



Submissions form

We seek your feedback on the specific proposals in the Zero Carbon Bill.

Either email this submission to ZCB.Submissions@mfe.govt.nz (Microsoft Word document (2003 or later) or PDF) or post to Ministry for the Environment, PO Box 10362, Wellington, 6143.

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Personal / organisation details

You must provide either a company name or given name(s)

Company name Environmental Change Institute, University of Oxford (but I emphasise the perspectives provided hereafter are my own, and not those of my employer)

Given names Dr Luke James

Surname Harrington

Contact person _____

Submitter type, pick one:

Individual

2050 target

1. What process should the Government use to set a new emissions reduction target in legislation?

Pick one:

- the Government sets a 2050 target in legislation now**

2. If the Government sets a 2050 target now, which is the best target for New Zealand?

Pick one:

- Net zero long-lived gases and stabilised short-lived gases:** Long-lived gases to net zero by 2050, while also stabilising short-lived gases

Optional comment

Out of the three options, this is the best selection. However, the best option all round would ideally be net-zero long-lived gases and stabilisation of short-lived gases at some emission rate lower than today (perhaps 1990 emissions as an arbitrary target).

I am assuming that the goal of the Zero Carbon Act is to stabilise New Zealand's contribution to permanent warming of the atmosphere by the time at which global-average temperatures reach either 2°C or 1.5°C above pre-industrial levels, so to fulfil our obligations as signatories of the 2015 Paris Agreement. In reality, a more scientifically defensible name for the legislation would be the Zero Warming Act (or a much less catchy name: "Zero additional warming from New Zealand emissions once global temperatures have exceeded 2°C Act").

CO₂ and other long-lived greenhouse gases (GHGs) are stock climate pollutants which accumulate in the atmosphere, and so the emission rate of these gases need to reduce to zero to ensure the stabilisation of our contribution to permanent warming of the atmosphere.

By contrast, methane from agriculture is a net flow climate pollutant. As explained clearly by Allen *et al* (2018, <https://doi.org/10.1038/s41612-018-0026-8>), this means that the rate of emissions **only needs to stabilise (not reduce to zero)** to ensure the stabilisation of our contribution to permanent warming of the atmosphere.

If we were not interested in the stabilisation of New Zealand's contribution to permanent warming of the atmosphere, but instead we wanted to **temporarily reverse** some of the warming of the atmosphere which has already occurred to date, then insisting on the reduction of agricultural methane emissions to zero would also achieve this task. However, such a target is not primarily relevant to achieving our commitments to the Paris Agreement, and may come at great cost.

The reason for my suggestion of the reduction of methane emissions to 1990 levels (but not zero), is that such actions may 'buy time' for adaptation measures to be implemented.

I also note that the differentiation of 'flow' and 'stock' contributions to warming

of the atmosphere should also be made with respect to the use of reforestation for mitigation in the Zero Carbon Act. Trees which are planted and then cut down to be used for fuel should be considered a temporary carbon sink, while permanent reforestation will be a permanent carbon sink.

3. How should New Zealand meet its targets?

Pick one:

- Domestic emissions reductions (including from new forest planting) and using some emissions reductions from overseas (international carbon units) that have strong environmental safeguards.**

Optional comment

Again, I would actually suggest a hybrid of the two options available. International carbon units (that have strong environmental safeguards) should be available as a tool to reach the “current” carbon budget. But we should ensure that such reductions in net emissions from international credits **do not carry over to the next budget period**. This ensures that in order to achieve each five-year budget, we either need to purchase an equivalent number of international credits again, or actually focus on domestic mitigation options which translate to permanent emission reductions of CO₂.

4. Should the Zero Carbon Bill allow the 2050 target to be revised if circumstances change?

Pick one:

- No.**

Optional comment

If I were to pick between these two options, I would pick ‘no’. But, again, I think a hybrid approach is needed. Instead I would actually suggest that, after two or three of the carbon budget periods have been completed (so either 15 or 18 years away), the government should review whether the rate of emissions mitigation of CO₂ that has occurred over the intervening period is consistent with reaching net-zero by the time (anthropogenic) global warming would reach 2°C, or whether we are in fact projected to achieve net-zero CO₂ at the time global warming is less than 2°C, or more than 2°C. If we are progressing with mitigation at a faster-than-required rate of change, then I would suggest we could extend the period required to reach net-zero by up to another decade.

It is important to keep in mind that ‘net-zero by 2050’ is actually an arbitrary time horizon. What’s important, from a scientific perspective, is that New Zealand reaches net-zero CO₂ emissions *by the time global mean warming reaches 2°C of warming* [or 1.5°C, if we want to achieve the most ambitious aims of the Paris Agreement], and the crossing of this temperature threshold won’t necessarily occur in the year 2050 (it might instead be 2070, for example).

Emissions budgets

5. The Government proposes that three emissions budgets of five years each (ie, covering the next 15 years) be in place at any given time. Do you agree with this proposal?

Pick one:

Yes

6. Should the Government be able to alter the last emissions budget (ie, furthest into the future)?

Pick one:

Yes, each incoming Government should have the option to review the third budget in the sequence

7. Should the Government have the ability to review and adjust the second emissions budget within a specific range under [exceptional circumstances](#)?

Pick one:

Yes

Optional comment

But only in the case where we will otherwise face a substantive economic recession.

8. Do you agree with the [considerations](#) we propose that the Government and the Climate Change Commission take into account when advising on and setting budgets?

Pick one:

Yes

Government response

9. Should the Zero Carbon Bill require Governments to set out plans within a certain timeframe to achieve the emissions budgets?

Pick one:

Yes

Optional comment

There should definitely be sectoral breakdowns of how we plan to achieve the mitigation targets outlined for any forthcoming carbon budgets.

The government should aim to prioritise the implementation of the *lowest-cost* mitigation policies which are available irrespective of which sector they relate to. In reality, this may mean some sectors (like electricity) will need to make greater emissions reductions more rapidly than other sectors will – the government will need to determine how to provide incentive structures to ensure this can be a successful approach.

What we shouldn't do is insist that a specific emissions reduction for a given national carbon budget should be achieved by all sectors equally over the same time period. For example, if a carbon budget over a given five-year period equates to a 20% reduction in national CO₂ emissions, we should not insist that the transport, heat & industry sector, and electricity sector, all reduce their individual emissions by an equivalent fraction. Instead we should maximise the reductions from the electricity sector (since they are cheapest), followed by heat & industry and then transport.

10. What are the most important issues for the Government to consider in setting plans to meet budgets? For example, who do we need to work with, what else needs to be considered?

Comment

As outlined in the comment above, we need to recognise that there are two timescales that are crucial for the implementation of the carbon budgets to reach net-zero CO₂ emissions (alongside stabilisation of short-lived GHG emissions at some lower level). The first timescale is how the most immediate carbon budget will be achieved: this should prioritise the lowest-cost mitigation options, which may in turn mean some sectors will have to do more work than others in the near term.

But the second timescale of planning relates to aligning near-term carbon budgets with achieving net-zero CO₂ emissions overall: if there are some sectors (like transport) which are not anticipated to reduce emissions until the third, fourth or fifth carbon budgets (when cost of electric cars will have reduced further and further, for example) then we need to start planning now as to how these longer-term phased reductions will actually come into effect. This reconciling of planning for near-term budgets with achieving the longer-term net-zero target will be one of the key points of responsibility for the proposed Climate Change Commission, in my opinion.

Climate Change Commission

11. The Government has proposed that the Climate Change Commission [advises on and monitors](#) New Zealand's progress towards its goals. Do you agree with these functions?

Pick one:

- yes

Optional comment

Yes, but we should also recognise that there are limits to the comparisons between New Zealand and the UK CCC model.

Specifically, in New Zealand we fundamentally lack the requisite researchers/experts with the right skill sets to fulfil the proposed roles of both the CCC and their Secretariat.

There is a risk that we may fill the necessary positions of the both the Commission, as well as the Secretariat, with people who are not competent enough to achieve the stated advisory role that the government so desires. As such, we should have a robust plan in place to ensure that the CCC has access to the right resources to achieve their remit (and specifically, expertise).

12. What role do you think the Climate Change Commission should have in relation to the New Zealand Emissions Trading Scheme (NZ ETS)?

Pick one:

- Makes decisions itself, in respect of the number of units available in the NZ ETS.**

13. The Government has proposed that Climate Change Commissioners need to have a range of [essential and desirable expertise](#). Do you agree with the proposed expertise?

Pick one:

- Yes**

Optional comment

If I have to pick one option, I'd pick 'yes' but with caveats.

The Discussion document states that the members of the Commission should be "sector experts rather than representatives of particular stakeholder groups". I believe we need to be particularly careful in a small country like New Zealand to differentiate between these two terms. There is a risk that proposed Commissioners who are perceived to be 'sector experts' can in fact have a strong level of overlap in their professional work with particular stakeholders who will be either positively or negatively affected by choices related to the implementation of the Zero Carbon Act.

One example is researchers who specialise in technologies to reduce agricultural methane emissions – they have a clear incentive to ensure that aggressive mitigation targets of short-lived biogenic methane emissions are recommended for the carbon budgets, despite the fact that such targets are scientifically

inconsistent with the *stabilisation* of New Zealand's contribution to a warming atmosphere.

Adapting to the impacts of climate change

14. Do you think the Zero Carbon Bill should cover adapting to climate change?

Pick one:

Yes

Optional comment

There definitely needs to be scope in the legislation for the implementation of a comprehensive adaptation strategy. This is a basic recognition that even if we achieve net-zero CO₂ emissions by 2050, there will still be substantive impacts of a 2°C warmer climate that New Zealanders will need to adapt to.

15. The Government has proposed a number of new [functions](#) to help us adapt to climate change. Do you agree with the proposed functions?

Pick one:

Yes

16. Should we explore setting up a targeted adaptation reporting power that could see some organisations share information on their exposure to climate change risks?

Pick one:

Yes