Submission on a New Zealand Zero Carbon Bill

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This submission is in three parts:

Part 1: Key Points
Part2: Introduction
Part3: Responses to Ministry for the Environment Proposals

Part 1: Key points

New Zealand needs a long-term climate change response strategy – and urgently.

> Clear targets for 2050 are important, but these need to be consistent with 100-year and longer-term aims that have a focus on sustainability.
>
> In the context of climate change, any 2050 target should be totally consistent with New Zealand making a proactive contribution to keeping global warming well below 2°C.

The basis for New Zealand's climate change response must be clearly established in legislation – and in ways that also ensure it can continually adapt.

> There has to be a clear long-term strategy that is consistent with a full range of national values.
>
> Options for addressing transitions, rather than just following simple trends, must be kept open.
>
> There is a need for regular reviews of progress towards targets as well as for potential changes in priorities, and this requires an independent Climate Change Commission that provides regular advice to government.

Actions stimulated by the response strategy must involve planning that involves all of the key players in proactive ways.

> Development of our Earthquake Commission came from a retrospective response to disasters. Dealing with climate change impacts must become based on both anticipation and avoidance.
>
> Key players depend on the context. Mitigation of greenhouse gas emissions is predominantly a national issue, whereas adapting to the effects of climate change is predominantly a regional or local issue.

Our plan must follow continuing, and potentially significant, developments in climate science together with an increasingly wide range of ways for managing changes.

> New Zealand's lead role in the Global Research Alliance, to improve food production in the context of climate change, should be followed with other approaches that also share international expertise.
>
> New Zealand's formal approvals of the Intergovernmental Panel on Climate Change science assessments must become directly linked to reviews of our climate strategy.

Part2: Introduction

"It's not enough that we do our best; sometimes we have to do what's required."
Winston Churchill.

We have entered the age of the Anthropocene where human activities determine much of the Earth system that we are totally dependent on [*Steffen et al.*, 2016]. Science has also made it clear that we have crossed several biophysical thresholds for sustainability [*Rockström et al.*, 2009].

In New Zealand, we like to think of ourselves as 'clean and green' but we have been explicitly identified as one of the countries that has crossed six out of seven major biophysical boundaries for sustainable use of our resources [*O'Neill et al.*, 2018].

This has to change.

New Zealand signed on to the 2015 UN Sustainable Development Goals but government has yet to adopt policies aimed at achieving these seventeen goals. Is this because of a deeply engrained "She'll be right" approach, or because of structural inertia in our society?

Increasing impacts specific to climate change are now being seen widely and show the growing urgency for some real structural changes. Ensuring that we have a sustainable climate has to be done globally and requires a new level of international responsibility. However, waiting for others to lead the way is simply delaying an acceptance of that responsibility. Instead, New Zealand should now set targets that are based on science; accept our fair share of responsibility; and play a leadership role in our key areas such as pastoral agriculture. Learning from success or failure of policy options in other countries is important, but should not become a reason for delays.

The extent to which stabilising climate change can minimise environmental impacts is highly dependent on how quickly it is achieved, but the effects on socioeconomic values and equity can also vary significantly for different pathways to the same target [*Reckien et al.*, 2017; *Riahi et al.*, 2017]. This shows that climate change is an issue of social equity at least as much as it is a scientific, technological or policy issue.

Keeping global warming below 2°C has been considered in scientific detail only for the last ten years [*R Moss et al.*, 2008; *Van Vuuren et al.*, 2008] and is still an area of rapid development. Keeping to 1.5°C has been considered in detail only since 2010 [*Ranger et al.*, 2010] and is now the subject of an Intergovernmental Panel on Climate Change Special Report to be finalised later this year. Policy frameworks and adaptation strategies must be able to follow these types of rapid change.

To put it bluntly, many of the details for actually keeping below 2°C will have to be worked out as we go. More specifically, several analyses of how different frameworks for dealing with major changes operate have shown that what used to be preferred as 'robust decision making' should be changed to a 'dynamic adaptive pathways' approach [*Kwakkel et al.*, 2016].

Consequently, New Zealand's approach for dealing with climate change should be structured in ways that ensure it remains dynamic.

Part 3: Responses to the Ministry for the Environment Proposals

In some cases, the range of responses to questions provided in the MfE submission document do not cover options that have been analysed in IPCC climate change assessments and which are generally seen in the science community as necessary to keep global warming below 2°C.

In these cases, we either modify one of the options provided by MfE or else provide a new option that is more directly justified by the science. These new options are given in *red italics* below.

2050 target

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

- ✓ **the Government sets a 2050 target in legislation now*, that is consistent with achieving net zero emissions for long lived greenhouse gases prior to 2070 together with a reduction of at least 70% in methane emissions, and that the legislation also establishes a Climate Change Commission to advise Government regularly on how to achieve this target.***
- ☐ ~~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.~~

Comments

Neither of the two proposed responses set out for this question in the MfE document[1] [*Ministry for the Environment*, 2018] were adequate. In particular, there is no point in setting a 2050 target unless it is consistent with New Zealand making a significant contribution to the 2015 Paris Agreement, which is "to keep the increase in global average temperature to well below 2°C above pre-industrial levels; and to aim to limit the increase to 1.5 °C".

Similarly, because a potential role for a Climate Change Commission was only mentioned in the second option, it might be seen as implying that the first option avoids the need for such a commission. That is simply not recognising the scale of challenges that are involved in achieving the Paris agreement.

Consequently, text in red above has been added to the MfE2018 first option to make it clear that the process has to be focussed consistently on both a long-term target and the process that will be used to achieve that.

<u>The basis for policy</u>

It would have been much clearer to simply ask whether New Zealand should follow the UK model and establish an equivalent of their Climate Change Act 2008 and, if so, whether

[1] This document will be referred to subsequently as MfE2018.

New Zealand also have an equivalent of the UK Committee on Climate Change that was established by that Act.

The answers to both of those questions are obviously: "Yes". The basis for this has been laid out in some detail by the New Zealand Productivity Commission's April 2018 report on a Low Emissions Economy [*New Zealand Productivity Commission*, 2018]. This has also been supported by the current Parliamentary Commissioner for the Environment, Simon Upton, who has considerable experience in both national and international climate policy.

Short-lived and long-lived greenhouse gases

The legal framework that becomes part of a New Zealand greenhouse gas mitigation policy must have a carefully balanced approach for dealing with short-lived and long-lived gases. In this context, the term 'net zero emissions' should not have been used in MfE2018 before considering what that can imply for methane and for CO_2.

There is a wide range of scientific analyses covering how these two gases should be compared, and a consensus that Global Warming Potentials (GWPs) with a 100-year time horizon, as used for national GHG emission inventories, are not appropriate when considering climate stabilisation [*Manning and Reisinger*, 2011; *Wigley*, 1998]. This has been studied in detail for agricultural emissions directly relevant to the New Zealand context [*Reisinger and Clark*, 2017] and a more recent proposal has also considered adjustments to the GWP for a policy framework more consistent with climate stabilisation [*Allen et al.*, 2018].

Furthermore, in the context of stabilisation, it is important to recognise that none of the climate model analyses consistent with keeping below the 2°C target found it necessary to have zero anthropogenic emissions for methane. Rather, the whole basis for the RCP2.6 scenario was: rapid reductions in anthropogenic methane emissions starting this decade; most methane emission reduction occurring prior to 2050; and methane stabilising at about 40% of current emissions.

The fact that CO_2 emissions will have to become negative or zero (or at least very small), and those for methane do not, shows that these are not related by some simple scaling factor. More explicitly, it has been shown that if a delay in the decrease of CO_2 is offset by making a larger decrease in methane, CO_2 still has to be reduced to zero while methane must not increase again [*Manning and Reisinger*, 2011].

To put it simply, cuts in methane, buy time to enable the zero-CO_2 emission target to be reached, but this was also seen as essential in the socioeconomic analyses that led to the Intergovernmental Panel on Climate Change RCP2.6 scenario.

Dealing with uncertainties

Careful analyses of the feasibility of the 2°C target by Integrated Assessment Models (IAMs) [*R H Moss et al.*, 2010] became the basis for more detailed climate model runs in the IPCC Fifth Assessment (AR5) [*IPCC*, 2013]. However, AR5 results included some cases consistent with the 2°C target where net CO_2 emissions remained positive throughout the

second half of this century [*IPCC*, 2014]. This has also been backed up by more recent analyses [*Wigley*, 2018].

Consequently, despite major advances in climate science, there are still significant uncertainties for what will be required in the second half of this century. These come from a range of effects on the climate system for which models have not yet been tested, such as the effects of changes on: the hydrological cycle; biophysical processes; long term socioeconomic factors related to land use; multiple potential causes for changes in biodiversity; structural changes in ocean circulation; etc. Even when the context for such changes is restricted to the global carbon cycle a recent review showed there is still a very wide range of results coming from current models [*Jones et al.*, 2013].

More specifically, as shown in the next section, increases in methane that have occurred in the last ten years have become a significant departure from the RCP2.6 scenario that keeps below 2°C and, while this is expected to have an anthropogenic cause, there is still no scientific consensus as to what that is.

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

- ☐ ~~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.~~
- ✓ ***the initial Government 2050 target will be for net carbon dioxide emissions to be reduced to less than 20% of 1990 gross emissions, methane emissions to be less than 30% of their 1990 emissions, and nitrous oxide emissions to less than 50% of their 1990 emissions. These targets will be reviewed regularly by the Climate Change Commission.***

Comments

In the global context, there are problems with each of the options set out in MfE2018. First, the science is very clear that major reductions in methane emissions are necessary to achieve the Paris Agreement, whereas the first MfE2018 option ignores any New Zealand responsibility for methane. Then the second option is consistent with allowing New Zealand's present level of methane emissions to continue unabated throughout this century. But, if that were done by other countries as well, then there is simply no scientific analysis that can justify it is consistent with the 2°C target.

The third option can be consistent with the 2°C target, but opens up questions about what 'net zero' means for a mix of quite different greenhouse gases. This can be seen as setting targets that turn out to be more stringent than the IPCC assessments show are required to keep global warming below 2°C or achieve the target of 1.5°C.

The alternative wording proposed here is based on starting with the RCP2.6 scenario for global reduction in emissions and then accepting that there are several reasons why New Zealand is in a position to play a lead role, which means we should plan to make deeper than global average cuts in both CO_2 and methane emissions.

The New Zealand context

New Zealand should aim to be a world leader in the increasingly important issue for keeping ruminant agriculture consistent with the Paris agreement. Some potential for this to happen was shown by a major advance in understanding rumen microbiota led by AgResearch [*Seshadri et al.*, 2018]. This needs to be backed up by an explicit government policy that recognises major advances in agricultural processes and technology will be required.

As noted above, while methane emissions do not have to be reduced to zero in order to stabilise the climate, all scenarios that are consistent with the 2°C target have more than a 50% reduction in anthropogenic methane emissions. This means that for meat and dairy agriculture to be consistent with the Paris target of keeping global warming less than 2°C there has to a major reduction in their production or in the animal biogenic processes that produce methane. In the New Zealand context, it also has to be recognised that there are major differences in greenhouse gas emissions per unit of product for different forms of ruminant agriculture, with beef production being much worse than dairy agriculture [*Poore and Nemecek*, 2018].

An important role for forestry

Figure 1. From [*Dawson*, 2007] showing forest cover for ~1000 AD, 1840 AD and 2000 AD. See [*Ewers et al.*, 2006] for more details.

During the nineteenth century, deforestation occurred more rapidly in New Zealand than in any other country [*Ewers et al.*, 2006] (See Figure 1). Loss of coastal forests in the 19th century also caused a pervasive inland movement of sand dunes which became an issue on a scale that had to be dealt with by central government intervention in the early 1900s [*Berg*, 2006].

Deforestation across much of the lower North Island was done rapidly over about 30 years and, as historian Ian Matheson pointed out in his centennial history of Palmerston North, this was a 'sad commentary on the foresight of our pioneers' [*Knight*, 2013]. Longer term deforestation in New Zealand had also been due to low intensity forms of agriculture used

by Māori leading to widespread clearance of native forests in order to enable growth of fern roots (aruhe).

Pine trees were brought into New Zealand from California in the 1850s, and its use become more extensive at the end of the 19th century in order to deal with a shortage of timber supply from native species such as rimu, totara, matai and miro. This was followed by extensive planting projects in the 1930s and the development of a major national industry so that New Zealand now has far more *Pinus Radiata* than California does.

But there is still much less forest cover across most of New Zealand than there was 200 years ago. Removal of this land cover has destabilised much of New Zealand hillsides and led to higher risks of landslides across wide areas [*Glade*, 2003]. Increases in heavy rain events are now leading to structural risks as seen in the abandoning of SH3 through the Manawatu Gorge.

Consequently, reference in MfE2018 to offsetting CO_2 emissions by planting forests can be clearly based on re-establishing what were sustainable forests with their wide range of environmental benefits. However, to plant 1 billion trees on 1 million hectares of land over 10 years still has to become more closely linked to the long term, rather than to the 20-year to 30-year time horizon that has dominated New Zealand forestry and led to a focus on a narrow range of fast growing species.

So far, New Zealand's use of forest carbon offsets in the Kyoto Protocol has delayed action to reduce fossil fuel emissions, did not provide any stability for carbon pricing related to new forest investments, and ignored the longer-term requirements. Short term perspectives, that dominated the New Zealand policy framework and led to this result, will have to be changed if any 'zero-carbon' policy is to be seen as realistic. For example, allocation of land for long term forest offsets has to be focussed on stability for 200-year and longer timeframes.

The Ministry of Primary Industries (MPI) plan for a billion trees should become an area of priority for the Climate Change Commission to provide advice on 100-year and longer targets for both the extent of forest cover and potential risks to its sustainability that may result from climate change. These need to cover issues such as more extreme weather and increased fire risk. E.g. the Canadian record fire loss of forests in 2016 was twice as large as its previous record. There can also be structural ecosystem changes related to insect and bird species such as the rapid increase in pine beetle that led to extensive loss of pine forest from Colorado to British Columbia over 2006 - 2008.

<u>A need for continual adaptation</u>

The New Zealand policy framework has to recognise that the details for keeping global warming below 2°C will have to be worked out as we proceed. For example, legislation must not set up any implicit barriers to either some change in priorities or rapid uptake of some new ways for reducing greenhouse gas emissions. This also means that the Climate Change Commission must ensure that it is keeping abreast of the latest science internationally, and that it should also have an advisory role for science research funding to ensure that New Zealand scientists can continue to play lead roles on key issues.

One example of a need to allow for changes in priority comes from a significant shift in the relative roles of CO_2 and methane that has come from a major revision to the radiative forcing due to these greenhouse gases [*Etminan et al.*, 2016]. Forcing by methane has increased by 23% over the value given in the most recent IPCC assessment report, and while the full effects of this on climate models have not yet been evaluated it is expected to decrease climate sensitivity to total radiative forcing [*Millar et al.*, 2017].

At the same time atmospheric methane has increased significantly over the last ten years [*Nisbet et al.*, 2016; *Schaefer et al.*, 2016] whereas the scenarios used in climate models that kept global warming below 2°C were based on it decreasing during this decade. The causes and longer-term implications of this are still not known but it is already clear that the peak CO_2 concentration around 2050 now has to be lower than given in the IPCC AR5 [*Nisbet et al.*, 2018]. See Fig 1.

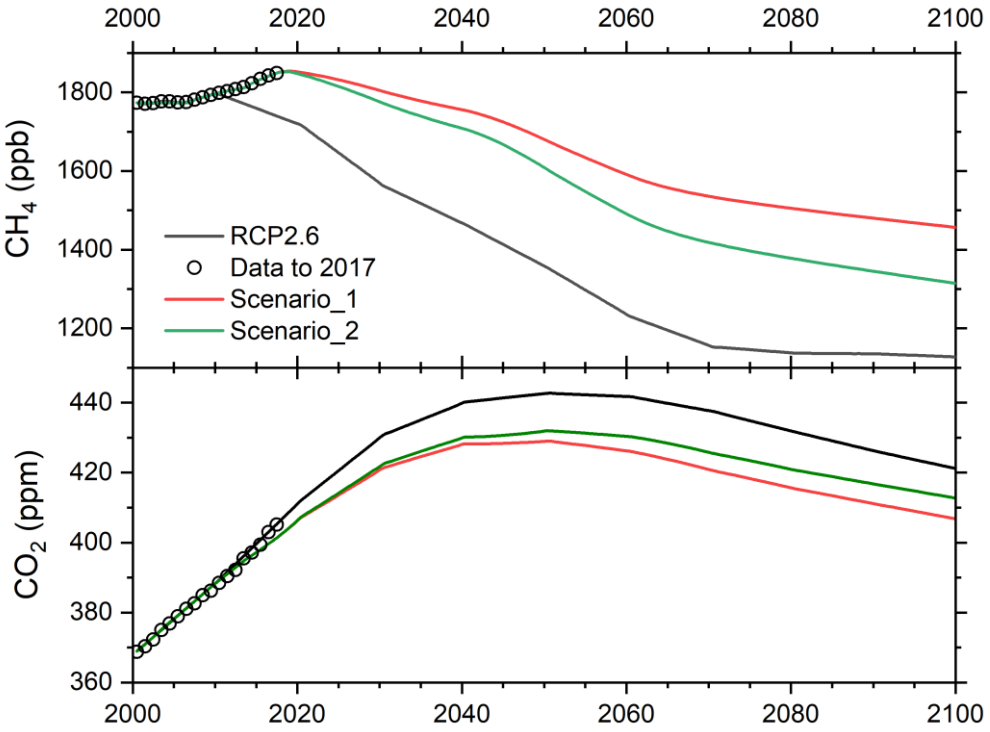

Fig 1. Black lines in both panels show methane and CO_2 concentrations used in the last IPCC assessment for the RCP2.6 scenario consistent with keeping global warming to less than 2°C. Open circles show observed global average concentrations to 2017 provided by NOAA ESRL. Coloured lines in the upper panel show projections for how the methane concentration will change if the increase is due to either: natural emissions that stop increasing in 2018 (red); or a delay in reducing anthropogenic emissions (green). The lower panel shows the decrease in CO_2 concentrations needed to keep to the same total radiative forcing of the climate system and Scenario 2 reduces cumulative CO_2 emissions from 2010 to 2050 by about 20%.

As the cause of this recent increase in methane is still not understood, its implications for keeping to the 2°C target are being shown here as a range of potential changes to the scenario that was used in climate models. This shows that the effects of changes in

methane sources can have long-term effects and if these are being caused by effects on atmospheric processes then their long-term implications are still not understood.

In contrast to this, recent analyses are still suggesting that the 2°C target can be met when net CO_2 emissions remain positive for several centuries, and while these could not keep below 1.5°C target there may be the potential to reduce 'overshoot' and return below 1.5°C on a century time scale [*Wigley*, 2018].

3. **How should New Zealand meet its targets?**

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

Comment

New Zealand's purchasing of "hot air" carbon credits from Russia and the Ukraine has led to a major loss of credibility for this approach. Similarly, New Zealand's reliance on forest offsets in the Kyoto Protocol was not consistent with a sustainable approach to reducing net CO_2 emissions because it did not alter the long-term balance between continual harvesting and replanting of exotic forests. Furthermore, the situation was made worse by sudden changes in government policy that reduced the value of carbon credits to forestry companies.

However New Zealand does not need to resort to "hot air" credits because we still have an extensive range of well distributed natural energy sources that are large relative to most countries on a per capita basis. We need a new level of commitment to sustainable development of these energy sources. Weakening this commitment by any reliance on purchasing international carbon units should not be part of the government policy.

Past rapid development of hydro power generation in New Zealand and our past leadership role in geothermal energy generation has shown what can be done on the national level. That led to 80% of our electricity coming from renewable sources, but the long-term trend in that fraction has been quite variable, and several other countries now have a higher fraction of renewable electricity production. This shows that a lack of long-term planning has to be addressed and that requires a cross-party government commitment that accepts a need to achieve specific targets for renewable energy.

While the 2035 target for 100% renewable electricity should be quite feasible, other Issues that have to be addressed can be seen in our slow uptake of solar power and electric vehicles relative to other countries. This can be partly due to a poor economy of scale in a small country, but the electricity market has also been captured by state-owned power companies that have been opposed to any rapid diversification of power sources. A lack of competitiveness in the power supply market is also linked to the lack of any regulation of

prices and 'privatisation' of the power companies leading to their rather arbitrary billion-dollar asset revaluations [*Bertram*, 2013].

A more proactive approach would be for the New Zealand government to:

- increase the solar power market size by having this widely used in schools as has been done in Australia.
- have a more obvious and long-term support for rapid uptake of electric vehicles.
- monitor the approaches being considered by some power companies to increase line charges to homes or businesses that may switch to solar power

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

✓ **yes**

☐ ~~no.~~

Comment

Legislation should be consistent with the dynamic adaptive pathway approach mentioned earlier.

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?

✓ **yes**

☐ ~~no.~~

Regular reviews are necessary for any long-term plan and five yearly reviews would be consistent with the UK approach. However, there are structural differences between reviewing what is enacted as legislation and what may be advances in the science and technology relevant for New Zealand. Monitoring the latter will be a key role for the Climate Change Commission and the commission should carry out a review of each IPCC assessment report to identify what is relevant to New Zealand.

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

☐ ~~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.~~

Comment

Stability in the policy process is necessary, but any rational approach to a changing climate must allow for that process to evolve.

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

✓ **yes**

☐ ~~no.~~

Comment

The question is not clear as 'exceptional' is open to quite different subjective interpretations. This is also primarily an issue for how 'Zero Carbon' legislation operates in relation to other relevant legislation and we are not qualified to comment on that.

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?

✓ **yes**

☐ ~~no.~~

Comment

The proposed roles for the Climate Change Commission are largely following the UK model. Issues such as the commission having stable long-term funding are important. However, there is still a need to consider how New Zealand circumstances can differ from those in the UK. For example, the role of agriculture and its relation to overseas trade will need to be dealt with more explicitly.

The MfE2018 report is also vague on what role the commission would have in monitoring scientific advances. As we have pointed out above, the commission will be dealing with a very active area of scientific research and will have to keep abreast of the latest issues so as to merge them with policy frameworks carefully. A key aspect for this is that scientific collaboration with other countries, such as Germany, has been very productive for New Zealand.

Government response

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

   ✓ **yes**

   ~~☐ no.~~

   Comment

   As noted above the issues are urgent.

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 noted above, the framework for government policy has to recognise that it is dealing with continuing change. These can have structural effects on New Zealand's society and economy. Key aspects of planning for this have to include: proactive engagement with all the major players; monitoring of progress towards targets; and allowing for well-planned transitions.

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?

    ✓ **yes**

    ~~☐ no.~~

    Comment

    The Climate Change Commission model is a good starting point but, as noted above, some adaptation of the UK model to New Zealand circumstances will be required.

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

    ~~☐ 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.**

Comment

New Zealand's ETS has not reduced gross greenhouse gas emissions despite that occurring in many countries that do not equivalent legislation. If the ETS were to continue in a way that was independent of the Climate Change Commission that could quickly lead to conflicting approaches and legal disputes.

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?

☐ **yes**

☐ ~~no.~~

Adapting to the impacts of climate change

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

☐ ~~yes~~

✓ **no**

Comment

The Zero Carbon Bill should focus on ensuring that New Zealand greenhouse gas emissions are rapidly reduced to match the Paris Agreement. However, adaptation to climate change is heavily dependent on developing better interactions between central and local government. Consequently, while the Climate Change Commission should be established by the Zero Carbon Bill and play a lead role in developing proactive adaptation strategies, the legislation for dealing with adaptation should be framed in ways that recognise different stakeholders and follow approaches used in the Netherlands, Germany and the UK.

<u>Why adaptation is different</u>

Development of better approaches to adaptation has to consider several major issues such as the ways in which loss of property due to persistent flooding or coastal erosion from storm surges and sea level rise are all going to be treated. A much more detailed treatment of the financial implications of climate impacts needs to be carried out so that the interminably repeated estimates of economic costs for mitigation become properly balanced by analyses of the much broader and more rapidly increasing socio-economic costs of climate impacts.

Adaptation strategies have to be promoted at a central government level but also closely integrated with development for both iwi and local government. A major problem in this area comes from some rather archaic legal frameworks that have been identified by Sir Geoffrey Palmer and others. Similarly, the New Zealand Coastal Policy Statement, that is

part of the Resource Management Act, is being largely ignored in land use planning decisions when there seem to be some conflicting aspects of local government responsibility.

This is also an area where the insurance and re-insurance industry clearly want to get better risk management processes established at the local government planning level. So, while there are some similarities with planning for mitigation of greenhouse gas emissions, the key players are quite different and they have very different structural barriers to overcome.

This cannot be dealt with by adding a lot more details to the Zero Carbon Act, rather it needs and extensive review of the existing legislative frameworks for planning and development and a recognition that these may need to be changed quite significantly.

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

✓ **No**

Comment

New functions for adapting to climate change have not been specified explicitly in MfE2018. Therefore, the question is ambiguous.

But for reasons noted above, we do not agree that the Zero Carbon Bill should set out a national adaptation plan. Government processes for dealing with climate change impacts have to be much more diverse and involve different key players. To try and merge that with plans to reduce national greenhouse gas emissions is simply going to delay any progress and lead to legislation that is more complex.

Having two parallel legislative processes that deal separately with mitigation and with adaptation, but which are kept in synchrony by the Climate Change Commission, is far more logical.

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?

✓ **yes**

☐ ~~no.~~

Comment

This should be explored, but again will require the much broader approach for dealing with climate impacts than for control of greenhouse gas emissions, as outlined above for question 14.

Experience in other countries has shown that relationships between government and the insurance industry can play a significant role in dealing with issues such as trends towards larger flood damages. New Zealand has also developed such links with the insurance industry for earthquake risk management.

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