EVIDENCE TOWARDS METHANE SCIENCE AND TARGET REVIEW 2024

16 September 2024

Dear Methane Panel members,

We write on behalf of the Nelson Tasman Climate Forum, a community body of about 150 individual and organisation members, with a 1500 email network, to express our views on the Government's methane science and target review.

We are a group of citizens deeply concerned about climate change, and about New Zealand's 'fair share' contribution to remaining as little over 1.5 degrees warming as possible. We promote a climate action campaign called Take the Jump. 'Taking the Jump' means trying one or more of seven shifts: one shift being moving from meat and dairy to a plant-based diet.

Based on our reading of scientific literature[1], we hold the view that the science of methane emissions is well established. We accept that using GWP100 – though part of the architecture of UNFCCC reporting – does not accurately represent the warming impact of methane (nor its potential cooling effect).

Rather, we hold that at the core of the methane debate are matters of fairness, values and ethics, particularly in relation to the Paris Agreement's aim of pursuing efforts to limit the global mean temperature increase to 1.5°C, including:

- the second part of Article 2: 'This Agreement will be implemented to reflect equity and the principle of common but differentiated responsibilities and respective capabilities, in the light of different national circumstances'

[1] E.g. Chapters 6 & 7, IPCC WGI report (and not pretending to understand all their complexities).

- the beginning of item 4 in Article 4: 'Developed country Parties should continue taking the lead by undertaking economy-wide absolute emission reduction targets'.

We see these aspects eloquently expressed in the work of Dr Andy Resinger and colleagues[2]. A recently published article[3] featuring Dr Reisinger and Professor Frame (one of the Panel members) expresses a contrast of approaches in implementing the Paris Agreement. We echo Dr Reisinger: 'Is fairness causing the same amount of climate change, or does fairness mean putting in the same effort?'

The context of the methane review is the forthcoming review of the 2050 target (including methane) in the Climate Change Response (Zero Carbon) Amendment Act 2019.

We request Panel members lay out for the people of Aotearoa New Zealand the full implications and consequences of different methane emissions reduction targets, including the global context[4].

Our request is aimed at enabling people to participate as informed citizens in this forthcoming process. This is vital both to maintain the social licence of the agricultural sector to continue to operate (including its markets), and to promote social cohesion in Aotearoa as the climate challenges that we face continue to increase. The costs of climate adaptation will increase the societal pressure on sectors that are still warming the planet.

We further see that the emissions decisions of the people of Bangladesh and Burkina Faso are of far greater consequence to the future climate in Aotearoa than our own decisions. **We further request** that Panel members frame their deliberations bearing these people (and others like them) in mind.

We acknowledge Panel members in considering our request will need to consider Item 7a in the terms of reference:

> *7. The following issues are out of scope of the review:*
> *a) **making any conclusions or recommendations** that go beyond performing the scientific review and providing the evidence-based advice required by these terms of reference. For example, the advice will not cover implications of any new proposed target on the broader climate strategy. It will not try to make*

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[2] E.g. Reisinger, A. & S.C. Leahy 2019. Scientific aspects of New Zealand's 2050 emission targets.

[3] Driver, G. 2023. Burps & bluster. North & South.

[4] E.g. United Nations Environment Programme and Climate and Clean Air Coalition 2021. Global methane assessment: benefits and costs of mitigating methane emissions.

> *values-based judgements about the burden sharing responsibilities of different sectors or nations (our emphasis **in bold**).*[5]

Our request **does not ask** the Panel members to make conclusions and recommendations.

We do request however that you spell out how various methane targets affect targets for long-lived gases. Failure to do this will deprive the ordinary citizen of the ability to understand the consistency of various reduction pathways consistent with remaining as little as possible over 1.5°C of warming.

We offer below a selection of publications and reports that we believe would be central towards our request. Likely none of these will be new to Panel members.

We further request that Panel members take account of:

- the role of nitrous oxide emissions as an inextricably linked component of ruminant methane emissions
- biogenic methane emissions from organic soils drained for agricultural purposes, the potential of these soils for habitat restoration and thereby methane emissions mitigation, and the inclusion of these processes within the CCRA 2050 methane target[6].

Ngā mihi nui.

Joanna Santa Barbara, Co-Chair, Nelson Tasman Climate Forum

Jenny Easton, Adaptation Group convenor, Nelson Tasman Climate Forum

Karen Driver, zero waste advocate, Nelson Tasman Climate Forum

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Cc. Dr. Andy Reisinger, andy.reisinger@anu.edu.au.

[5] Ministry for the Environment 2024. Terms of Reference: methane science and target review.

[6] Gibson, E. 2021. Uncounted and unseen, is this the biggest planet warmer you've never heard of?
Gibson, E. 2024a. Is the heat about to go on Fonterra over farming on drained peat?
Gibson, E. 2024b. Tiny portion of New Zealand soil making twice the carbon dioxide previously totalled.

Evidence towards our request (in addition to references cited herein)

Allen, M.R. *et al*. 2022. Indicate separate contributions of long-lived and short-lived greenhouse gases in emission targets.

'It has long been accepted that stringent mitigation of both LLCFs and SLCFs is needed to meet any ambitious temperature goal … making progress on two fronts necessitates monitoring progress on two fronts'.

Ivanovich *et al*. 2023. Future warming from global food consumption.

'We found that sustaining current dietary patterns worldwide throughout the rest of the century could amount to nearly 1 °C of additional warming beyond today's level of ~1 °C above preindustrial times. Even under a range of population growth scenarios, we expect at least 0.7 ± 0.2 °C and up to 0.9 ± 0.2 °C of additional warming …. Either scenario would surpass the 1.5 °C temperature target from food consumption alone…

… methane emissions account for 73% of the additional temperature increase from food by the midcentury and 60% by the end of the century. Because methane emissions are relatively short lived and the ~30% of current warming attributed to methane is almost entirely from recent emissions, decreasing methane emissions can rapidly benefit the climate…

… our analysis clearly demonstrates that current dietary production and consumption patterns are incompatible with sustaining a growing population while pursuing a secure climate future. Fortunately, compelling mitigation options are available to address this challenge.'

Lynch, J. et al. 2021. Agriculture's contribution to climate change and role in mitigation is distinct from predominantly fossil CO2-emitting sectors.

'Policy-makers, stakeholders, and society at large should also be reminded that the role of agriculture in climate mitigation is a much broader topic than climate science alone can inform, including considerations of economic and technical feasibility, preferences for food supply and land-use, and notions of fairness and justice.'

Reisinger, A. & S.C. Leahy 2019. Scientific aspects of New Zealand's 2050 emission targets.

Comment: the extent of Aotearoa's historical emissions from landuse change (principally agriculture; Figure 1, below), is particularly pointed to the question of fair share of the global atmospheric commons.

Reisinger, A. 2021. How necessary and feasible are reductions of methane emissions from livestock to support stringent temperature goals?

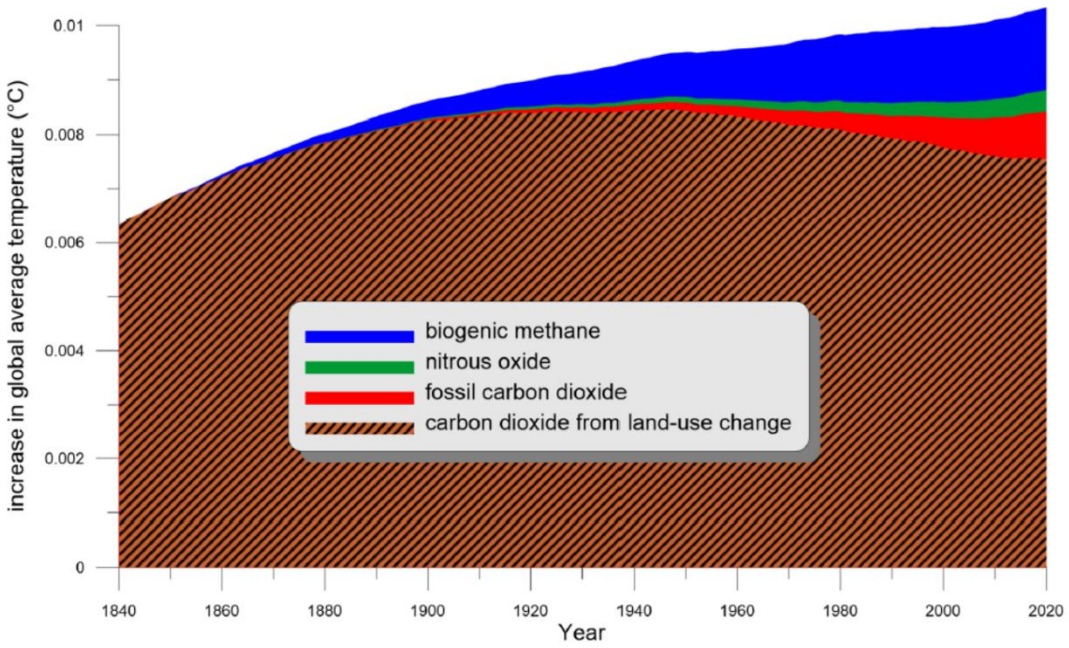

Figure 1. Calculated total contribution to global average temperature change from New Zealand's emissions to date. Emissions and associated warming of carbon dioxide from historical land-use change, fossil carbon dioxide, nitrous oxide, and biogenic methane from livestock are based on (PCE, 2019). Emissions of biogenic methane from waste were estimated using the national greenhouse gas emissions inventory and extrapolated back to 1840, and were added to methane emissions from livestock before calculating the resulting warming using the methodology in Reisinger (2018).

Reisinger, A. 2024. Why addressing methane emissions is a non-negotiable part of effective climate policy.

Shindell, D. *et al*. 2024. The methane imperative.

Nitrous oxide and drained organic soils

Ministry for the Environment 2024. New Zealand's second emissions reduction plan (2026–30): discussion document.

Comment: N2O is traditionally considered an inert molecule, making it difficult to remove from the atmosphere. The ERP2 discussion document makes zero provision for offsetting N2O emissions (from agricultural or other sources) in the immediate future, let alone N2O and CO2 into the post-net zero 2050 future. Given finite land for ongoing CO2 forest sequestration, it would be a nonsense for a methane target not to account for ongoing N2O emissions.

Nisbet, E.G. *et al*. 2021. Atmospheric methane and nitrous oxide: challenges along the path to Net Zero.

'Discussion of this important gas is almost absent from the political debate.'

Pronger, J. *et al*. 2024. Improving accounting of emissions from drained organic soils.