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	***Tom Kay, Forest & Bird***
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.
Answer: *Forest & Bird submitted on the Zero Carbon Bill. In this we commented on the potential for agricultural emissions targets to be strong and the potential for agricultural emissions to be reduced in a profitable manner through farm optimisation with a farm system model such as 'E2M'. See -* ***https://www.landcare.org.nz/file/farm-systems-marlborough-case-study/open*** *and* ***https://www.landcare.org.nz/file/farm-systems-takaka-case-study-1/open***

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.***
Answer: *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.***
Answer: *Significant progress can be made immediately (within 1-2 seasons) within our existing agricultural systems at no cost to (and potentially to the economic benefit of) our farmers. Such gains have been proven through the use and application of a farm system model known as the Environmental Economic Model (E2M – previously known as the GSL model).* *Reductions in leaching and emissions resulting from the use of the E2M model are most evident in the results of the Lincoln University Dairy Farm (**http://www.siddc.org.nz/assets/LUDF-Focus-Days/10-May-2012-.pdf**), which, through a reduction in external inputs and the size of its herd (from 630 to 560 cows), increased its production (from 400kgMS to over 500kgMS per cow) and profitability, while decreasing its nitrogen leaching (by 30%) (**https://www.stuff.co.nz/business/farming/97071476/demonstration-dairy-farm-cuts-nitrate-leaching-30-per-cent-and-stays-profitable**). This (approximately) 11% reduction*

in herd size would have resulted in a significant reduction in CO2 and methane emissions that is in line with the target reductions currently being discussed for the Zero Carbon Bill – all achieved without any adverse impact on farm operations or profitability, and all without expensive mitigation technology.

The E2M model is able to achieve such exceptional results as it utilises two techniques that no other farm system model in New Zealand uses – linear programming and marginal analysis. Essentially, this means the E2M model is able identify the optimum combination of management options on a farm to maximise economic performance and minimise environmental impacts. Other models (e.g. FARMAX, UDDER) cannot do this as they rely on the user to try and identify these 'optimum' combinations based on educated guesses, using poorly suited accounting, rather than economic, principles.

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:

Farm system change, including in the ways we measure economic success on farms and the ways banks/fertiliser companies/DairyNZ/Fonterra etc. promote production over profit.

Farm optimisation with the E2M model offers enormous potential to reduce the environmental impact of agriculture in New Zealand – through reductions in leaching, more efficient use of fertiliser and irrigation water, reductions in herd size and soil compaction rates, and most importantly, through reductions in greenhouse gas emissions. While there will be some regions where some agricultural activities are not appropriate and farm optimisation will not solve problems (e.g. intensive dairy farming in Canterbury), optimisation is a vital tool for making immediate progress in regions and catchments more suitable for agricultural activity.

*Unfortunately, despite farm optimisation with the E2M model having been endorsed by Fonterra and Dairy NZ in the evidence of David Graeme McCall (In the footnote on page 6 of: **https://api.ecan.govt.nz/TrimPublicAPI/documents/download/1760006**), by Dairy NZ in information for farmers (**https://www.dairynz.co.nz/publications/environment/reducing-nitrogen-loss/**), by Pāmu's Environmental Advisor, Alison Dewes (**http://pnrp.gw.govt.nz/assets/Uploads/HS4-S308-Fish-and-Game-Alison-Dewes-Expert-evidence-26-January-2018.pdf**), and by individual farmers who have utilised the model, uptake has been extremely limited. We note that government have also commissioned work using the E2M model through (a.) MAF circa 2007 to examine the potential of E2M to model agricultural emissions for the Emissions Trading Scheme (ETS) (Riden & Ridler, (2007), 'Report for MAF Policy, Resource Allocation Optimisation, New Zealand Dairy Farms'; and 'Report on the NZ ETS's Impacts on Farms and Viable Response Strategies Using GSL's Model' MAF POL 0910-11911) and (b.) several*

*regional councils who have used the model to analyse the potential for profitable reductions in irrigation and nutrient leaching across their catchment (e.g. **http://www.horizons.govt.nz/HRC/media/Media/One%20Plan%20Documents/Ridler-Representative-Farm-Report-January-2018.pdf?ext=.pdf**). However, neither of these government work programs led to applied use of the E2M model for farm optimisation. As a result, New Zealand has not made significant progress in reducing the greenhouse gas emissions from, or environmental impact of, agriculture.*

Forest & Bird's research into why there has been such a small uptake of farm optimisation modelling has revealed some concerning evidence, particularly in regard to this work by central and local government that was initiated but not progressed. In particular, that evidence points to vested interests, entrenched cultures, large egos, and a comfort with the status quo. Vested interests are clearly a substantial—and potentially an orchestrated—barrier, given that:

> *1. Fertiliser companies have no economic interest in promoting farm modelling that may suggest farmers should de-intensify (and apply less fertiliser) to increase profits*
>
> *2. Dairy NZ and Fonterra's funding is acquired per kgMS produced, incentivising them to promote models that support increased milk production rather than increased profitability or reduced environmental impacts (however note that in many cases farm optimisation can result in gains in all respects)*
>
> *3. Regional Councils appear to struggle (or are unwilling) to promote an approach to farm management that contradicts industry sentiment or the opinions/vested interests of their voters*

While farm optimisation modelling suggests the New Zealand dairy industry could substantially reduce the size of its national herd, while maintaining or increasing profitability and significantly reducing our greenhouse gas emissions, industry sentiment appears to be a substantial barrier.

Our conclusion in this regard is reinforced by a comment made by a Rural Advisor at Horizons Regional Council in an OIA-obtained document. When commenting on the potential to start trials with local farmers and Dairy NZ based on the findings of the E2M model (that farmers could reduce their herd sizes while increasing their profits), the Advisor said of a similar, earlier project "It should be noted that [the project]... was prematurely discontinued due to DairyNZ not wishing to fund further work. Motivation for stopping this research appears to have something to do with the belief that promoting lower milk production was not good for the industry"

Forest & Bird consider that the evidence supporting a profitable reduction in the greenhouse gas emissions from agriculture is compelling, and that industry sentiment has disrupted and delayed progress that could have been made to date.

We need to overcome these barriers.

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.
Answer:

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)?***
Answer:

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?***
Answer:

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?
Answer: *Agricultural emissions targets and reporting. Modelling of on farm emissions and steps to reduce them. See evidence referred to above.*

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?***
Answer:

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:

Evidence that shows reductions in emissions will not economically impact farmers negatively – e.g. https://www.landcare.org.nz/file/farm-systems-takaka-case-study-1/open (note there is also academic, published literature supporting this farm modelling system)
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: ***See attached.***

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

If you have any questions about completing the call for evidence, please contact us via feedback@ICCC.mfe.govt.nz.