



THE ZERO CARBON BILL

SUBMISSION TO THE MINISTRY FOR THE ENVIRONMENT

Author: Lindsay Wood | 17th July 2018

About Resilienz Ltd: Resilienz Ltd. focusses on climate change strategies and education and, especially, connecting technical and scientific information with the needs of decision makers, businesses and the community. Resilienz is also engaged in sustainable design, construction and cost management. Founding director Lindsay Wood has over 30 years' experience engaging with climate change and related environmental issues, and has delivered numerous papers, talks and articles in the field. He has also held educational leadership roles in architecture, construction, and quantity surveying, is the author of cost management software, and has extensive experience in architectural practice and cost management consultancy.

Scope: This submission responds primarily to the Ministry for the Environment's document "Our Climate Your Say" ("OCYS") consultation document. The author attended the MfE's presentation in Nelson on 4th July and has also interrogated on a selective basis documents referred to on pp 55 and 56 of OCYS. The completed submission questionnaire is in Appendix A and should be read in conjunction with the respective comments in sections 1 – 4 below.

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1.0 GENERAL COMMENTS

The Zero Carbon Bill is welcomed as a critical milestone in the evolution of New Zealand's responses to climate change, and the government is urged to maintain maximum focus and momentum on its evolution and implementation. We applaud the measures to facilitate multi-lateral support, and to defuse the variabilities of changes in government.

However we strongly point to the need to set the most stringent targets possible. Not only does the scale of the problem warrant that, but recent history shows two trajectories that are likely to worsen the situation and make it harder to meet targets:

- The severity of climate change effects has tended to be worse than predicted¹ and
- The response of societies has been slower than expected²

We are also concerned that the framing of the Bill as “Zero Carbon”, and with an expected target date of 2050, potentially concentrates the attention of government, and society at large, on those dimensions at the expense of other facets of climate change worthy of attention but not falling directly within that scoping. (For example timeframes shorter or longer than 2050; or individual and community actions – some of which will be essential in any event, such as public education, and/or may have quicker effect than large-scale bureaucratic strategies, such as changes in driver behaviour.) The opening paragraph of OCYS Part Three: Next Steps points in this direction but focusses only on bureaucratic processes.

Additionally, and notwithstanding the comments under “Creating the right environment for adaptation” (p. 47), it is suggested that there is insufficient recognition of the uncertainty ahead, and thus on a) the need to actively search for and assimilate new information and b) to be able to respond with agility to new circumstances or understandings.

In that regard OCYS conveys a sense that the problem has largely been “defined” (e.g. in the relative confidence expressed that we can preserve lifestyles and economic success, and in the discussion of the national climate change risk assessment, p 48.). It is of great importance to explicitly take steps to keep abreast of unfolding circumstances, and to factor agility into downstream processes so as to minimise bureaucratic delays.

It is also noted that a risk with lines of inquiry that closely prescribe the format and scope of responses is that they only address matters that the authors already have in mind. Without detracting from the merits of what is actually in the documents, or of the substantial processes that underpin them, we have concern that they do not explicitly encourage thinking or suggestions outside the prescriptive framework supplied - of especial concern for matters of such considerable gravity, uncertainty and urgency as climate change

To that end, without suggesting current questions are inappropriate, or that the following are in any way comprehensive, we comment in Section 2 below on a range of matters that we consider are inadequately addressed by OCYS and/or the accompanying submission form.

¹ E.g. the potential acceleration of the melting of West Antarctic ice

² A recurring theme. E.g, RNZ interview with Prof Tim Naish, 8th July 2018

2.0 WHAT IS MISSING?

2.1 Still too reactive and lacking suitable focus:

The Zero Carbon Bill needs at least to identify the need for a national debate on the sort of society we aspire to create. Such a vision, and not “Zero Carbon”, should be the lodestone for guiding our overall approach to addressing climate change.

“Zero Carbon” is a highly worthy, and necessary, aspiration in 2018, but needs to be framed more strongly in the greater dynamic of longer timeframes, unfolding information and events, and well-considered national aspirations.

OCYS expresses concerns about the reactive nature of prior efforts to address climate change, and of fragmentation in the way that climate change has (or has not) been addressed in legislation etc.

While the present proposals represent a quantum leap in the right direction in addressing such issues, it is highlighted that the approach is still largely reactive - to the Paris Agreement and 2050 - to the exclusion of issues outside that scope.

For example there is next to no discussion of processes to propel the development of a shared national view of the sort of society, economy and environment we actually want to evolve to as we hopefully transition to a “stabilising climate” era.

While this greater envisioning may not be the actual function of a “Zero Carbon Bill”, “Zero Carbon” can only be a stepping stone on the way to such a greater and more holistic desired destination. The Hon James Shaw hints at this in his introduction to OCYS when he asks which direction should be taken by our future economy.

It is stressed this is not suggesting climate change issues themselves should receive lower priority than national aspirations, but rather that the manner of response should be tailored to help navigate the path to an aspirational destination.

Arguably “Zero Carbon” itself may in the end prove inadequate if for example that greater vision required a “Negative Carbon” approach in order to be attained.

2.2 Standardisation of climate change terminology

It is critical that real rigour is brought to the use of terminology in the climate change arena. Highly significant issues (e.g. strategies for electricity generation, options for a zero carbon economy) depend on currently ambiguous terms whose subtleties cannot be expected to be at the fingertips of decision-makers.

While we agree with the PCE that this should ultimately be the responsibility of the Climate Change Commission, work should commence at the earliest opportunity via another agency, and steps taken to ensure that currently-contemplated strategies and legislation are not being founded on ambiguous terminology.

Inconsistent or ambiguous terminology is a serious Achilles Heel of processes seeking to address climate change, and will likely be more critical as society engages further with the development and application of major climate change strategies.

The importance of this is illustrated by the EU's 2018 High-Level Expert Group on Sustainable Finance, whose first key recommendation is to "Establish and maintain a common sustainability taxonomy at the EU".

https://ec.europa.eu/info/sites/info/files/180131-sustainable-finance-final-report_en.pdf , Jan 2018).

This far-reaching foundational issue goes well beyond the few examples given below, and that is a concern shared by significant researchers in the field (e.g. Wellington's Sapere Research Group). The matter was also highlighted in the Resilienz submission on the Productivity Commission's recent low-emissions economy consultation.

AS SUCH TERMINOLOGY IS BEING USED TO UNDERPIN MAJOR STRATEGIC PROCESSES (LIKE PROPOSALS IN THE CURRENT CONSULTATION) IT MUST BE APPLIED WITH REAL RIGOUR.

In replying to our inquiries on this, Simon Upton, Parliamentary Commissioner for the Environment, endorsed the need for consistency and accuracy in terminology and noted that he felt this was a valid function of the Climate Change Commission.

While we agree with Mr Upton on this, we consider that addressing the matter could, and should, be commenced as soon as possible, as a) it is currently compromising the development of important strategies, b) the Climate Change Commission will initially have more than enough wheels to get turning without adding this; and c) the matter can be transitioned to the CCC in due course (in a similar way to the first climate change risk assessment process as per the top of p 49).

Below are examples of different types of terminology, including issues applying to everyday terms as well as to scientific or discipline-specific ones.

What sort of gas is methane? Under "Science of different gases" (p.22) and in Table 1 (p. 24) OCYS describes methane as a short-lived greenhouse gas. However other authoritative organisations describe it as a long-lived greenhouse gas.³ This has the potential to seriously undermines the consultation process (and, even more seriously, to undermine the actual logic off the proposals in OCYS).

"Renewable" does not equal "sustainable" or "emissions free". The emissions profile of New Zealand's electricity sector is of escalating importance in an economy that is simultaneously expanding and trying to transition off fossil fuels.

In this context there is a chronic misperception around the term "renewable", which is often loosely used as also meaning "clean" or very-low-emissions generation, but that is far from the truth in terms of geothermal generation. (Examples of how widespread are our implicit "clean green electricity" perceptions are by it being perpetuated by the Productivity Commission's own suite of documents, by Transpower's CEO in an

³ e.g. NIWA, and the US EPA, <https://www.niwa.co.nz/our-science/climate/information-and-resources/clivar/gases> and <https://www.epa.gov/climate-indicators/greenhouse-gases> respectively.

RNZ interview on 6th June and even, with the greatest respect, by the Minister for Climate Change, the Hon James Shaw, in his introduction to OCYS.)

To illustrate this further, MBIE's document "New Zealand Energy Sector Greenhouse Gas Emissions" (for 2015)⁴, states (p. 11) "Geothermal electricity generation is another significant and increasing source of fugitive emissions..."

We have raised this confusion over "renewable" terminology with Sapere Research Group, authors of the Productivity Commission's primary document on electricity. They commented that "*This is a real problem and we think it could get worse.*"

The text of OCYS itself illustrates this very ambiguity. In "What do our emissions look like" (p. 16), "renewable" electricity gets strong mention. While geothermal is not mentioned, "80% renewable" figures mentioned *include* geothermal, even though geothermal produces some 20% of the overall emissions from the electricity sector

Additionally, the same discussion refers to a strategy of making electricity 100% renewable by 2035, *but that requires a more accurate description if the intention is actually to make it "emissions free" by 2035* –for that to be achieved, not only will the other 20% of non-renewable generation need to be covered, but also the transition off geothermal (currently key "peaking" generation), and additional capacity to cover both growth and, especially, the transition off fossil fuels for the vehicle fleet.

This illustrates the fraught situation that may arise if we base key strategies on loosely applied terminology. In the above scenarios ("100% renewable" and "100% emissions free"), in the first case geothermal offers a potentially major contribution to the solution, while in the second it worsens the problem by a significant factor.

Common words do not always have a common meaning. There are many everyday words and phrases that are used with the seeming perception of a universal understanding, when in fact there can be a considerable diversity of interpretations.

Frequently used terms include "growth" and "cost" (e.g. 5th bullet point near the bottom of p. 48). "Considerations" in Q8 of OCYS, and "functions" in Q15 are open to misunderstanding (especially as the hyperlinks do not seem to go anywhere useful), and even "Climate Change" itself is not consistently used⁵.

⁴ At <http://www.mbie.govt.nz/info-services/sectors-industries/energy/energy-data-modelling/publications/energy-greenhouse-gas-emissions/documents-image-library/NZ%20Energy%20Greenhouse%20Gas%20Emissions.pdf>

⁵ e.g. the glossary in IPCC Annex III seems not to encompass phenomena such as sea level rise and habitat change, but "Climate" combines an ambivalent mix of a very atmosphere-centred view and the more holistic approach described under "climate system". See https://www.ipcc.ch/pdf/assessment-report/ar5/wg1/WG1AR5_AnnexIII_FINAL.pdf. MfE seems to take the latter, wider, approach.

2.3 Need for stronger focus on temporal challenges.

The documents need clear focus, and mechanisms to ensure others maintain clear focus, on the critical and very demanding timeframes that apply to climate change responses.

This arises from the nature of the issues in any event, the need to integrate strategies, and the frequent monitoring and adjusting of actions in order to optimise staying on target.

The Zero Carbon Bill is in itself a massive and hugely commendable acceleration of New Zealand's commitment to lowering its greenhouse gas emissions.

However, while OCYS refers occasionally and broadly to the challenges of achieving a zero net carbon society by 2050, and there are incidental suggestions of urgency (e.g. second para on p. 49 re preparing the first risk assessment), it conveys no real sense that this transition is in reality a monumental, unprecedented and compressed undertaking that will take exceptional vision, commitment and change to achieve.

Indeed the tenor of much of the document is rather “softly, softly catchy monkey”, a benign approach illustrated by the Executive Summary, which states “By setting a long-term target we will have time to adjust and to upgrade our economy” (see under “Why we should take action”, p. 9). This claim is very much open to question.

This does not mean that the documents must try to scare the pants off the population (although an accurate picture of our likely future might well have that effect), but the proposed strategies should at least be setting in train robust processes with the structure and teeth to give some hope of actually achieving Zero Carbon by 2050.

Thus, for example, a “national adaptation plan” would be expected to propel major actions and identify mechanisms to achieve very real high-level outcomes in terms of addressing climate change. Instead we find that page 49 lists nine objectives for the plan which are largely passive and lacking in aspiration.

Taking two, for example: “aim to integrate climate change risk into decision-making” and “recognise the importance of monitoring and evaluating progress towards enhanced resilience” give a sense neither of raising the bar to meet a particular objective/standard nor of achieving actual targeted results. They should at the very least be rephrased along the lines of:

“Require climate change risk to have priority in all decision-making [*possibly at or a above a defined level*] and identify potential mechanisms to enable that to happen.” and

“Develop and publicise key monitoring and evaluation benchmarks as a basis for robust measures that contribute effectively towards enhanced resilience.”

In a temporal sense 2050 is just a small distance along the very long time continuum over which climate change effects are expected to continue ramping up, quite possibly to alarming levels far beyond what is being formally contemplated in our planning.⁶

⁶ E.g. regarding sea level rise refer RNZ interview with Professor Tim Naish, 8th July 2018, or chapter 12 of the US Climate Science Special Report 2017)

While a “Zero Carbon Bill” focussing on 2050 cannot be expected to go into great detail on other issues or other timeframes, it should to point to and/or integrate with them in a workable way. Hence it should forge explicit links to other strategies (e.g. longer timeframes, other legislative mechanisms, or tracking indicators as to whether 2050 remains the right target date).

In regard to the last item, the proposed 5 yearly review of the National Climate Change Risk Assessment is considered far too infrequent for navigating the incredibly important but largely uncharted 30 year journey to 2050. (Creating a risk like setting off on a life-or-death mission from Wellington to Taranaki and only discovering in Masterton that we took a wrong turning before Ngauronga Gorge.)

A further temporal issue is the seeming general lack of consideration of courses of action that can be commenced immediately and in parallel with the more formal bureaucratic processes that re at the centre of the proposed Bill.

Given the recognised advantages of early action, and the general tardiness of communities to change their ways, impetus should be given to the many useful actions that can be taken at an individual or small-scale level.

For example:

An initial programme of public education and awareness, rather than rely on ad hoc exposure through variable media outlets.

Strategies to improve the uptake of electric cars (ranging from interim financial incentives to standards for improved planning and management of public charging points).

A concerted effort on easing congestion through reducing low-occupancy car usage and/or increasing the staggering of travel times.

Pursuing the “Johnny Baxter effect” (as made in our submission to the Productivity Commission - see Appendix B below).

2.4 The daunting cost of inaction

Consideration of the fiscal implications of courses of action must be accompanied by consideration of the fiscal implications of corresponding inaction.

OCYS refers to possible actions bringing associated costs (e.g. towards the end of p. 49). However it does not discuss the fundamental, but less obvious, cost of inaction.

It is widely recognised across climate change literature that a) the cost of addressing a situation almost always escalates dramatically if action is delayed, and b) early investment in remedial action pays back many times over quite a short timeframe.

Thus while it may be entirely valid to consider costs in terms of how they are funded or how they are apportioned, the implication of “additional costs”, such as in the statement on p. 49, is inappropriate, and even misleading, unless presented also in terms of the cost(s) of inaction.

2.5 What about Education? (See also Appendix C)

For the timely implantation of zero carbon strategies it is critical that complementary educational programmes are put in place at the earliest opportunity.

The Bill must at least recognise this, and identify connections to, and promote the establishment of, suitably dynamic educational strategies.

While a “Zero Carbon Bill” would not be expected to address educational matters in detail, neither should it disregard them to the extent it does.

The successful and timely implementation of zero carbon strategies will be hugely dependent on the successful and timely implementation of an extremely wide range of educational strategies to equip society with the necessary skills. These will especially be needed in the tertiary sector.

These skills will often be new or unusual educational programmes to develop them, and these will require new, or significantly adapted, curricula and teaching skills.

The tertiary educational sector is noted to be resistant to change⁷, so the development of suitable educational platforms should be commenced at the earliest possible date.

3.0 SUBMISSION ON PART ONE - INTRODUCTION

Our concern with this section regards the ambiguity around key terminology relating to:

- “renewable” geothermal electricity generation (p. 16);
- whether methane is to be treated as a “short-lived” or “long-lived” GHG, and what difference that makes;
- ensuring that figures for agricultural emissions are robust.

These are discussed in more detail elsewhere (see 2.2 above, and 4.2 and 4.3 below). Correct interpretation of these potentially makes huge differences to choices of strategies.

4.0 SUBMISSION ON PART TWO – PROPOSALS

4.1 Introductory comment

The Bill must target zero net emissions but must base resultant strategies on robust data on long-lived and short-lived GHG, and on agricultural emissions.

As stated elsewhere, we strongly endorse the Zero Carbon Bill and a target of zero net emissions, even if the trajectory to that point is different for different classes of emissions.

⁷ See Productivity Commission report “New models of tertiary education”, March 2013

We also strongly endorse the proposed stepped path to emissions reductions and, especially, the use of forward settings to smooth out the effects of political differences.

However we consider that a robust explanation is first needed to clarify the confusion over methane as a long-lived versus short-lived greenhouse gas (as described in the terminology discussion above) together with the implications of that for the current consultation

We also stress the importance of clarity on the quantum of agricultural emissions. We understand there is still debate over the actual figures to use, with potentially much lower figures than the 49% currently used (e.g. p. 17 of OCYS). This is of real importance not only in considering the implications for the agricultural sector, but also on the potential for even greater weight being given to reducing emission from the transport sector.

4.2 2050 Target

The processes for setting emissions targets must factor in NZ-specific social and environmental issues and impacts as well as the three factors already stated.

We endorse the overall thrust of processes described on pp 20 and 21, but are seriously concerned that, in “Setting the new 2050 target” there is currently silence on both social and environmental impacts.

The Paris Agreement and the science of GHG must be taken as “givens” (subject to the clarifying the terminology regarding the latter, as discussed above). However “the economy” should be the servant of society, not its master, and “economic impacts” cannot be taken as a fitting proxy for much broader and more complex societal needs.

Similarly, the Paris Agreement - singularly significant as it is - cannot be taken as adequately addressing all of New Zealand’s unique environmental issues and impacts.

4.3 Emissions budgets

The principle of stepped reductions in budgets is sound but must also build in a substantial time buffer to give confidence of meeting the 2050 deadline.

While we endorse in principle the approach to stepped reductions in emissions budgets, and the 3-step forecasting cycle, we are most concerned that the “lazy S” trajectory shown in Figure 2 (a gradual start, steepening at mid-period, and easing at the end) does not build in safety factors that give confidence the programme to 2050 can be sustained in the face of aggravating circumstances.

When viewed through a project management lens, and given that such aggravations should be considered likely (e.g. see bullet points in 4.4 below), a trajectory to, say, a 2040 completion would give much greater confidence of actually attaining the 2050 target.⁸

⁸ 2040 is a notional adjustment, representing roughly a 30% “float” or buffer. A historical view of past performance against reduction targets would suggest an even greater safety factor should be built in.

4.4 Climate Change Commission

We fully endorse the establishment of a Climate Change Commission, consider it must have greater powers than purely “monitoring and advisory”, and see it as highly important that it also plays a key role in defining related terminology and in considering and advising on associated educational needs.

We strongly endorse the establishment of the Climate Change Commission, its role in a robust advisory capacity, and its proposed composition of experts rather than stakeholders.

The advisory and monitoring functions listed on page 42 are appropriate but we consider should be extended to include:

- The standardisation of appropriate terminology (refer section 2 above).
- Educational strategies, both in curricula (and especially in tertiary qualifications) and in general public education. (Refer Appendix 3 for the Resilienz Ltd. submission on education to the Productivity Commission.)

We also acknowledge the dilemma traversed on page 43, between the Commission achieving a high level of independence from political swings, as against keeping decision-making the preserve of the elected parliament. In this regard we advocate that, in deciding the final form of the Bill, weight is given to the need to do what we *must* do as against what we *can* do. This tips the balance towards giving the commission a very robust role, whether or not tied to actual decision making powers.

Page 43:

We have real reservations about the recurring use of the terms “cost” and “costs”, such as at the bottom of page 43, without a very clear underpinning definition. In the absence of such a definition (including a sense of a timeframe) “costs” can be taken in so many different ways that a) it becomes almost impossible to consider proposals with specificity and b) it allows undue latitude for actions or decisions to be taken contrary to the compelling need to address climate change.

Page 45:

We recommend that expertise at trade and professional education be included in the list of “desirable but non-essential” skills.

4.5 Adapting to the impacts of climate change

We endorse the Bill considering climate change adaptation strategies, and also the proposed priority regarding establishing risk assessment. We consider it also important to give priority to implementing emissions monitoring and profiling processes on a wide front to speedily a foundation for robust and internationally credible emissions reduction strategies.

Page 47:

Refer to the comments in 2.3 about increasing attention to keeping up with uncertainty, and agility and in responding.

Page 48:

We strongly endorse the priority on establishing risks assessment.

Also our engagement internationally demonstrates a parallel priority as establishing emissions monitoring knowledge and regimes that enable businesses to readily identify the sources of their emissions and resultant profile. This can then benchmark strategies for emissions reduction, and ongoing monitoring. It is essential such monitoring is recognised internationally.

Page 49:

As stated previously, five years is considered far too long for periodic reviews of the risk assessment. Say biannually. (It is noted, for example, that Hamburg, Germany reviews its climate plan every two years).

While we are passionate supporters of using scientific evidence, we believe it should be made clear that this may not always be possible. For example there are times when “the precautionary principle” might prevail in the absence of conclusive scientific evidence. In many ways addressing climate change is a project management exercise on an unprecedented scale, and there is an apt saying that “*the art of good project management is the ability to make robust decisions on inadequate information*”. This seems likely to epitomise addressing climate change.

We are concerned at the introduction of “stakeholders” (in the last paragraph) when there are strong arguments elsewhere (e.g. re composition of the Climate Change Commission) for not giving stakeholders close involvement with decisions. This does not prevent their views being canvassed and considered through other processes.

Page 50:

We strongly endorse the proposed adaptation reporting power, but consider its application should be extended also to major players/companies in the economy (e.g. food production, tourism and the construction sector).

See prior comments about the use of terms like “costs”.



Appendix A. Completed questionnaire from “Our Climate Your Say”.

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.

Publishing and releasing submissions

All or part of any written submission (including names of submitters) may be published on the Ministry for the Environment’s website, www.mfe.govt.nz. Unless you clearly specify otherwise in your submission, the Ministry will consider that you have consented to website posting of both your submission and your name.

Contents of submissions may be released to the public under the Official Information Act 1982 following requests to the Ministry for the Environment (including via email). Please advise if you have any objection to the release of any information contained in a submission, including commercially sensitive information, and in particular which part(s) you consider should be withheld, together with the reason(s) for withholding the information. We will take into account all such objections when responding to requests for copies of, and information on, submissions to this document under the Official Information Act.

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Personal / organisation details

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

Company name Resilienz Ltd

Given names Lindsay Macdonald

Surname Wood

Submitter type, pick one:

- Business / Industry** YES

Submission by Resilienz Ltd on the Zero Carbon Bill

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 **YES**
- the Government sets a goal to reach net zero emissions by the second half of the century, and the Climate Change Commission advises on the specific target for the Government to set later.

The climate change issue is so huge and compelling that we must a) take the most ambitious option and b) drive change with a specific target – both quantum (zero carbon) and time (2050).

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

Pick one:

- net zero carbon dioxide:** Reducing net carbon dioxide emissions to zero by 2050
- net zero long-lived gases and stabilised short-lived gases:** Long-lived gases to net zero by 2050, while also stabilising short-lived gases
- net zero emissions:** Net zero emissions across all greenhouse gases by 2050. **YES**

As for 1 we must target the most ambitious option. This will be exceedingly difficult –but if our courses of action are not so difficult then we are not taking the issue seriously enough. **Please also note that there is a conflict between MfE treating methane as a short-lived gas, and other notable organisations (e.g. NIWA and the US EPA) treating it as a long-lived gas. This is a real concern, and an impediment to effective submissions, when the short vs long distinction seems central to “science based” target options.**

3. How should New Zealand meet its targets?

Pick one:

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

As a last resort we may need to use offshore carbon offsets in the very short term but it is untenable for a country like NZ to target anything other than “self sufficiency” in our carbon offsetting.

A possible exception is in the event that our major exporting of goods with a high emissions content (e.g. meat and dairy) completely eclipses the emissions content of imported goods and services, in which case offshore offsets could be used to balance this. However this will need to take account not only the

emissions content of imported goods but also such less-tangible items as the emission profiles of services such as cloud storage data centres etc.

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

Pick one:

yes

no.

But only relax the target under extreme circumstances (hard to visualise – perhaps a new disease vector decimating our forests, or a volcanic eruption in Auckland).

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

no.

I think the general idea of a triple staged target plus the time periods leapfrogging elections is an excellent step towards defusing political/ideological swings.

However I wonder if it should be more tied in with the 3-year electoral cycles (e.g. 6 yearly) to a) enable target reviews to reliably occur mid-term (and thus fairly remote from electioneering influence) and b) to reduce scenarios where one particular government is to some extent disenfranchised by a diminished opportunity during their term.

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

yes, the third emissions budget should be able to be changed, but only when the subsequent budget is set

no, emissions budgets should not be able to be changed.

But only for compelling reasons that fit predetermined criteria.

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
 no.

But only to tighten, and never relax, the second target.

8. Do you agree with the [considerations](#) [This link only goes to the title page of this consultation document, and the online version of the form doesn't link anywhere. These have been taken as the "Design Choices" section on page 44 of "Our climate your say".] we propose that the Government and the Climate Change Commission take into account when advising on and setting budgets?

Pick one:

- yes
 no.

Some of the considerations on P 44 of the consultation document are entirely valid (e.g. the first two bullet points) but most of the others are slanted far too much towards

- a) potentially justifying only doing what we can do rather than what we must do;
- b) encouraging short-termism by not mentioning or factoring in the longer-term implications of **not** taking certain actions.

While such considerations may be helpful in assisting balancing between possible courses of action, there is too much a sense of leaning towards "temporal discounting" – of deferring short-term pain/cost by failing to account fully for the severity of long-term pain or costs.

We must not risk possibly impeding our efforts by perpetuating such an approach.

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
 no.

Most definitely important. Simon Upton, as PCE, make this point well. The Zero Carbon Act must minimise opportunities for stalling action.

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?

Please see separate part of our submission.

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

no.

Provided there are significant obligations on the government of the day to heed the advice, and safeguards if they fail to. (This is a case where NZ's lack of a second house in government needs some compensatory mechanism.),

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:

advising the Government on policy settings in the NZ ETS

makes decisions itself, in respect of the number of units available in the NZ ETS.

The policy settings are too far reaching not to be determined by parliament, subject also to the comments on question 11.

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

no.

Expertise is definitely favoured over direct stakeholder participation. There should be robust avenues where stakeholder views can be expressed for consideration by the Commission.

Responding to climate change is a monumental challenge which will require massive changes, and stakeholders do not have a good track record at propelling such changes (unless they are seen as in their own relatively short-term interests).

Adapting to the impacts of climate change

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

Pick one:

- yes
- no

In the broad issue-identification, standard-setting and monitoring type processes described, but not in terms of prescribing “nuts and bolts” actions.

15. The Government has proposed a number of new [functions](#) [ditto re misdirected link as for “consideration” above. The “Functions” do not appear to be identified by that name, and have been taken as the items on pp 48 and 49] to help us adapt to climate change. Do you agree with the proposed functions?

Pick one:

- yes
- no.

A “yes” or “no”? question doesn’t fit this well. “Yes in principle” to the measures proposed, but “no” or qualifications to some specific measures.

E.g.1. low on p. 48 is reference to “minimise the cost” – “cost” is a term that has myriad meanings, is much misused, and needs much greater definition before being enshrined in such a context.

E.g. 2 With all respect, 5-yearly intervals are far too long on which to formally update the risk assessment. This is the case whichever lens this is viewed through: e.g.

- unfolding climate change-related events,
- the likely difficulty of getting our actions right and extreme consequences of not,
- the general inertia of our systems to change, coupled with the very short time frame until 2050,
- the project management perspective of maximising the benefits of early knowledge and decisions;
- the time-trap associated with responding in timely fashion to exponential phenomena

We cannot afford to be so relaxed in developing, maintaining and applying what should be a major navigational tool to guide our path through the turbulent waters ahead.

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

no.

We fully endorse this at several levels:

As the report notes, this can raise the level of success of actions by organisations.

It can also direct reporting to wards accepted standards – seen internationally as a critical facet of effective reporting.

It can also provide most valuable information that is worth sharing to assist others maximise their own success. (The writer was recently at a major European business which was having exceptional success in emissions reduction but did not want that publicised because they felt I gave them a competitive advantage. It is critical to try to find a way to defuse such short-sighted approaches.)

APPENDIX B. “The Johnny Baxter effect” and Trucking Fuel Economy.

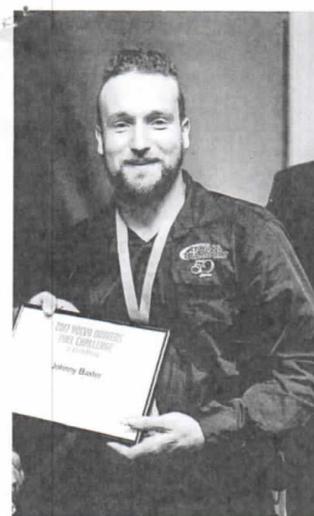
(From Resilienz Ltd. submission to the Productivity Commission on a low-emissions economy)

In September 2017, Temuka truck driver Johnny Baxter won the on-road category of the International Volvo Truck Fuelwatch championship.

New Zealand Trucking Magazine, November 2017, reported “Baxter recorded 10.1% less fuel consumption than the two runners up.” The runners up were the best of the other ten national champions that were competing in the on-road class.

That astonishing result deserves deep consideration. Baxter drove his truck over 10% more efficiently *than the next best in the world*. Imagine how much better he was than the average truckie in the street. Imagine what it would do to emissions reduction and business profitability if he could impart his magic to other drivers – hopefully millions of them, hopefully quickly.

Baxter’s stunning success shines a ray of hope on achieving speedy emissions reductions in the heavy road transport arena. He should be heralded as a national hero and be engaged at a huge salary to teach truckies and other drivers the country over (world over?) how to achieve the same.



Left: Taken at the time he received his New Zealand award, Johnny Baxter from Temuka Transport took out the on-road category of the International Volvo Trucks Fuelwatch Challenge in Sweden in September (right).

Source: NZ Trucking Magazine Nov 2017

APPENDIX C. Educational implications.

(From Resilienz Ltd submission to the Productivity Commission on a low-emissions economy)

2.2 Education

There will be an overwhelming need for step-changes in education across almost all disciplines, from trade practicalities (e.g. maintaining EVs, constructing demountable buildings, new land use practices), to the new forms of governance (e.g. in policy, agility, ETS, credible low-cost monitoring), to the application of climate change issues in virtually all professions (e.g. law to architecture to medicine).

At a general level there seems a conspicuous lack of engagement with this in curriculum development and teaching in tertiary institutions (beyond teaching and research in specialist departments, the isolated emergence of short or postgraduate courses with a climate change focus, and occasional specialist public talks). If our entire business sector is to gain speedy traction on transitioning to a low-emissions economy, those needing to implement the practicalities of the change must hit the ground with their feet running, and they need equipping for that. Currently that does not seem a consideration, and the educational sector needs propelling to address this.

However, reference to educational requirements are virtually absent from the consultation documents and, other than Victoria University of Wellington, no educational organisations are included among those listed as consulted. This lack of engagement is doubly significant given the Productivity Commission's own "New models of tertiary education" report, March 2017, repeatedly refers to the significant inertia of the current educational system, and to a regulatory structure skewed against new, innovative and/or disruptive elements in tertiary education.

That climate change/low-emissions education has not made it onto the general radar of tertiary education is further illustrated by its lack of any obvious presence in the Commission's above report, or in the programmes for Auckland's April 2017 "Future Focus Tertiary Education Conference", and the coming "New Zealand Education & Technology Summit - Creating pathways for 21st Century learning".

The website of the 3-day 27th New Zealand International Education Conference and Expo (August 2018) claims "It's fast becoming the 'go-to' event on the global international education circuit", and has as its theme, "inspiring global citizens". In this context it would be hoped that climate change would find a notable presence, but in the lengthy and detailed programme the only hint climate change is there at all is buried in the introductory notes for one talk on day two.

Of course such events would not be expected to put climate change issues centre stage, but it seems portentous that not one of four significant and forward-looking educational events sees fit to give it some emphasis.

There are, of course, exceptions, such as the Deep South National Science Challenge, but these are really special events rather than part of mainstream vocational education.

Unfortunately, the same seems to be the case at a grass-roots level, and in spite of the various ad hoc efforts of the media (sometimes commendable, sometimes not), opportunities to enlighten and engage with the public are in the main sporadic and uncoordinated, with a dearth of seriously planned, or strategically directed initiatives. Again, there are exceptions, such as excellent specialist addresses (e.g. some Auckland Conversations) but these are not programmes of general public education.

This is an arena that could generate a vast range of unusual initiatives to raise awareness, promote innovative forward thinking, and encourage the attitudinal shifts that will help us with the much-needed move away from a "business as usual" mentality. Whether these take the form of toolkits, generate-your-own energy music festivals, or making climate change a regular feature of weather forecasting, this needs considerable creative thought and active and structured promotion.

The lack of attention to the educational implications of transitioning to a low-emissions economy neglects one of the most important pillars of effective implementation of the necessary strategies. It is imperative that this is addressed.