation/feed crops respectively.[8]
- Deforestation due to agricultural activities should be reported under agriculture sector emissions rather than under the land sector, so the importance of reducing the relevant agricultural activity is clear. Also, agricultural emissions should be reported separately to Land Sector sinks for example in the breakdown by economic sector, so that the size of the agricultural emissions footprint is clear and not watered down by the carbon positive land sector.
- NSW and Australian governments can look to the positive example set by Denmark in tackling diet change. **Denmark have published an Action Plan for Plant-Based Food and stated that "plant-based foods are the future"**.[9]

Question 2: What actions can the commission take to engage across the community to help drive the shifts needed for the net zero transition and for effective climate change mitigation and adaptation?

Help educate government, community members, and businesses on the opportunity and importance of eating healthier, more sustainable food (predominantly plant-based as per EAT-Lancet commission guidelines). The EAT-Lancet Commission on Food, Planet, Health brought together 37 world-leading scientists from across the globe to answer this question: Can we feed a future population of 10 billion people a healthy diet within planetary boundaries? The EAT-Lancet report is the first full scientific review of what constitutes a healthy diet from a sustainable food system, and which actions can support and speed up food system transformation.[10] **This could include making plant-based food the default option in hospitals and health facilities** and promoting the importance of diet change as a means to improve health and reduce food footprints.

The following policy suggestions from the EAT-Lancet commission would be great to consider (see footnote for the full 2-page brief)[11]:

- Developing guidelines based on the planetary health diet and supporting the implementation of these guidelines through regulatory efforts.
- Applying effective food labelling laws and regulations to inform consumers about the implicit costs of unhealthy foods to human health and the environment and to shift existing producer practices.
- Addressing the different socioeconomic and political drivers of food through the full range of policy levers from "soft" (e.g. voluntary commitments) to "hard" (e.g. legislation) to advance the planetary health diet.
- Complementing other policy measures with public education campaigns, particularly on what constitutes a planetary health diet.

[8] World Watch Institute, What If the Key Actors in Climate Change are Cows, Pigs and Chickens?, 2009, https://awellfedworld.org/wp-content/uploads/Livestock-Climate-Change-Anhang-Goodland.pdf
[9] Ministry of Food, Agriculture and Fishers of Denmark, Danish Action Plan for Plant-Based Foods, 2023, https://en.fvm.dk/Media/638484294982868221/Danish-Action-Plan-for-Plant-based-Foods.pdf
[10] The EAT-Lancet Commission, webpage, https://eatforum.org/eat-lancet-commission/
[11] The EAT-Lancet Commission, Brief for Policy Makers, https://eatforum.org/content/uploads/2019/01/EAT_brief_policymakers.pdf

- Embedding healthy and sustainable food education into school curricula.
- Ensuring that all certified health professionals have a demonstrable level of competence surrounding planetary health diets.
- Training and equipping food producers with both the knowledge and skills to deliver healthy and sustainable food options and by creating "win-win" interventions through building novel collaborative relationships.

Question 5: What additional information and evidence should the commission consider when assessing progress towards NSW's targets for reducing net greenhouse gas emissions?

There is a large volume of emissions currently missing from the agricultural ledger, specifically emissions related to livestock. Although NSW follows IPCC guidelines for GHG emissions reporting, unfortunately IPCC guidelines do not represent best practice in the agricultural space. There are significant gaps, as explained below:

- **Carbon dioxide from farm animal respiration is not currently counted or estimated in NSW emissions reporting**. This seems to stem from the thought that the carbon in livestock forms part of the natural biological cycle. However, as argued by the World Watch Institute this is false logic, given that livestock are no more natural than cars (considering humanity create, maintain and operate livestock farms purely for human consumption). As such respiration from livestock is no different in how it should be treated than tailpipe CO2 emissions from a vehicle or for that matter methane emissions from ruminant animals.[12] My rough **estimates for cattle and sheep respiration emissions in NSW are over 17M tonnes**! This excludes pigs, chickens and all other farmed animals and conservatively uses minimum CO2 respiration figures from available data. The true amount, reflecting all livestock, would be much higher.
- **Methane global warming potential (GWP) should be calculated on a 20 year not 100 year timeframe**, to reflect more accurately the urgency and opportunity of methane reductions. Supported by the World Watch Institute who say the 20 year timeframe "is more appropriate because of both the large effect that methane reductions can have within 20 years and the serious climate disruption expected within 20 years if no significant reduction of GHGs is achieved. The Intergovernmental Panel on Climate Change supports using a 20-year timeframe for methane."[13] It is accepted that the GWP over 100 years is approximately 28 whereas over 20 years it is 84-87. Therefore, even taking the lower end of the latter range, methane is 3 times more harmful in the medium term. This puts **methane from ruminant livestock emissions in NSW around 42 million tonnes!**[14]
- Land clearing is a significant cause of emissions, and reduces CO2 drawdown at the same time, a double whammy. **NSW has a high rate of land clearing, most of which is for**

[12] World Watch Institute, What If the Key Actors in Climate Change are Cows, Pigs and Chickens?, 2009, page 11, https://awellfedworld.org/wp-content/uploads/Livestock-Climate-Change-Anhang-Goodland.pdf
[13] Ibid., page 13.
[14] NSW Net Zero Dashboard, Emissions by IPCC Sector, https://www.seed.nsw.gov.au/net-zero-emissions-dashboard

livestock pasture or feed production.[15] **Land clearing/deforestation emissions should be attributed to the relevant agricultural product, to clearly highlight the heavy impact of certain agricultural products.** For example, deforestation for livestock should be included in the livestock footprint, rather than land use change/deforestation separately.

- Equally in terms of having a clear picture of the issues and opportunities by sector and subsector, animal feed from crops and other plant products should be attributed to livestock inventories, to reflect the relatively high emissions footprint of meat, dairy and eggs.

Question 10: What specific actions or policies could increase uptake of emissions reduction strategies in agriculture, both in the short and long term?

Analysis

Importance of diet change

One of the key climate practices the NZC should consider in its advice to government, is shifting diets towards a plant-based diet. This practice is cheap, fast and efficient, noting potential political challenges. Given the urgency of emissions reductions and potency of this opportunity, it seems an important element for the NZC (as well as governments across Australia and climate experts more broadly) to address.

The NSW agriculture sector is feeling the impacts of climate change and the government recognises that there are insufficient solutions to address emissions. Given the ambitious emissions targets NSW has set, there is an urgent need for the Government to consider what the agriculture sector should look like in a net zero emissions future. As mentioned above, this means government should start thinking now about what role plant-based diets can and should play.

Oxford University researchers found "**There is a strong relationship between the amount of animal-based foods in a diet and its environmental impact, including GHG emissions, land use, water use, eutrophication and biodiversity**."[16] Another Oxford University research team found that "[environmental] impacts of the lowest-impact animal products typically exceed those of vegetable substitutes, providing new evidence for the importance of dietary change."[17]

Put directly by the Grantham Institute, in recommending steps individuals can take to minimise impact on climate and biodiversity, "**Avoiding meat and dairy products is one of the biggest ways to reduce your environmental impact on the planet**."[18]

Below is the model plate created by the EAT-Lancet Commission (see figure 1)[19], to show the portions of food from different food groups that reflect a healthy and sustainable plate. As you can

[15] ABC News, The Deforestation on Farms that People Don't Even Know is Happening, https://www.abc.net.au/news/2024-08-27/coles-woolworths-urged-to-dump-beef-linked-to-deforestation/104261314

[16] P. Scarborough et al, 'Vegans, vegetarians, fish-eaters and meat-eaters in the UK show discrepant environmental impacts', 2023, page 571, https://www.nature.com/articles/s43016-023-00795-w

[17] Poore, J., & Nemecek, T., Reducing food's environmental impacts through producers and Consumers, 2018, page 1, https://www.science.org/doi/10.1126/science.aaq0216

[18] The Grantham Institute, 9 things you can do about climate change, https://www.imperial.ac.uk/stories/climate-action/

[19] The EAT-Lancet Commission, The Planetary Health Diet webpage, https://eatforum.org/eat-lancet-commission/

see, the **guidance is that our diet should consist of 90+% plant foods**. This means **the standard Western diet must shift significantly away from animal products towards plant-based foods**. There is also a note that diet is quite flexible and allows for adaptation to dietary needs, personal preferences and cultural traditions. Vegetarian and vegan diets are two healthy options within the planetary health diet but are personal choices.[20]

Figure 1 - Planetary Health Diet - EAT-Lancet Commission

Importance of government leading the way

Harvard University research that included input from over 200 climate scientists and sustainable food/agriculture experts underlined the responsibility of affluent countries like Australia taking leadership roles on diet change, saying "High producing and consuming nations must lead the

[20] The EAT-Lancet Commission, The Planetary Health Diet webpage, https://eatforum.org/eat-lancet-commission/

efforts, and **policies to support a deep and rapid transition away from livestock production and consumption will be needed**."[21]

Without government leading the path forward on this practice, barriers including behavioural inertia, cost of alternatives, availability and knowledge of plant-based foods are unlikely to change. This is a key opportunity for the government to bring down emissions, while also restoring biodiversity and reducing health care costs associated with current standard diets. Indeed, recent research from Stanford University speaks to the importance of this strategic opportunity "**The magnitude and rapidity of these potential effects should place the reduction or elimination of animal agriculture at the forefront of strategies for averting disastrous climate change.**"[22]

One of governments' roles in this strategic approach to diet change is to support both the supply- and demand-side measures as highlighted in research from within NSW "**A combination of well-designed and effectively implemented supply- and demand-side strategies are needed to address GHG emissions from food systems whilst also achieving social, economic and environmental benefits.**"[23]

Examples of government opportunity

Governments across Australia, especially in populous NSW have a terrific opportunity to improve diets by increasing the amount of plant produce and reducing animal-based foods, benefiting community health along the way. **There are a multitude of avenues to explore in this opportunity, including community health and climate messaging, government function catering policies, tax incentives and other finance measures.**

A report for the UK CCC includes some of the following as examples of government measures/technologies that can address diet change: [24]

- broadening menu choice (e.g. through new public sector catering regulations),
- training for public sector catering staff,
- mandatory standardised environmental impact labels for food,
- introducing a requirement for supermarkets to give shoppers feedback on their food purchasing,
- creating financial supports, subsidies and taxation to reward lower-emission producers, which will help send price signals to consumers and incentivise changes in product development and production methods,

[21] Harvard Law School, Options for a Paris compliant livestock sector, 2024, page 5, https://animal.law.harvard.edu/wp-content/uploads/Paris-compliant-livestock-report.pdf

[22] Eisen MB, Brown PO, Rapid global phaseout of animal agriculture has the potential to stabilize greenhouse gas levels for 30 years and offset 68 percent of CO2 emissions this century, 2022, page 1, https://doi.org/10.1371/journal.pclm.0000010

[23] E.L. Ng, J. Honeysett and Y. Scorgie, Regionalised greenhouse gas emissions from food production in South-Eastern Australia, 2022, https://www.sciencedirect.com/science/article/pii/S2352550922002913#:~:text=In%20the%20south%2Deastern%20state,2019%20(DISER%2C%202021a).

[24] Richard Carmichael, Behaviour change, public engagement and Net Zero, 2019, page 14, https://www.theccc.org.uk/wp-content/uploads/2019/10/Behaviour-change-public-engagement-and-Net-Zero-Imperial-College-London.pdf

- and directly funding food technology research to accelerate the development and commercialisation of low-carbon plant-based proteins.

The size of the food technology opportunity is highlighted by the Boston Consulting Group "**Investment in plant-based proteins has the highest CO2e savings per dollar of invested capital of any sector.**"[25]

Denmark is an excellent case study for recent work to tackle agricultural emissions through behaviour change (including shifting diets). They have taken a positive approach to facilitating a transition in food production and consumption, by building relationships with all relevant sectors and using positive and 'opportunity' toned language. Central to this is the recent publication of the 'Danish Action Plan for Plant-Based Food'. This plan has 3 key elements: stimulate demand, stimulate supply and build sectoral bridges. In the opening address, the Minister for Food, Agriculture and Fisheries, Jacob Jensen, says "**If we want to reduce the climate footprint within the agricultural sector, then we all have to eat more plant-based foods**".[26] Note this bold approach and statement comes from the country producing more meat per capita than any other country in the world.[27]

Significant Co-benefits

There are monumental co-benefits to shifting to plant-based diets including biodiversity conservation, water conservation, reduced desertification, decreased eutrophication as well as human health improvements and cost savings. When these individually significant opportunities are added together and integrated with the emissions opportunity, the value in shifting our food choices towards plant-based is remarkably clear. However, as noted in research by John Thøgersen "consumers need considerable assistance if they are to change to a climate friendly way of life."[28]

[25] Boston Consulting Group and Blue Horizon, The Untapped Climate Opportunity in Alternative Proteins, 2022, page 26, https://web-assets.bcg.com/6f/f1/087a0cc74221ac3fe6332a2ac765/the-untapped-climate-opportunity-in-alternative-proteins-july-2022.pdf

[26] Ministry of Food, Agriculture and Fishers of Denmark, Danish Action Plan for Plant-Based Foods, 2023, https://en.fvm.dk/Media/638484294982868221/Danish-Action-Plan-for-Plant-based-Foods.pdf

[27] The Guardian, Insanely tasty green food': how the meaty Danes embraced a world-first plant-based plan, https://www.theguardian.com/environment/2025/jan/31/more-carrot-less-stick-how-meat-loving-danes-were-sold-a-plant-led-world-first

[28] John Thøgersen, Consumer behavior and climate change: consumers need considerable assistance, 2021, https://www.researchgate.net/publication/349572042_Consumer_behavior_and_climate_change_consumers_need_considerable_assistance

References and further reading

Benjamin Morach, Malte Clausen, Jürgen Rogg, Michael Brigl, Ulrik Schulze, Nico Dehnert, Markus Hepp, Veronique Yang, Torsten Kurth, Elfrun von Koeller, Jens Burchardt, Björn Witte, Przemek Obloj, Sedef Koktenturk, Friederike Grosse-Holz, and Olivia Stolt-Nielsen Meinl (2022), The Untapped Climate Opportunity in Alternative Proteins, Boston Consulting Group and Blue Horizon.

Carmichael, R. (2019) Behaviour change, public engagement and Net Zero. A report for the Committee on Climate Change. Available at https://www.theccc.org.uk/publications/ and http://www.imperial.ac.uk/icept/publications/

E.L. Ng, J. Honeysett and Y. Scorgie (2022), Regionalised greenhouse gas emissions from food production in South-Eastern Australia, NSW Department of Planning and Environment

Eat Lancet Commission, The Planetary Health Diet, https://eatforum.org/eat-lancet-commission/the-planetary-health-diet-and-you/

EAT-Lancet Commission brief for Policymakers https://eatforum.org/content/uploads/2019/01/EAT_brief_policymakers.pdf

Eisen MB, Brown PO (2022) Rapid global phaseout of animal agriculture has the potential to stabilize greenhouse gas levels for 30 years and offset 68 percent of CO2 emissions this century. PLOS Clim 1(2): e0000010. https://doi.org/10.1371/journal.pclm.0000010

Goodland, R. and Anhang, J. (2009) Livestock and Climate Change: What If the Key Actors in Climate Change Are Cows, Pigs, and Chicken? World Watch, November/December.

Hannah Ritchie (2020) - "You want to reduce the carbon footprint of your food? Focus on what you eat, not whether your food is local" Published online at OurWorldInData.org. Retrieved from: https://ourworldindata.org/food-choice-vs-eating-local [Online Resource]

Harwatt, H. Hayek, M.N. Behrens, P. and Ripple, W.J. (2024) Options for a Paris compliant livestock sector. Timeframes, targets and trajectories for livestock sector emissions from a survey of climate scientists. Research report, Brooks McCormick Jr. Animal Law & Policy Program, Harvard Law School. March 2024. Available at: https://animal.law.harvard.edu/wp-content/uploads/Paris-compliant-livestock-report.pdf

John Thøgersen, 2021, Consumer behavior and climate change: consumers need considerable assistance, Aarhus University.

Kaloyan Mitev, Lois Player, Caroline Verfuerth, Steve Westlake, Lorraine Whitmarsh (2023), The Implications of Behavioural Science for Effective Climate Policy, University of Bath.

Ministry of Food, Agriculture and Fisheries of Denmark, The Department, October 2023, ISBN: 978-87-88363-32-6 (digital version) https://en.fvm.dk/Media/638484294982868221/Danish-Action-Plan-for-Plant-based-Foods.pdf

Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. Science, 360(6392), 987-992.

Project Drawdown, Plant-rich diets, https://drawdown.org/solutions/plant-rich-diets

Scarborough, P., Clark, M., Cobiac, L. et al. Vegans, vegetarians, fish-eaters and meat-eaters in the UK show discrepant environmental impacts. Nat Food 4, 565–574 (2023). https://doi.org/10.1038/s43016-023-00795-w

Steinfeld, H., Gerber, P., Wassenaar, T., Castel, V., Rosales, M. and de Haan, C. (2006) Livestock's Long Shadow: Environmental Issues and Options. Food and Agriculture Organization of the United Nations (FAO), Rome.

The Grantham Institute, 9 things you can do about climate change, https://www.imperial.ac.uk/stories/climate-action/

Tim G. Benton, Carling Bieg, Helen Harwatt, Roshan Pudasaini and Laura Wellesley (2021), Food system impacts on biodiversity loss, Chatham House. https://www.chathamhouse.org/sites/default/files/2021-02/2021-02-03-food-system-biodiversity-loss-benton-et-al_0.pdf

University of Leeds, Arup, C40 Cities (2019), Addressing food-related consumption-based emissions in C40 cities.