

## Response ID ANON-NZPP-DRDF-8

Submitted to **Climate action for Aotearoa**

Submitted on **2021-03-28 16:40:58**

### Introduction

**What is your name? What is your organisation (if applicable)?**

**Name (enter in text box):**

Zero Carbon Nelson Tasman

**What is your email address?**

**Email (write into text box):**

aaron.stallard@xtra.co.nz

**In what capacity are you responding to this survey?**

**In what capacity are you responding to this survey? Select from the dropdown list.:**

NGO

**Add other/more than one capacity if applicable:**

**(Optional) Specify iwi/hapū affiliation, or if a mandated representative specify iwi/hapū/pan-iwi organisation, Māori-collective\* or Māori organisation you represent.:**

**What part of Aotearoa are you from?**

**What part of Aotearoa are you from? Select from the dropdown list.:**

Nelson (Whakatāne)

**Please specify if you are from outside Aotearoa:**

**What is your age group?**

45-54

**Confidentiality and disclosure**

Yes

**How this consultation works**

**Do you want to continue with the consultation questions or do you want to submit a pre-prepared response?**

I want to continue with the consultation questions

**File upload:**

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**Are you here to tell us your one big thing?**

**Your one big thing:**

**Your one big thing::**

We ask for climate action that considers and directly addresses the interconnectedness of the climate, biodiversity, and ecological crises, and that tackles the root cause of these crises, which is human activities and behaviour that exploit and degrade the natural environment.

We must acknowledge planetary boundaries and curb our drive for infinite economic growth on a finite planet. We call for strong, urgent, and unprecedented action across all sectors of society to address both the symptoms and the causes of the crises we face.

[About our group: Zero Carbon Nelson Tasman is a group of concerned citizens dedicated to urgent climate action to limit warming to 1.5°C and enable a just transition to a resilient low-carbon society. We have a shared passion for research and public communication. Members of Zero Carbon Nelson Tasman are Jenny Easton, Dr. Yuki Fukuda, Bruce Gilkison, Carolyn Hughes, Alistair Munro, Dr. Olivia Hyatt, Julie Nevin, Dr. Jack Santa Barbara, Dr. Joanna Santa Barbara, and Dr. Aaron Stallard. This submission is based on input by all members of the group.

We congratulate the Climate Change Commission on both the broad scope of thinking and the detailed evidence supporting their advice to the government, on much of which we agree. We thank the Commission for the opportunity to make a submission. This submission will focus on our points of difference from the

Commission that we hope will strengthen the report and lead to faster climate action that lessens the burden on future generations.]

Note that we would like to see the following points addressed in the report.

Support for nature-based solutions

<https://www.newsroom.co.nz/rod-oram-we-must-put-nature-at-the-centre-of-our-climate-response>

<https://www.newsroom.co.nz/climate-commission-needs-help>

Energy descent

One of the major issues lacking from the Commission's analyses and recommendations to the government is net energy analysis - i.e., both declining fossil fuel's EROI (energy return on energy invested) over time AND reduced EROI available to the society from transitioning from fossil fuels to renewables.

Reduced EROI would have a far-reaching and widespread impact globally as well as all corners of our society, including food production (Marshall, Z. and Brockway, P.E. 2020. A Net Energy Analysis of the Global Agriculture, Aquaculture, Fishing and Forestry System. *Biophysical Economics and Sustainability* (2020) 5:9 DOI: 10.1007/s41247-020-00074-3). Therefore, we must rapidly aim for self-sufficiency within NZ by starting to grow all varieties of food and fibers we currently rely on imports. Reduced EROI would likely result in price hike of many imported products, including what we consider essential for infrastructure, such as concrete and steel. Therefore, a planning for managed retreat from vulnerable areas must start immediately as we may lack the resources to rebuild if we wait too long.

As for the reduced EROI from renewable transitions, the following gives a picture of what our future might look like: "A novel methodology is developed to dynamically assess the energy and material investments required over time to achieve the transition from fossil fuels to renewable energy sources in the electricity sector. The obtained results indicate that a fast transition achieving a 100% renewable electric system globally by 2060 consistent with the Green Growth narrative could decrease the EROI of the energy system from current ~12:1 to ~3:1 by the mid-century, stabilizing thereafter at ~5:1. These EROI levels are well below the thresholds identified in the literature required to sustain industrial complex societies. Moreover, this transition could drive a substantial rematerialization of the economy, exacerbating risk availability in the future for some minerals. Hence, the results obtained put into question the consistence and viability of the Green Growth narrative" (Capellán-Pérez, I., de Castro, C. and González, L. 2019. Dynamic Energy Return on Energy Investment (EROI) and material requirements in scenarios of global transition to renewable energies. *Energy Strategy Reviews* 26: <https://doi.org/10.1016/j.esr.2019.100399>).

The government must start public campaigns to increase awareness of this issue. Our wellbeing, however, does not have to rely on high EROI values. We can improve wellbeing by focusing on creating a more just and sustainable society where people have access to organic, nutritiously-dense food, music and art, recreation and meaningful work.

We recommend the government initiate research regarding energy descent and its impact on both our renewable energy system and the international implications regarding trade and social stability.

Fisheries practises

We would recommend that the Commission considers bottom-trawling practices in NZ waters by the fishing industry, because this disturbs marine sediments (carbon sink) and releases a huge amount of CO<sub>2</sub> (Sala et al., 2021. Protecting the global ocean for biodiversity, food and climate. *Nature*. This is a very recent report (March 2021) which has found that annual CO<sub>2</sub> released globally by bottom trawling exceeds the amounts emitted annually by global aviation (pre-Covid). Extensive bottom trawling is currently carried out by NZ companies in NZ waters.

[https://www.nature.com/articles/s41586-021-03371-z.epdf?sharing\\_token=w3OJFpNcR0SpjU8zIYvud9RgN0jAjWel9jnR3ZoTv0MwjSp\\_dqdYRo11ccDn9dqPW5D1xJuK8f](https://www.nature.com/articles/s41586-021-03371-z.epdf?sharing_token=w3OJFpNcR0SpjU8zIYvud9RgN0jAjWel9jnR3ZoTv0MwjSp_dqdYRo11ccDn9dqPW5D1xJuK8f)

Importance of public education to accelerate behaviour change (e.g. in moving away from private ownership of transport vehicles; in waste/methane/refrigeration; in frequent but unnecessary upgrading of goods which are not essential; and most of all in helping people understand that the future is likely to be one with declining energy availability )

The cost of inaction (only the costs of action are considered), as well as the cost of inadequate action.

The cause of the climate crisis. This is important because it will inform the solution and help us to prevent mistakes of the past. We see the Climate Crisis as a symptom of our civilisation's problematic relationship with Nature - our willingness and our technological capacity to exploit Nature, with no holistic understanding of the importance of the integrity of ecosystems and that there cannot be infinite growth in a finite world.

**Do you want to continue with the consultation questions or would you like to end your submission here?**

I want to continue with the consultation questions

**Our six big issues - intro**

**Our six big issues - the pace of change**

**1 Do you agree that the emissions budgets we have proposed would put Aotearoa on course to meet the 2050 emissions targets?**

Disagree

**Please explain your answer (1000 word limit):**

We disagree with the report's cautious strategy and low rate of emissions reductions in the first three budgets. We call for greater ambition by the Commission and greater change, sooner. We note that more than three decades of inaction has allowed the crisis to deepen and targets to become more challenging. The mindset of "prepare now and act later" should end because it means we fall further behind, is ineffective in creating change, is inconsistent with the scale and

urgency of the emergency, and encourages a business-as-usual approach. Instead, we advocate for a 'kick-start' approach with steep emissions reductions that puts mitigation at the forefront of our decisions immediately.

There are a number of reasons for doubting we are on course to meeting the 2050 targets: the Commission's approach gives only a 50%–66% chance of limiting warming to 1.5°C, there are real uncertainties about the effectiveness of forestry removals of carbon, the exclusion of agriculture from the Emissions Trading Scheme, the weak reduction targets for agricultural methane, and the failure to date of the Emissions Trading Scheme.

These points also indicate the need for stronger action. Given the failure of the Emissions Trading Scheme, we recommend the Commission considers other, more direct approaches to reducing both CO<sub>2</sub> and methane emissions.

We support the Commission's statement that transformational work must start now. This means rapid reductions in all greenhouse gases, including carbon dioxide from transport and energy, and methane from agriculture. More ambitious targets would be achievable for people walking, cycling, and taking public transport to work and school. We would also like to see faster action to reduce agricultural emissions, including more farms moving to regenerative and organic farming. The Government can support this by funding farmers to change the ways they farm, and using regulations to reduce the application of industrial fertiliser. The IPCC calls for rapid reductions in emissions in the decade to 2030, and we ask the same of the Commission.

## **Our six big issues - future generations**

### **2 Do you agree we have struck a fair balance between requiring the current generation to take action, and leaving future generations to do more work to meet the 2050 target and beyond?**

Disagree

#### **Please explain your answer (1000 word limit):**

It is well known that the longer we wait to reduce emissions, the harder it becomes and the greater the costs to future generations. We need to start now. Future generations will thank us if we take urgent action at the scale that's needed. This means the Government must take urgent action (i.e., during the period of the first emissions budget) to set up the systems, structures, and policies that make reducing emissions easy and affordable for everyday people.

As an example of the intergenerational injustice of the situation, we note that the Commission talks about minimising the 'cost' of reducing emissions. This must be compared with the cost of not reducing emissions. Since the long-lived greenhouse gases we emit will be acting adversely on climate over thousands of years, we ask the Commission to consider the ultimate cumulative environmental and social costs of emissions that affect future generations over such an extended time period. These costs have been estimated to be US\$100,000 per ton of C by Archer et al. (2020) (<https://doi.org/10.1007/s10584-020-02785-4>), compared with present-day abatement costs of US\$800–\$1500 per ton of C (same article, also <https://www.stuff.co.nz/business/world/300238133/what-is-the-cheapest-way-to-cut-carbon>). The cost paid by companies emitting greenhouse gases (i.e., purchasing units via the Emission Trading Scheme) is only ~US\$120 per ton of C (i.e., NZ\$~40 (US\$30) per unit to emit 1 tonne of CO<sub>2</sub>, multiplied by 44/12 (molecular weights of CO<sub>2</sub> and C) to arrive at US\$110 per tonne of C, multiply by 1.1 to convert tonne to US ton, gives US\$~120 per ton of C).

It is clear that by delaying action we are placing a huge and disproportionate burden on future generations, and our young people can feel this looming burden. Projections suggest our descendants may be struggling with the impacts of climate change in a world of debilitating effects on soil health, food productivity, human health and capacity for human work at higher temperatures. Living standards may suffer from mass migration from unlivable areas, social disruptions and diminished availability of energy and material resources.

Therefore, the optimal time to cut emissions, in terms of environmental health, tackling climate change, and reducing the costs (financial, social, and environmental) to future generations, is now, not in the future.

## **Our six big issues - our contribution**

### **3 Do you agree with the changes we have suggested to make the NDC compatible with the 1.5°C goal?**

Disagree – our changes are not ambitious enough

#### **Please explain your answer (1000 word limit):**

Aotearoa New Zealand as a country has significant economic wealth (although it's often not shared fairly). As a developed country, we have a responsibility to act quickly and help lead the global effort. We can do this in a way that raises living standards for our disadvantaged communities.

We are lucky to have lots of potential for more low emissions renewable electricity like wind and solar, and this can be used to power industry and transport.

We need to do this not just for ourselves, but also for our Pacific neighbours who are at the frontlines of the changing climate.

We disagree with including offshore mitigation in the NDC. Offshore mitigation is undertaken to enable a wealthy nation to continue emitting greenhouse gases by claiming the benefit of emissions reductions made in developing countries. We view offshore mitigation to be immoral, exploitative, and inconsistent with the need to urgently reduce emissions globally. However, we are strongly in favour of Aotearoa New Zealand offering substantial assistance to the climate action efforts of developing countries, especially to our Pacific neighbours. This should be seen as foreign aid, rather than being counted as a contribution to our national mitigation obligations.

We strongly disagree with the Commission's decision to not set a specific emission reduction target for the NDC. We ask the Commission to set a specific 'fair share' target (e.g., <https://www.oxfam.org.nz/wp-content/uploads/2020/09/Oxfam-NZ-Briefing-A-Fair-2030-Target-for-Aotearoa.pdf>) rather than vaguely

suggesting a target that is 'much more than 35% below 2005 gross levels by 2030'.

## **Our six big issues - role and type of forests**

### **4 Do you agree with our approach to meet the 2050 target that prioritises growing new native forests to provide a long-term store of carbon?**

Agree

**Please explain your answer (1000 word limit):**

We agree that strategic (e.g., adjacent to waterways) and widespread planting of new native forests should be prioritised to support biodiversity, soil health, carbon sequestration, and flood protection.

We do not agree with proposals for further planting of pine forests as a business investment that is used to justify our ongoing emissions.

We do not agree with forest offsets, as forests should be used to draw down carbon already in the atmosphere rather than to justify continued emissions.

We recommend the Commission expand this section from solely forestry to also include the restoration of wetlands and estuaries, which are also important sinks of carbon and support biodiversity, and to include urban trees, which have the co-benefits of reduced emissions, cooler urban temperatures, and improved quality of life for those living in cities.

## **Our six big issues - policy priorities to reduce emissions**

### **5 What are the most urgent policy interventions needed to help meet our emissions budgets? (Select all that apply)**

Action to address barriers, Pricing to influence investments and choices, Investment to spur innovation and system transformation

**Please explain your answer (1000 word limit):**

We support all three interventions but note that this list is incomplete. For example, there can be no pricing policies without complementary equity measures.

Focusing on energy and transport makes sense because clean energy and clean transport options are available. However, agriculture accounts for almost half of the emissions in Aotearoa New Zealand so it needs urgent action too.

We strongly support urgently ending the use of coal for industry, phasing out the use of gas in industry, government action to reduce the cost of electric cars, and phasing out imports of new petrol and diesel cars, building more wind, solar, and geothermal electricity generators and electrifying rail for freight and passengers.

In terms of transport policy priorities, we encourage the Commission to be more ambitious in ensuring a shift from cars to walking, cycling, and public transport. If Government makes these modes of transport safe, reliable, and affordable, people will do it! A major public messaging campaign could increase the speed of uptake.

Legislation is also needed promptly to ensure that Local and Central Government can establish the right policies to transform the current system.

## **Our six big issues - technology and behaviour change**

### **6 Do you think our proposed emissions budgets and path to 2035 are both ambitious and achievable considering the potential for future behaviour and technology changes in the next 15 years?**

Disagree

**Please explain your answer (1000 word limit):**

We disagree that the budgets and path to 2035 are ambitious, but agree they are achievable. The cost of inaction is much greater than the cost of action, so we should be more ambitious in our targets, to lighten the burden on future generations.

The Covid response has shown that very rapid changes in behaviour and technology are possible if governments, businesses, and the public decide to act with urgency and prioritise the issue being confronted. A critical part of Covid success was clear and consistent information from government in partnership with scientists, officials and largely backed by a media sector that holds government to account without spreading misinformation. Trust was developed in Aotearoa New Zealand as a result of honest discussions of what was known, how our knowledge and approach might change, and what the uncertainties were.

In response to Covid, countries have closed and opened internal and international borders, asked people to change where they work and how they get around, changed the rules around business and taxation, and undertaken massive public education and communication campaigns.

If we decide to apply the same urgency and effort to tackling the emergency that is the climate crisis, we can meet much more ambitious goals than those set by the Commission.

We therefore call for a massive public education campaign on climate change, the nature and scale of changes required to address climate change, and why the changes are required.

This is necessary because the Commission's recommendations will not be implemented unless they are well supported by the public. To date, the government has been largely absent in terms of communicating the realities of climate change and climate change mitigation to the public. This needs to change immediately if the country is going to move together and move successfully to a low-emissions future.

## **Would you like to end your submission here, or move on to the detailed section of our consultation?**

I want to continue with the consultation questions

## **Detailed questions on our advice**

### **1. How we developed our advice**

#### **1 Do you support the principles we have used to guide our analysis?**

Partially support

#### **Please explain your answer (400 word limit):**

We endorse most of Principle 1 but not the view that actions in the next five years should focus solely on setting us up for deeper emissions in later budgets. We ask for steeper reductions in the next five years, to clearly signal the urgency and scale of the changes ahead.

We endorse most of Principle 2 but not the offsetting of emissions using carbon removal by forests. We also do not agree that reducing production should be excluded from consideration. A key component of the meeting the 1.5°C limit is reduction (in consumption, energy use, and land under human use).

It is inconsistent for the Commission to state 'Forest sequestration should not displace making gross emissions reductions' and yet use forestry carbon removals to offset 30% of emissions in the third emission budget (apologies if we are wrong on this point). The emphasis should be on reducing emissions rather than planting more pines to enable business-as-usual.

Principle 3 is vague and of little use to the reader without specific details. Please give examples of the options referred to and the ways in which these options are created. We support identifying multiple options for emissions reductions, but in general, advocate for using all possible options to maximise speedy mitigation.

Principle 4. We have strong concerns about aspects of this principle (avoid unnecessary cost). Within the body of the text, please define 'cost'. We assume the Commission refers to 'financial cost', which we find troubling because a key driver of the climate crisis is the priority of financial cost over environmental cost. This principle continues the mindset that has given rise to the climate crisis in the first place, and does not factor in the cost of doing nothing. In this respect it is concerning to read 'This means using measures [to meet emissions budgets] with lower costs...'. We ask that this section be rewritten to consider both financial cost and environmental cost, and that the Commission acknowledges a safe climate (and therefore rapid reductions in emissions) is more important than avoiding the scrapping of assets or being left with stranded assets. Please also acknowledge that a key component of fighting climate change is leaving fossil fuels in the ground; consequently, we actually need to embrace the idea of supporting change that results in stranded assets. Remember this is an emergency!

Principle 5. We support this principle and would like to see more evidence of this principle feeding through to the advice contained in this report.

Principle 6. We agree with this principle. Is it possible to provide in this paragraph some examples of actions that (i) increase the country's overall exposure to climate risks such as drought, flooding, forest fires and storms, and (ii) both reduce emissions and enhance resilience to the impacts of climate change.

Principle 7. We support this principle. We would like to see this principle more strongly expressed in terms of the emissions-reducing transitions that have the greatest co-benefits, such as a shift from ICE vehicles to active transport (which has major co-benefits for human health, reduced road congestion, reduced air and noise pollution, safer transport, reduced resource consumption, more compact cities, and financial savings), and a shift from intensive livestock and large-scale monocrop agriculture to regenerative farming, diversified organic horticulture, and replanting of indigenous forest (which has co-benefits for human health related to diet, biodiversity, freshwater quality, soil health, the the health of aquatic life).

Finally, we ask that the Commission add the following key principle that would enhance the work of the Commission and the urgency and ambition of this report:

'The climate crisis is an emergency and accordingly we will make emergency decisions and take emergency actions.'

## **2. Emissions budgets numbers**

### **2 Do you support budget recommendation 1? Is there anything we should change and why?**

#### **Q2 Emission budget levels - Emissions budget 1 (2022 – 2025):**

Not ambitious enough

#### **Q2 Emission budget levels - Emissions budget 2 (2026-2030):**

Not ambitious enough

#### **Q2 Emission budget levels - Emissions budget 3 (2031-2035):**

Not ambitious enough

#### **Please explain your answer (1000 word limit):**

We would ask for steeper reductions in emissions, as the proposed budgets give only a 50%–66% probability of limiting warming to 1.5°C by 2030, and the 2% decrease in emissions through to 2025 provides no incentive or compulsion for change.

We ask the Commission to set a 'fair share' target (e.g., <https://www.oxfam.org.nz/wp-content/uploads/2020/09/Oxfam-NZ-Briefing-A-Fair-2030-Target-for-Aotearoa.pdf>) and much stricter budgets.

We urge the Commission to use the AR5 GWP100 value for methane (28) throughout the report instead of the AR4 value (25). The AR5 value is more accurate, regardless of the government's use of the AR4 value in other documents. Furthermore, use of the AR4 value unjustifiably diminishes the contribution of biogenic methane to climate change. We note that the global warming during the first decade of methane is 80x CO<sub>2</sub>equiv (GWPstar).

### 3. Breakdown of emissions budgets

#### 3 Do you support our proposed break down of emissions budgets between gross long-lived gases, biogenic methane and carbon removals from forestry? Is there anything we should change, and why?

##### Q3 - Gross long-lived gases:

Not ambitious enough

##### Q3 - Biogenic methane:

Not ambitious enough

##### Q3 - Forestry:

Too ambitious

##### Please explain your answer (1000 word limit):

From a scientific perspective we support a split-gas approach because of the different behaviours of the gases, but we would like to express our concerns regarding issues such as loss of international reputation, validity of IPCC modeling when applied to Aotearoa New Zealand's unique emissions profile, and whether we are meeting our international commitments by taking such an approach.

Lord Deben, chair of the United Kingdom's Climate Change Committee, says Aotearoa New Zealand's practice of splitting agricultural methane emissions off from the rest of our greenhouse gases damages our reputation overseas and that it 'doesn't really wash'. It gives the impression we're excluding our biggest industry and biggest emitter, just as a major coal-producing country might protect its coal industry from cutbacks.

We recommend that carbon removals from forestry are not considered in the Commission's emissions budgets, for the following reasons.

The use of carbon removals from forestry results in delayed climate action, higher emissions than otherwise, and encourages a continuation of business as usual.

To return to 'safe' CO<sub>2</sub> levels of 350 ppm requires us to stop emitting AND remove CO<sub>2</sub> from the atmosphere, as natural processes of long-term CO<sub>2</sub> removal are incredibly slow (e.g., ~10% of emitted CO<sub>2</sub> is still present in the atmosphere after ~10,000 years; e.g., <https://www.annualreviews.org/doi/abs/10.1146/annurev.earth.031208.100206>). Therefore, removal from forestry is needed to reduce atmospheric CO<sub>2</sub> levels, not enable continued anthropogenic emissions.

Carbon removed from the atmosphere by replanting indigenous forest simply removes the carbon released to the atmosphere when the original forest was destroyed, so there is no scope for using replanting to offset emissions.

There can never be a 'balance' between emissions from fossil fuels and carbon removal by forestry, as the carbon in fossil fuels is taken from the extremely long-term geological carbon cycle (timescale of tens or hundreds of millions of years) and introduced to the short-term and dynamic Earth-surface carbon cycle, which is overwhelmed and fundamentally changed by the flood of carbon from fossil fuels. It will never be safe to load huge amounts of fossil fuel carbon into the Earth-surface carbon cycle, even if it is taken up by forestry in the short term.

### 4. Limit on offshore mitigation for emissions budgets and circumstances justifying its use

#### 4 Do you support budget recommendation 4? Is there anything we should change, and why?

Partially support

##### Please explain your answer (1000 word limit):

We fully support Recommendation 4a and further recommend that offshore mitigation also be excluded from subsequent emissions budgets (i.e., beyond the first three budgets) and from the NDC.

We support Recommendation 4b in principle, but have some concerns about the force majeure clause, as we want to avoid this clause being abused and employed to unjustifiably delay climate action.

The decision on whether an event can be characterised as force majeure is somewhat subjective, and we suggest that a group of qualified people is established to make this decision.

Our reason for concern is that some disasters are predictable even if not preventable and the Government should be pursuing energy sustainability & resilience measures to reduce the impact of these events. One example is the Alpine Fault magnitude 8 event that is predicted to occur soon. The electricity from the South

Island will be disrupted, so it is important to have more renewable energy generation in the North Island so we don't have to burn coal or gas. The Top of the South will also be cut off, so more renewable generation is required here also, and transport alternatives such as coastal shipping.

Some emergency supplies of fuel will be needed for generators at hospitals, and heavy rescue machinery. If communities are resilient in terms of electricity, food supplies and local active transport, then such a disaster should not interrupt our programme of emissions reductions.

We consider that droughts, storms, fires and pandemics should not be considered force majeure events. These events are predictable if not totally preventable, and we should be doing our best to prevent and prepare for these, including not planting large areas of fire-vulnerable trees or delaying managed retreat. More public education about the risks we face is imperative.

Other countries will also be affected by force majeure events, and some won't have been able to prevent or prepare for them the way we can, as a wealthy country. We need to be very strict about what really is so severe that we use it as a reason to stop our emission reduction plans, to encourage other capable countries to keep on-track also. This is why we recommend that a named group of experts should decide whether an event does fall into this category.

In the process of thinking about this we realise there are many good reasons to go as fast as possible reducing our carbon emissions now, before there are any more disasters. Not only will it reduce the global temperature and make some of the droughts, fires and floods less likely, but people under stress have a narrow focus on survival, and are less able to keep undertaking the actions required for carbon emission reductions.

However, we strongly support specific Aotearoa New Zealand climate aid to developing countries to enhance their mitigation and adaptation capabilities. We would like to see this action be part of the pathways described in this document.

## **Enabling an enduring climate transition - intro**

### **5. Cross-party support for emissions budget**

#### **5 Do you support enabling recommendation 1 on cross-party support for emissions budgets? Is there anything we should change and why?**

Fully support

**Please explain your answer (1000 word limit):**

We strongly support Enabling Recommendation 1, especially that the budgets are debated in the House of Representatives and the position of each political party is on the parliamentary record.

Note that we do not wish the budgets to be weakened in the process of gaining cross-party support.

We consider a key factor in achieving cross-party consensus is public support for action on climate change in general and for the Commission's budgets in particular, thereby resulting in public pressure on political parties to commit to strong and lasting action on climate change. This requires dedicated public education and communication (as for the Covid response), and efforts to enhance public engagement in the process.

We note that the UK has had cross-party consensus on climate legislation since 2008, even through changes in government and Brexit. That consistency, and the effectiveness of its Climate Change Committee, have been key factors in its climate progress.

We also support the formation of a Citizens Assembly in deciding on climate action.

### **6. Coordinate efforts to address climate change across Government**

#### **6 Do you support enabling recommendation 6 on coordinating efforts to address climate change across Government? Is there anything we should change and why?**

Fully support

**Please explain your answer (1000 word limit):**

We strongly support such coordinated efforts. We recommend that carbon emissions for government projects be reported alongside the estimated financial cost of the project, and prioritise projects with the lowest emissions.

We especially appreciate the importance of progress indicator (a), as Aotearoa New Zealand has yet to pass into law the policies and strategies needed to bring about meaningful reductions in emissions (this includes the Emissions Trading Scheme).

### **7. Genuine, active and enduring partnership with iwi/Māori**

#### **7 Do you support enabling recommendation 3 on creating a genuine, active and enduring partnership with iwi/Māori? Is there anything we should change and why?**

Fully support

**Please explain your answer (1000 word limit):**

We fully support this recommendation and we commend the Commission on the efforts made through 2020 to consult with iwi/Māori. We note the well-known data on Māori/Pākehā health inequalities, and the evidence that these are at risk of being exacerbated by the impacts of climate change on health and food insecurity due to rising food prices, household crowding with population pressure from climate immigration, heat-related death on a population with a greater burden of chronic disease, the impact of extreme weather on relatively isolated communities with vulnerable infrastructure and greater risk of water-borne disease in flood events (Jones R, Bennett H, Keating G, Blaiklock A. Climate Change and the Right to Health for Māori in Aotearoa New Zealand. Health and Human Rights, 2014, 16/1). We believe that parallel work on reducing inequality in Aotearoa New Zealand must proceed while we act on climate change. Indeed we see it as an enabling condition to an adequate response to climate change.

To achieve this goal, the government needs to carry out an effective public campaign on the impact of structural racism on Maori to increase the awareness, because currently there is very little awareness of the unconscious bias most Pākehā have. The current campaign (Give nothing to racism) is a good start, but has not gone far enough to make Pākehā aware of their contribution to the problem of racism or the need to dismantle institutional racism. Teaching the true history to both children and adults and consolidating the efforts to eliminate systemic racism are the crucial steps towards building a genuine partnership with iwi.

## **8. Central and local government working in partnership**

### **8 Do you support enabling recommendation 4 on central and local government working in partnership? Is there anything we should change and why?**

Fully support

#### **Please explain your answer (1000 word limit):**

We support Enabling Recommendation 4 in principle; however, our experience with local government suggests central government should be dominant in this "partnership" and provide direction, legislation and leadership so local Councils have no choice but to plan to reduce carbon emissions in their region equitably and make 50/100-year long term decisions. If plans for emission reductions are allocated to sectors and regions are not given specific targets, it is very unlikely that councils will make their contribution. They lack the expertise as well as the political courage to pursue long-term solutions.

We support Enabling Recommendation 4a to align legislation and policy, and this is required urgently. Some examples of issues that will benefit from this recommendation: Infrastructure plans should be longer than 30 years, as the life of pipes and roads, sea and airports, schools, hospitals, sewage treatment etc should be at least ~100 years. Legislation is needed to ensure that urban growth is consistent with the development of "15/20 minute townships" to reduce transport emissions and protect productive rural land.

We support Enabling Recommendation 4b and wish to emphasise that the funding formulae for managed retreat is urgently required as part of the proposed Managed Retreat and Climate Change Adaptation Act.

## **9. Ensuring inclusive and effective consultation, engagement and public participation**

### **9 Do you support enabling recommendation 5 on establishing processes for incorporating the views of all New Zealanders? Is there anything we should change and why?**

Fully support

#### **Please explain your answer (1000 word limit):**

We fully support Enabling Recommendation 5.

We support forms of direct democracy such as a citizen assembly. There will be difficult choices to make in future, and it will be important to have a strong democratic mandate in making them. Such assemblies have been employed in France, the UK, and Ireland, and several groups in Aotearoa New Zealand are promoting this idea.

In Nelson/Tasman, we established a Climate Forum in February 2020 with the intent of including as widely as possible the diverse perspectives in our community. After a year of work, we feel enthusiastic about what it has accomplished, and about its potential. However, a truly representative body would need to be constituted by a form of random selection, such as is used in Citizens' Assemblies.

We support the Commission's suggestion that this be done both nationally and regionally.

## **10-11. Locking in net zero**

### **10 Do you support our approach to focus on decarbonising sources of long-lived gas emissions where possible? Is there anything we should change and why?**

Partially support

#### **Please explain your answer (400 word limit):**

We support decarbonising the sources of long-lived gas emissions, although not at the neglect of short-lived gas emissions, as short-lived gas can have a very long-lived warming effect. For example, methane may be short-lived in the atmosphere (it breaks down after about ~12 years), but its warming effect is greater than that of CO<sub>2</sub> over a period of >200 years (see Fig. 7 in <https://www.eci.ox.ac.uk/research/energy/downloads/methaneuk/chapter02.pdf>) as a result of it being a much more potent greenhouse gas than CO<sub>2</sub>, and the fact that it breaks down into CO<sub>2</sub> and ozone (both greenhouse gases), among other compounds. In addition, even if the rate of methane emissions is held constant, it would take more than a century to stabilise the concentration of methane in the atmosphere,



and we cannot afford to wait this long.

Therefore, it is inconsistent for the Commission to state 'We need to avoid pushing the burden to future generations' (which is the heading to this section) and at the same time ignore the need to reduce methane emissions. The timeframe of >200 years certainly affects future generations!

In conclusion, we support decarbonising sources of long-lived gas emissions and ask the Commission to expand its focus to reduce emissions of both long- and short-lived greenhouse gasses, as even short-lived methane has a long-lived heating effect.

## **11 Do you support our approach to focus on growing new native forests to create a long-lived source of carbon removals? Is there anything we should change and why?**

Partially support

### **Please explain your answer (400 word limit):**

We support increasing new native forests. However, we do not agree that carbon removals from forests should be used to offset anthropogenic emissions. Instead, carbon sinks should be used to draw down past emissions. To return to 'safe' CO<sub>2</sub> levels (e.g. 350 ppm) requires us to stop emitting AND remove CO<sub>2</sub> from the atmosphere, as natural processes of long-term CO<sub>2</sub> removal are incredibly slow (e.g., ~10% of emitted CO<sub>2</sub> is still present in the atmosphere after ~10,000 years; <https://www.annualreviews.org/doi/abs/10.1146/annurev.earth.031208.100206>). Therefore, carbon removal through forestry is needed to reduce atmospheric CO<sub>2</sub> levels, not enable continued anthropogenic emissions.

There are other problems with including forests in carbon accounting. A growing body of research suggests the strength of the land carbon sink (mainly forests) will fall rapidly in coming decades due to reduced photosynthesis and enhanced plant respiration as a result of global warming (e.g. <https://advances.sciencemag.org/content/7/3/eaay1052ref>). Given this uncertainty, we argue that carbon removal by forests should not be included in carbon accounting.

On a final note, we ask the Commission to expand its scope to include the protection and restoration of other sinks such as wetlands and blue carbon. These are mentioned briefly, although they seem to be largely left to future work, as the sequestration rates are more difficult to measure (whereas carbon capture and storage receives more attention). Restoring and supporting sequestration in our wetlands and oceans will have widespread co-benefits, beyond sequestration, with few if any risks. We must not wait for imperfect measurement tools. There is significant scope to restore peatlands and wetlands throughout Aotearoa New Zealand. This will also stop emissions from drained wetlands.

## **12. Our path to 2035**

### **12 Do you support the overall path that we have proposed to meet the first three budgets? Is there anything we should change and why?**

Partially support

### **Please explain your answer (1000 word limit):**

We have serious concerns about the overall path proposed to meet the first three budgets. The primary concern is that the path is likely to result in ineffective climate action and a failure to meet emission reduction targets. This concern arises because of the aspirational nature of much of the Commission's advice in this chapter (e.g., the use of words such as 'encourage', 'expect', 'assume', 'require'), the lack of a hard cap on the ETS (which allows emissions exceeding the budget), the reliance on behaviour change without adequate incentive or compulsion, the lack of a detailed energy analysis, the weak reductions proposed for biogenic methane, and the reliance on carbon removal by forestry. We do not think that the Commission has considered the likely decline in energy availability as we move away from fossil fuels. We consider that the proposed path should have a greater focus on active transport, reduced domestic and international travel, and shrinking limits on fossil fuel production and import (i.e., supply-side climate policy).

We also note that international aviation and shipping need to be included in our budgets as soon as possible, as emissions from aviation alone are about 50% of land transport emissions, and rising rapidly. To exclude emissions from international aviation and shipping would represent a failure in our attempts to stay within the 1.5°C limit.

## **13. An equitable, inclusive and well-planned climate transition**

### **13 Do you support the package of recommendations and actions we have proposed above to ensure an equitable, inclusive and well-planned climate transition, and is there anything we should change?**

Support some of the actions

### **Please explain your answer (1000 word limit):**

We commend the commission's careful analysis of the impact on low-income households of the necessary transition to a low-carbon economy. We support the recommendation of targeted assistance to low-income families for infrastructure expenses such as home insulation, double glazing, heat pumps, LED lighting, electric vehicles. However, given the current serious inequality in Aotearoa New Zealand of both wealth and income, a more systemic change in this area needs to be addressed, in parallel with direct action on lowering emissions and sequestering carbon. There are several pathways to reduction of inequality, including wealth tax, capital gains tax, land tax. Alongside tax reform, it will be important to provide accessible, well-funded job retraining for people whose livelihood will change in our transition to a low-carbon economy.

We see this as a necessary enabling condition for transition, so that both benefits and costs will be shared equally across our society. The Commission's report alludes to this; we would like you to state it more explicitly.

## The direction of policy

### 14. Transport

#### 14 Do you support the package of recommendations and actions for the transport sector? Is there anything we should change and why?

Support some of the actions

##### Please explain your answer (1000 word limit):

The following needs to be included:

Necessary Action 2.

These need to be time-critical necessary action 'by December 2022'.

A. We recommend more ambitious goals for cycling. The Commission recommends a 95% increase in cycling by 2030, which might seem substantial but only equates to, for example, an increase in the proportion of Aucklanders cycling to work from 1.2% today

(<http://sustainablecities.org.nz/wp-content/uploads/Benchmarking-cycling-and-walking-in-six-NZ-cities.pdf>) to 2.3% in 2030. A goal of, for example, 20% of journeys of distance <15 km to be made by cycling would be more effective in reducing emissions and bringing about a modal shift in transport.

B. This funding needs to come from road building (which is carbon intensive and also increases transport emissions by allowing more car travel). The current target needs to be more ambitious and it should be replaced with a goal of achieving 20% of all commuting to work and school in urban areas by active transport by 2030 and 40% by 2035. Active transport has significant health benefits by reducing the risks of heart diseases, Type 2 diabetes and improves fitness and mental health. Reduced car travel would improve air quality, which reduces respiratory illnesses. Safety is one of the major barriers for women to take up cycling (Russell, M., Davies, C., Wild, K. and Shaw, C. 2021. Pedalling towards equity: Exploring women's cycling in a New Zealand city. *Journal of Transport Geography*. DOI:10.1016/j.jtrangeo.2021.102987). Therefore, investments must prioritise building safe and connected cycle ways. The successful model from the Netherlands and Copenhagen should be tried here. The goal also should be shortening cycling time over driving time. An increase in parking and congestion charges would help motivate people to take up cycling. A significant amount of funding should be made available to provide heavy incentives (e.g. 50% off) on bikes/E-bikes, scooter/E-scooter purchases. Electric cargo bikes can replace a family SUV as some can carry up to four small children. In Copenhagen, 26% of families with two or more children owns an E cargo bike (<https://cyclingindustry.news/cargo-bike-market-by-2030/>), and this should be our goal by 2040. Therefore, the government should heavily subsidise E cargo bikes. Simply increasing the bike path funding is not enough – we need to increase the training and education for the NZTA employees because their priority has been 'building roads for cars' for many decades. Public education campaigns, similar to the anti-smoking one, also need to be carried out by the government.

C. We recommend that 'Family' be included in the targeted groups, because this group has a huge potential in teaching public transport habits to young children. The fares are currently too prohibitive for this group. We would like busses to be able to carry multiple strollers and bikes.

D. 'Endorse' rather than just 'Encourage' councils. A lack of useful ridesharing apps has been preventing many people from sharing their commute. Each council must urgently develop various locations which would make it easier for drivers to be able to give a lift to other commuters. Each business should urgently establish an employees' commuting plan to encourage active transport, public transport, ridesharing, and working from home options.

The following needs to be added:

Endorse the government to change the law regarding driver's license to heavily penalise motorists who hit cyclists. The Dutch government brought in legislation stating that primarily the motorist is liable for the damage incurred in accidents involving cyclists. An education campaign (e.g. a Dutch hold) for all drivers would increase the safety of cyclists. These will reduce health costs by preventing accidents and reducing rehabilitation costs.

Request the government to change the driving speed limit from 50km/h to 40km/h in all urban zones because it will significantly reduce fatal accidents involving cyclists. This will lead to an increased uptake of walking and cycling. In areas near schools, kindergartens and most residential streets, a reduction to 30km/h should be adopted.

Time-critical necessary action 2

EVs have higher embodied energy and, therefore, we believe that emphasis should be made on active, public transport as well as ride-sharing, rather than switching most ICEs with EVs. Given the approaching energy descent (which appears to be overlooked in this report), EV production is unlikely to continue indefinitely and, therefore, it is a short-term solution.

Consequently, we recommend only incentivizing EV car and ride sharing programs rather than just EVs.

Having acknowledge this, we make the following recommendations on EVs:

B. To ensure safe use of EVs, the manual and dashboard should be made available in English with every purchase and the government should make this compulsory for car importing companies.

C. This target should be brought forward to 2023 because it should not cost much to do so and the benefits would outweigh the costs.

The following could be added to this section:

By 2025, the existing fleet of EVs would need a battery replacement to restore its range above the minimum practical distance they require. Develop a battery replacement infrastructure and incentivise its cost.

Necessary action 3

We ask the Commission to acknowledge that (1) replacing our fleet of ICE light vehicles like-for-like with electric vehicles will be impossible in terms of resource constraints and (2) will not ensure we meet our climate targets because electric vehicles still have about half the lifecycle emissions of an ICE vehicle (<https://www.newsroom.co.nz/ideasroom/freewheeling-our-way-to-net-zero-carbon>). By purchasing electric vehicles, we are shifting the emissions responsibility to the country that manufactures the car. In summary, electric vehicles are not good for the climate. We simply need to get people out of personal cars of any type. Cycling, walking, public transport, and shared electric vehicles represent the future of personal transport.

Necessary action 4

We disagree with this recommendation, except for d. Biofuel is water intensive and also has a low EROI. "Biofuel production is characterised by low EROI values, especially relative to historic fossil fuel EROI values. Reviewing bioenergy EROI estimates Rana et al. (2020) find gross EROI values for bioenergy production systems ranging from 0.08 to 1.84:1 for synthetic natural gas from microalgae, to 14.7–22.4:1 for biogas from corn. Assessing rapeseed production for biodiesel in Europe van Duren et al. (2015) concluded that the maximum gross EROI was 2.2:1. These estimates evidence the limited capacity of biofuel production to maintain a sufficient net energy supply to society" (Marshall, Z. and Brockway, P.E. 2020. A Net Energy Analysis of the Global Agriculture, Aquaculture, Fishing and Forestry System. *Biophysical Economics and Sustainability* (2020) 5:9 DOI: 10.1007/s41247-020-00074-3).

A significant reduction of airplane use should become a priority, instead of trying to replace fossil fuels with biofuel in order to maintain the industry that is not compatible with the net zero carbon goal. Recommend online webinars, meetings, conferences for all governmental agencies, local councils, businesses, education institutes whenever possible to reduce aviation emissions. The same is true for international travelling - we must educate the public to reduce their expectations so that they come to understand that the unrestricted air travels and the climate goals are simply incompatible. We oppose the use of hydrogen fuel because it represents an extremely inefficient use of energy (we note that we are entering a time of energy scarcity) and has massive infrastructure costs. We acknowledge there may be rare situations where hydrogen fuel should be considered, but we recommend this be the choice of last resort and not be widely employed.

## 15. Heat, industry and power

### 15 Do you support the package of recommendations and actions for the heat, industry and power sectors? Is there anything we should change and why?

Support some of the actions

#### Please explain your answer (1000 word limit):

We support some of the actions, but note that the priority should be given to energy conservation at a national level. Since electrification has a lower net energy than fossil fuels, the first priority for a mostly renewable electric system is demand reduction. Given the likelihood of energy descent, our import and export priorities are likely to change substantially. We need a national strategy for dealing with energy descent to determine what our industrial priorities are to ensure domestic needs are met. Just as international tourism is likely to change permanently, many other sectors are also likely to undergo significant change. Developing such a national strategy should be undertaken along with a transition to renewable energy sources as suggested. A Transition Engineering approach be considered in transitioning this sector, as TE considers not only technical but also social and behavioral changes to meet social needs.  
<https://www.transitionengineering.org/>

We support Time-critical necessary action 3 and Necessary action, but the following needs to be added:

The proposed 2025 phase out date for fossil fuel heating in new buildings could be brought forward to 2022.

All coal mining should be phased out and any remaining subsidies that relate to fossil fuel use to be terminated.

We do not support Necessary Action 6 because bio-fuel has very low energy return on energy invested (see our response for Necessary Action 4).

We support Necessary Action 7 but coal burning for process heat for dairy produce should be stopped much earlier than the proposed 2037 and the end should be brought forward to 2025. The transition could involve gas, and should become 100% renewables.

We support Necessary Action 8 but would like Commission's advice to the government to include "reducing the demand for these carbon-intensive products and mandating buildings that have low-embodied energy."

Necessary Action 9: Increase energy efficiency in buildings

We fully support these actions; however, the target needs to be much higher. Currently, the government is updating the building code to reflect the Zero Carbon Bill. It is planned that the code would reflect reduced carbon budgets at each of the 5 year periods. Certified passivhaus buildings using timber and other renewable materials should be recommended for new commercial and residential buildings because they will minimise both embodied and operational energy (Myers et al., 2012. The potential to reduce the embodied energy in construction through the use of renewable materials. The 46th Annual Conference of the Architectural Science Association. Gold Coast, Australia; Feist, W. 2015. Passive House Planning Package: the energy balance and design tool for efficient buildings and retrofits. Passive House Institute. 265 p.). Life-cycle carbon analysis should be made mandatory as a part of the building consent process.

The commission's recommendation to the government must include the emission-intensive nature of concrete and strongly advise an immediate reduction in concrete use in all aspects of society, not only in housing but also infrastructure and landscaping. Cement is responsible for approximately 8% of global emissions and, if it were a country, it would be the third largest emitter (i.e. behind China and the USA.). The reduced use of concrete will ultimately change the aesthetic of urban and semi-urban landscapes, for example limiting concrete driveways. Reducing the number of cars in use in NZ will reduce the need for both roads and driveways.

Mandatory requirements need to be placed on building products being sold in NZ to declare their embodied carbon and life cycle carbon so that building owners and designers have more choice and understanding of the carbon associated with the products used in the industry. Standardised systems need to be developed to ensure that all buildings are compared and analysed in the same way.

Necessary Action 10

Urban sprawl needs to stop and intensification around urban centres needs to be given urgent priority. Sea level rise also needs to be well considered when it comes to urban intensification. There is no point intensifying urban centres if they will need to be abandoned due to increasing flood risks in the next 25–50 years.

Less focus needs to be given to the development of road infrastructure and more given to low-emission public transport solutions. This needs to be considered in both urban areas and between urban areas in order to reduce our reliance on private motor vehicle use. Safer and better-connected cycleways need to be developed to make cycling more accessible to all. Transport routes need to favour bicycles and discourage car use in order to disincentivize private vehicle use.

Environmentally unsustainable land covenants need to be removed or limits applied to them - minimum building sizes, and requirements related to the use of second hand material are commonly used covenants but only serve to increase building budgets both in monetary and carbon terms. Lawn/grasses need to be kept short during summers to reduce fire risks; however, during other times, letting them grow taller would increase biodiversity benefits and reduce emissions from fossil fuels by reducing the frequency of mowing and, therefore, should be recommended.

## 16. Agriculture

### 16 Do you support the package of recommendations and actions for the agriculture sector, and is there anything we should change?

Support some of the actions

#### Please explain your answer (1000 word limit):

We support the Time Critical and Necessary Actions 4 and 11. However, they need to go much further and be more integrated across all land uses in a systems approach.

#### Land Systems approach

The recommendations need to include a systems-based approach to land management, that looks at catchments, soils, microclimates, geology, topography, biodiversity and communities. Otherwise we will end up with more unintended consequences. There needs to be a greater focus to reduce or end land-management practices that emit carbon such as frequent soil tilling and drained wetlands. We need greater cooperation of all landowners and local government in catchment-group planning that is backed up and supported with legislation. The drive to fix one problem at a time, such as water quality or methane, is problematic in that the problems are interrelated and are implemented on land by the same land managers. We need to rapidly decarbonise and reduce methane in our rural sector and at the same time rapidly increase sequestration. Land owners must do both.

#### Collective Management - Catchment Groups

Rapidly scaling up and adequately resourcing collective management through catchment groups has huge potential for better outcomes on a range of issues and has been demonstrated to work (e.g. Our Land and Water, Landcare Trust). We have examples in our region such as the long-established Sherry River Catchment Group and recent momentum of the Moutere and Motueka Catchment Groups. Some of our members are part of catchment groups, which have diverse land managers and owners (e.g. forestry, pasture, horticulture, lifestyle blocks) coming together and taking action collectively. These groups are often set up to address water quality, though also bring in speakers and develop actions on a range of challenges which are interlinked, such as climate change. Our experience is landowners feel empowered and supported to change and take action in these groups. This is the key to moving beyond tinkering and generating real change that empowers land managers, reduces emissions, increases sequestration, builds community resilience both in our landscapes and improving mental health.

#### Sequestration

There needs to be a separate time-critical action on sequestration on farms. Although this is a part of He Waka Eke Noa, it needs more emphasis now. Sequestration is complementary to other work going on with water quality, biodiversity and increasing resilience. There is significant scope to increase sequestration in pasture and horticulture systems:

By incorporating trees in pasture beyond riparian and slope stability planting (which is mentioned briefly in chapter 5). Many farmers do this already (e.g. poplars) for slope stability and windbreaks. There are many species that have co-benefits which provide extra feed, summer shade, food, biodiversity and timber. These types of integrated systems have significant promise that can combine on farm production diversity/resilience, income, biodiversity and environmental gains, as well as sequestering carbon.

Sequestration on farms is an important part redressing some of the emissions from our historical land use change to farmland, some of which is continuing, such as emissions from drained peatlands.

Reinstating and creating new wetlands, which have the co-benefits of filtering runoff, reducing floods and drought severity.

#### Technology and Land Management Practices

The focus on technology is too narrow and needs to include the range of practices that are available, including those of kaupapa and mātauranga Māori, which focus on the health and ecology of land, soil, water and people. The technologies mentioned such as breeding low emission dairy cows and methane inhibitors might have contributions long term, but are not likely to help this decade when we need rapid emission reductions. Furthermore, human nature being as it is, we are drawn to easy technological fixes, which require little other change. We need a transformation in all our sectors and aspects of our lives, which must include agriculture to decarbonise, substantially reduce methane AND sequester as much of our past emissions as possible.

#### Nitrous oxide

Recommendations to reduce nitrous oxide are inadequate. We recommend a higher target that could be achieved with land management practices that has a focus on soil ecosystem health and function.

## 17. Forestry

### 17 Do you support the package of recommendations and actions for the forestry sector? Is there anything we should change and why?

Support some of the actions

#### Please explain your answer (1000 word limit):

We would first like to highlight the report's inconsistent statements on the role of forestry in meeting our emissions targets.

In the Executive Summary it is stated 'As a country we can no longer rely on forests to meet our climate change targets', on page 12 it is stated 'we can't plant our way out of climate change', and on page 29 it is stated 'Forest sequestration should not displace making gross emissions reductions'.

In contradiction of these statements, forestry carbon removals are used to offset a large proportion of emissions in all three 5-year budgets, increasing to 30% of emissions in the third emission budget (page 32), and the report contains many statements emphasising the role of carbon removal by forests in meeting our emissions budgets. For example:

Page 121: 'Forests will play an important role in meeting the country's emissions budgets and targets'.

Page 13: 'By 2035, our path shows that net forestry removals reach 14.5 Mt CO<sub>2</sub>. This puts us on track to meeting our 2050 target.'

Page 49: 'Even in our Headwinds scenario net zero long-lived gases could still be achieved by 2048, with a greater reliance on carbon removals by forestry.'

Page 70: 'emissions budgets could be met through...further land use change from livestock agriculture into ...exotic forestry.'

To resolve this discrepancy, we ask that the Commission either acknowledges its reliance on forestry offsets or does not include carbon removal by forestry in its emissions budgets.

We also note that forestry used for bioenergy (biomass feedstock) should not be included in emissions offsetting if the sequestered carbon is returned to the atmosphere during combustion.

We ask for limits to be placed on the planting of exotic forests, as the report acknowledges the ETS incentivises large-scale pine plantations, and it is important to note that exploitation of land and nature for human financial gain (e.g. the planting of plantation forest to make money by gaining ETS units) is the very behaviour that has brought about the climate crisis. We do not want to see further environmental problems generated by the planting of pine forests as a business investment that is used to justify our ongoing emissions.

Although we oppose the use of carbon removal by forest to offset future emissions, we support Time-critical necessary action 5 and Necessary action 12, though recommend that many of the actions should be broadened in scope and go further. Our key recommendations:

Limit offsetting sooner to drive emission reductions and have the goal of our forestry to drawdown as much as possible our historical emissions and not just the future hard-to-abate emissions.

That land management planning and legislation needs to be looked at as a system, in a catchment and regional basis. This is especially important in increasing resilience to climate change impacts and improving environmental outcomes, such as biodiversity

The ETS rules and settings and global market forces are creating barriers to small dynamic diverse land management and driving large pine afforestation. There needs to be legislation and incentives to diversify both species planted (e.g. exotics, hardwoods, bamboos and native), harvest and management practices.

Deforestation must be reduced to near zero for all land and forests sizes, including urban land.

Planting of indigenous trees at all scales should be encouraged and supported, from urban streets, courtyards, lifestyle blocks and farms.

A public campaign is needed to change our culture to value trees and their diverse benefits.

We ask the Commission to recommend similar incentives for the restoration of peatlands, wetlands and blue carbon for long term sequestration and not wait until we can measure these better.

Significantly increase the proportion of exotic forest harvests to long/er term sinks, via local mills.

Limit maximum clear felling in one area to 20ha\* at a time to reduce topsoil loss and erosion. \*this is the forestry legislation in Japan, whereas there is no regulation in NZ in terms of harvest area.

To reduce fire risks (which increases with climate change), installation of water holes to increase water storage capacity in rural areas must become mandatory.

Diversify plantation trees, rather than just focusing on *P. radiata*. Cypress, for example, is a highly-valued timber in Asia, and does not require chemical treatment to be used for outdoor purposes and, therefore, likely to maintain stronger values in exports as well as domestic use.

As was the case in Japan, a significant increase in conifer plantations has led to proportional increase in hay fever patients. The negative health impact from pine plantations should not be overlooked and the government needs to allocate increased health-related cost for treating hay fever.

A native timber industry, ideally owned by iwi, should slowly be developed as native forests grow. True values of native forests and indigenous culture can be appreciated through the use of sustainably-managed native timber in our everyday life through housing, furniture and wood carving.

We ask the Commission to consider growing bamboos (non-invasive clumping types) commercially as carbon sinks. Bamboos are much faster-growing than timber, and can produce a wide range of products including food, wrapping, buildings, infrastructures, landscaping and household materials, fiber, bio-char, scaffolding, pipes etc (<https://en.wikipedia.org/wiki/Bamboo>). Successful local production and use of natural materials like bamboo will reduce plastic waste as well.

## 18. Waste

### 18 Do you support the package of recommendations and actions for the waste sector? Is there anything we should change and why?

Support some of the actions

#### Please explain your answer (1000 word limit):

Overall: We support the direction of the waste sector package, and support the inclusion of refrigerant gases here, but believe there are opportunities for faster emissions reductions. Many of these opportunities have significant co-benefits.

1. The principal (and almost sole) focus in this chapter is on biogenic emissions from organic waste. It is not totally clear whether 'Necessary action 13' applies to organic waste or to all waste, but presumably to the former. Recommendation: It should be made clear whether these proposals apply to organic waste or all waste.

2. If this refers only to organic waste, this ignores the opportunities and co-benefits from reducing all waste. These include upstream emissions and cost savings arising from extraction, manufacturing, international freight, domestic transport, loss of materials, excess packaging, purchase of un-repairable products, financial costs and storage. They also include downstream costs such as transport and disposal. (These emissions are included, but are less visible, in profiles of other sectors.) Co-benefits from reducing inorganic as well as organic waste include saving landfill space, and helping to keep waste including plastics out of oceans, waterways and ecosystems, as well as reducing emissions as above. Measures such as increased landfill levies for all waste will reduce emissions and encourage moves to design waste out of production. The Government needs to set binding waste reduction targets in the Waste Strategy and the Waste Minimisation Act for all waste streams. Recommendation: Include ambitious targets, and measures to support them, for reductions for all waste to landfill.

3. Action (a) suggests reductions of at least 15% by 2035. This seems too modest and lacking in urgency, and 25% is recommended. Indications as to the potential for savings are shown elsewhere in the draft report: e.g. the report notes that our municipal waste generation is among the highest per capita in the OECD; that our recycling rate of 28% is very low compared to Australia's 62%; and that Ireland reduced its waste generation by almost 50% from 2006 to 2016. Tools such as higher landfill levies, increased community-scale composting and recycling opportunities and promotion, and product stewardship should be used

to attain these. Recommendation: Targets should be made more ambitious as above.

4. The report suggests the need to change the way Aotearoa New Zealand “deals with and thinks about waste”. If we are to change the way we think about waste, i.e. to bring about behaviour change quickly, a public education programme would be useful (this is not included as a ‘necessary action’ in the report, and needs to go beyond just ‘promotion of reuse and recycling’).

Informal enquiries suggest that many households have little understanding of the harmful effects of organic waste, of why these gases are so potent, and of how to reduce these. One example of how this is currently not well understood and promoted: the Nelson Tasman Waste Management and Minimisation Plan 2019 (48 pages) makes no mention of methane or greenhouse gases as a reason to reduce waste, and defines ‘organic material’ as just ‘Kitchen scraps, green waste and in some cases sludge from wastewater treatment processes’ (i.e. ignoring wood, paper and cardboard).

Education is needed to build public understanding that current levels of waste are unacceptable and substantially avoidable, of the ways in which biogenic methane emissions are generated, and the potency of these. Over time, organic material could be banned from landfill, as has been done by some European countries. Recommendation: The provision of public education should be added to the action list.

5. Landfill levies are a key way of influencing behaviour of businesses and households. Recommendation: Landfill levies should be raised progressively to reflect the growing cost of emissions and the urgency to cut these, balanced against the risk of ‘fly-tipping’.

6. Product stewardship schemes are currently limited to six priority products. Such schemes encourage businesses and households to commit to reuse and recycling, influence design and production decisions, and lower emissions from extraction, production, consumption, transport and waste disposal. The Government needs to use effective product stewardship to create reuse and resource recovery systems that keep materials in circulation and favour products that last longer. Products that cannot be effectively recovered and recycled or composted should be designed out of the economy. Recommendation: The current group of six priority products should be urgently and progressively expanded.

7. Higher landfill levies for construction and demolition waste will encourage greater reuse and recycling of pre-used timber and other products, both organic and inorganic. Higher levies for all waste will influence manufacturing, importing and purchasing decisions, favouring longer-lived and recyclable products and materials. Recommendation: Landfill levies should be regularly and progressively reviewed to reflect the urgency of reducing emissions and the growing costs associated with these.

HFCs: We believe the significance of these highly potent gases, the opportunities for emission reductions, and the suggested targets for such reductions, are understated in the report. We consider that public education - not just ‘mandating’ - particularly in relation to reducing equipment leakage and increasing end-of-life recovery, should be a ‘necessary action’. Reduction targets of 18% by 2030 and 33% by 2035 appear modest and should be increased (to 25% and 45%?). The need to manage and control these emissions will be increasingly important as temperatures rise and demand for refrigeration and air-conditioning increases. In support of the urgency and significance of these emissions:

- “Project Drawdown” rates refrigerants as the single greatest global opportunity for emissions reduction:

<https://www.drawdown.org/solutions/refrigerant-management>).

- Many local authorities have taken limited responsibility for building awareness of this issue (e.g. most do not include guidance on disposal of refrigerants on their websites) and MfE has not encouraged councils to provide such guidance (evidence of this available if required).

- Countdown Supermarkets describe transitions to lower GWP refrigerant gases as ‘the hero’ in their successful emissions reduction programme. Such examples need to be ‘the norm’:

<https://www.countdown.co.nz/media/1555558/countdown-nz-csr-2020.pdf>

Recommendation: Education in the use and control of these potent substances should be a ‘necessary action’. Targets should be more ambitious.

## 19. Multi-sector strategy

**19 Do you support the package of recommendations and actions to create a multisector strategy, and is there anything we should change?**

Not Answered

Please explain your answer (1000 word limit):

## 20. Rules for measuring progress

**20 Do you agree with Budget recommendation 5 on the rules for measuring progress? Is there anything we should change any why?**

Support all the actions

Please explain your answer:

## 21-23. Our Nationally Determined Contribution (NDC)

**21 Do you support our assessment of the country’s NDC? Do you support our NDC recommendation?**

Partially support

Please explain your answer (1000 word limit):

We agree that the country’s existing NDC is inadequate in terms of our contribution to limiting global warming to 1.5°C. We agree that the NDC contribution needs to be strengthened.

The Commission concludes we need to reduce net emissions by ‘much more than 35% below 2005 gross levels by 2030’ and then states that ‘How much stronger than that level the NDC should be set at is a question for elected decision-makers.’

We strongly disagree with the Commission’s decision to not set a specific emission reduction target for the NDC. The Commission has been asked to set targets

and provide advice, so we ask the Commission to provide a specific emission reduction target. It is true that the ultimate decisions on emission reductions lie with elected decision-makers, but first a reduction target should be presented by the Commission.

We strongly disagree with NDC recommendation 2b ('How much the NDC is strengthened beyond 35% should reflect the tolerance for climate and reputational risk and economic impact, and principles for effort sharing, which require political decisions.'). The NDC target should be based on limiting warming to 1.5°C, not on political considerations. This statement is not a recommendation (it appears to be a justification for the Commission's puzzling decision to not provide a specific emission reduction target for the NDC) and therefore should not be placed here. It should be replaced with a specific emission reduction target.

On a technical note, it is confusing that emission reduction targets (e.g., percent reduction in emissions) are given relative to a number of different baseline years (in section 8, for example, a baseline year of 2010 is used for IPCC targets and 2005 for Commission targets; elsewhere, 2018 is used as a baseline year). This makes it difficult to assess the degree of consistency across targets with different baseline years. Please either standardise or state multiple equivalent values wherever a target is given for a particular baseline year; e.g., if a target is given relative to 2005 emissions, in parentheses give the equivalent target for other baseline years used in the report (e.g., add relative-to-2005 values in Table 8.1, to enable direct comparison between the two sets of values in this section with baseline years of 2005 and 2010).

The significance of the final paragraph in section 8.2 is unclear and it seems to ready the reader for failed climate action. Please either state the purpose of this paragraph or delete.

In Table 8.2, please state the years covered by the NDC period mentioned in the header to the middle column; e.g., 'Allowed emissions in NDC period 2020–2035 (Mt CO<sub>2</sub>e).

## 22 Do you support our recommendations on the form of the NDC?

Somewhat support

**Please explain your answer (400 word limit):**

Point 1

There is potentially a problem with the logic of the explanation given for Aotearoa New Zealand's split-gas approach and emissions reduction targets, as outlined in Box 8.2.

The IPCC modelling is based on the global emissions profile, which is dominated by CO<sub>2</sub>, and consequently the IPCC recommends strong reductions in CO<sub>2</sub> and smaller reductions for other gases such as methane.

In contrast, Aotearoa's emissions profile is dominated by methane, and by following the IPCC advice using the split-gas approach, we are making only modest reductions in methane emissions.

The possible problem (and a possible flaw in the split-gas approach) is that we are applying CO<sub>2</sub>-dominated global modelling to a methane-dominated national emissions profile.

To take meaningful action, would it be more appropriate to base our emissions reduction targets on modelling using an methane-dominated emissions profile? If the global emissions profile were dominated by methane, surely the IPCC would be recommending much stronger reductions in methane emissions than those being proposed by the Commission.

We believe that the burden on meeting a more ambitious NDC should be borne by emitters of both short- and long-lived gases.

Point 2

We strongly disagree with the use of offshore mitigation to meet our NDC commitment. It is unacceptable to couch offshore mitigation as being undertaken to 'support other countries to reduce emissions' (page 155) or 'help other countries' (page 156) or being 'consistent with ... whanaungatanga...and tikanga'. Offshore mitigation is undertaken to enable a wealthy nation to continue emitting greenhouse gases by claiming the benefit of emissions reductions made in developing countries.

We view offshore mitigation to be immoral, exploitative, and inconsistent with the need to urgently reduce emissions globally.

In addition, there is no reputable international emissions market. The use of international offsets would require some countries to be well ahead of their reduction targets or even have negative carbon emissions, but this isn't the case.

We propose that in the case of funding and assistance provided to other countries to help them reduce emissions, the emissions reductions be included in the budget of the country receiving the assistance, not the country providing the assistance. This should be viewed as foreign aid, not as offsets for domestic carbon emissions.

Point 3

Regarding the form of the NDC, we should be as honest as possible with other nations. Therefore, we recommend using the 'Fully split-gas' format. We do not recommend obscuring our use of a split-gas approach.

Point 4

We recommend that GWP100 values from AR5 are used in the NDC.

Other points:

Please give the full name of 'The Act' mentioned at the start of section 8.7.1. It is currently unclear which Act this refers to.

Please remove the word 'that' in the last sentence of the second paragraph of section 8.11.3 (typo).

## **23 Do you support our recommendations on reporting on and meeting the NDC? Is there anything we should change, and why?**

Somewhat support

**Please explain your answer (400 word limit):**

We strongly disagree with the use of international carbon markets to enable the NDC to be met. Such markets are currently non-existent, morally unjustifiable, work against efforts to reduce global emissions, and represent wealthy nations exploiting developing nations to enable their own continued emissions.

## **24. Eventual reductions in biogenic methane**

### **24 Do you support our assessment of the possible required reductions in biogenic methane emissions?**

Somewhat support our assessment

**Please explain your answer (1000 word limit):**

Answer to Q 24: We support NZ reaching the higher range of biogenic methane reduction (26% by 2030 and 59% by 2050).

Consideration 1. What global reductions of biogenic methane emissions might be required to limit warming to 1.5 degrees C.

Agricultural methane that comes from ruminants is linked to N<sub>2</sub>O, and farm management can increase or decrease the relationship. Thus the reduction in agricultural methane in most cases will also reduce the emission of long lived gases in the form of N<sub>2</sub>O and the CO<sub>2</sub> formed from methane breakdown. (The heavy use of nitrogen fertiliser, such as for winter greens, will also release N<sub>2</sub>O).

When considering reduction in biogenic methane, we should factor in that methane has very high warming potential for the first decade, so reduction of methane in the 2020–2030 decade will help to avoid overshoot of the 1.5°C limit.

This is also a reason to advocate for rapid reduction of methane from waste and coal and fossil fuel extraction, reticulation and use. We should not forget about these fossil sources of methane, as historically and globally they have been underreported. Coking coal is not essential for steel production and processes are being designed to produce "green steel". The process of mining coal releases methane. Biogenic methane from waste reduction requires product stewardship and government policies and regulation, as it's not possible, or fair to rely only on the consumer's limited choice.

The IPCC scenario for 60% agricultural methane reduction by 2100 is estimated to have a 66% chance of achieving this. We understand from scientists that global warming is happening faster than this 2018 Special 1.5 report (based on 2 yr old data at the time) so we have to reduce GHG emissions faster, not only to have a better chance of succeeding, but to get the levels down sooner so we don't have to do much more, much faster, later on. In addition, to improve our chances of 66% likelihood of success we should aim for this reduction by 2050.

Consideration 2. What reductions of biogenic methane could Aotearoa make to contribute to limiting warming to 1.5 degrees, recognising national circumstances?

National circumstances need to factor in that we have 2.5x the global average in CO<sub>2</sub> equiv emissions, and we have gained wealth and capacity from our historic GHG emissions, including the massive deforestation of the original forest cover. We need to do more than average to meet "our fair share".

If we import less (fossil fuels and luxury items) we won't have to export so much. Red meat and dairy are likely to be a much smaller part of the plant-based diet the global economy is transitioning to. We recommend that Aotearoa New Zealand should reduce the size of the ruminant livestock herd by a greater amount than that recommended by the Commission.

Consideration 3. What social, economic and demographic changes may occur?

To reduce agricultural methane (and nitrous oxide) emissions will require a change in farm management to regenerative practices that have already started. There are many co-benefits from this:

Soil: Healthy soil ecosystems contain and retain more carbon, have greater water holding capacity, are less likely to erode into rivers and contribute to damaging sediment. We need to advocate and educate for improved farm management that reduces soil disturbance (e.g. no till) and no pugging (e.g. winter fodder) to prevent erosion of the topsoil. Even if the carbon in soil can't be reliably monitored it is still very important to encourage this practice.

We need to rapidly phase out synthetic nitrogen fertiliser and the related continuing use of agrichemicals that damage the soil ecosystems, reduce plant biodiversity and produce excessive nitrous oxide emissions above the natural nitrogen cycle. The technology and practices are rapidly developing here and internationally, which groups such as Aotearoa New Zealand's Quorum Sense facilitating and supporting farmer uptake and trials.

Water quality: The changes to farming will need to be site specific e.g. gravel soils are quite unsuitable for irrigated dairy, and catchment groups such as those



facilitated by the Landcare Trust are an excellent way to engage with landowners collaboratively.

Biodiversity: There are many co-benefits from planting trees; riparian protection, shade , fodder, fruit and nuts, bee food, high value timber, cooling urban areas. However large scale plantings of flammable e.g. manuka and eucalypts and thirsty trees such as pines are not wise choices in a warming world.

Economic changes that may occur

The future markets could be negatively influenced by inoculating cattle with a vaccine or adding a methane inhibitor to pasture and its uptake by milk (customer suspicion and not so 'clean and green'). The assumption that in the future the wealthy will still want red meat and dairy may not follow, as fashion, alternative protein manufacture and issues of carbon footprints influence the potential customers. In addition there could be trade barriers if our NDC is weak. The adverse environmental effects from harmful land management practices such such as water quality, soil health, animal welfare etc will adversely affect the advertising/image/sales pitch for these products. We recommend further diversification of our agriculture and where we produce meat and dairy we must aim for low methane animals that are grown on pastures and farms that sequester more than they emit in their soils, trees and wetlands.