Nelson Tasman Climate Forum

Submission on Aotearoa New Zealand's Second Emissions Reduction Plan (2026-2030)

25 August 2024

Nelson Tasman Climate Forum – Who we are

The Nelson Tasman Climate Forum launched in February 2020 as a community-led climate action initiative open to everyone. The Forum aims to weave the community together around urgent, strategic action to achieve the following goals:

- Rapidly reduce the region's greenhouse gas emissions, increase carbon sequestration and undertake other climate stabilising initiatives, consistent with the urgency of the situation.
- Adapt to the likely adverse environmental effects of climate change and the resulting social and cultural effects, using inclusive and responsible decision-making to support these desirable outcomes.
- Respond to climate change in a way that recognises the rights of all living organisms, including people, and provides for a just, equitable, and resilient society.

The Forum is volunteer-led, apolitical, and registered as a non-profit partner under the Tasman Environmental Trust.

In the four years the Forum has been functioning, volunteers have carried out over 30 community projects. These range across many climate initiatives and include monthly Repair Cafés in Nelson and Tasman, a yearly Climate Action Festival, a climate action campaign called Take the Jump, art events and photography exhibitions, a Climate Action Plan and Book for the region, climate conversations with varied groups across the community, several waste reduction projects, letter writing campaigns, government and council submissions, and the protection and restoration of native habitats.

This submission on Aotearoa New Zealand's second Emissions Reduction Plan (ERP2) has been compiled by the NTCF Nature and Climate group and the NTCF Submissions group. Feedback was sought from NTCF members and has been incorporated within this submission.

We welcome the opportunity to contribute to the development of the second Emissions Reduction Plan (ERP2). We offer many possible courses of action and perspectives to enhance emissions reductions; and counter-views to some ERP2 assumptions and proposals.

Our submission opens with our views on the ERP2 proposed approach. It then presents a summary of our responses to the consultation questions. Our detailed responses to the consultation questions are presented in an Appendix.

We thank you for the opportunity to present this submission and for your consideration of our contribution.

Our views on ERP2 proposed approach

Ethics

1. **We advocate** the moral and ethical dimension (climate justice) as a further central tenet of ERP2. This is poignantly expressed in the '1000-ton rule':

   > *'... a future person is killed every time 1000 tons of fossil carbon are burned (order-of-magnitude estimate). If warming reaches or exceeds 2°C this century, mainly richer humans will be responsible for killing roughly 1 billion mainly poorer humans through anthropogenic global warming, which is comparable with involuntary or negligent manslaughter.'*[1]

   In this currency, every million tonnes of CO2 not emitted could avoid the deaths of (roughly) 300 future persons this century.

Ambition

2. ERP2 sets the emissions budget for 2026-2030. Under the Climate Change Response Act (Section 5W), emissions budgets are set 'with a view to meeting the 2050 target and contributing to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels'. ERP2 proposes a net target emissions reduction of 24% by 2030 (against a 2019 baseline)[2]

   Much greater ambition is warranted to fulfill ERP2's second purpose (contributing to the global effort to limit the global average temperature increase to 1.5°C), on five counts.

   (a) We are now on the threshold of breaching the Paris Agreement target. The global mean near-surface temperature in 2023 was 1.45 ± 0.12 °C above pre-industrial, making it the warmest year on record[3], and the average for July 2023 – June 2024 was 1.64°C[4]. Notwithstanding the very high temperatures of the past year were influenced by El Niña, it is about as likely as not (47%) that the five-year mean between 2024 and 2028 will exceed 1.5°C[5].

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[1] Pearce & Parncutt, 2023. Quantifying global greenhouse gas emissions in human deaths to guide energy policy. 1000 tons of carbon burnt is equivalent to 3326 tonnes of CO2 emissions.
[2] 73829 MtCO2e in 2019 (New Zealand's projected greenhouse gas emissions to 2050); 56000 MtCO2e in 2030 (Consultation at a glance New Zealand's second emissions reduction plan).
[3] World Meteorological Organization 2024. Climate change indicators reached record levels in 2023.
[4] World Meteorological Organization 2024. Record temperature streak continues in June.
[5] World Meteorological Organization 2024. WMO global annual to decadal climate update.

The best-case scenario for climate change now is 1.6°C of warming (with 'low overshoot' and at around 5–45% likelihood)[6]. Minimising the magnitude and duration of overshoot is now essential[7]. Under the present geopolitical approach to GHG emissions, global warming will exceed 2°C before 2050[8]. At 2100, current policies presently in place around the world are projected to result in about 2.7°C warming, NDCs would bring that down to 2.5°C, binding long-term or net-zero targets would bring that down to about 2.1°C, and an 'optimistic scenario' of net zero targets adopted or under discussion would result in about 1.8°C[9].

(b) The IPCC found that limiting warming to around 1.5°C requires global greenhouse gas emissions to peak before 2025 at the latest, and be reduced by 43% by 2030 (on a 2019 baseline); at the same time, methane would also need to be reduced by about a third[10]. Even if we do this, it is almost inevitable that we will temporarily exceed this temperature threshold but we could return to below it by the end of the century. It called for deep, rapid and sustained greenhouse gas emissions reductions in all sectors. The levels of ambition in ERP2 (24%) and our current Nationally Determined Contribution ('NDC'; 32%), both covering the period out to 2030, fall well short of the IPCC finding.

(c) At the current temperature rise, five major tipping points in the Earth system are at risk of being crossed due to warming right now (the Greenland and West Antarctic ice sheets, warm-water coral reefs, North Atlantic Subpolar Gyre circulation, and permafrost regions) and three more are threatened in the 2030s (boreal forest, mangroves and seagrass meadows). 'The effects [on economies and societies] will cascade through globalised social and economic systems … the threat … is of a magnitude never before faced by humanity'[11]. Several are climate feedback loops that will amplify warming as natural carbon stores are released (e.g. melting permafrost, sea and glacial ice melting increasing albedo). '**1.5°C is a physical limit: this climate target can't be negotiated'**[12].

(d) Our principal leverage to mitigate the future consequences of climate change in Aotearoa (think 2022 Nelson atmospheric river, Auckland floods, Cyclone Gabrielle) is to foster the goodwill of our fellow people across the globe by demonstrating we are reducing our emissions at a high ambition level. Our climate future is dependent on their emissions choices. The ambition level in ERP2 (and our current NDC) isn't going to sway those whose decisions we wish to influence.

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[6] C. Bertram et al. 2024. Feasibility of peak temperature targets in light of institutional constraints.
[7] 10 New Insights in Climate Science 2024. Overshooting 1.5°C is fast becoming inevitable.
[8] Hansen et al. 2023. Global warming in the pipeline.
[9] Climate Action Tracker 2024. 2100 warming projections.
[10] IPCC 2022. The evidence is clear: the time for action is now. We can halve emissions by 2030.
[11] Lenton et al 2023. Global tipping points report 2023.
[12] World Economic Forum 2024. The latest climate science.

(d) ERP2 projections (Figure 2.1 and Table 2.2) show substantial uncertainty even in meeting the 2026-2030 emissions budget.

3. **Ambition need not be daunting.** Imagination/unleashing possibility is a powerful human trait. What we can imagine influences what we believe is possible[13].

   The NTCF Take the Jump 'less stuff - more joy' campaign seeks to take angst out of the daunting challenge of climate action. We invite people to take action and we celebrate them for the actions they take. We invite all to participate.

   The power of imagination is also inherent in the breathtaking ambition of Recloaking Papatuanuku[14], proposing to restore large areas of Aotearoa to indigenous forests.

   These two short videos illustrate highly ambitious, transformative change:
   Farm Zero C project (climate-neutral, profit-making dairy farm, Ireland, five minutes)
   Utrecht: planning for people and bikes, not for cars (eliminating roadways, nearly 33 000 bike parking spots downtown, Netherlands, 13 minutes).

Proposed least-cost, net approach

4. **Proposed least cost approach:** The social and economic costs of **climate inaction** are well understood to be greater than the costs of climate action (**Figure 1**). Estimates of economic impacts of climate mitigation should account for impacts from climate change itself, and associated economic benefits of avoided impacts e.g. economic losses through climate damages and risks, and social losses in human health and well-being, loss of biodiversity and nature, conflict and migration and global and local inequalities. Some of these losses are difficult to quantify.

   Deep consideration of the costs of impacts from climate change and associated economic benefits of avoided impacts is not apparent in the ERP2 discussion document. The Treasury's estimate of total economic damage from Cyclone Gabrielle (between $9 billion and $14.5 billion[15]) is not to be seen. Are we factoring in the impact on marine ecosystems and the marine economy that the temperature of New Zealand oceans would rise by 4°C if the global average rose to 2°C[16]?

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[13] Bristow et al. 2024. The system within: addressing the inner dimensions of sustainability and systems change.
[14] Pure Advantage 2024. Reclocking Papatūānuku: a nation-wide indigenous forest initiative.
[15] The Treasury 2023, Impacts from the North Island weather events.
[16] Grant et al. 2023. Amplified surface warming in the south-west Pacific during the mid-Pliocene (3.3–3.0 Ma) and future implications.

5. The social costs of carbon concept is a tool that helps policy-makers in weighing present costs against future avoided harms. We've not seen Aotearoa studies but overseas studies are indicative. The recent US EPA update[17] has these US dollar (2020) estimates for CO2 emissions per metric ton: $120, $190, and $340, at 2.5%, 2%, and 1.5% discount rates, respectively. These exclude or only partially cover many categories of climate impacts. **We request** consideration of recent studies of the social cost of carbon[18], and of recent evidence that the full macroeconomic damages of climate change globally being six times greater than hitherto thought[19].

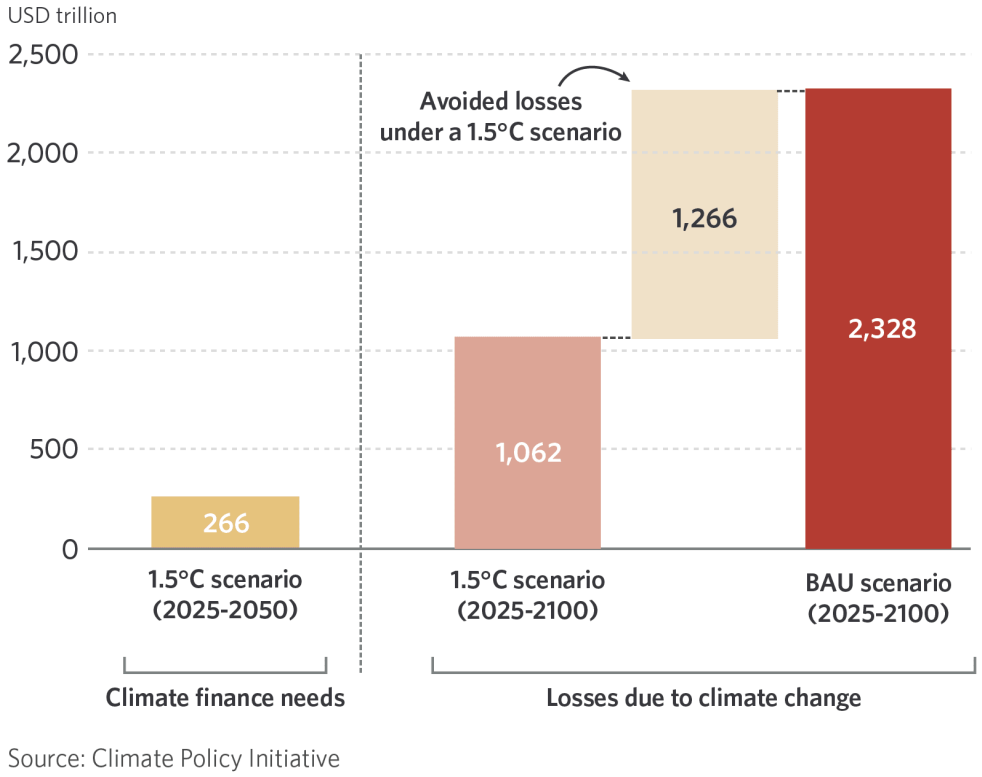


Figure 1: Cumulative climate finance needs vs losses under 1.5 C and BAU scenarios[20].

6. The ERP2 discussion document acknowledges a least-cost approach requires taking account of economic co-benefits, yet this doesn't seem evident in its proposals. **We request** specific consideration of Aotearoa studies of economic co-benefits of climate action: total health costs of fossil-fuelled transport of $10.5

[17] US EPA 2023. Report on the social cost of greenhouse gases: estimates incorporating recent scientific advances.
[18] US EPA 2023. Report on the social cost of greenhouse gases: estimates incorporating recent scientific advances.
Errickson et al. 2021. Equity is more important for the social cost of methane than climate uncertainty.
[19] Bilal & Känzig 2024. The macroeconomic impact of climate change: global vs. local temperature.
[20] C. Alberti, 2024. The cost of inaction.

billion[21]; an estimated benefit/cost ratio of 11:1 (using a discount rate of 3.5%) for active travel programmes in New Plymouth and Hastings[22]; a 5% shift in light vehicle kilometres travelled for short journeys to cycling annually would save around 50,000 tonnes of CO2, and could result in 116 fewer deaths as a result of the benefits of physical activity and 5.6 fewer deaths from vehicle emissions[23].

7. **Proposed net approach:** Relying on radiata pine monocultures to meet carbon budgets has high associated risks: susceptibility to large wildfires (predicted to increase with climate change; **Figure 2**); wilding pines/conifers spread; effects of drought, pests and diseases in monocultures; treefall, erosion and slash movement in severe weather (e.g. Tairāwhiti and Hawkes Bay during Cyclone Gabrielle); and uncertainty that current forest carbon removal rates will be maintained as temperatures increase due to changes in physiological processes. Biological carbon simply doesn't have the longevity that subterranean oil and gas have.

Figure 2: Pigeon Valley fire, New Zealand's second largest wildfire in recent history, near Nelson, February 2019[24]. Forest industry estimates for firefighting

[21] Kuschel et al, 2022. Health and air pollution in New Zealand 2016 study.
[22] Chapman et al. 2018. A cost benefit analysis of an active travel intervention with health and carbon emission reduction benefits.
[23] Royal Society Te Apārangi 2017. Human health impacts of climate change for New Zealand: evidence summary.
[24] D. Nilsson 2023. Survey provides insights into how people responded to 2019 Pigeon Valley wildfires.

and evacuation costs have been as high as $50 million[25].

It is unclear how we will maintain low net emissions after 2050, when the majority of these exotic monocultures will have reached equilibrium and no longer be removing significant amounts of carbon and there will still be a need to offset hard-to-abate emissions (notably nitrous oxide). The better strategy is to go to work on reducing emissions as deeply and permanently as possible, without further delay.

The proposed net-based approach would entrench an entitlement to our use of the atmosphere that ignores the global inequity in Aotearoa having the highest cumulative per capita rate of atmospheric emissions, from our massive historical deforestation[26]. In reforestation, our 'advantage of … opportunities, like our abundance of natural resources' (in the words of the Minister of Climate Change) arises from these unparalleled historical emissions. Rather, we should apply this 'advantage' to the global effort that is now necessary (implicit in IPCC models) to draw down CO2 from the atmosphere to limit warming to 1.5°C.

8. Figure 0.2 of the ERP2 discussion document shows 45 MtCO2e projected reductions in sector gross emissions and 30 MtCO2e forest sequestration for the second emissions budget. Yet Table 0.1 Key policies proposed for ERP2 and interim projected abatement accounts for just 4.1 MtCO2e in the second emissions budget. Table 0.2 potential opportunities accounts for an additional 3.5 (low estimate) to 22.7 (high estimate) MtCO2e. These figures don't add up. This discrepancy appears to be what Lawyers for Climate Action refer to in their July 2024 newsletter.

9. **We note** the ERP2 discussion document concern that complementary policies that buy emissions out of the NZ Emissions Trading Scheme would allow emissions to rise elsewhere under the system cap. We note also the Climate Change Commission chair's view[27] that there are multiple ways in which the scheme does not cap emissions. We see a role for public investment.

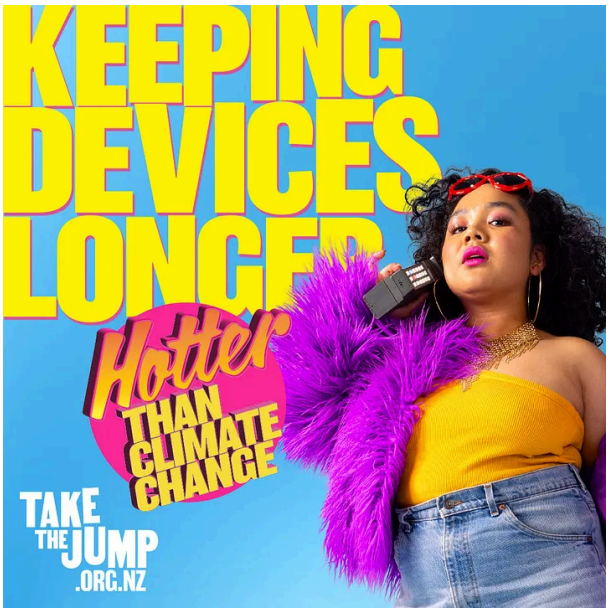
10. In considering abatement costs and decarbonising, the World Bank advocates[28] addressing the issue of sequencing, or the rate of transition, and the need to begin earlier in the most difficult sectors. We could see this being applied in the development of technologies, promoting early EV uptake, investing in public transport, coastal shipping and rail transport, or a coal phase-out plan. The least cost approach likely will not consistently capture this value, and we see the Government has a role in identifying such pathways and policy combinations[29]

[25] M. Dudfield et al. 2020. A comparison of the 2019 Pigeon Valley forest fire with similar events in the past.
[26] Evans, S. Analysis: Which countries are historically responsible for climate change?
[27] E. Gibson 2024. Climate chief rubbishes claims farmers must wait for new technology to reduce emissions.
[28] S. Hallegatte 2023. What you need to know about abatement costs and decarbonization.
[29] A. Stechemesser 2024. Climate policies that achieved major emission reductions: Global evidence

through ERP2. **We request** ERP2 explicitly identify such crucial pathways.

11. The ERP2 discussion document is silent on a democratic process on how it is decided to 'spend' our remaining carbon budget on development, and how the voice of future generations and the natural environment will be incorporated.

12. **Please further investigate** other avenues in achieving emissions reductions through ERP2:



- promoting education to shift our culture from the consumerist mindset and lifestyle we are now ensnared in to one that is sustainable in relationship with Nature Te Taiao[30]
- the IPCC 'avoid, shift and improve final service' framework for addressing demand-side mitigation framework is estimated to be able reduce in three end-use sectors (buildings, land transport, and food) by 40–70% globally by 2050[31]. To illustrate, effective 'avoid' options may include not using a car and cutting back on flights, effective 'shifting' may include switching to plant-based diets and using public transport, and effective 'improving' may include purchasing an electric car or a heat pump
- political leadership for transformative social and economic change.

13. A recent advisory judgement of the International Tribunal for the Law of the Sea found that greenhouse gases constitute marine pollution and States must control greenhouse gases from international shipping and aviation[32]. This adds to the legal framework for Aotearoa New Zealand taking climate action. **We request** the implications of this ruling for climate policy generally and ERP2 in particular be considered, specifically matters such as coastal shipping, and the protection and preservation of the marine environment including threats from ocean acidification caused by CO2 emissions.

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from two decades.

[30] Baron, G. 2024. There's no buying our way out of the environment crisis.

[31] IPCC 2022. Demand, services and social aspects of mitigation.

[32] International Tribunal For The Law Of The Sea Tribunal 2024. Request for an advisory opinion: Submitted by the Commission of Small Island States on Climate Change and International Law: Advisory opinion.

14. We have a choice. We can decarbonise now in ways that safely support the long term health of human society and our environment or we can procrastinate and prevaricate and have decarbonisation forced upon us by catastrophic climate change. ERP2 and its associated policies does little to take us down the path of safe and controlled decarbonisation. Instead, it leads us deeper into climate catastrophe.

Iwi and Māori

15. **We request** that ERP2 honours Te Tiriti and its partnership responsibilities.

16. Many Iwi, as kaitiaki of the whenua, have environmental plans with emissions reducing outcomes such as: wetland restoration, pest control, maintenance/development of indigenous forests, regenerative agriculture and harvesting energy from natural hot pools. Support of these existing Iwi environment plans would not only lead to reduced emissions but would also recognise their mana whenua, an important part of upholding Te Tiriti O Waitangi.

17. The financial impact is the primary impact for Māori in relation to the distributional impacts of climate mitigation policy, and should be addressed through government support. Government compensation should be considered so as not to unfairly disadvantage Māori who, thanks to colonisation were largely left with poor quality land unsuitable for income generation other than pine. Māori should be supported to develop wood processing infrastructure and businesses.

18. Given complexities around Māori collective land ownership structures and governance, support for Māori farm businesses would help them to reduce on-farm emissions and transition to low emissions land uses.

19. Māori own large tracts of emissions reducing native forest, which are under threat from introduced species, largely due to colonisation. Government should consider allocating biodiversity credits for pest control of these areas to ensure permanency and growth of their carbon storage capacity.

20. Given the extensive areas of both exotic and indigenous forest on land owned by Māori across the country, we urge the Government to **partner** with Māori to develop appropriate and effective policies for forestry and land use, rather than the tokenism inherent in the current ERP2 consultation process.

Summary of responses to consultation questions

21. **ETS:** Potential risks we see in using the NZ ETS as a key tool to reduce emissions include: the ETS price will be insufficient to drive gross emissions reductions; susceptibility to carbon losses from large wildfires and severe weather events; uncertainty that current forest carbon removal rates will be maintained as temperatures increase due to changes in physiological processes; the possibility of changes to carbon-accounting processes from the maladaptive nature of extensive monocultures.

    The Government needs to signal as soon as possible that it plans to end free industrial allocations by 2030. They were intended to be a transitional measure. It could introduce a Carbon Border Adjustment Mechanism like the EU to create a level playing field for industries while they still face the full carbon price.

    How the ETS will function once net zero is achieved, including how nitrous oxide emissions (6.8 MtCO2e annually, currently outside the ETS) will be addressed, needs to be formulated.

22. **Funding:** As previously indicated, a true social cost of carbon price that reflects all costs and co-benefits is the way to drive climate action, particularly to avoid massive damages to future generations (intergenerational equity). Income transfers to lower income people and households will be needed as they would be differentially impacted by a higher carbon price.

    We urge the Government to take responsibility for the fiscal cliff (between $3 billion and $23b) entailed in the offshore mitigation component of our current NDC and to recognise this as a financial liability on the Government's balance sheets. **We request** comprehensive treatment of the roles of domestic action and offshore mitigation in the forthcoming NDC2 consultation document.

    A lack of imagination seems to be a major barrier to increasing climate mitigation investment. In the Nelson-Tasman region alone, it would be possible to invest many tens of millions of dollars in green projects over the period of ERP2 that would reduce emissions while increasing adaptation, resilience, employment opportunities, skills, environmental and social outcomes.

    Investment in **herbivore control** across the DOC estate and other areas of indigenous vegetation has been calculated to reduce carbon emissions by 8.4 MtCO2e per annum or more[33]. This is 10x the amount predicted to be reduced by new policies in ERP2 (0.8 MtCO2e pa). Control of mammalian herbivores is likely to be one of the most significant and cost-effective options for protecting and enhancing the country's massive stores of natural carbon.

[33] Hackwell & Robinson 2021. Protecting our natural ecosystems' carbon sinks.

Other actions the Government can take to enable more private investment in climate mitigation are **removal of all subsidies** (direct and indirect) from any industries and activities that emit carbon (e.g. agriculture, oil and gas, transport), and removing the allocation of free ETS units to polluters. The risk of leakage of these activities is over-played when over 80% of New Zealand's exports by value are now going to countries with mandatory climate related disclosures - proposed or in force.

23. **Energy**: The essentials of policy to reduce emissions and enable a secure, sustainable and affordable energy supply are: reduce energy demand; increase energy efficiency; meet the demand with renewable energy; rapidly reduce to near zero the use of fossil fuel energy; and ensure that everyone has equal access to energy at sufficiency levels. ERP2 currently addresses only the third of these areas.

    Reducing energy demand is a particularly under-used arena of potential emissions reductions and cost saving.(e.g. identifying waste, behaviour change). Investing in community and household renewable energy schemes would improve electricity supply resilience and reduce transmission loss.

    We strongly reject the suggestion that we continue to rely on fossil gas (with its risk of stranded assets), and see the idea of Carbon Capture and Storage enabling its use as wishful thinking. There is every reason to focus strongly on speedily minimising its use, alongside transition from coal- and oil-powered processes to solar and other renewables. The price of NZ ETS units needs to incentivise these transitions. Proposed infrastructure investment for LNG imports to deal with the current electricity shortage should be applied to rooftop solar.

    We should not provide for reticulated gas supply in new buildings, and not consent to gas-powered processes in new plants. We should incentivise transitions in industrial machines to renewable energy, and require companies to detect and repair sites of fugitive gas leakage.

    We should ensure that everyone has equal access to energy at sufficiency levels.

    To address the ultra-high energy demands of a small elite, **we recommend** changing the tax system to distribute wealth and income more fairly (starting with a wealth tax), and introducing a tradable energy quotas (TEQs) scheme to ration the use of fossil fuels.

24. **Transport:** Transport is one of New Zealand's largest sources of GHG emissions, producing 40% of domestic CO2 emissions. The Climate Change Commission has identified transport as a sector with the potential to be almost completely decarbonised by 2050 and make large reductions from the third emissions budget period (2031-2035).

We support increasing EV charging infrastructure. It should be targeted at gaps in the current network, of a standard to charge at a speed of at least 50 kW, and offer more than one charger (ideally four).

Initial cost, not EV charging infrastructure, is the main barrier to EV uptake. **Please review** the Government's decisions on the Clean Car Discount (CCD). This otherwise is a commitment to continuing to pollute CO2, nitrous oxides and particulates for 14-20 years (the age of scrapped vehicles).

This can be done in an altered form so it is net zero cost to the Government, allows dispensation for off road capable 4WD utes for those that need them for business, and is set at a lower level so cars that are perceived as luxury vehicles would not be eligible ($55k cutoff). This would reverse the complete plunge in zero tailpipe emission vehicles from this time last year, and disincentivise buying a diesel double cab ute as a daily runabout with its particulate, NOx and high carbon emissions.

We support the proposals to reduce emissions from heavy vehicles. **We recommend** that heavy vehicles pay for the road damage and additional road strengthening required for their vehicles. At present for local roads 1/2 of the cost of road damage, bridge strengthening etc is paid for by ratepayers - this ratepayer subsidy for heavy freight companies is completely iniquitous.

We welcome the Government's intention to introduce congestion charging legislation.

Other opportunities to reduce land transport emissions include restoring the free bus allowance for school children, encouraging mode shifting from car commuting including 30 kph speed limits on minor urban roads to create a safe cycling network, e-bike discounts, and urban design up rather than out.

Aviation is a difficult to abate sector. An analysis of 12 aviation roadmaps for net zero 2050 revealed they could require 9% of global renewable electricity and 30% of sustainably available biomass in 2050, with significant energy 'losses'.

We recommend the implications of preferential access to land use and other renewable energy sources at such potential scale for SAF production be honestly portrayed to the public. **We advocate** for demand reduction (‘avoid’).

Coastal shipping has a much lower emissions intensity than heavy transport: about a fifth of the carbon emissions (well-to-wheel) of road freight. **Please investigate** the potential for mode shift of heavy transport to coastal shipping as a priority in ERP2.

Other opportunities to reduce emissions from aviation and shipping include switching to renewable energy (‘avoid’), Hybrid Ships for the inter-island ferries, electric shore power, short-haul battery electric flights, and possibly photovoltaic powered electric airships.

We request the Government proceed rapidly to include international aviation and shipping in our domestic emissions reduction targets and budgets following the report of He Pou a Rangi Climate Change Commission at the end of this year.

25. **Agriculture**: Methane and nitrous oxide are the two primary agricultural emissions gases. Nitrous oxide is a long-lived greenhouse gas. Methane is a short-lived gas, breaking down in the atmosphere to CO2 and water (H2O) within about 12 years.
26. The key difference between short- and long-lived gases is this: ‘Global surface temperature changes following a pulse of CO2 emission are roughly constant in time ,,, whereas the temperature change following a pulse of short-lived GHG emission declines with time. In contrast to a one-off pulse, a step change in short-lived GHG emissions that is maintained indefinitely causes a concentration increase that eventually equilibrates to a steady state in a way that is more comparable to a pulse of CO2’.
27. The Government’s underlying intention for its methane review (due 29 November 2024) appears to be to change the Climate Change Response Act 2050 methane target (24-47% less than 2017 emissions). Its terms of reference make no reference to the 10% reduction by 2030 target.
28. The methane review is founded upon the premise of ‘additional warming’ and its consequences for our agricultural industry. Its focus is on the actual level of warming (which can be modeled), and the rate and direction of change of methane emissions by the agricultural industry. We see it as imperative to also consider the rate and direction of change of global methane emissions.
29. The NZ GHG Inventory shows a slight decline trend in methane emissions since 2006 and a more pronounced decline since 2014. Significantly, if this trend continues or becomes more pronounced, it is helping to cool the planet.
30. Methane is the second most important greenhouse gas driving global climate change. Global methane emissions are currently rising at their fastest rate in

decades. Reducing human-caused methane emissions is one of the most cost-effective strategies to rapidly reduce the rate of warming, and could avoid nearly 0.3°C of global warming by the 2040s.

31. In the balance of Aotearoa methane emissions levels trending downwards but global levels rapidly increasing, an important question of values arises: what is a fair level of methane emissions reductions nationally in the context of a global imperative to rapidly reduce methane emissions – the single most potent lever to avoid nearly 0.3°C of global warming by the 2040s?

32. Without wishing to promote any further delay in action on agricultural emissions reductions, **we foresee a need for a national conversation on what is an appropriate methane target for Aotearoa when the methane review is completed**.

33. We accept in principle the Climate Change Commission's finding that a farmer-focused and cost-effective pricing system outside the NZ ETS is the best way to deliver the emissions reductions needed for agriculture to contribute to meeting New Zealand's emissions reduction targets, alongside a broader policy package. We exclude nitrogen fertilisers however: these should remain in the ETS and accounted for at processor level.

34. Given the Government is developing a standardised on-farm emissions calculation methodology by 2025, we believe it should commit to phasing in a fair and sustainable pricing system for on-farm emissions, beginning **1 January 2027.**

35. **Forestry and wood processing:** Relying on carbon removals by either forestry or non-forestry mechanisms to meet carbon budgets is a short-term solution at best and has high associated risks, such as wildfires releasing large quantities of carbon back into the atmosphere and negating the removal benefits of the trees in the first place.

    There are no limits on conversion of areas to forestry proposed for Land-use Capability (LUC) class 7 land. LUC class 7 land is high-risk land, particularly with regard to erosion. In some areas, afforestation on this land may be suitable but in areas with highly erodible, slip-prone soils, planting extensive exotic plantations is a recipe for disaster. Radiata pine monocultures on the highly erodible hills of Tairāwhiti have wreaked havoc on both the environmental and social fabric of the region. We urge the Government to desist from further exotic afforestation of these areas and to consult with land-owners, particularly with Iwi, about more appropriate land-use, including indigenous reforestation.

    We urge the Government to enforce forestry slash management standards, to ensure that all exotic forestry stands across the country are managed in such a way as to minimise risk from slash mobilisation.

We urge the Government to remove barriers to land-owners planting relatively small areas of forest and claiming carbon credits for so-doing.

The Government needs to recognise that Crown land for planting trees is owned by the people of Aotearoa New Zealand and consultation must be undertaken before there is any significant change in its management. Any conservation land to be used for planting should only be to indigenous forest, not exotic species; the planting should not compromise conservation values; and it should be subject to public consultation.

We urge the Government to only plant diverse, indigenous forest on Crown Land. Diverse indigenous afforestation has numerous win-win co-benefits, including greater carbon sequestration over a much longer term than radiata pine, helping the long-term drawdown of CO2 from the atmosphere.

We dispute the ERP2 discussion document assertion that the current costs of native afforestation make it uneconomic compared with exotic planting. Taking a long term view rather than a short term least-cost approach allows a more holistic assessment of the cost benefits of the two forest types, which is why the two local Councils (Nelson and Tasman) are in the process of replacing exotic plantations with native forests on local Council-owned hills.

We support initiatives that 'add value' to our economy and environment. For example, processing high value wood in New Zealand to create long-lived wood products is of much greater economic value than the current practice of exporting logs for relatively little economic benefit. In addition, the carbon stored in those logs is quickly returned to the atmosphere when they are turned into low-value disposable products such as pallets, paper, packaging, boxing timber etc.

We believe wood can play a major role in the built environment through the use of structural timber products such as gluelam beams and other high-tensile products. Such products should be used in lieu of steel or concrete wherever possible to decrease emissions embedded in buildings.

Adopting bio-diverse farm-forestry approaches to managing land can build resilience by reducing erosion, improving drainage, soil health and plants/crops that are higher in nutrients, and more resistant to disease and fire. Potential tree crops might include high value timber species, nut and fruit trees.

Planting should continue to be subject to the National Environmental Standards for Commercial Forestry.

36. **Non-forestry removals:** We urge the Government to ensure that significant investment in nature-based solutions (NbS) is holistic, ecologically driven and applied at a landscape scale. To achieve this and to avoid perverse outcomes, we encourage the Government to add an environment/biodiversity benefit metric to the prioritisation and implementation of NbS as non-forestry removals options. Including such a metric would ensure that the right NbS are employed at the right

place, and that short-term mitigations that may create other problems in the longer term are avoided.

37. Despite being one of the five pillars of the Government's climate change strategy, there is little detail provided in ERP2 on the application of NbS across the country. No information is provided on funding mechanisms to implement NbS, nor on how carbon emissions/removals will be quantified or monitored to ensure that NbS are indeed contributing to net carbon removal. We need to ensure that all quantifications of carbon emissions/removals are real and not merely based on models developed using inappropriate or inadequate data.

38. Whilst it is heartening to see blue carbon included in the list of potential non-forestry removals options, it is pertinent to note that the health of seagrass populations has declined rapidly in recent years, both in New Zealand and globally. It is likely that much of this decline is a result of marine heatwaves, which is one consequence of climate change. Without significant reductions in ocean temperatures, it is unlikely that seagrass populations will recover. The loss of seagrass will negatively impact the myriad of species dependent on these communities, as well as limiting the potential for carbon sequestration. We grieve for the near total loss of seagrass in the local Whanganui Inlet, likely representing one of the largest recent losses of intertidal seagrass recorded in New Zealand[34].

39. We need to be cognisant of the impacts of climate change on the ecosystems we are relying on to remove carbon for us. For example, increasing sea level rise will negatively impact mangrove populations. If mangroves are lost from our coastlines, coastal areas will become more vulnerable to storm surge, inundation and erosion. And with both mangroves and seagrass, the loss of these species in coastal areas will mean that coastal sediments will be more vulnerable to wave action, with increased mobilisation resulting in a higher likelihood of release of the blue carbon sequestered therein.

40. We support natural removals technologies such as wetland restoration, browsing pest control in pre-1990 forests, seagrass beds, etc. Restoring drained peatland to wetland can considerably reduce emissions.

    We encourage the Government to add an environment/biodiversity benefit metric to their prioritisation of non-forestry removals technologies to avoid creating other problems in the longer term. Measurement, additionality and data need to be addressed.

41. **Waste**: Action is needed to reduce organic waste disposal emissions (methane capture at existing and new landfills; reduce, and ultimately divert, all organic material to landfill). Investment (from Waste Disposal Levy Funds) in activities at the top of the Zero Waste Hierarchy is critical (e.g. preventing food waste at source, rescuing edible food, reusing textiles and construction and demolition

[34] Jones, K. 2024. 'Alarming' loss of seagrass in large, remote inlet.

materials), as well as in downstream activities.

42. **Helping sectors adapt to climate change impacts:** Planting pine plantations will exacerbate flooding damage in downstream river deltas, wreaking havoc on housing, farming and rural communities. Communities will not be resilient if they have pine plantations upstream.

    Omitting agricultural methane emissions from ERP2 will exacerbate tension between urban and rural communities. Successful, ongoing adaptation to climate stressors requires social cohesion, mutual respect and an understanding that all sectors are playing their part to reduce GHGs.

    Focusing on sectors rather than communities is a siloed approach that is not going to achieve resilient well-adapted communities. Long term planning and collaboration by all sectors at a regional level is required as we move to a low carbon economy, to ensure there is no maladaptation. The communities must be involved in the decision-making process.

43. **Distributional impacts of climate mitigation policy:** We request the Government develop a just transition programme to support people affected by reducing emissions.

Appendix: Our responses to consultation questions

Share your views

0.1 What do you think is working well in New Zealand to reduce our emissions and achieve the 2050 net zero target?

Initiatives that appear to have worked well include:

- Climate Change Response (Zero Carbon) Amendment Act 2019 and the independent He Pou a Rangi Climate Change Commission
- First emissions reduction plan
- Pricing carbon through the Emissions Trading Scheme (ETS; in principle)
- (Previous) specific funding for initiatives to drive down emissions e.g.
    - Government Investment in Decarbonising Industry (GIDI) fund
    - Clean car discount scheme
    - Active and public transport investment
- Citizen concern and engagement (in the latest Ipsos poll: 2 in 3 (66%) stated that if the Government doesn't act now, it will be failing the people of New Zealand; only 1 in 3 (32%) stated that they believe the Government has a clear plan in place to tackle climate change[35])
- Young people fighting tooth and nail to save their planet, fearing the consequences for them otherwise[36]. We should model our actions after theirs and learn from their methods and their idealism.
- Contributions of Aotearoa scientists to IPCC AR6 reports and to national climate research (e.g. the temperature of New Zealand oceans would rise by four degrees Celsius if the global average rose to two degrees; GNS climate scientist Georgia Grant[37])
- Increasingly proactive businesses and financial institutions, including the mandated or voluntary disclosure of emissions
- Regional and local government authority initiatives (e.g. GWRC Regional Policy Statement (RPS) Proposed Change 1[38], Tasman District Council climate action plan[39]).

0.2 The Government is taking a 'net-based approach' that uses both emissions reductions and removals to reduce overall emissions in the atmosphere (rather than an approach that focuses only on reducing emissions at the source). A net-based approach is helpful for managing emissions in a cost-effective way that helps grow the economy and increase productivity in New Zealand.

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[35] Ipsos 2024. Ipsos Earth Day Report 2024 - NZ edition.
[36] School Strike 4 Climate NZ.
[37] RNZ 2023. Warmer oceans to make severe weather events more catastrophic - climate scientist.
[38] Greater Wellington 2024. Regional Policy Statement (RPS) Proposed Change 1 (PC1).
[39] Tasman District Council 2024. Tasman Climate Response and Resilience Strategy and Action Plan 2024-2035.

a. What do you see as the key advantages of taking a net-based approach?

b. What do you see as the key challenges to taking a net-based approach?

Taking a 'net-based approach' and relying on forestry to absorb 20% of gross emissions it reduces pressure on other sectors to reduce emissions. At this stage of the climate crisis, emissions reduction is the most important outcome we can seek to achieve. Rapid and deep decarbonisation is critical to limiting planetary warming. We have a global and generational responsibility to decrease emissions NOW.

We urge the Government to take leadership of this mahi - there is no more pressing matter for Government at this time than decarbonising our society.

Another challenge is the risks of relying on high levels of carbon sequestration (removals) from forestry. To date in New Zealand, this reliance has been on exotic, predominantly radiata pine, forestry. Grown in extensive monocultures across the landscape, these forests increase susceptibility to wildfires (which are predicted to increase in a changing climate, with risks also to human life, property and native ecosystems), present an extensive and expensive wilding pine risk, and compromise soil stability on erosion-prone slopes with disastrous consequences during high rainfall intensity events, as seen during Cyclone Gabrielle in Tairāwhiti and Hawkes Bay. Biological carbon simply doesn't have the longevity that subterranean oil and gas have.

There is increasing international disquiet about the use of non-native monoculture plantations as a carbon removal mechanism[40]. The IPCC considers large-scale non-native monoculture plantations among the 'worst practices and negative adaptation trade-offs' for temperate forests[41]. It may not be possible in the future to count the carbon sequestration from exotic monocultures in the carbon-accounting processes, thereby negating much of New Zealand's removals in the net-based approach.

A further concern with relying on exotic monocultures is that the assumption of CO2 'fertilisation' may not continue to hold (e.g. as they become limited by vapor pressure deficit[42]), and fundamental physiological limitations may limit the amount of carbon removed as the climate warms. It is possible that carbon uptake by these forests will be balanced or outpaced by carbon release as temperatures rise (through photorespiration and other physiological processes). This would mean that the extent of removals over time would be much lower than expected.

It is unclear how the country will maintain low net emissions after 2050, when the majority of these exotic monocultures will have reached equilibrium and no longer be

[40] He Pou a Rangi Climate Change Commission 2024. Monitoring report: Emissions reduction. Assessing progress towards meeting Aotearoa New Zealand's emissions budgets and the 2050 target. P. 260
[41] IPCC 2022. Climate change 2022: impacts, adaptation and vulnerability. Chapter 2.
[42] G. Popkin 2024. Will climate change upend projections of future forest growth?

removing significant amounts of carbon. It is not possible to continue planting ad infinitum as we will run out of land. What is the plan for 2051, 2060, 2090? How to offset hard-to-abate emissions then if there is no new forest to remove them (e.g. nitrous oxide emissions from the use of nitrogen fertiliser in the agricultural sector, 6.3 MtCO2e in 2022, and not covered by the ETS)?

The net-based approach ignores the global inequity in Aotearoa having the unenviable record of the highest cumulative per capita rate of atmospheric emissions[43], from our massive historical deforestation. The net-based approach entrenches that entitlement.

The net-based approach comes with large social dislocation of rural communities.

A better strategy is to reduce emissions as deeply and permanently as possible, without further delay. This would negate the need to use a flawed 'net-based approach' based on exotic monocultures.

Steeper gross emissions reductions also would open up greater opportunities for extensive, but slower growing indigenous reafforestation in place of faster growing exotic trees. In addition to long-term, ongoing carbon sequestration, planting diverse indigenous forest communities has a myriad of co-benefits: improved outcomes for biodiversity; better climate adaptation as well as mitigation; improved soil health and reduced soil erosion; improved water quality and quantity; improved aesthetics and human health. The scope of restoring large areas of Aotearoa to indigenous forests proposed by Recloaking Papatuanuku[44] could capture the public's imagination in the same way Predator Free New Zealand has.

0.3 The current proposed policies in the ERP2 discussion document cover the following sectors and areas:

- **strengthening the New Zealand Emissions Trading Scheme**
- **private investment in climate change**
- **energy sector**
- **transport sector**
- **agriculture sector**
- **forestry and wood-processing sector**
- **non-forestry removals**
- **waste sector.**

What, if any, other sectors or areas do you think have significant opportunities for cost-effective emissions reduction?

Please investigate the emissions consequences of housing intensification vs urban sprawl[45].

[43] Evans, S. Analysis: Which countries are historically responsible for climate change?
[44] Pure Advantage 2024. Recloaking Papatūānuku: a nation-wide indigenous forest initiative.
[45] Neubauer, T. 2024. Don't sweat the small stuff when it comes to emissions savings.

The impacts from **imported products** are far greater than waste impacts and issues including durability, reparability, upgradability, remanufacture and reuse, should be given far more attention. Product stewardship schemes should have meaningful and mandatory targets, at the top of the waste hierarchy, that get progressively more demanding over time, and move as quickly as possible to EU style Extended Producer Responsibility (EPR), with eco-modulation (or mandatory minimum product design requirements) to drive product eco-design.

0.4 What Māori- and iwi-led action to reduce emissions could benefit from government support?

Māori would be more empowered to lead action to reduce emissions if their status as mana whenua was recognised. The Government could support Māori by publicly acknowledging, and acting in accordance with, their mana whenua.

Many Iwi, as kaitiaki of the whenua, have environmental plans with emissions reducing outcomes such as: wetland restoration, pest control, maintenance/development of indigenous forests, regenerative agriculture and harvesting energy from natural hot pools, environmental research, monitoring and development, database development and facilitation of pertinent wānanga.

Local and central Government uptake, incorporation, promotion and support of these existing Iwi environment plans would not only lead to reduced emissions but would also recognise their mana whenua, an important part of upholding Te Tiriti O Waitangi.

There are complexities around Māori collective land ownership structures and governance that affect the ability of these landowners to raise capital that would enable on-farm practice changes, implementing on-farm mitigations, or changing land use. Support for Māori farm businesses would help them to reduce on-farm emissions and transition to low emissions land uses[46].

1 Approach to New Zealand's climate change response

1.1 What opportunities do the proposed initiatives and policies across the sectors offer for Māori- and iwi-led action to reduce emissions?

Apart from exotic forestry which has negligible benefits other than as feedstock/carbon mineralisation potential, the policies could help Māori/Iwi to achieve their (emissions reducing) native forest, wetland restoration, coastal vegetation management and marine ecosystems environmental plans.

[46] He Pou a Rangi Climate Change Commission 2024. Monitoring report: Emissions reduction. Assessing progress towards meeting Aotearoa New Zealand's Emissions budgets and the 2050 target.

1.2 What additional opportunities do you think the Government should consider?

The current approach of ERP2 is to take a 'least-cost approach'. This is seen as 'economically efficient because it relies on markets, which leads to innovation and investment' (p. 24). However, if markets were able to solve the climate crisis, then surely they would have done so by now? The crisis is not new, it has garnered international agreements and attention for several decades now, yet markets have failed dismally to address it. Relying on markets to address the complexities of the climate crisis, including changing human behaviour, is completely insufficient. Powerful industries with very deep pockets have successfully stymied progress for decades. Where is the evidence that this situation will change, if left to the market?

The Government should consider seizing the opportunity to address all the costs of climate change (economic, environmental, social); to act boldly and legislate for deep cuts to emissions immediately; to prioritise decarbonisation across all sectors; and to lead the way into a sustainable and healthy future for all, putting planet and people before profits and markets.

2 *Tracking progress towards meeting emissions budgets*

2.1 What other impacts or consequences of the Government's approach to meeting the first emissions budget should the Government be aware of?

The Government's move to cancel ERP1 actions 9.4 (Support businesses moving to circular economy models) and 9.10 (Commence a Circular Economy and Bioeconomy Strategy) impact the implementation of a circular economy, and reduces the ability to target the reduction of the use of resources and hence the reduction of waste[47].

2.2 What, if any, are the long-term impacts from the changes to the first emissions reduction plan on meeting future emissions budgets that should be considered through the development of the second emissions reduction plan?

In the 15 years from 2008 to 2022, the average annual net emissions for New Zealand ranged from 68.9 - 75.4 MtCO2e[48]. The Climate Change Commission explored the decline in emissions between 2021 and 2022 and ascribed 94% of the decline to external factors. These included high rainfall filling hydro lakes, increasing renewable electricity generation capacity, and the closure of the Marsden oil refinery.

Given the national commitment to decrease carbon emissions over this 15 year

[47] He Pou a Rangi Climate Change Commission 2024. Monitoring report: Emissions reduction. Assessing progress towards meeting Aotearoa New Zealand's emissions budgets and the 2050 target. P. 84

[48] He Pou a Rangi Climate Change Commission 2024. Assessing progress towards meeting Aotearoa New Zealand's Emissions budgets and the 2050 target. P. 47.

period, including via the ETS, it is worrying that emissions have stayed relatively stable over this period. It is realistic to assume that any 'low hanging fruit' has already been implemented, and so further decarbonisation is more complex and/or expensive.

In dropping the Clean Car Discount and the Government Investment in Decarbonising Industry, delaying agricultural pricing, and avoiding incentivising other decarbonisation, the Government has backed itself into relying on carbon sequestration through exotic forestry on a massive scale to meet emissions budgets. This has substantial risks (described at question 0.2b).

Avoiding urgent action on deep and extensive emissions reductions also comes with being party to the high risks of global **inaction**, such as triggering climatic and other harmful tipping points in the natural world that pose some of the gravest threats faced by humanity[49]. Their triggering will severely damage our planet's life-support systems and threaten the stability of our societies. This also puts us into the territory of polycrisis, when crises in multiple global systems become causally entangled in ways that significantly degrade humanity's prospects[50].

By relying on the market and continuing with a Business As Usual approach with a few tweaks around the edges, ERP2 will fail to achieve the required emissions reductions to help keep planetary warming at 1.5°C or below. The Government has failed to grasp the seriousness of the climate crisis and the urgency with which we must decarbonise. We have less than a decade to rapidly decarbonise before the window closes, and with the increased temperature already locked in with existing emissions, it may be too late already to avoid some catastrophic tipping points in planetary systems.

3 Strengthening the New Zealand Emissions Trading Scheme

3.1 What else can the Government do to support NZ ETS market credibility and ensure the NZ ETS continues to help us to meet our targets and stay within budgets?

The Government needs to signal as soon as possible that it plans to end free industrial allocations by 2030. Free carbon credits were intended to be a transitional measure, with the original Emissions Trading Scheme legislation in 2008 setting a phase out by 2030. It could introduce a Carbon Border Adjustment Mechanism like the EU to create a level playing field for industries while they still face the full carbon price. We understand the concrete industry supports swapping out free carbon

[49] Lenton et al 2023. Global tipping points report 2023.
[50] Miller & Heinberg 2023. Welcome to the Great Unraveling: navigating the polycrisis of environmental and social breakdown.
Lawrence et al. 2024. Global polycrisis: the causal mechanisms of crisis entanglement.

credits for a Carbon Border Mechanism.

To reduce risk from the proposed heavy reliance on the ETS, the Government could support ETS market credibility and ensure it helps to meet climate targets by actively investigating and pursuing complementary policies not identified or abandoned in the ERP2 proposals e.g. providing infrastructure for the use of rail and coastal shipping to mode shift heavy freight from highways.

Such policies would need targeted wealth transfer from increased ETS prices to reduce the disproportionate financial burden on lower-income households.

3.2 What are the potential risks of using the NZ ETS as a key tool to reduce emissions?

Potential risks we see include:

- The ETS price will be insufficient to drive gross emissions reductions to net zero. It's time to end free carbon credits to allow the ETS to do its job properly.
- The risks of relying on radiata pine monocultures with their susceptibility to carbon losses from large wildfires (predicted to increase with climate change) and treefall from severe weather events; and uncertainty that current forest carbon removal rates will be maintained as temperatures increase due to changes in physiological processes. How does the ETS take account of forests lost or damaged by such events?
- Is there a risk that the IPCC's finding of large-scale non-native monoculture plantations being among the 'worst practices and negative adaptation trade-offs' for temperate forests will lead to a change in how they are accounted for under UNFCCC carbon-accounting processes?
- If natural sinks are indeed weaker than expected, then warming will be stronger than expected in IPCC scenarios. Hence, even more ambitious efforts on emissions reduction will be required[51].
- It is unclear how we will maintain low net emissions after 2050, when the majority of these exotic monocultures will have reached equilibrium and no longer be removing significant amounts of carbon and there will still be a need to offset hard-to-abate emissions.

3.3 How can the Government manage these risks of using the NZ ETS as the key lever to reduce emissions?

One way to manage these risks is to formulate how the ETS will function once net zero is achieved, including how nitrous oxide emissions (currently outside the ETS) will be addressed at that time.

[51] 10 New Insights in Climate Science 2024. Over-reliance on natural carbon sinks is a risky strategy: their future contribution is uncertain.

3.4 Do you support or not support the Government's approach of looking at other ways to create incentives for carbon dioxide removals from forestry, in addition to using the NZ ETS?

Any side-by-side incentives scheme for afforestation on agricultural and other land would need to be as robust as in the ETS.

3.5 Apart from the NZ ETS, what three other main incentives could the Government use to encourage removals through forestry?

- Support for large scale riparian plantings via Catchment Management Plans, with the co-benefits of enhancing water quality (by reducing leaching to waterways) and increasing the health of aquatic and riparian habitats, and improving biodiversity outcomes
- Supporting Recloaking Papatuanuku
- Restoring indigenous vegetation communities at scale across the landscape, thereby linking fragments, increasing resilience and providing corridors for both fauna and flora (genes, pollen) to move through the landscape.

3.6 Please provide any additional feedback on the Government's thinking about how to use the NZ ETS to reduce emissions.

Is there to be a role for the ETS in addressing nitrous oxide emissions inside the Government's proposed net approach? How else would this be done?

4 How we fund and finance climate mitigation

To fund and finance climate mitigation we need to **price carbon appropriately**. We need to understand the real and full cost of each tonne of emitted carbon and charge emitters the full cost. Currently the price of carbon is highly artificial and does not reflect the cost. The price does little to stimulate deep emission cuts or to fund long term, sustainable removal solutions. The cost of carbon emissions is already being borne by communities in New Zealand and around the world and this will only increase over coming decades. As previously indicated, a true social cost of carbon price that reflects all costs and co-benefits is the way to drive change.

It is concerning that the chapter on funding and financing climate mitigation entirely focuses on private investment. Where is the leadership from Government? There are numerous benefits to Government in mitigating climate change through reduced health costs, reduced repair bills after significant climate events, reduced emissions and hence reduced need for offshore mitigation.

Instead, this Government has rolled back investment in emissions reductions including the Clean Car Discount, the Government Investment in Decarbonising Industry fund, vehicle emission standards, and public and active transport initiatives,

as well as delaying the requirement for agriculture to pay for emissions. These rollbacks send the message to industry, business and the wider community that reducing emissions is only a 'nice to have' and not essential. Indeed, taking a 'least-cost approach' to ERP2 signals that short term financial gain is being prioritised over long term economic, environmental and social survival.

A 'least-cost approach' assumes that the financial consequences of climate change are relatively insignificant and we don't need to invest substantially to address the climate crisis. Nothing could be further from the truth. The costs to government (local and central), private individuals, businesses, growers and the insurance industry for the two climate disasters early in 2023 - the Auckland Anniversary floods and Cyclone Gabrielle - have been estimated at $14 billion. This figure includes only direct economic costs, but not the social and health costs to individuals and communities and businesses that cannot be claimed from insurance. Nor the cost to the environment.

As a nation we cannot afford a $14 billion hit to our economy on a regular basis. But with climate change, that is what we can look forward to. Increased intense rainfall events, increased frequency and severity of droughts, increased storm surges in our coastal areas - all of these have the potential to have major economic impacts.

The Government has the role of providing **Leadership** and must demonstrate that through prudent investment in effective climate mitigation measures. Relying on private investment to do the work of government is not an option. By all means the Government can work with private investors to co-fund actions, but it cannot abrogate responsibility for climate mitigation.

We urge the Government to take responsibility for the fiscal cliff (between $3 billion and $23 billion) entailed in the offshore mitigation component of our current NDC and to recognise this as a financial liability on the Government's balance sheets[52]. Delay in addressing this mitigation will only increase the eventual cost outcome[53]. While there are opportunities in funding emissions mitigation offshore, there are also risks.

As prudent economic managers, this Government has the opportunity to ensure that the country is liable for as limited amount of offshore mitigation as possible. Surely it makes economic sense to reduce emissions to the extent that we are no longer liable for a fine of $3-23b? That is a lot of money to send offshore because we were too slack in reducing our emissions. **We urge** the Government to investigate how to ensure that between now and 2030, the country reaches its Paris Agreement NDC target. This may include seeking an update to earlier Climate Change Commission advice on the NDC and further domestic action[54].

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[52] Morrison & Hood 2024. An obscure climate accounting decision with billion-dollar consequences.
[53] Gibson, E. 2024. 'Significant risk': Delaying climate deals could cost five times more, Simon Watts told.
[54] He Pou a Rangi Climate Change Commission 2024. Information note: The NDC and further domestic action (2021).

We understand the Government will be consulting shortly on the NDC2 covering the period 2031–35. **We request** comprehensive treatment of the roles of domestic action and offshore mitigation in the NDC2 consultation document.

We also want to let the Government know that private individuals are already paying a hefty price for climate instability through increased insurance premiums. These have increased by over 50% in the last two years in some cases, and are becoming unaffordable for some homeowners. We are also aware that some insurance companies are refusing to insure homes in large areas of suburban Nelson, making it impossible for buyers to secure mortgages. If this trend continues and it becomes impossible to buy and/or insure houses in large areas of our urban centres due to the perceived climate risks, the economic consequences will be major. The severity of the current housing crisis will pale in comparison with the chaos of a totally derailed housing market.

4.1 Do current measures work well to unlock private investment in climate mitigation?

We are aware of one start-up facing a massive challenge in seeking venture capital for a significant emissions reduction project in Nelson, essentially needing to trail blaze a pathway through many of the hurdles identified in the ERP2 discussion document.

4.2 What are the three main barriers to enabling more private investment in climate mitigation?

It is clear from the ERP2 documentation that a lack of imagination is a major barrier to increasing investment. To state that there are ‘signs that investable New Zealand green projects are in short supply (p. 45) indicates a deep ignorance of the potential present across the country to quickly and significantly bring green projects on tap. In the Nelson-Tasman region alone, it would be possible to invest many tens of millions of dollars in green projects over the period of ERP2 that would reduce emissions while increasing adaptation, resilience, employment opportunities, skills, environmental and social outcomes.

Projects including solar and wind farms that provide renewable energy locally and decrease the reliance of the region on the supply of electricity generated elsewhere. Supply that is extremely vulnerable in the event of a large earthquake (AF8.0). This investment would increase the resilience of the region, as well as decreasing emissions.

Projects including reforestation of large areas with indigenous forest communities; restoration of riparian corridors with indigenous vegetation; restoration of coastal and estuarine ecosystems that enhance and protect blue carbon sinks, and protect productive and inhabited land from the impacts of sea-level rise and storm surges.

Given that the two local Councils and a small number of NGOs were able to develop projects and secure funding for more than $20m of environmental projects within the very short time frame provided by the Jobs for Nature process, it is entirely feasible that the same agencies, and others, could develop numerous multi-million dollar projects that would reduce net emissions and produce a myriad of other benefits.

Similarly, most other regions across the country could develop green projects within ERP2 easily and effectively. How about chatting with iwi in Tairāwhiti, for example?

Then there are the HUGE carbon benefits of reducing herbivory in our native forests and ecosystems. Investment in **herbivore control** across the DOC estate and other areas of indigenous vegetation has been calculated to reduce carbon emissions by 8.4 MtCO2e per annum or more[55]. This is 10x the amount predicted to be reduced by new policies in ERP2 (0.8 MtCO2e pa). As the authors of the report note 'control of mammalian herbivores is likely to be one of the most significant and cost-effective options for protecting and enhancing the country's massive stores of natural carbon.'

Controlling herbivores not only increases carbon sequestration and decreases carbon emissions from their activities, but has multiple benefits for indigenous biodiversity, for soil health, for water quality and quantity, and for the overall health and resilience of our indigenous ecosystems and environment. An area ripe for investment, surely?

It is unclear if these emissions are being fully accounted for in current inventories. It is possible that the loss of biomass is captured by monitoring, but less likely that the 3.1 MtCO2e emitted by the herbivores is captured in emissions data. This situation reinforces that we need to be wary of assuming that our carbon accounting accounts for all emissions, because global climate systems care not one jot about the accounts we produce on paper. Instead these systems respond to actual carbon emissions, regardless of whether we account for them or not.

Hence it is extremely prudent to reduce emissions more deeply than we might believe necessary from accounting calculations, to account for those emissions we have not accounted for elsewhere.

4.3 What are the three main actions the Government can do to enable more private investment in climate mitigation for the next 18 months?

Remove all subsidies (direct and indirect) from any industries and activities that emit carbon. That includes agriculture, the oil and gas industry, the transport industry and more. This includes removing the allocation of free ETS units to polluters.

Redirect those funds to industries and activities that result in climate-positive outcomes, through co-investing with private entities. For example, provide co-investment for installation of household solar; reinstate the clean car discount to promote the uptake of electric vehicles; co-invest with private entities, Iwi, NGOs and

[55] Hackwell & Robinson 2021. Protecting our natural ecosystems' carbon sinks.

local government to undertake large-scale restoration and reforestation of indigenous ecosystems.

Government needs to lead in this space, not assume that private investment will happen.

Supporting a ‘sustainable finance taxonomy - a ‘rulebook’ for defining what is green’, referred to in the ERP2 discussion document (p. 45), must include scientifically sound standards for emissions. It must also be a high priority when over 80% of New Zealand’s exports by value are now going to countries with mandatory climate related disclosures - proposed or in force[56].

4.4 What are the three main things the Government can do to enable more private investment in climate mitigation in the longer term (beyond the next 18 months)?

See 4.3

4.5 Please provide any additional feedback on the Government's thinking about how to enable more private investment in climate mitigation for the next 18 months.

5 Energy

As in other sectors, measures to reduce emissions in the energy sector are seriously unambitious. There seems to be no recognition of the IPCC’s warning of ‘the rapidly closing window of opportunity’ and the need to make ‘deep, rapid or immediate emissions reductions’.

There is a dangerous acceptance of not reaching our ‘fair share’ goals and of the inevitable consequences of this: either acquiescing to well over 1.5°C of global warming if all countries adopt such a low ambition approach, or free-riding on the even greater efforts of others to make up for our failures – hardly an ethical course.

The essentials of policy to reduce emissions and enable a secure, sustainable and affordable energy supply are:

1. Reduce energy demand
2. Increase energy efficiency
3. Meet the demand with renewable energy
4. Rapidly reduce to near zero the use of fossil fuel energy
5. Ensure that everyone has equal access to energy at sufficiency levels.

ERP2 addresses only the fourth of these areas, with policies on increasing

[56] Swan et al. 2024. Protecting New Zealand’s competitive advantage.

renewable energy generation. Clearly ERP2 requires further policies complementary to the ETS, which will not function as intended with the price of carbon kept below a level which could incentivise the necessary transition. Here are several policy goals we recommend.

1. **Rapidly reduce to near zero the use of fossil fuel for energy.** NZ fossil gas is diminishing in supplies. We strongly reject the suggestion in the ERP2 proposals that we continue to rely on fossil gas (with its risk of stranded assets), and see the idea of CCS enabling its use as wishful thinking. There is every reason to focus strongly on speedily minimizing its use, alongside transition from coal- and oil-powered processes to renewables such as solar. Proposed infrastructure investment for LNG imports to deal with the current electricity shortage should be applied to rooftop solar.

With current ETS settings, there is a serious risk that the price of NZ units is too low to incentivise these transitions. The Government may need to separately incentivise them, or rethink the settings.

Such transitions entail workforce changes that need to be planned for, both in training people for new skills and knowledge and in dealing supportively with redundancies.

- Do not provide for reticulated gas supply in new buildings.
- Do not consent to gas-powered processes in new plants.
- Incentivise transitions in industrial machines to renewable energy.
- Require companies to detect and repair sites of fugitive gas leakage.

2. **Reduce energy wastage and use**. This is a particularly under-used arena of potential emissions reductions and cost saving as pointed out in a recent World Economic Forum Report[57].

High levels of energy waste can be identified when attention is paid to the matter. Remedying energy waste involves systems design or systems review of industrial and buildings processes, especially heating, ventilation and cooling. If the Government were assisting with grants or low cost loans in electrification (as will be suggested), the systems review could be a condition of financial help. An example from the food and beverage industry is lowering peak electricity demand by cooling products at night, when electricity demand is lower.

For households and commercial buildings, reducing energy demand may require behaviour change, in some cases, staff training. Government leadership is required in applying knowledge of behaviour change e.g. automation, ‘nudge’ tactics or simple leadership and requests.

Household energy demand could be substantially reduced by subsidising home

[57] World Economic Forum 2024. Transforming energy demand.

insulation, for instance by a windfall tax on the high profits of the electricity gentailers.

We support the call[58] by BRANZ, Chartered Institution of Building Services Engineers, Engineering NZ, New Zealand Institute of Architects, Sustainable Business Council, Infrastructure New Zealand, and the New Zealand Green Building Council (NZGBC) and 40 other industry bodies for:

1. A commitment to implement MBIE's Building for Climate Change programme delivering substantially lower operational and embodied carbon emissions by the early 2030s.

2. Implementing energy transparency labels on new homes and buildings, and existing commercial buildings from 2026. This will enable the market to see which buildings cost less to run and incentivise greater efficiency.

As the NZGBC chief executive indicates:

'The second Emissions Reduction Plan is a massive opportunity to help slash the built environment's 20% contribution to New Zealand's emissions,

There's overwhelming support for transforming the way we design, construct and operate our buildings. Not only can it help Aotearoa meet our climate obligations, but more efficient buildings reduce running costs for Kiwi families and businesses, while also taking pressure off our struggling electricity grid. The sector has invested significantly in preparation for these changes.

Unlike other sectors, the knowledge and technology already exist to massively reduce our sector's carbon footprint. We know internationally from the likes of the UK, US, and throughout the EU, regulatory change is vital for impactful climate action. All we need is some leadership and smart policy from the Government.'[59]

3. **Increase energy efficiency.** Replacement of lighting and of stationary energy machines by more efficient equipment may be necessary. This requires a funding mechanism. Examples can be drawn from circular economy applications such as using excess heat from one processing area to supply needed heat in another. The Government is in a good position to incentivise such innovation.

4. **Meet the reduced demand with renewable energy.** The Government plans to make the consenting process for renewable energy generation easier. It is to be hoped that siloed thinking directed to increasing supplies of energy will not result in damage to ecosystems and species that could have been avoided with a more careful process.

There is something of a crisis in Aotearoa's electricity system and in its pricing, despite large profits for the four gentailers. Relevant to ERP2, there is still a stubborn

[58] NZGBC 2024. New Zealand's largest property, construction and business organisations call on Government to improve buildings as part of upcoming Emissions Reduction Plan.
[59] Ibid.

proportion of electricity generated using fossil fuels. The Government, as a major shareholder in three of the four gentailers, is in a good position to change this by:

(i) setting profit reinvestment targets for the gentailers to invest in new renewable generating capacity

(ii) using dividends paid to the Government to buy shares to increase control of these companies for the purpose of a secure, sustainable, affordable electricity supply

(iii) purchasing remaining fossil fuel generators and plan for their diminishing contribution to electricity generation

(iv) investing in **community and household renewable energy schemes**. This move has major implications for the resilience of electricity supply and is strongly recommended. Distributed energy systems are also high in efficiency as there is less loss in transmission.

What can be learnt from the transformation of the South Australian electricity generation system from 1% to 74% renewable energy in just over 16 years?[60]

Regarding hydrogen as an energy carrier, we are of the view that it has been 'overhyped' due to overlooking the high energy losses in its generation. The energy return on energy invested is negative. It has a few limited applications, such as powering heavy freight vehicles.

5. Ensure that everyone has equal access to energy at sufficiency levels. This condition of equal access to satisfying basic energy needs does not pertain now. There is a proportion of our population that cannot afford sufficient heating or mobility.

There is also a proportion of the population that makes ultra-high demands on energy, and consequently is responsible for ultra-high carbon emissions. **We recommend** two approaches to this.

(i) Change the tax system to distribute wealth and income more fairly. In particular, a wealth tax is recommended as a start.

(ii) Since the ETS looks increasingly problematic in terms of its present capacity to enable us to reach our targets for lowering emissions, consider a scheme in which this would be done through individual tradable energy quotas (TEQs) for the purchase of fossil fuels. The quantity distributed would align with our emissions reduction targets. All individual adults would be issued with an equal quantity of TEQs. Companies would purchase them from the Government at a controlled price. Each year the quantity available would decrease in alignment with emissions reduction targets. Unlike a properly functioning ETS, the system would not disadvantage the poor.

5.1 What three main barriers/challenges that are not addressed in this

[60] South Australian Department for Energy and Mining 2024. Leading the green economy.

chapter do businesses face related to investing in renewable electricity supply (generation and network infrastructure)?

The main barrier faced is that electricity generators have every incentive to maintain scarcity. With the way the electricity market is set up, everyone who produces electricity to supply the grid gets the highest price of the most costly producer. There is a built-in incentive to not invest in new electricity generation that might reduce the profits you get from high-cost fossil generators flowing through into low cost hydro schemes. The system was never fit for purpose and was flawed from the beginning. Instead of the Max Bradford reforms giving us lower electricity prices, it has done the opposite. We need the Electricity Authority to transition from impotence to being the single buyer of electricity to the grid, that pays companies for storing electricity in our dams etc. and pays companies a fair price for their electricity based on their sunk costs. The fact that we have had masses of consented wind energy ready to go but not being built is testimony to the fact that it's not consenting delays that are the issue, it's the design of the electricity market. The amount of consented but not built renewable generation (1304 MW; Table 1) is not far off the capacity of fossil fuel power stations currently in operation (1686 MW[61])!

Table C.1 Consented renewable electricity plants

Plant name	Owner	Capacity (MW)	Expected commissioning
Turitea Stage 2 Wind Farm	Mercury	103	Mid-2023
Kaiwera Downs Stage 2 Wind Farm	Mercury	240	End of 2023
Tauhara Geothermal Plant	Contact Energy	168	End of 2023
Kaitaia Solar Farm	Lodestone Energy		End of 2023
Harapaki Wind Farm	Mercury	176	Mid-2024
Ruakākā Solar Farm	Meridian	75	End of 2024
Mt Cass Wind Farm	MainPower	95	2024-2025
Mahinerangi Stage 2 Wind Farm	Mercury	164	-
Puketoi Wind Farm	Mercury	230	-
Kaiwaikawe Wind Farm	Mercury	73	-
Ngāwhā OEC5 Geothermal Expansion	Top Energy	32	-
Te Huka Unit 3 Geothermal Plant	Contact Energy	51	-

Table 1: Consented renewable electricity plants[62]. The Turitea Stage 2 wind farm was commissioned in May 2023.

5.2 How much will the Government's approach to driving investment in renewable energy support businesses to switch their energy use during 2026-30 (the second emissions budget period)?

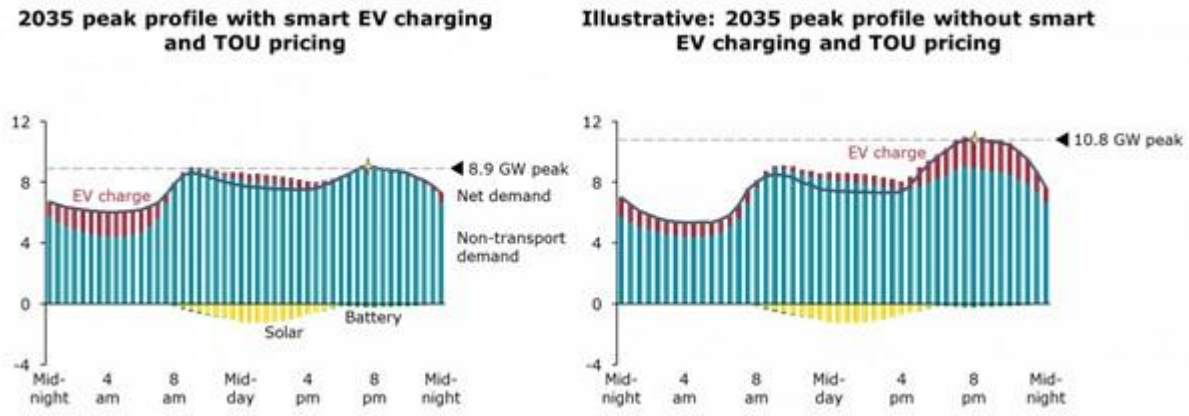
[61] MBIE 2024. Electricity statistics.
[62] MBIE 2024. Energy in New Zealand 2023.

5.3 What three main barriers/challenges do businesses and households face related to electrifying or improving energy efficiency, in addition to those already covered in the discussion document?

Everyone should be paying variable prices for electricity, depending on the wholesale price at the time of day and time of year. The price people get paid for putting power back into the grid should also go up and down with the wholesale price of electricity, but should be higher than the wholesale price in recognition that it means that there are little electricity losses or distribution costs for injecting into the grid in the middle of load centres. So if this pricing structure was in place people would naturally charge their EVs up at off peak times, and also they would tend to delay using dishwashers and dryers until they go to bed at off peak times. They would possibly put their freezers on timers to operate only in off-peak times. They would have their hot water cylinders heating water only in off peak times.

This alone has a massive effect on the amount of new generation that needs to be provided as it is the peaks that determine the total amount of generation capacity that needs to be built. By lopping off the peaks and dumping them into the troughs we can get by with less new generation.

As the charts below show, the effect of using Distributed Energy Resource Management Systems (DERMS) and automated smart chargers and batteries, peak demand can be reduced by around 2 GW. That's more than twice the output of Aotearoa New Zealand's largest hydro power station at Lake Manapouri[63]. This is important.



If people could charge their EVs up at low off-peak prices and feed back into the grid at peak times and get paid handsomely for it, then this can do more than the above. While some people lament that new EVs will have to be made compatible with Vehicle to Grid (V2G) applications and that currently only Nissan Leafs and Mitsubishi Vehicles can do this, we already have 15,000 used Nissan Leafs here in NZ, as well as new ones. 95% of the time these are sitting around not being used. Just how big is that battery capacity available? If we assumed 10kWh* from 15,000

[63] Transpower 2024. FlexPoint.

Nissan Leafs, that is 150 MWh. In comparison the much celebrated big Tesla grid battery in South Australia (which doesn't use cars) is 200 MWh, it's not much less than this celebrated big battery, just from our old Leafs already here in NZ. It would of course need wallboxes wherever the EV is parked most - be that work or home.

Now, assuming the government wanted to buy a 150 MWh battery, buying 1500 $10,000 wall chargers for people to use with their Nissan Leafs, would cost the government $150m. Is this cheap for this size battery? Surely if the government went out to tender for well over 1000 of these things, the price would be much lower - perhaps even stimulate a NZ startup to make them.

Lastly, the Lithium Ion battery chemistry used in EVs is significantly different from other chemistries that we might be more familiar with in that the primary degradation factor is not number of cycles but simple "calendar " degradation: if your car battery is slowly degrading each year regardless (almost) of how often it is charged and discharged and you were being paid a handsome differential for feeding into the grid, why wouldn't you?

* The first Nissan Leafs that came out had 24 kWh batteries, the next model had 30 kWh, and new shape ones have 40-64 kWh. So assuming 10kWh from every Leaf is surely not too far out for this back of an envelope calculation.

5.4 How much will existing policies support private investment in low-emissions fuels and carbon-capture technologies?

5.5 What three main additional actions could the Government do to enable businesses to take up low-emissions fuels and carbon-capture technology?

5.6 If you are an electricity generator, please explain and/or provide evidence of how Electrify NZ could affect projects already planned or underway.

5.7 If you are an electricity generator, please explain and/or provide evidence of how Electrify NZ could increase the likelihood that new projects will be investigated.

5.8 Please provide any additional feedback on the Government's proposals to reduce emissions in the energy sector and the industrial processes and product use sector.

6 Transport

‘Transport is one of New Zealand’s largest sources of GHG emissions, producing 40% of domestic CO_2 emissions and 17% of total GHG emissions in 2021. The Climate Change Commission has identified transport as a sector with the potential to be almost completely decarbonised by 2050 and make large reductions from the third emissions budget period (2031-2035) onwards. New Zealand’s overall emissions reduction success is likely to rely heavily on transport realising this potential’[64].

Studies strongly support the benefits of shifting from fossil-fuel emitting forms of transport to public transport and active transport.

- The health and air pollution in New Zealand 2016 study[65] estimated the social costs of PM2.5 pollution from motor vehicles at $1.04 billion, and the costs of NO2 pollution from anthropogenic sources (assumed to result from motor vehicles alone) as $9.5 billion. Total costs of fossil-fuelled transport thus were $10.5 billion.
- A study of New Plymouth and Hastings active travel programmes[66] found that concerted investment is likely to produce measurable, positive returns. They found an estimated benefit/cost ratio of 11:1 for these two cities (using a discount rate of 3.5%).
- A 5% shift in light vehicle kilometres travelled for short journeys to cycling would annually save around 50,000 tonnes of CO2 . In addition, there could be 116 fewer deaths per annum as a result of the benefits of physical activity, and 5.6 fewer deaths from vehicle emissions[67].

6.1 Do you support the proposed actions to enable EV charging infrastructure?

We support increasing EV charging infrastructure. **We recommend** that new charging stations are targeted at gaps in the current network, are of a standard to charge at a speed of at least 150 kW (which newer cars can take advantage of), and that more than one charger (ideally four) are added from the start. Although the average charger spacing might be 75 km, that is an average and is of no help when you’re in well-traveled, but under resourced areas, such as the Lewis Pass in North Canterbury. The Energy Efficiency and Conservation Authority (EECA) should tender out subsidies for installing charging infrastructure in the gaps in the network.

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[64] Ministry of Transport Te Manatū Waka 2023. Briefing to incoming Ministers. P. 11.
[65] Kuschel et al, 2022. Health and air pollution in New Zealand 2016 study.
[66] Chapman et al. 2018. A cost benefit analysis of an active travel intervention with health and carbon emission reduction benefits.
[67] Royal Society Te Apārangi 2017. Human health impacts of climate change for New Zealand: evidence summary.

Further, if effort and expense is going towards putting in chargers, ensure there are at least four per charging station so there's room to support current and future demand, which will reduce any need for spending money to update EV charging infrastructure in the near future.

EV charging infrastructure is not the main barrier to EV uptake, rather it is the initial cost (discussion document technical annex, p. 54). **Please review** the Government's recent decisions on the Clean Car Discount (CCD). Reinstating the CCD can be done in an altered form so it is net zero cost to the Government, allows dispensation for off road capable 4WD utes for those that need them for business, and is set at a lower level so cars that are perceived as luxury vehicles would not be eligible ($55k cutoff). The CCD scheme was a significant driver of higher EV uptake in previous years (**Figure 3**). This otherwise is a commitment to continuing to pollute CO2, nitrous oxides and particulates for 14-20 years (the age of scrapped vehicles).

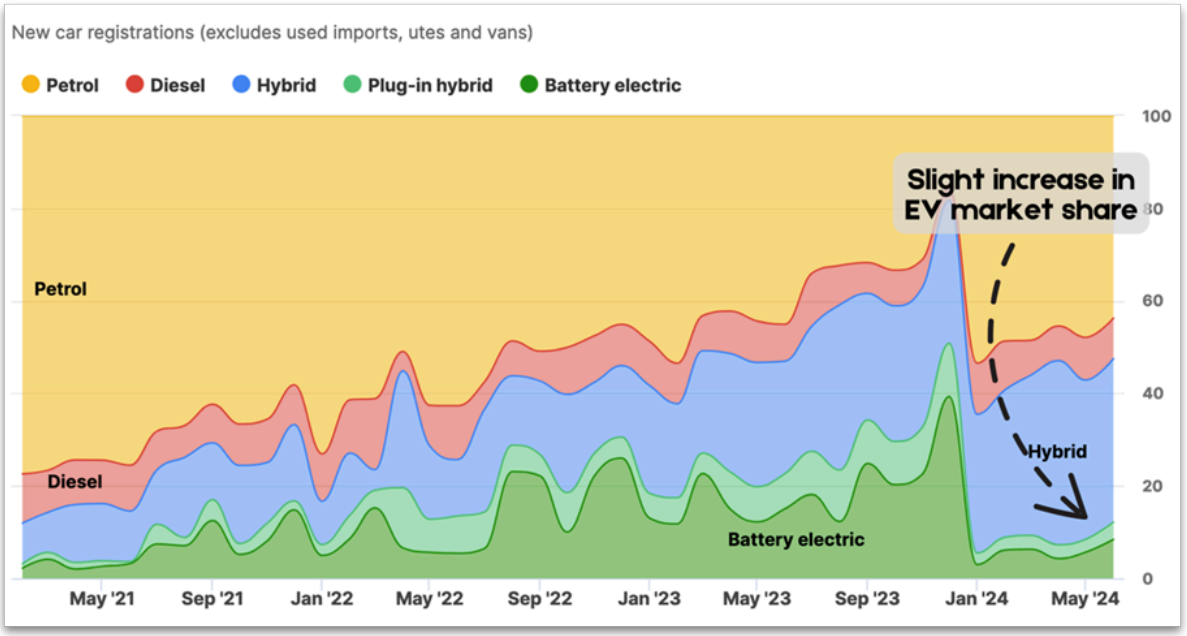

Figure 3: New car registrations (excludes used imports, utes and vans), May 2021-May 2024[68].

[68] July 2024 newsletter, EVDB.

We recommend that the cap for the CCD come down from the previous $80k to $55k (there are numerous good vehicles approaching this figure already), reducing the amount of the incentive to $5k maximum for a pure EV, and balancing the outgoings from that with the income on a sliding scale fee from highly polluting vehicles. These settings could be reviewed annually to ensure it is net zero cost to the Government and that the cap for assistance and the fee amount are still in balance. This would reverse the complete plunge in zero tailpipe emission we have seen from this time last year. And it would tip more people over from buying a diesel double cab ute as a daily runabout with its triple whammy of particulate and NOx emissions as well as high carbon emission to an EV. This is a zero-cost government nudge in the right direction that would have significant ongoing effect.

6.2 What are the three main actions the Government can do to reduce barriers to and enable the development of a more extensive public EV charging infrastructure in New Zealand (without adding too much cost for households and businesses)?

1) The Energy Efficiency and Conservation Authority (EECA) should tender out subsidies for installing charging infrastructure in current gaps in the network

2) New EV charging infrastructure should allow uses to charge at a speed of at least 150 kW and there must be more than one charger (ideally four) per station

3) the Government could ensure that every fossil fuel station has fast EV charging (at least 50 kW) accessible by two or more vehicles at a time.

6.3 Do you support the Government's proposals to reduce emissions from heavy vehicles?

We support the proposals to reduce emissions from heavy vehicles, and **we recommend** there's a provision that heavy vehicles pay for the road damage and additional road strengthening required for their vehicles. At present for local roads 1/2 of the cost of road damage, bridge strengthening etc is paid for by ratepayers - this is completely iniquitous.

While 100% of State highways are paid for through Road User Charges and Fuel Excise Duties, for local roads 49% of maintenance is paid for by ratepayers. We are concerned about this ratepayer subsidy for heavy freight companies. Road damage is to the fourth power of the axle weight, so you can see the difference in road damage between a bicycle or car and a log truck on local roads both paid for 49% by the ratepayer. We would contend the person on a bike or in a car is paying far more than their share for the road damage they do and a trucking company far less than the damage they do. And it's not just the cost of the road surfaces but the way they have to be built extra strong for the extra large trucks, the retaining walls and bridges upgraded - all 49% at the ratepayers expense.

6.4 What are the three main actions the Government can do to make it easier to switch to low- and zero-emissions heavy vehicles (without adding too much cost for households and businesses)?

No comment.

6.5 Do you support the Government proposals to reduce emissions from aviation and shipping?

The ERP2 discussion document identifies little in the way of specific actions to decarbonise aviation and shipping. Rather, we see:

- we have committed to supporting the phase-down of fossil fuels by enabling the development of sustainable aviation and marine biofuels
- the Government sees its main role for these sectors as facilitating industry discussions through existing forums, considering regulatory barriers and ensuring New Zealand's interests are represented appropriately on the international stage
- the Government has established Sustainable Aviation Aotearoa.

Aviation is a difficult to abate sector. For example, the Climate Change Commission discussion document on including international aviation in the 2050 target[69] notes Ara Ake's estimate that replacing international aviation fuel using only woody biomass would require 128% of the waste woody biomass supply available in Aotearoa New Zealand.

An analysis of 12 aviation roadmaps for net zero 2050 revealed heavy reliance on biogenic SAF in the medium-term and synthetic e-kerosene in the longer term. Realising these roadmaps could require 9% of global renewable electricity and 30% of sustainably available biomass in 2050, with significant energy 'losses'[70]. **We recommend** the implications of preferential access to land use and other renewable energy sources at such potential scale for SAF production be honestly portrayed to the public.

We therefore advocate for demand reduction. While the air industry and its lobbyists are keen to portray air travel as a normality[71], we note the extraordinarily uneven income-related distribution of flying to which few globally have access[72], while its climate impact affects everyone on our planet, especially poorer humans. At most 1% of the world population likely accounts for more than half of the total emissions from passenger air travel.

[69] He Pou a Rangi Climate Change Commission 2024. Review on whether emissions from international shipping and aviation should be included in the 2050 target
[70] Becken et al. 2023. Implications of preferential access to land and clean energy for Sustainable Aviation Fuels.
[71] I. Husabø 2020. 1% of people cause half of global aviation emissions. Most people in fact never fly.
[72] Gössling & Humpe 2020. The global scale, distribution and growth of aviation: Implications for climate change.

Allowing low- or zero-carbon shipping on trade routes by 2035: **please investigate** if this warrants action sooner, given the proposal would come in half way through the third emissions budget period.

Coastal shipping has a much lower emissions intensity than heavy transport: about a fifth of the carbon emissions (well-to-wheel) of road freight[73]. **Please investigate** the potential for reducing emissions identified by this research as a priority in ERP2.

We see a Cook Strait freight service including train transport capability is pivotal to reducing heavy transport emissions intensity.

6.6 What opportunities might there be from rolling out new technologies to reduce emissions from aviation and shipping?

- A significant amount of GHG emissions is caused from shipping fossil fuels to NZ. The quicker we transform our fossil fuel use to renewable and NZ based energy sources (e.g. wind, solar, hydro) the less international shipping emissions we will be causing from shipping these around. In this vein, moving to imported LNG for gas-fired power stations is not recommended.
- Hybrid Ships should be encouraged for the inter-island ferries (as the cancelled IRex ones were to be) so that the drives are electric and the electricity could be supplied in a number of ways - initially it might be with generators running on fossil fuels, but this could be swapped out at a later time for half battery half methanol generator power supply. This would mean daily ferry crossings would not have to run their main engines until well offshore and the combustion byproducts from their exhaust would not be emitted in or near population centres.
- Shore power should be encouraged, incentivised and potentially subsidised so commercial ships tied up at wharfs do not have to keep their dirty main engines or diesel generators running for electricity. Combustion byproducts from ships engines and diesel generators are particularly toxic and have societal and health costs for citizens given the can be emitted near population centres.
- The possibility of battery electric domestic flights particularly on shorter runs like Nelson to Wellington and eventually to Christchurch could be encouraged through a contestable fund for demonstrating commercial flights with zero emissions. For longer domestic flights and certainly international flights, sustainable aviation fuel seems to be the only realistic option for conventional heavier than air flight. Again, a contestable fund from the Government for sustainable aviation fuel production here in NZ would be helpful. We are among the world leaders with Rocket Lab, and as we are so reliant on long distance aviation for international tourists, being world leaders in sustainable

[73] P. Gallardo, 2024. A shift to coastal shipping and rail could cut NZ's freight transport emissions – why aren't we doing it?.

aviation technology would be very beneficial.

- Missing from minimising aviation emissions is researching and testing the possibility of photovoltaic powered electric airships. With not having to use any energy to stay aloft, the amount of power needed is quite low. Printed photovoltaic materials have already been produced but they are of low efficiency. With an airship you have a huge surface area that could be covered in these PV materials.

6.7 What are the three main actions the Government can do to make it easier to reduce emissions from aviation and maritime fuels (without adding too much cost for households and businesses)?

We recommend that the Government recognise the importance of encouraging behaviour change and mode shift, taxing high consumption lifestyles, and education on the inequity between the rich flying for leisure and the poor bearing the consequences of their actions.

For example:

- The IPCC identified reducing long-haul aviation as one of the two greatest 'Avoid' potentials in addressing demand[74].
- Encourage people to holiday locally, to be strategic when booking a flight[75].
- Require that airline flight tickets have a warning label: 'Whereas smoking a cigarette takes 10 min off your life, an intercontinental return flight takes 13 days off the life of a future person'. Better still, the number of lost days for the specific flight in question could be calculated[76].

We request the Government proceed rapidly to include international aviation and shipping in our domestic emissions reduction targets and budgets following the report of He Pou a Rangi Climate Change Commission at the end of this year.

6.8 Please provide any additional feedback on the Government's thinking about how to reduce emissions in the transport sector.

Supporting public transport, cycleways and e-bike subsidies can lead to big reductions in car journeys and GHG emissions. There are also massive cost-saving co-benefits for public health and safety, from air pollution, less cars on roads especially in neighbourhoods, and more active lifestyles.

Support local emissions reduction initiatives: It is vital that the Government supports local initiatives such as Nelson's electric buses, instead of undermining them. The scrapping of the free bus allowance for schoolchildren has led to a 60% drop in their usage of the buses, and to more cars on the roads with parents taking

[74] IPCC 2022. Demand, services and social aspects of mitigation.
[75] Take the Jump Kia Maia Te Peke 2024. Holiday local. Enjoy local excursions, be strategic when booking a flight.
[76] Pearce & Parncutt 2023. Quantifying global greenhouse gas emissions in human deaths to guide energy policy.

their children to school. A ‘least cost’ approach can be very detrimental to such excellent and effective local developments.

Mode shifting freight from roads to coastal shipping: This action immediately results in emissions being cut by 1/3 even with the same fuel used. The now dominant use of shipping containers (including the availability of 'curtain side' ones mean the transfer of freight from road (or rail) to ship and back to road can be quick and simple: the downsides of double handling are minimised with containers.

Mode shifting from car commuting: It is really very simple, if we make other commuting options at least or slightly more attractive for most people than car commuting they will flock to it in droves. So by making buses faster than car commuting like the wildly successful North Shore busway in Auckland, like allowing communities the instant safe cycling network that 30 kph minor urban road speed limits provide (in combination with protected cycle paths on more major roads with 50 or even 80 kph speeds on them).

Proximity as a transport solution: If you live close to where you work or work close to where you live walking or biking becomes more viable. But also if we grow our towns in and up rather than out, the higher density means buses are more viable - they can be more frequent, start earlier, finish later and the fares can be lower though higher utilisation.

E-bike discounts: Instead of a 'cash for clunkers' scheme, what about an e-bike for clunkers programme where people could bring their (warrantable) ICE car in to be recycled and be given discount vouchers for the purchase price of an e-bike. Noting that e-bikes and more particularly e-cargo bikes are often substitutes for a family’s second car but have a high purchase price that limits uptake.

We welcome the Government’s intention to introduce congestion charging legislation.

7 Agriculture

Agricultural emissions in Aotearoa arise from three gases, methane, nitrous oxide and CO2. In seeking to contribute towards developing agricultural emissions reductions policies, we consider here the differences in the emissions properties of these gases, and also the intent of the Government's methane target review (regrettably separated from the ERP2 consultation process).

Long-lived and short-lived gases

Using the conventional Global Warming Potential metric (GWP-100, which compares radiative forcing effects over a 100-year time horizon), it can be said that 83% of Aotearoa's agricultural emissions is methane, 15% is nitrous oxide and 2% is CO2[77]. Using GWP-100 too, it can be (and is often) said that agricultural emissions comprise half of Aotearoa's emissions.

Using GWP-100 in this way follows UNFCCC standard practice for comparing radiative forcing of different gases. While practical in many contexts, this is a simplification, and it obscures the fact that methane and nitrous oxide are distinct from CO2 in many ways, including their effects on climate, ecosystems, and human health[78].

Nitrous oxide and CO2 are long-lived greenhouse gases whose climate effects are similar. The lifetime of fossil fuel CO2 in the atmosphere is a few centuries, plus 25 percent that lasts essentially forever.[79] Nitrous oxide has a lifetime of 109 years[80]. Methane is a short-lived gas, breaking down in the atmosphere to CO2 and H2O (water) within about 12 years[81].

In the first two decades after it is emitted, methane is approximately 80 times more powerful than CO2 as a GHG. Because it is removed from the atmosphere much more quickly, its radiative forcing is much lessened over a hundred year period: the GWP-100 value for biogenic methane (compared with the CO2 baseline) comes down to 27[82].

The key difference between short- and long-lived gases is this: 'Global surface temperature changes following a pulse of CO2 emission are roughly constant in time ,,, whereas the temperature change following a pulse of short-lived GHG emission declines with time. In contrast to a one-off pulse, a step change in short-lived GHG

[77] Ministry for the Environment 2024. New Zealand's greenhouse gas inventory 1990–2022.
[78] Mar et al. 2020. Beyond CO2 equivalence: The impacts of methane on climate, ecosystems, and health.
[79] D. Archer 2009. The long thaw: how humans are changing the next 100,000 years of Earth's climate.
[80] IPCC 2021. Climate change 2021: the physical science basis. Chapter 7: The Earth's energy budget, climate feedbacks, and climate sensitivity. Table 7.15.
[81] Ibid.
[82] Ibid.

emissions that is maintained indefinitely causes a concentration increase that eventually equilibrates to a steady state in a way that is more comparable to a pulse of CO2'[83].

The IPCC offers this clarification: 'expressing methane emissions as CO2 equivalent emissions using GWP-100 overstates the effect of constant methane emissions on global surface temperature by a factor of 3-4 … while understating the effect of any new methane emission source by a factor of 4-5 over the 20 years following the introduction of the new source'[84]. The GWP-100 methane value for biogenic methane (27) would then translate to 6.75-9 for constant methane emissions and to 108-135 for a new methane emission source.

Methane review

The purpose of the Government's methane review is to 'deliver an independent review of methane science and the 2050 target for consistency with no additional warming from agricultural methane emissions'[85]. This in turn seeks to deliver on the agricultural industry's advocacy for a 'science-led methane review'[86], based on a report commissioned from Oxford University[87].

The Government's underlying intention appears to be to change the Climate Change Response Act methane target upon competition of its methane review (due 29 November 2024)[88]. That is, emissions of biogenic methane are 10% less than 2017 emissions by 2030; and are 24% to 47% less than 2017 emissions by 2050 and for each subsequent year.

The methane review is founded upon the premise of 'additional warming'. The key factors in this are:

- the level of warming (which can be modeled)
- the rate and direction of change of methane emissions by the agricultural industry
- the rate and direction of change of global methane emissions.

Aotearoa methane emissions trends

The NZ GHG Inventory shows a slight decline trend in methane emissions since 2006 and a more pronounced decline since 2014 (**Figure 4**). Significantly, if this trend continues or becomes more pronounced, it is helping to cool the planet.

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[83] Ibid. P. 1014.
[84] Ibid. P. 1016.
[85] Ministry for the Environment 2024. Terms of Reference: methane science and target review.
[86] Beef+Lamb New Zealand 2023. Kiwi farmers need science-led methane review.
[87] Barth et al. 2023. Agriculture emissions and warming in Aotearoa New Zealand to 2050: Insights from the science.
[88] M. Daalder 2024. Govt will weaken methane target in defiance of Climate Commission – McClay.

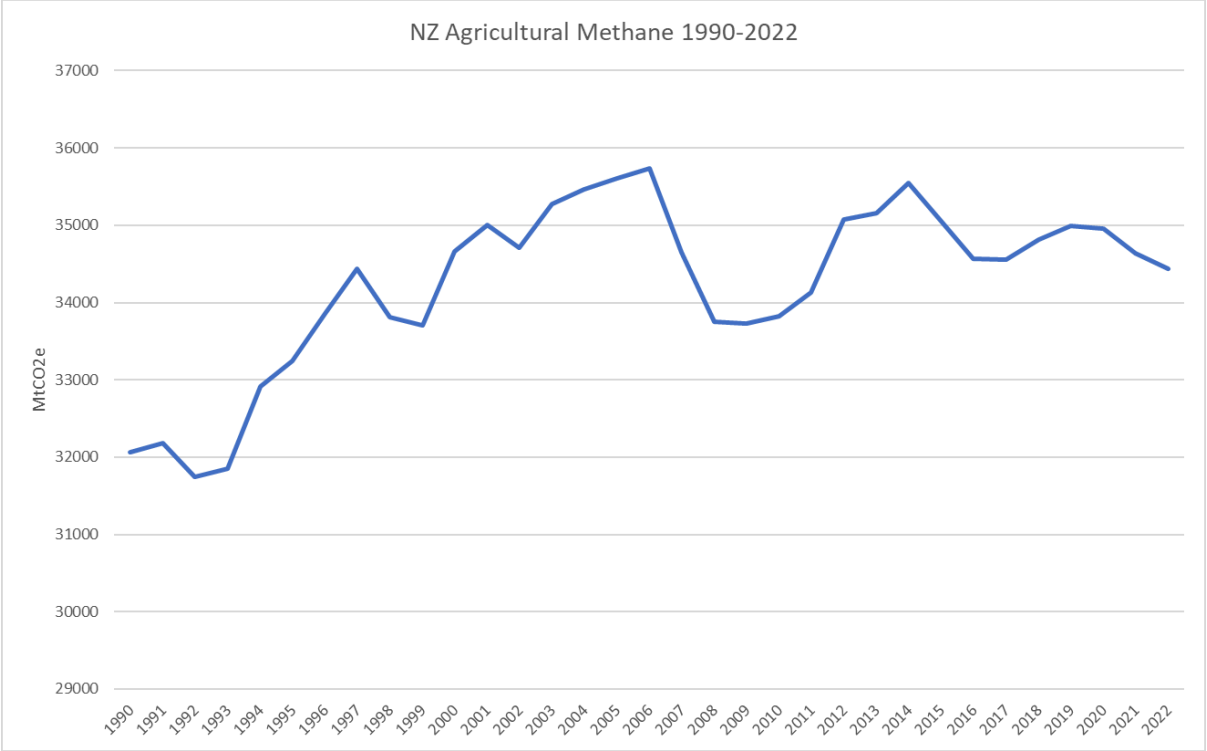

Figure 4: NZ agricultural methane emissions 1990-2022[89].

Global methane emissions trends

Methane is the second most important greenhouse gas driving global climate change. Out of a total observed warming of 1.07°C between 2010 and 2019, 0.5°C has been attributed to methane emissions[90]. Global methane emissions are currently rising at their fastest rate in decades[91].

'Reducing human-caused methane emissions is one of the most cost-effective strategies to rapidly reduce the rate of warming … available … methane measures … can … reduce human-caused methane emissions by as much as 45 per cent, or 180 million tonnes a year (Mt/yr) by 2030. This will avoid nearly 0.3°C of global warming by the 2040s … It would also, each year, prevent 255 000 premature deaths, 775 000 asthma related hospital visits, 73 billion hours of lost labour from extreme heat, and 26 million tonnes of crop losses globally'[92].

Aotearoa is a signatory to the Global Methane Pledge[93]. The Pledge recognises that rapidly reducing methane emissions can achieve near-term gains in our efforts in this decade for decisive action and is regarded as the single most effective strategy to keep the goal of limiting warming to 1.5˚C within reach while yielding co-benefits,

[89] Ministry for the Environment 2024. New Zealand's greenhouse gas inventory 1990–2022.
[90] Shindell et al. 2024. The methane imperative.
[91] Ibid.
[92] United Nations Environment Programme and Climate and Clean Air Coalition 2021. Global methane assessment: benefits and costs of mitigating methane emissions.
[93] Climate & Clean Air Coalition Secretariat 2024. About the Global Methane Pledge.

including improving public health and agricultural productivity.

Other perspectives

Our agricultural industry largely feeds Aotearoa and a large number of fellow humans around the world and is a significant part of our economy.

Our agricultural industry has very high environmental costs. Two telling instances: the lack of action to restore Te Waihora Lake Ellesmere after an Environment Canterbury and Ministry for the Environment study found that would result in a revenue loss of $250 million for the dairy farmers, the source of 95% of the problem nutrients; secondly, the cost to remove the nitrate from dairy farming from Christchurch City's drinking water to protect human health is estimated at $1.5 billion, or almost $4000 per person[94].

There are strong market incentives for the agricultural industry to take urgent action. The recent report 'Protecting New Zealand's Competitive Advantage'[95] revealed the pressure on New Zealand exporters to keep up with international expectations on sustainability, with more than 80% of New Zealand's exports by value now going to countries with mandatory climate-related disclosures either in force or proposed.

Directions

In the balance of Aotearoa methane emissions levels trending downwards but global levels rapidly increasing, an important question arises: what is an ambitious yet fair level of methane emissions reductions nationally in the context of a global imperative to rapidly reduce methane emissions – the single most potent lever to avoid nearly 0.3°C of global warming by the 2040s?

Finding ways to reduce agricultural emissions in Aotearoa has proven difficult, leading to unconscionable delay in taking action. Without wishing to promote any further delay, **we foresee a need for a national conversation on what is an appropriate methane target for Aotearoa when the methane review is completed**.

We commend for the Government's consideration Denmark's recently adopted multi-sectoral comprehensive plan[96] to price agriculture emissions to meet climate goals. We believe the exercise of political leadership necessary to achieve something of this nature will greatly enhance Aotearoa's social cohesion and resilience across rural-urban communities in the face of the climate challenges to come.

We accept in principle the Climate Change Commission's finding[97] that a farmer-focused and cost-effective pricing system outside the NZ ETS is the best way to deliver the emissions reductions needed for agriculture to contribute to meeting

[94] Joy et al. 2022. Levelling the grazing paddock.
[95] The Aotearoa Circle 2024. Protecting New Zealand's competitive advantage.
[96] Dwyer and Quiroz 2024. How Denmark plans to tax agriculture emissions to meet climate goals.
[97] He Pou a Rangi Climate Change Commission 2022. Progress towards agricultural emissions pricing.

New Zealand's emissions reduction targets, alongside a broader policy package. We exclude nitrogen fertilisers however: these should remain in the ETS and accounted for at processor level.

Regrettably, the draft ERP2 discussion document in relation to agricultural emissions applies 'technologies of prevarication': technological promises elicited by climate politics and policy to meet reduction targets, which **repeatedly avoids transformative social and economic change**[98].

For now, the absence of a confirmed emissions pricing system or alternative policy measures that will incentivise reductions in agricultural biogenic and nitrous oxide emissions[99] adds to risk of the country not being on track to meet the second emissions budget (2026-2030) and third emissions budget (2031-2035) and the biogenic methane components of the 2050 target[100].

7.1 What are the three main barriers or challenges to farmer uptake of emissions-reduction technology?

Notwithstanding the Government intends to develop a system of measuring on-farm emissions by 2025, we see a huge barrier is the lack of financial incentive through the delay and more delay in developing and implementing an on-farm pricing system for agricultural emissions, now out to 2030. As noted in the ERP2 discussion document in relation to transport emissions: 'A credible carbon market is essential to abate emissions at least cost to New Zealand'.

We think promoting wide awareness of the consequences of increasing climate change for farmers and agriculturally-based communities (for example through promoting agriculture-specific risk assessments) could promote behaviour change towards emissions reduction actions.

7.2 How can the Government better support farm- and/or industry-led action to reduce emissions?

- Well-designed extension and advisory services to support producers to understand where the emissions are generated in their systems and which mitigations will help reduce them. Start by promoting existing resources[101].
- Actively promoting early implementation of the feeding practices and breeding opportunities, and selecting less methane emitting land types and protein types, seemingly low cost and already available opportunities[102].
- Support for farmer catchment groups could result in further improvements in

[98] McLaren & Markusson, 2020. The co-evolution of technological promises, modelling, policies and climate change targets.
[99] CO2 emissions are covered by the NZ ETS.
[100] N. Wallace 2024. Climate watchdog warns of ag lag on emissions.
[101] Ag Matters 2024. Reduce methane emissions.
[102] RNZ 2024. Climate chief rubbishes claims farmers must wait for new technology to reduce emissions

land management practices that reduce on-farm emissions.

7.3 How should Government prioritise support for the development of different mitigation tools and technologies across different parts of the agriculture sector?

7.4 What are three possible ways of encouraging farmer uptake of emissions-reduction tools?

- Given the Government is developing a standardised on-farm emissions calculation methodology by 2025, we believe it should commit to phasing in a fair and sustainable pricing system for on-farm emissions, beginning **1 January 2027.**
- Promoting early uptake by offering assistance to farmers to gain access to markets for lower emissions intensity products.

7.5 What are the key factors to consider when developing a fair and equitable pricing system?

- The need for urgency
- Courageous moral leadership by the Government towards wide social buy-in by producers, consumers, civil society and NGOs, and citizens for a comprehensive package such as Denmark has come to.
- Fairness in relation to pricing of other emissions through the ETS.

7.6 Please provide any additional feedback on the Government's thinking about how to reduce emissions in the agriculture sector.

Finding ways to reduce agricultural emissions in Aotearoa has proven difficult, leading to unconscionable delay in taking action. Without wishing to promote any further delay, **we foresee a need for a national conversation on what is an appropriate methane target for Aotearoa when the methane review is completed**.

We request nitrogen processor pricing provisions be retained in the ETS.

The Climate Change Commission found evidence [103]that barriers to participating in an emissions pricing system and taking action to reduce emissions will be higher for Māori collectively-owned land due to land tenure and management structure restrictions. **We strongly request** representation of Iwi Māori in the proposed Pastoral Sectoral Group.

[103] He Pou a Rangi Climate Change Commission 2022. Agricultural progress assessment.

8 Forestry and wood processing

We reiterate that relying on carbon removals by either forestry or non-forestry mechanisms to meet carbon budgets is a flawed approach. Although it may meet the criteria of 'least-cost', it is a short-term solution at best and has high associated risks.

Removal of carbon by radiata pine plantations is not permanent. At harvesting, some carbon is immediately re-released back into the atmosphere from both biomass and through soil disturbance. The carbon sequestered in the harvested timber may endure for decades if the timber is used as a building material or for other long term purposes, as long as it remains in place. Any removal or disturbance is likely to result in degradation of the timber and subsequent carbon release. Currently a proportion of New Zealand's timber export ends up in very short-term structures such as boxing for concrete, resulting in carbon re-release within a very short timeframe (less than a decade). Thus it is unlikely that more than a very small fraction of the carbon removed by radiata pine remains sequestered over the long term (centuries).

If radiata pine plantations are left in situ as permanent carbon forests, the amount of carbon sequestered over time decreases, as stand equilibrium develops. Thus a mature plantation removes very limited amounts of carbon. In order to maintain removal levels, additional plantations are required. Taken to its logical conclusion, this could see the landscape covered in mature radiata pine plantations in decades to come. Not a desirable endpoint.

As noted in Question 0.2b, it is unclear whether monocultures of radiata pine, or any exotic species, will maintain current carbon removal rates as temperatures increase due to changes in physiological processes - primarily changes in the balance between rates of photosynthesis and photorespiration.

Relying on monocultures of radiata pine and other exotic species to remove carbon comes with a range of significant risks. Wilding pines/conifers are invading large areas of the landscape, and it's estimated that 25% of New Zealand would be covered in unwanted wilding conifers within 30 years if they are left to spread[104]. While these wilding trees do remove carbon, they have significant detrimental impacts on indigenous ecosystems and biodiversity, and on productive land.

Exotic conifers in plantations and as wildings across the landscape significantly increased the risk of wildfires. As temperatures increase, wildfire risk increases both due to higher temperatures and also due to decreased humidity and increased droughts, even if there is no change in average precipitation[105]. New Zealand ecology is poorly adapted to fire as it was a relatively rare event pre-human, but climate change and land use change means the risks have risen dramatically. Here in Tasman, the Pigeon Valley fire in 2019 is a very good example of this risk.

Analyses of recent wildfires across the globe have shown that changes to the climate

[104] Biosecurity New Zealand 2024. Wilding conifer control in NZ.
[105] Harrington et al. 2024. Robust changes to the wettest and driest days of the year are hidden within annual rainfall projections: a New Zealand case study.

made fires three times more likely in Canada, 20 times more likely in western Amazonia, and twice as likely in Greece, with global wildfires adding 8.6bn MtCO2e to the atmosphere in 2023[106]. Even wetlands and rainforests are at risk of fires now, as we have seen here in New Zealand with wetlands burning in Southland and Northland recently.

Exotic conifers pose a much higher fire risk than do indigenous species. Couple this with the increasing risk of fires due to climate change, and the likelihood of large wildfires in the future increases significantly. Not only does this pose a risk to human life, property and native ecosystems, but such fires release large quantities of carbon back into the atmosphere, negating the removal benefits of the trees in the first place.

In response to concerns from the agricultural sector, the Government is proposing limiting conversion of areas to forestry for land classified in land-use (LUC) classes 1- 6, but there are no limits proposed for LUC class 7. LUC class 7 land is high-risk land, particularly with regard to erosion. While limiting extensive new exotic afforestation to areas of limited productive value to the agricultural sector, this policy does not take into account the variability in erodibility of LUC 7 land. In some areas, afforestation on this land may be suitable but in areas with highly erodible, slip-prone soils, planting extensive exotic plantations is a recipe for disaster. The monocultures of radiata pine on the highly erodible hills of Tairāwhiti have wreaked havoc on both the environmental and social fabric of the region. We urge the Government to desist from further exotic afforestation of these areas and to consult with land-owners, particularly with Iwi, about more appropriate land-use. Pre-human, these hills would have been cloaked with diverse indigenous forests containing species mixes with diverse rooting architectures, able to hold the erodible soils in place during heavy rainfall. Radiata pine cannot do this.

As has been recently seen by the impacts of Cyclone Gabrielle and other high intensity rainfall events in Tairāwhiti and Hawkes Bay, exotic pine plantations cannot hold erosion-prone soils in place during intense rainfall events. Such events are going to increase in frequency and severity as the planet warms. Monocultures of any sort are less resistant to the impacts of climate change – increasing temperatures, changes in rainfall patterns, pests and diseases, than are complex, diverse vegetation communities. Afforestation with indigenous forest communities on land classified as LUC 7, and other erosion-prone land is a much more cost-effective solution in the longer term. Indigenous afforestation also provides a wide range of environmental, climate mitigation and social benefits, in addition to climate adaptation benefits.

Climate adaptation benefits include not having soils washed off hillslopes and into rivers, estuaries and then into the ocean. Sediment in waterways, both freshwater and marine, has a range of negative impacts on waterway health and on biota.

[106]F. Harvey 2023. Canada's 2023 wildfires produced nearly a decade's worth of blaze emissions.

Benefits include not having infrastructure destroyed by forestry slash, nor beaches covered in slash after heavy rainfall events. We urge the Government to enforce forestry slash management standards, to ensure that all exotic forestry stands across the country are managed in such a way as to minimise risk from slash mobilisation. Promoting alternative uses for this byproduct, for example as feedstocks for energy generation by biofuels, is one option.

Given the extensive areas of both exotic and indigenous forest on land owned by Māori across the country, we are disappointed by the tokenism inherent in the statement in the ERP2 Discussion document on page 82: "*We will consider input from Māori on the first emissions reduction plan, recent climate change consultations, and this consultation as the work progresses."* We urge the Government to **partner** with Māori to develop appropriate and effective policies for forestry and the use of land of all land use classes.

We also urge the Government to remove barriers to land-owners planting relatively small areas of forest and claiming carbon credits for so-doing. Research undertaken by Manaaki Whenua Landcare Research in their "Trees in Landscapes" programme[107] (funded by MBIE) has shown that it is possible to convert about 15% of land in the average hill country farm to trees without any loss of income from the land. Creating patches of trees across farms builds mosaics within the landscape. These mosaics have multiple benefits, not just for carbon removal, but in decreasing soil erosion, providing shelter for stock, improving biodiversity outcomes, improving water quality and quantity outcomes, improving soil health and social and amenity benefits. Of course, quantifying the amount of carbon sequestered by native species growing in these patches will require much better data than currently provided by MPI's carbon look-up tables!

8.1 How could partnerships be structured between the Government and the private sector to plant trees on Crown land (land owned and managed by the Government)?

The Government needs to recognise that Crown land is owned by the people of Aotearoa New Zealand and consultation must be undertaken before there is any significant change in its management. That the ERP2 isn't upfront that most of it is likely to be conservation land is dishonourable.

The ERP2 discussion document is vague on what is proposed in potential partnerships to plant trees on Crown land. It is unclear whether this will involve planting only indigenous trees or exotic trees as well? Or whether it will focus solely on planting trees and not on reforestation - restoring diverse indigenous forest communities, made up of trees, shrubs, ferns, grasses, bryophytes and other flora. It must be understood that there is a world of difference between planting native trees

[107] Manaaki Whenua Landcare Research 2024. Trees in landscapes Te Kapunipunitanga a Tāne Mahuta.

and creating native forests.

Will native trees be planted with the intention of harvesting them at some point in the future?

Without clarity it is difficult to provide valid feedback on this proposal. However, we do wish to raise a number of points:

1. We do not support the leasing of further Crown Land or indeed conservation land to forestry companies for exotic plantation forestry.
2. Any conservation land proposed for planting should only be to indigenous forest, not exotic species; the planting should not compromise conservation values; and it should be subject to public consultation.
3. Plantation exotic forestry on erosion-prone Crown and private land has proved to be unsustainable with negative effects exacerbated by extreme weather events, which are predicted to increase with climate change.
4. This unsustainability was highlighted in 2023 in Tairāwhiti (where 88% of forested land is highly erosion-prone) and the Hawkes Bay, where Cyclone Gabrielle caused severe erosion and the catastrophic mobilisation of forestry slash. This resulted in the loss of lives and livelihoods, houses, soil, forests, biodiversity, pasture, crops and infrastructure; all at a huge economic, social and environmental cost to local communities and the regions as a whole.
5. This assertion of the ERP2 discussion document (p. 80) is incorrect: *'Both native and exotic trees can help New Zealand adapt to climate change and provide greater resilience to severe weather, fire and biosecurity incursions.'* Radiata pine is shallow rooted, making it susceptible to erosion, windfall and drought. As monocultures, plantation forests are less resistant to disease, and exotic conifers increase the risk of wildfires. Diverse indigenous forest ecosystems are resilient to ‘severe weather, fire and biosecurity incursions.’
6. **We urge** the Government to only plant diverse, indigenous forest on Crown Land. Diverse indigenous afforestation has numerous win-win co-benefits including:
    - greater carbon sequestration over a much longer term than radiata pine (centuries compared with decades), both above and below ground
    - improved biodiversity outcomes for flora and fauna
    - improved ecosystem functioning and provision of ecosystem services
    - improved soil health
    - improved water quality and quantity
    - lower risk of erosion compared with exotic plantation forestry or grazing, which provides added climate resilience and important downstream protections to communities
    - better climate resilience.

We dispute the assertion in the ERP2 discussion document (p. 80) that the current

costs of native afforestation makes it uneconomic compared with exotic planting. When all the costs are factored in, including the impacts of the two forest types on erosion and sedimentation, on long term levels of carbon sequestration, on the provision of a wide range of ecosystem services and the risks of wildfire, over the lifetime of the forests, then indigenous forests are more cost-effective. Taking a long term view rather than a short term least-cost approach allows a more holistic assessment of the cost benefits of the two forest types, which is why the two local Councils (Nelson and Tasman) are in the process of replacing exotic plantations with native forests on local Council-owned hills.

Finding the initial funding to undertake reafforestation with indigenous species would be relatively straightforward if we priced carbon emissions at their true cost, as noted in Section 4 above.

8.2 What are the three main actions the Government could do to streamline consents for wood processing?

We support initiatives that 'add value' to our economy and environment. For example, processing high value wood in New Zealand to create long-lived wood products is of much greater economic value than the current practice of exporting logs for relatively little economic benefit. In addition, the carbon stored in those logs is quickly returned to the atmosphere when they are turned into low-value disposable products such as pallets, paper, packaging, boxing timber etc.

The Government must regulate the industry to ensure supply of all wood used in the manufacture of timber and other products, has been grown, harvested and processed under internationally certified sustainable environmental and social standards.

8.3 How large should the role of wood in the built environment play in New Zealand's climate response?

We believe wood can play a major role in the built environment through the use of structural timber products such as gluelam beams and other high-tensile products. Such products should be used in lieu of steel or concrete wherever possible to decrease emissions embedded in buildings.

We support ongoing research and development of sustainable wood products and technologies that result in the greater use of high-quality structural timber in construction.

We recommend a move to strengthen emissions pricing to make the use of wood in the construction industry more attractive than steel or concrete.

8.4 What other opportunities are there to reduce net emissions from the forestry and wood-processing sector?

The aim of the ERP2 appears to focus on planting trees to offset emissions when the focus should be on reducing emissions at the source. We suggest that the expansion

of short-term rotational exotic plantation forestry as practised in NZ is not economically nor environmentally sustainable and in new forestry areas, the practice be replaced by the growing of bio-diverse native forests on suitable land. These forests could feature a proportion of high value timber species trees, suitable for high-tech selective extraction methods. These include helicopter harvesting, where trees are lifted out by helicopter with minimal impact on the forest ecosystem, and adjacent vegetation, soil and wildlife remain intact. The timber trees could be native or introduced hardwoods of proven high value returns.

We recommend an immediate change from short rotation clear felling of radiata pine to long-term biodiverse native forests which may or may not include an agreed proportion of introduced high value timber species, of high marketable value for use in construction and specialist wood manufacturing.

We recommend separating out the price emitters pay from the price forest growers receive. The Government could then provide price incentives for growing bio-diverse native forests.

8.5 Please provide any additional feedback on the Government's thinking about how to reduce emissions in the forestry and wood-processing sector.

Incentivise landowners to change the way they practice forestry as described above.

Short term thinking and short-term economics is getting in the way of creating long term benefits of indigenous afforestation.

Replace radiata pine with longer rotation, high quality/high value timber species.

Blend forestry and agriculture by adopting bio-diverse farm-forestry approaches to managing the land. Improved land-use practice can build resilience by reducing erosion, improving drainage, soil health and plants/crops that are higher in nutrients, more resistance to disease and fire. Potential tree crops might include high value timber species, nut and fruit trees.

Organic land-use practices we suggest would return higher market returns while reducing emissions in the long term.

Planting should continue to be subject to the National Environmental Standards for Commercial Forestry.

9 Non-forestry removals

As in Chapter 8, we preface our feedback below with the very strong caveat that ERP2 and future ERPs should not be relying on emissions removal to meet targets, but instead must **prioritise emission reductions**. The long term health of the planet is dependent on reducing emissions. Crossing our fingers and hoping removals will balance “business as usual” emissions is a doomed strategy. Without deep, immediate cuts to emissions, we risk global temperatures increasing to levels beyond those which current ecosystems, including human ecosystems, can survive, let alone thrive.

We also urge the Government to ensure that any significant investment in nature-based solutions (NbS) is holistic, ecologically driven and applied at a landscape scale. To achieve this and to avoid perverse outcomes, we encourage the Government to add an environment/biodiversity benefit metric to the prioritisation and implementation of NbS as non-forestry removals options. Including such a metric would ensure that the right NbS are employed at the right place, and that short-term mitigations that may create other problems in the longer term are avoided.

Despite being one of the five pillars of the Government’s climate change strategy, there is little detail provided in ERP2 on the application of NbS across the country. No information is provided on funding mechanisms to implement NbS, nor on how carbon emissions/removals will be quantified or monitored to ensure that NbS are indeed contributing to net carbon removal. We need to ensure that all quantifications of carbon emissions/removals are real and not merely based on models developed using inappropriate or inadequate data. As we noted above, planetary climate systems respond to actual carbon levels in the atmosphere, rather than to levels we might model in our carbon accounting processes. For this reason, it is critical to err on the side of caution in our estimates of carbon emissions/removals.

Whilst it is heartening to see blue carbon included in the list of potential non-forestry removals options, it is pertinent to note that the health of seagrass populations has declined rapidly in recent years, both in New Zealand and globally. It is likely that much of this decline is a result of marine heatwaves, which is one consequence of climate change. Without significant reductions in ocean temperatures, it is unlikely that seagrass populations will recover. The loss of seagrass will negatively impact the myriad of species dependent on these communities, as well as limiting the potential for carbon sequestration. We grieve for the near total loss of seagrass in the local Whanganui Inlet, likely representing one of the largest recent losses of intertidal seagrass recorded in New Zealand[108].

[108] Jones, K. 2024. ‘Alarming’ loss of seagrass in large, remote inlet

We need to be cognisant of the impacts of climate change on the ecosystems we are relying on to remove carbon for us. For example, increasing sea level rise will negatively impact mangrove populations. If mangroves are lost from our coastlines, coastal areas will become more vulnerable to storm surge, inundation and erosion. And with both mangroves and seagrass, the loss of these species in coastal areas will mean that coastal sediments will be more vulnerable to wave action, with increased mobilisation resulting in a higher likelihood of release of the blue carbon sequestered therein. Losing these species due the impacts of climate change not only increases our vulnerability to climate change and negatively impacts other biota (decreasing their resilience), but also releases carbon back into the climate system, further exacerbating the problem.

9.1 What are the three main opportunities for non-forestry removals to support emissions reduction?

1. Herbivore control in native forests (see also Q 4.2 above):

Controlling introduced herbivores (including deer, pigs, goats, possums, thar and chamois) in indigenous ecosystems will reduce the consumption of foliage, flowers, fruit and leaf litter, thereby promoting ecosystem health, and the survival and regeneration of native species. This will improve carbon stores and ecosystem services, rather than contributing to carbon release from indigenous ecosystems. In addition, an estimated 3.1 MtCO2e of herbivore carbon emissions per annum will be removed[109].

Removing herbivores, in concert with predator control (ERP2 Discussion document p. 27), will enhance the resilience of indigenous ecosystems to the impacts of climate change, with additional benefits accruing elsewhere in the landscape. For example, improved understorey vegetation and intact litter layers increase the ability of ecosystems to intercept rain and retain moisture. This reduces peak flood flows during high rainfall events, decreasing soil erosion and sedimentation of waterways, and extends the flow of water during periods of drought.

2. Planting indigenous species

Providing incentives for land owners and managers to plant appropriate indigenous species across the landscape will not only contribute to carbon removals, but will result in improved biodiversity outcomes, enhanced climate resilience and the continued provision of ecosystem services. For example, planting of riparian corridors, floodplains and adjacent areas decreases sediment and nutrient inputs into waterways, improving water quality. Given the dire state of New Zealand's waterways, such improvement is critically required.

[109] Hackwell & Robinson 2021. Protecting our natural ecosystems' carbon sinks.

As noted in Chapter 8, planting native trees in the least productive areas of hill country farms can have many positive benefits with little or no economic loss. We advocate for these plantings to include a diversity of indigenous species, including non-tree species, to create diverse, resilient vegetation communities that provide a multitude of ecosystem benefits.

3. Restoring wetlands

Restoring both freshwater and coastal wetlands has the potential to remove large amounts of carbon over time. When healthy, these ecosystems can potentially sequester significant amounts of carbon, but without New Zealand-specific data, it is not possible to currently quantify just how much carbon could be removed.

However, restoring all wetlands has a multitude of other benefits. Freshwater wetlands provide habitat for a diversity of species; trap sediments and nutrients improving water quality; and attenuate both high and low flows, improving water quantity. Coastal wetlands also provide habitat and trap sediments, and they attenuate storm surge, protecting inland areas erosion and inundation. Coastal wetlands need room to migrate inland in response to sea rise to avoid 'coastal squeeze'. The many benefits of healthy wetlands result in greater climate resilience across the landscape.

9.2 What are three main barriers to developing more non-forestry removals?

1. Lack of data

There is a woeful lack of data on the carbon sequestration levels and rates for indigenous species and ecosystems. The MPI look-up tables provide a single figure for carbon removal by indigenous species and this single figure is only for regenerating kānuka and mānuka scrub. Non-government NGOs provide some useable information[110] but without robust, region-specific, species-specific, ecosystem-specific data, it is virtually impossible to calculate how much carbon is sequestered in indigenous vegetation and ecosystems.

It is not technically difficult to collect the required data, rather it appears that the primary barrier is a lack of commitment to collecting and collating the data. We urge the Government to urgently address this data gap by collecting and collating the required data and making them available prior to the commencement of ERP2.

2. Cost

Controlling herbivores, planting indigenous species, restoring wetlands – all cost time and money. Somewhere, somehow, someone must meet that cost. Without an appropriate carbon price, those individuals and groups working to implement NbS must scramble for the few crumbs that are available for this critical mahi.

We urge the Government to price carbon at its real cost - a cost that includes the

[110] Tāne's Tree Trust 2024. Carbon calculator.

damage to infrastructure, livelihoods and the environment from climate change, a cost that accounts for the human toll of climate change, a cost that reflects the actual cost of removing a tonne of carbon from the atmosphere. Once we build the real and actual costs into each and every tonne of emitted carbon, we will release a large pool of funding for a wide range of mitigation and adaptation activities, including NbS.

Putting an economic value on ecosystem services is one way to improve understanding of how critical healthy ecosystems are for our survival. Ecosystem services such as the provision of clean air, clean water, food, fibre, pollination, protection from flooding etc. Without healthy ecosystems, we cannot survive.

3. Belief in Technology

While it is tempting to assume that technology will save us, it is foolhardy to believe that any technologies not currently in place will have enough of an impact between now and 2030 to make a large enough difference in either carbon emission reductions (e.g. methane inhibitors) or in carbon removals (e.g. carbon capture, utilisation and storage). By all means investigate any technologies that potentially can make a significant difference but recognise that we cannot rely on these technologies to remove sufficient quantities of carbon from the atmosphere within the next 6 years to meet the required targets. We must cut emissions now to have any hope of avoiding catastrophic climate change.

9.3 It is important to balance landowners ability to use their land flexibly with the recognition of the role of non-forestry removals. How can this balance be achieved?

Incentivise landowners through rates relief for retired marginal land, be it currently in pines, grassland or other agriculture, where soil loss/erosion and poor drainage are problematic. Ensure that this relief continues only as long as the land remains retired. Provide support to landowners to plant this marginal land with appropriate indigenous species and to restore wetlands. Ensure that this support is conditional on the long term retirement of land, with the proviso that if the land returns to production at any point in the future, any support provided (including rates relief) must be repaid. Any new owners of the land must be made aware of these conditions.

Landowners will be rewarded with improved soil health, drainage, resilience and biodiversity outcomes across their properties from the native planting of their marginal land. If of high enough value, areas might become eligible for QE2 Trust protection.

9.4 What three main benefits beyond emissions reductions could be created by developing more non-forestry removals?

Assuming all non-forestry removals are nature-based, then the main benefits

include:

1. Improved ecosystem structure, function and health, thereby providing ecosystem services such as improved soil health, reduced soil erosion and sedimentation of waterways, improved water quality, improved water quantity, improved climate-resilience across the landscape, attenuation of high and low flows, protection from storm surge and sea rise, improved biodiversity outcomes, increased pollinator populations and overall healthier land, coastal and marine ecosystems;

2. Improved human and community health and wellbeing through improved water quality, food quality, physical health through increased opportunities for outdoor recreational (particularly if walk and cycle ways with educational interpretation are integrated into NbS areas revegetated with indigenous species), improved mental health through decreased climate anxiety and increased opportunities to spend time in nature, particularly in areas with thriving indigenous flora and fauna;

3. Reduced financial costs through reduced climate risk, reduced likelihood of infrastructure and livelihoods being severely damaged during storms, reduced insurance premiums, reduced physical and mental health costs, increased wellbeing.

9.5 What risks and trade-offs from incentivising land-use and management change to reduce net emissions need to be considered?

One of the key risks is that without robust data, assumptions about the extent of carbon removal by non-forestry removals, particularly NbS, may be substantially incorrect. Assumptions may significantly underestimate or overestimate both carbon emissions and reductions. Only with good data can we be sure that the measures implemented are achieving what we are aiming to achieve.

It will also be important to have robust monitoring in place to ensure that NbS are being implemented and managed to maximise their effectiveness.

Providing incentives and financial support to landowners and land managers to implement NbS has economic costs, and may not always be seen as economically sustainable. However, pricing carbon appropriately will unlock investment opportunities for NbS.

There will be challenges in convincing some landowners that changes need to be permanent to ensure long term sequestration of carbon. Providing the right incentivisation frameworks should assist with this challenge.

However, it is critical to recognise that for many NbS, there are ongoing costs that must be borne by the landowner, or others. These include the costs of active weed and pest control to protect resources/ecosystems and enhance biodiversity. Again, implementing the right incentivisation frameworks and pricing carbon appropriately should ensure that ongoing investment can be sustained to maximise the outcomes from NbS.

9.6 Please provide any additional feedback on the Government's thinking about how to reduce emissions through non-forestry removals.

As we have emphasised, the lack of robust data is limiting our ability to determine the effectiveness of NbS (and indigenous reafforestation) in removing carbon. We believe significant Government investment in projects that can collect these data, including blue carbon projects, is one of the most urgent priorities for the Government. These data will allow for the development of innovative investment products, including a blue carbon credit scheme, which will unlock investment to finance NbS.

10 Waste

10.1 Do you agree or disagree that the Government should further investigate improvements to organic waste disposal and landfill gas capture?

Improvements in the capture of methane gas from landfills should be considered to reduce the emissions of legacy organic material that has already been deposited within landfills. Methane capture should be mandatory for new landfills. The other critical part is to reduce, and ultimately divert, all organic material that goes to landfill[111].

In addition to diverting organic waste from landfill we need to reduce the amount of organic waste that is generated. It is critical that investment (from Waste Disposal Levy Funds) is made in upstream activities at the top of the Zero Waste Hierarchy like preventing food waste at source, rescuing edible food, reusing textiles and construction and demolition materials, as well as downstream activities like diverting food and garden waste to composting systems or chipping waste wood.

Source separation of different organics streams is critical to maintain material and compost quality so that they can go to the highest and best end uses.

Textiles need to be included as natural fibres emit methane in landfill and textiles as a group have a high carbon footprint.

Landfill Gas Capture

We support investigations to:

- better understand the flows of organics into landfill types
- determine which landfill types need Gas Capture systems
- establish settings that increase Gas Capture efficiency

[111] He Pou a Rangi Climate Change Commission 2024. Monitoring report: Emissions reduction. Assessing progress towards meeting Aotearoa New Zealand's emissions budgets and the 2050 target. P. 268

- improve the data and evidence base making reporting/ accounting more accurate

It is critical that we get better at both capturing methane and accurately measuring and reporting the success rate. The evidence base for the assumed rates we have been using in the NZ GHG Inventory (68%) are being questioned and there is a risk that a default rate of 20% may be applied. This would create a much bigger gap between our actual and target emissions reductions.

10.2 What is the main barrier to reducing emissions from waste (in households and businesses or across the waste sector)?

The main barrier is the lack of a circular economy. Emissions reduction from our whole society would follow from moving to a circular economy in Aotearoa New Zealand. That is the most effective way of reducing emissions from the generation of waste as it reduces the use of resources, and so reduces the emissions generated from the production of those resources[112].

Businesses and households don't have access to the infrastructure and services they need to be able to participate in practical ways to reduce waste emissions. Many of the programmes and incentives that are common in other countries have not been developed in Aotearoa.

Councils do not have a clear direction of travel as the recent change of Government has seen the waste work programme put on the back burner. This makes it difficult for them to secure ratepayer funding and the sign off from councillors that is required to get big organics infrastructure projects embedded into their long Term Plans or to develop regional partnerships to plan and build facilities.

New Zealand households and businesses want to do the right thing but the leadership, Regulatory Framework, infrastructure and systems are just not there for them.

The ETS is a tool but not a whole strategy in itself. The use of the ETS as a market instrument makes some sense if people have alternatives to use instead of landfilling. Viable and practical alternatives for the business / household to switch to, need to be in place for a market instrument like the ETS to be effective.

The Waste Disposal Levy rate and the ETS price are still both too low to drive any real change in waste disposal activity.

10.3 What is the main action the Government could take to support emissions reductions from waste (in households and businesses or across the waste sector)?

The main action the Government could take is to ensure that the move towards a

[112] He Pou a Rangi Climate Change Commission 2024. Monitoring report: Emissions reduction. Assessing progress towards meeting Aotearoa New Zealand's emissions budgets and the 2050 target. P. 84

circular economy is continued and accelerated.

Successive Governments have been avoiding the implementation of effective waste policy. Progress with updating the waste legislation and regulatory framework, establishing effective product stewardship schemes and establishing systems, incentives and infrastructure has been very slow.

We support the Government continuing to progress the waste actions that were detailed in ERP1. Some of these are still active and others are ‘pending decisions’. It is critical that these actions are not delayed any longer. They were already clearly signalled and delaying implementation creates uncertainty for the sector.

We want to see progress on these actions that are waiting on decisions:

- Mandated food scraps collection policy
- Require separate collection of organic waste
- Enable the separation of construction and demolition materials
- Develop a national waste licensing scheme.

Keeping organic materials out of landfill reduces methane emissions and creates multiple co-benefits including:

- Replacing organic matter in soil which works as a nature based solution that increases resilience by improving water retention capacity which reduces exposure to both drought and flooding.
- We depend on healthy soil to grow food, fibre, timber and other forms of biomass which are critical inputs into the economy.
- Rescuing food and passing it on meets social need and engages local communities.
- Preventing food waste by only buying what you need avoids unnecessary upstream emissions from growing, processing, packaging, and refrigerating food that does not get eaten.
- Deconstructing buildings and reusing timber and other materials retains embodied carbon.
- Reusing clothing and textiles means new ones do not need to be produced from virgin material limiting upstream environmental impacts and ecosystem damage.

Waste Reduction

Government needs to continue to progress waste reduction activities in line with the zero waste hierarchy alongside the ERP2 emissions reductions actions. Resource Efficiency is a useful tool for reducing both waste and emissions.

We strongly support the proposal to use a proportion of the Waste Minimisation Fund to target infrastructure projects and systems that reduce organic waste and emissions (and other waste streams) including those that:

- develop and implement schemes for businesses, manufacturers and

consumers to take responsibility for the products they produce and buy (product stewardship schemes)
- expand and upgrade resource recovery facilities (including transfer stations)
- investigate and, where appropriate, develop infrastructure for renewable energy recovery of hard-to-recycle materials (e.g. wood waste).

Coordination of and provision of this kind of public good infrastructure along with the necessary regulatory framework enables businesses to put sustainable packaging and products on the shelves and households to shift towards zero waste lifestyles.

10.4 Please provide any additional feedback on the Government's thinking about how to reduce emissions in the waste sector.

The science exists. The NTCF supports the Climate Change Commission waste areas for attention and new opportunities findings[113].

Product stewardship / Extended Producer Responsibility is a key waste policy tool which results in emissions reductions for other sectors (but not necessarily for the waste sector). The ERP1 Circular Economy chapter recognised these opportunities but this is no longer a focus in ERP2 which leaves a big gap.

The ERP2 waste proposal proposals have been developed within the limitations created by the internationally agreed approach that is used to account for and report on the emissions each country generates. ERP2 and New Zealand's wider Zero Carbon Framework is based on counting the emissions that New Zealand produces onshore.

These are divided into sectors, one being the Waste Sector. The only emissions sources allocated to the Waste Sector are solid waste disposal, wastewater treatment and discharge, incineration/open burning of waste and biological treatment of solid waste. Waste sector emissions are mainly methane created by the decomposition of organic material.

The ERP2 actions for Waste focus on diversion of organics from landfill and improving landfill gas capture because these activities will help to reduce ‘waste emissions’.

The supply chain emissions that are produced offshore to extract, transport, manufacture, package and distribute products that are imported into New Zealand to meet the demand of businesses and households are not included. Onshore supply chain emissions like transport of goods, recycling and waste get counted in other sectors like Transport. These supply chain emissions are called consumption emissions.

Most of the opportunities to reduce emissions generated in the production and consumption of products and packaging are in the supply chain but since they are

[113] He Pou a Rangi Climate Change Commission 2024. Monitoring report: Emissions reduction. Assessing progress towards meeting Aotearoa New Zealand’s emissions budgets and the 2050 target. Chapter 12.

not counted in the waste sector there are no proposals included in ERP2 to try and reduce these. Product Stewardship and Extended Producer Responsibility fall between the cracks.

It is critical that the Government continues to take actions that work at the top of the zero waste hierarchy to design out waste and pollution, to keep products and materials in circulation for as long as possible and to regenerate natural systems. Circular Economy is a core element in the agreements we have with our key trading partners.

Action to reduce waste generates emissions reductions across the other sectors and needs to be progressed through the implementation of the Waste Strategy so that waste reduction and emissions reduction can be achieved alongside one another.

Don't Use Incineration

Many countries have incineration as a large greenhouse gas emissions source in their waste sector. Denmark burns a large amount of mixed rubbish including waste plastics in incinerators and is not able to meet its recycling targets or its emissions reduction targets.

Denmark has started to shut down incinerators in order to increase reuse and recycling and reduce emissions.

There are at least 2 proposals on the table in Aotearoa to develop incinerators that can be used to burn mixed solid waste (Waimate and Te Awamutu).

Given that we are investing heavily in reducing waste emissions it makes no sense to introduce a major new emissions source when the goal of ERP2 is to implement least cost solutions to achieve the exact opposite.

The cheapest way to reduce waste emissions is not to create them in the first place.

11 Helping sectors adapt to climate change impacts

11.1 What are the three main barriers to managing climate risks through emissions reduction policies in this discussion document?

1. Planting pine plantations will exacerbate flooding damage in downstream river deltas, wreaking havoc on housing, farming and rural communities. Communities will not be resilient if they have pine plantations upstream.

Reason: Pines have shallow roots and so their viability is susceptible to more extreme winds and heavy rains, and also droughts. Their harvesting causes erosion, loss of topsoil, and slash debris that can create debris dams, clog waterways, damage bridges and stopbanks and spread waste wood over beaches. This is an

energy intensive industry and the cost/benefit from a financial and carbon emissions perspective is questionable. The industry is controlled by overseas companies, the market value for logs, shipping schedules, and the ETS price. Downstream communities are not factored into these considerations, and the companies continue to operate even when they have lost their social licence and the slash and debris from their operations has not been removed.

Pines are highly flammable and with anticipated droughts and heat waves, wildfires will threaten adjacent or down-wind communities, and these communities will not be resilient.

2. By **omitting agricultural methane emissions,** ERP2 will exacerbate the tension between urban and rural communities. Successful, ongoing adaptation to climate stressors requires social cohesion, mutual respect and an understanding that all sectors are playing their part to reduce GHGs. By relying on unproven technical fixes that might be available sometime in the future, you are expecting the 95% of New Zealanders who aren't farmers to carry a very large additional burden. This is particularly unfair when a reduction in methane would cool our planet more quickly than other long lived gases and when there are already ways for farmers to reduce methane emissions.

3. **Relying on planting trees rather than behaviour change** to reduce carbon emissions is sending the wrong message to communities and the public who are trying to become more resilient. Adaptation and mitigation are two sides of the same coin, and we can't succeed with climate adaptation if we keep on not decreasing carbon emissions and making it worse for future generations.

11.2 What are the three main benefits of managing climate risks that can come from the emissions reductions policies in this discussion document?

Resilient communities rely on stable/enduring/robust/flexible supply lines. By actually reducing our GHGs, we are showing our global trading partners that we are taking the Paris Agreement seriously and this will help prevent carbon tariffs.

However there is a risk that international carbon experts will query our accounting system for 'net' carbon, which is different from what the atmosphere actually sees.

Resilient communities rely on a modal shift for transport, as this increases social cohesion, a sense of belonging, increased empathy as well as the many physical, and medical benefits to health. Reducing emissions from the transport sector this way will have long term benefits. However, there is also a risk because of the Government's intention to build new roads and increase the speed limits, when the transport sector should instead focus on increasing public transport, encouraging cycling and walking, intercity buses, more trains and coastal shipping.

11.3 What are some examples of how businesses and industries are already managing climate risks?

11.4 How can these kinds of activities be further supported?

11.5 Please provide any additional feedback on the pathway the Government has set out for managing climate risks from emissions reduction activities.

Focusing on sectors rather than communities is a siloed approach that is not going to achieve resilient well-adapted communities. Long term planning and collaboration by all sectors at a regional level is required as we move to a low carbon economy, to ensure there is no maladaptation. The communities must be involved in the decision-making process. The current increase in poverty from Government policies is going to make it very difficult.

Unfortunately ERP2 will be affected by the proposed Fast Track legislation which currently does not allow for public, environmental NGOs and community participation. This agency is essential for resilient communities. There is currently no legislation to prevent more houses being built in flood prone areas, and no funding formulae for managed retreat.

Resilient communities are also going to have to make do with less energy, and ERP2 should include a public education campaign to encourage the Economy of Enough, ways to reduce wasteful energy, aviation and heating. New builds should keep the higher insulation standards.

Unfortunately the current Government is intending to reduce the numbers of climate scientists in NIWA and GNS. Without their knowledge and modelling it is going to be very difficult to plan for sector mitigation that will also be beneficial for long-term adaptation.

12 Addressing distributional impacts of climate mitigation policy

12.1 What are the main impacts of reducing emissions on employees, employers, regions, iwi and Māori, and/or wider communities that you believe should be addressed through Government support?

The financial impact is the primary impact, which should be addressed through government support.

Lower-income households, of which Māori make up a disproportionate percentage, have less or no means with which to invest in electric cars or other energy saving/emissions reducing devices. Therefore, they will need extra support to upgrade to a low emissions lifestyle.

Circular economies with as much self-sustainability as possible at the local level

should be supported by the Government as the most emissions-lowering type of economy. Circular economies in often isolated Māori communities as well are the least vulnerable to increasing climate change related disasters.

Under the current ETS settings, pine plantations are the most economic use of the land. However, blanket pine plantations are not a good way to reduce emissions, for a number of reasons.

Native forest should be used for carbon capture, and pine for feedstock. Government compensation should be considered so as not to unfairly disadvantage Māori who, thanks to colonisation were largely left with poor quality land unsuitable for income generation other than pine. Māori should be supported to develop wood processing infrastructure and businesses.

Māori also own large tracts of emissions reducing native forest, which are under threat from introduced species, largely due to colonisation. Government should consider allocating biodiversity credits for pest control of these areas to ensure permanency and growth of their carbon storage capacity.

12.2 The Government can use a lot of existing tools to support people affected by reducing emissions (welfare and income support systems, employment and training services).

- **Do you think additional climate-specific services, supports or programmes should be considered by the Government over the coming years?**

Yes. We request the Government develop a just transition programme to support people affected by reducing emissions.

- **Please describe what additional climate-specific services, supports or programmes could be useful.**