

Call for evidence: response form

We are looking for responses that are evidence-based, with data and references included where possible. Please limit your response to each question to a maximum of 400 words, plus links to supporting evidence, using the template provided. Please answer only those questions where you have particular expertise or experience.

We recommend that you refer to the Climate Change Response (Zero Carbon) Amendment Bill when considering your answers, which can be found [here](#).

If you have any questions about completing the call for evidence, please contact us via feedback@ICCC.mfe.govt.nz. Please include a contact number in case we need to talk to you about your query.

Please email your completed form by **12 noon, Friday 15 November 2019** to feedback@ICCC.mfe.govt.nz. We may follow up for more detail where appropriate.

Contact details

Name and/or organisation	Robert McLachlan
Postal Address	
Telephone number	
Email address	

Submissions on similar topics

Please indicate any other submissions you have made on relevant topics, noting the particular material or information you think we should be aware of.
1. <i>Clean Car Plan (joint with Steve Trewick & New Zealand Centre for Planetary Ecology) (not published yet)</i>
2. <i>Green Freight (ditto)</i>

3. *Aotearoa New Zealand Government Tourism Strategy*
4. *Climate Change Response (Zero Carbon) Amendment Bill*
5. [*Interview with Julia King*](#), member of the UK CCC

Commercially sensitive information

Do you have any objection to the release of any information contained in your response, including commercially sensitive information?

If yes, which part(s) do you consider should be withheld, together with the reason(s) for withholding this information.

No

Questions for consideration:

Section A The first three emissions budgets

Under the proposed Zero Carbon Bill, the proposed Commission will have to provide advice to government on the levels of emissions budgets over the coming decades.

Currently, the Zero Carbon Bill requires budgets to be set from 2022-2035 (three separate budgets covering 2022-2025, 2026-2030, and 2031-2035). When preparing this advice the proposed Commission will have to consider the implications of those budgets for meeting the 2050 target. The Commission will also need to consider the likely economic effects (positive and negative) of its advice.

Question 1:

In your area of expertise or experience, what are the specific proven and emerging options to reduce emissions to 2035? What are the likely costs, benefits and wider impacts of these options? Please provide evidence and/or data to support your assessment.

The "Call for Evidence" is asking for information relating to the entire operation of the CCC for the next 30 years. That's a big ask. Instead, in this submission I will highlight a few points from previous submissions, suggest some areas that need further research, and jot down a few random thoughts.

Land Transport

In our submission on the Clean Car Plan, we concluded that the assessment of the status quo in that plan, and the assessment of the emissions impact of that Plan, were both overly optimistic. Even in Norway, light vehicles are not yet making a reasonable contribution to Net Zero 2050¹. However, the tools they are using are likely not yet acceptable in New Zealand. The Concept Consulting study for the PCE found that drivers only pay around 2/3 of the cost of land transport in New Zealand, not including climate impacts. It's going to be difficult to change that.

No part of our public or private institutions has yet addressed the impact of the massive ongoing increase in the fossil-fuel-powered vehicle fleet. Some are exacerbating it, e.g. NZTA's motorway programme, which will impact negatively on the viability of public transport.

Developing a Net Zero 2050 plan requires modelling the contribution of each sector over time. That's a big job, but we can guess that land transport is going to have to play an outsized role, because (unlike, e.g., industry) it's a net financial cost and it is an area where drastically lower emission alternatives already exist.

One area for immediate action would be to increase the Low-Emission Vehicle Fund from \$7m to \$150m/yr. That would be enough to start to make a difference (e.g. in electric buses and rubbish trucks) and to begin to learn from experience. That's the size of the similar fund in the San Joaquin Valley (pop. 5m).

It should also be relatively popular. I recommend the study of public support and acceptance of various mitigation measures and regulatory instruments as a useful area for the CCC to explore.

To reach net zero by 2050, barring some development like cheap synthetic liquid fuels, extremely few ICE vehicles can be sold in New Zealand after 2030.

Although cycleway funding is now included in the National Land Transport Programme, funding levels have hardly increased since 2014. Many cycleways are delayed or stalled. Over the past decade it has become clear (both in NZ and internationally) that urban and regional cycleway networks are the best way to significantly raise cycling mode share.

We need effective zero- or low-emission regional and national bus and train networks.

Transport and emissions should be a focus of urban planning and zoning.

Population growth (2%/yr, twice the world average) and increasing commute times and distances act to increase emissions. Vehicles per capita (now the highest in the OECD) surely can't increase much further, but distance driven per capita could still increase if it

¹ Because their car fleet is increasing. In Dec 2013 Norway had 2.52 ICE and 0.02m EV cars. In Dec 2018 it had 2.57m ICE and 0.20m EV cars. Capping the fleet and keeping the EV market share at 60% would reduce light vehicle emissions 30% by 2030. In New Zealand (same population as Norway) the light vehicle fleet is closer to 4m.

continues to be subsidized.

Congestion charging can reduce emissions (from idling) and discourage driving.

Electricity

Technologies already exist to eliminate almost all the 5 MtCO₂e of emissions from electricity generation. However, eliminating the emissions from geothermal generation could be expensive, and eliminating gas peakers will require more storage. The structure of the electricity industry does not sufficiently reward reducing emissions, nor does it prevent price rises. The wholesale electricity price has risen from 8c in 2016 to 13c this year with little response from government or industry. Industry is still investing in fossil fuel generation. The whole sector needs (another!) review consistent with Net Zero 2050.

At present, no existing generator would build a large new wind farm unless (like Mercury) they had enough hydro to cover it, or (like Tilt at Waverley) they can pre-sell the electricity. No operator would build large-scale storage (e.g. pumped hydro), which may be needed to reach net zero by 2050.

Direct government investment and/or a restructure may be needed to reduce emissions while returning prices to their 'normal' level.

Industry

Technology exists to use biomass for some industrial heat applications. But the industry needs help to get started, there are transport and supply problems, and the whole area is fraught with uncertainty (see e.g. "[The Great Biomass Boondoggle](#)", New York Review Daily 14 October 2019).

Buildings

Technology exists to greatly reduce emissions from buildings, especially from heating. There is scope to further strengthen the building code at no net cost, subsidize double glazing of old houses, and to set a date for a ban on new fossil-fueled heating.

Domestic aviation

Technologies exist to reduce emissions from domestic aviation. These include flying slower, switching from jets to turboprops, biofuels, and improving land transport.

Responsiveness

Other countries have found that it is difficult to predict and manage the response to new mitigation policies. The UK and France have been adjusting their light vehicle policies constantly, with sometimes good and sometimes bad effects. However, we can't afford to try out (e.g.) the Clean Car Plan for ten years before judging whether it's working. Regulatory bodies need to be able to adjust the parameters in these arrangements easily in response to their observed effects, while also preserving transparency and predictability. (Not easy.)

Question 2:

In your areas of expertise or experience, what actions or interventions may be required by 2035 to prepare for meeting the 2050 target set out in the Bill? Please provide evidence and/or data to support your assessment.

Answer:

Question 3:

In your areas of expertise or experience, what potential is there for changes in consumer, individual or household behaviour to deliver emissions reductions to 2035? Please provide evidence and/or data to support your assessment.

The potential for significant immediate reductions is very low. Households are not responsible for most emissions, and voluntary efforts (e.g. veganism) will struggle to achieve widespread uptake. Most people's behaviour is driven by convention and by the available choices (e.g. the location and type of available housing). In addition, there is a risk that placing responsibilities on individuals can act to prevent the collective action needed. (See, e.g., "[Climate change deniers new battleground attacked](#)", 9 Nov 2019.)

Where individual behaviour changes are important are in building support for collective action and in accumulating experience and exploring barriers. On the other hand, some people who would like to do more towards building a net zero society (e.g., by investing their savings) are lacking opportunities. In many countries, home solar can be an effective emissions-lowering investment, but in New Zealand the case is not so clear.

The UK CCC has a member who is a behavioural psychologist. Overall, the link between individuals' behaviour and the actions of civil society groups and the government would be worth exploring further.

Roadshows and a Citizen's Climate Assembly could generate ideas and build support.

Question 4:

When advising on the first three emissions budgets and how to achieve the 2050 target, what do you think the proposed Commission should take into account when considering the balance between reducing greenhouse gas emissions and removing carbon dioxide from the atmosphere (including via forestry)?

This issue needs to be handled very carefully to avoid perverse outcomes with regard to the use of fossil fuels in New Zealand, the spread of plantation forestry, and the long-term sustainability of a net zero carbon economy in New Zealand.

When a large area of plantation forestry is established over a span of time, and harvested

and replanted in rotation, the total sequestered carbon increases steadily for a time, and then, as the plantation reaches a steady state, levels off to a maximum. Current economic models, as developed e.g. by Motu and used by the Productivity Commission and the Parliamentary Commissioner for the Environment in their studies of the low-emission transition, reflect this by recording a sequestration rate of 32 tonnes of CO₂ per hectare per year for the first 21 years, and zero thereafter. The enormous 'carbon liability' thus acquired, 672 tonnes CO₂ per hectare stored above ground in a barely stable state, is not recorded or incorporated in the model. The gains are all front-loaded, the future liabilities are ignored. This is not merely a foible of how one particular economic model was developed, it is a fundamental drawback to the strategy of reaching net zero quickly at one point in time via plantation forestry.

For example, using this (somewhat spurious) accounting, our gross GHG emissions (excluding biogenic methane) in 2017 of 52 MtCO₂e (including international transport) could be entirely offset by establishing new plantation forestry of just 1.6 Mha, which is not at all an unreasonable amount. We would then be technically at net zero, but we would not have made a start at decarbonizing energy; we would be running out of space in which to increase the forestry estate; and we would be shouldered with maintaining a large area of forestry in perpetuity. Who would bear the carbon liability (at possibly much higher carbon prices than the owners were paid during the forest's establishment phase)? This could require insurance to allow for the forest suffering clearance, burning, or attack by disease. The owners might be bankrupt. This is not just an academic argument – there are already reports of a new land rush in pine forestry.

Forestry offsets, both plantation and permanent, must be real, measurable, permanent, additional, and independently verifiable. This will require strong oversight. In addition there are uncertainties around each of these factors. The reestablishment and expansion of indigenous forest would better ensure long term sequestration and contribute effectively to other responsibilities including the Convention on Biological Diversity.

See also ["Pine plantations extend lifetime of methane in North Island atmosphere"](#) (Stuff, 28 Aug 2019) and ["The scandal of calling plantations 'forest restoration' is putting climate targets at risk"](#) (The Conversation, 5 Apr 2019).

Question 5:

What circumstances and/or reasons do you think would justify permitting the use of offshore mitigation for meeting each of the first three emissions budgets? And if so, how could the proposed Commission determine an appropriate limit on their use?

To begin with, the New Zealand Government and some companies should accept their share of responsibility in creating the present state of offshore mitigation globally, such as the Ukraine 'hot air' scandal, the collapse of the carbon price in the NZ ETS, and the alleged laundering of international credits. Our past policies and practices may have fouled international carbon trading for everyone and materially delayed the global response to climate change.

Until this is acknowledged and resolved, there will remain a temptation for New Zealand companies to use substandard offshore mitigation.

For example, aviation is relying on the CORSIA offsetting scheme to cap aviation emissions at 2020 levels. But, the scheme has not yet been developed in New Zealand and the international call for expressions of interest was [risible](#), attracting only 14 entries and falling short in particular on the question of additionality. There is clear potential for failure and adverse consequences here.

Section B Emissions reduction policies and interventions

The proposed Commission will also need to consider the types of policies required to achieve the budgets it proposes. This consideration should include:

- sector-specific policies (for example in transport or industrial heat) to reduce emissions and increase removals, and
- the interactions between sectors and the capability of those sectors to adapt to the effects of climate change.

Question 6:

What sector-specific policies do you think the proposed Commission should consider to help meet the first emissions budgets from 2022-35? What evidence is there to suggest they would be effective?

Emission-intensive and Trade-Exposed (EITE) Industries

Responsibility for managing these falls to the Commissioners, the Minister, and the industries. There is little guide in the Zero Carbon Bill. Current policies, economic models, and input to the ETS envision a gradual removal of the EITE subsidy.

This issue will be quite difficult to deal with and is deserving of a detailed study.

First, we assume that a falling cap on emissions and a rising carbon price will be instituted, for without these it is difficult to imagine anywhere near the level of progress being made that is required for net zero 2050.

If the subsidies are not removed, then, under a falling cap on emissions, the non-EITE sector will have to make heroic reduction efforts indeed, and the carbon price will rise more rapidly. If the subsidies are removed, then some industries will fail, high-emission imports may be substituted, and no one (including the environment) will be better off. A coordinated strategy led by government and the EITE industries (both in NZ and internationally) is needed. Otherwise we face a scrappy fight over every reduction to the subsidy, and every industry arguing for special privileges. Some areas, e.g. support for low-emission industrial heat, may need government support.

Industries should be required to demonstrate that they are following best practices, and that through their international bodies they are contributing to credible global emissions reduction plans.

At present some industries seem to be following the opposite strategy, of using their international bodies (and other entities such as the UN) to fight coordinated action. For example, airlines (and countries) have fought attempts to get ICAO (a UN body) to set an emissions reduction target for aviation, and IATA (the airlines' body) lobbies against attempts to tax aviation. Chris Roberts, the head of the NZ Tourism Industry Association, said (North & South, August 2019) that the question of international aviation emissions was best left to the airlines to deal with. That is, this industry is not yet accepting responsibility for its emissions. Rather, it is engaged in activities intended to increase emissions.

The Tiwai Point aluminium smelter is in trouble because of enormously increased production in China. Chinese aluminium has around 7 times the emissions of Tiwai Point aluminium, because of China's use of coal for electricity and because Tiwai Point has made big efforts to reduce non-CO2 emissions. Closing Tiwai Point just to reduce New Zealand's emissions would not help anyone. Yet, the global industry is not taking a lead here. See sciencebasedtargets.org/aluminium for a new project started by this environmental organisation.

Steel and cement are two other industries in a similar position. See [Science Based Targets](#) for more information.

The Atlantic [reported](#) on 7 Oct 2019 that the five most popular mitigation strategies in the US, all of which find majority support, are (i) a national recycling programme, (ii) \$1.3 trillion in government spending to improve energy efficiency of buildings, (iii) \$1.5 trillion in government spending on renewable electricity, (iv) a border adjustment fee on the embodied GHG of imports, and (v) aggressive government support for climate-friendly manufacturing.

It would be helpful to build a similar picture for New Zealand. Government spending might be more popular than green taxes, for example.

The Zero Carbon Bill asks the CCC to advise on bringing international transport emissions into the targets in 2024. The equivalent bodies in the UK and France have already recommended that they be brought in now, and the UK government has agreed (in principle). It seems inevitable that these emissions will have to be recognised at some point. The more they rise in the meantime, the more difficult they will be to rein in. Until then, the CCC can direct public attention to this sector, keep an eye on international developments (e.g. the EU's efforts to tax aviation fuel), and ensure the sound operation of CORSIA in New Zealand. For example, public knowledge about the CCC's thinking on international aviation in the period 2020-2024 could influence decisions around airport expansions.

Question 7:

What cross-sector policies do you think the proposed Commission should consider to help meet the first emissions budgets from 2022-35? What evidence is there to

suggest they would be effective?

Many government programs affect the direction of the economy and influence whether investment flows into higher- or lower-emission sectors. These should be reviewed.

The NZ Energy Strategy 2011-2021 calls for increasing energy exports, and greatly increased oil production. But there is no requirement to reduce emissions from the oil and gas sector itself. Seven years into the strategy, fugitive emissions from fuels are still 2 Mt CO₂ per year, oil refining emits 1 Mt per year, while industrial emissions (which the NZES does mention) have increased from 5.3 Mt to 7.0 Mt. The new NZES should have stronger requirements to reduce emissions.

The National Land Transport Plan, National Infrastructure Plan, Petroleum Action Plan, Business Growth Agenda (not sure if this is still maintained), and the RMA, greatly influence future emissions.

Question 8:

What policies (sector-specific or cross-sector) do you think are needed now to prepare for meeting budgets beyond 2035? What evidence supports your answer?

Answer:

Section C Impacts of emissions budgets

The proposed Commission will need to consider the potential social, cultural, economic and environmental impacts of emission budgets on New Zealanders, including how any impacts may fall across regions and communities, and from generation to generation. Potential impacts may be either positive or negative.

Question 9:

What evidence do you think the proposed Commission should draw upon to assess the impacts of emissions budgets?

Answer:

Question 10:

What policies do you think the proposed Commission should consider to manage any impacts of meeting emissions budgets? Please provide evidence and/or data to support your assessment.

Answer:

Section D Other considerations, evidence or experience

Question 11:

Do you have any further evidence which you believe would support the future Commission's work on emissions budgets and emissions reduction policies and interventions?

Answer:

Please email your completed form to feedback@ICCC.mfe.govt.nz by **12 noon, Friday 15 November 2019**.

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