

esr zero carbon bill submission 190711**To: Committee Secretariat
Environmental Committee**

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Date: 11 July 2019

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Engineers for Social Responsibility Inc. (ESR) is an independent group of engineers who consider that being knowledgeable in the field of technology means that they also have a special obligation to the public at large in matters that relate to engineering, or that can be addressed using engineering approaches. Given the urgency of the issue, for some time now the organization has been particularly focused on how to respond to the climate crisis by reducing emissions and concentrations of greenhouse gases in the atmosphere.

The key authors of this report are all members of ESR with strong experience and qualifications in engineering, and a broad knowledge in relation to global heating, what is causing it and how it can be addressed.

Submission in response to: Climate Change Response (Zero Carbon) Amendment Bill

GENERAL

We strongly support the Bill's objective of limiting global heating to 1.5°C, legislating targets projected to make this possible, creating a framework of five-yearly emissions budgets to make meeting the targets achievable, and establishing an independent Climate Change Commission to assist with the above.

The Bill's objective is consistent with the internationally-reached 2015 Paris Agreement, that New Zealand ratified, for which one of the key aims is, "to pursue efforts to limit the temperature increase to 1.5°C above pre-industrial levels, recognizing that this would significantly reduce the risks and impacts of climate change".

The recent IPCC report (Special Report on Global Warming of 1.5 °C, October 2018) also very strongly drives home the need for urgent action to stay within the 1.5 °C threshold. If we are to limit the extreme damage that the climate crisis could cause, perhaps even making the planet uninhabitable by our species, for the sake of our children and future generations we need to take extremely urgent action.

Scientists are forecasting that even warming of 1.5°C is going to result in serious problems. Some of these are: a major rise in sea levels that will, for example, severely affect some of our Pacific neighbours; large land areas of the world becoming no longer suitable for agriculture or habitation because of hotter temperatures and reduced availability of water; and significant changes in sea life that are likely to have a major effect on what food we can recover from the sea.

Although New Zealand's emissions are only a small percentage of the global total, they are extremely high on a per capita basis. At the same time, New Zealand is also very fortunate in having, the tools, the clean energy

alternatives and the expertise to address this. We therefore believe it is critically important that New Zealand takes rapid and effective action to reduce its emissions, and also **pushes strongly for action from other countries by setting an example of** what is possible.

We want the Bill to ensure that New Zealand's carbon emissions start falling rapidly, that by 2030 they have fallen sufficiently to meet the projected requirements of the recent IPCC report (Special Report on Global Warming of 1.5 °C, October 2018), and that they reach a net zero level by or before 2050. We also want the Bill to ensure a major reduction in primarily agriculturally-related emissions of methane and nitrous oxide.

We do not believe that the Bill in its current state is capable of achieving the above.

DETAILS

1. Make the Act enforceable

1.1 The Act is currently not legally enforceable. It needs to be. The court needs to be able to review proposed developments that could significantly raise emissions and might make it impossible for emissions budgets to be met.

1.2 Section 5ZJ must be removed to allow the court to take other steps to remedy ineffective government budgets.

1.3 Section 5ZK needs to be changed so that the governments must take targets and budgets properly into account.

2. Improve the legislated targets

The Bill currently only has targets to: reduce all greenhouse gases (except biogenic methane) to net zero by 2050; and to reduce emissions of biogenic methane within the range of 24-47 % below 2017 levels by 2050, including to 10% below 2017 levels by 2030.

2.1 The recent IPCC report (Special Report on Global Warming of 1.5 °C, October 2018) concludes that to retain a possibility of holding global warming to a maximum 1.5 °C above pre-industrial levels, overall global emissions need to fall by around 45% below 2010 levels by 2030, with net emissions falling to zero by 2050. However, these are global reduction figures. Since New Zealand is a developed country with strong expertise and resources, it needs to aim considerably higher than this: perhaps for a reduction over the 2010 to 2030 period of 50% for overall non-agricultural emissions. We therefore recommend that a reduction of 50% for non-methane emissions by 2030 be included as a legislated target.

2.2 The IPCC report referred to above also concludes that global coal emissions need to fall by around 68% below 2010 levels by 2030. Again, because of New Zealand's position, it needs to aim higher than this. Other energy sources and technologies are available to replace coal, so a complete phaseout in New Zealand by 2030 is realistic. We therefore recommend a reduction of at least 70% in coal-based emissions by 2030 be included as a legislated target.

2.3 Regarding agricultural emissions, New Zealand studies indicate that farm profitability can in many cases be improved with smaller herd sizes. We also know that there is a large variation in methane production between individual animals, so methane reduction can be targeted with an intensive breeding program. And we further know that feed sources can have an effect. For example, addition of only 5% of seaweed to ruminants' diet typically results in a major reduction in their methane emissions. We therefore ask that the Bill includes a 2050 methane target that is consistent with the 1.5°C target, and a reduction target for 2030 that is significantly higher than the current 10% figure in the Bill.

3. Improve our Paris target

New Zealand's commitment under the Paris Agreement, which we ratified in October 2016, reads as follows:

Emissions will be reduced to 30% below 2005 levels by 2030. The 2005 reference has been chosen for ease of comparability with other countries. This responsibility target corresponds to a reduction of 11% from 1990 levels.

What is not made clear in the above is that the target is based on an inconsistent comparison of gross emissions in 2005 with net emissions in 2030. If you express this target on a consistent net-net basis, using recent emissions data our target is actually to increase our net emissions to 7% *above* 2005 levels by 2030, which corresponds to an increase of 67% *above* 1990 levels.

We need to rapidly discard the Paris commitment New Zealand previously made and submit one that accords with what we actually need to achieve. A revised Paris commitment could be included in the Bill currently being considered.

4. Ensure appropriate commissioners are appointed

4.1 The Bill provides for the members of the Climate Change Commission to be appointed by Parliament. There need to be strong provisions to ensure that those appointed have the necessary knowledge and skills, and do not have vested interests that may lead to them attempting to slow down the adoption of the emissions reductions that are required.

4.2 We ask that the Bill include provisions for at least one person to be appointed to the Climate Change Commission who can represent iwi and ensure that matters relating to Te Tiriti o Waitangi are properly taken into account.

5. Give Commission greater independence

5.1. We think that it is important for the Climate Change Commission to be able to act independently from the government, in much the same way as the Reserve Bank currently can when it takes steps such as changing interest rates, changing the percentage deposit on house purchases that must be paid in cash or changing the percentage of deposited funds that banks must hold as cash. This will allow the Commission to take certain steps without prior government approval, to provide truly independent advice and hold the government to account.

5.2 The Commission's funding needs to be safeguarded to prevent a government from restricting it by cutting its resources.

5.3 The Commission needs to report to Parliament, not to a specific Minister.

6. Increase the responsibilities of the Commission

Besides giving advice to the Government on setting budgets, we believe the Commission should also have certain independent powers in relation to

- # Setting and revising targets
- # Setting and revising budgets
- # Ensuring that carbon prices are appropriate
- # Phasing out free emissions units to trade exposed industries
- # Restricting forestry offsets
- # Ceasing to allow the use of banked units from other price periods
- # Stopping acceptance of units from outside New Zealand
- # Including emissions from international aviation and shipping

See below for details.

7. Allow targets to be revised

The Bill gives the Commission some powers to review the reduction target currently given in the Bill for 2050, but only under certain conditions. We recommend that the Commission have the right to review any target in

the legislation, for a wide range of reasons; and to recommend new targets for different dates not already covered in the legislation, if they consider this to be appropriate.

The success of the Montreal Protocol on Substances that Deplete the Ozone Layer gives an example of why it is important to have flexible control over emissions regulations. It turned out that scientific conclusions about the extent of ozone depletion had been significantly under-estimated at the time the original protocol was negotiated. The negotiators had allowed for this possibility by developing a highly flexible instrument which could increase or decrease controls based on continual improvement of scientific data sets. This flexibility meant the protocol could be amended to include stricter controls. Additional ozone-depleting substances could be added to the control list and objectives changed from a partial phase-out to a total phase-out.

8. Allow budgets to be set and revised

The Bill currently allows the Commission to advise the Government on setting budgets. We believe that the power of the Commission needs to go beyond this, so that it can revise existing budgets, or set new ones, if it considers this necessary.

9. Make emissions pricing more central to the objectives

9.1 Making expected emissions pricing available for the coming several years is a key driver to allow business and other organisations to be able to sensibly plan and implement changes to reduce their emissions and fossil fuel use. If the government has not done this, or the Commission considers the government's proposed prices are not appropriate, then we believe the Commission should have the power to set or amend these.

9.2 The New Zealand Productivity Commission in its recent report (Low Emissions Economy, final report, August 2018, Ch 5) recommends "a system in which emissions are priced at a level that reflects their harm". This price is often referred to as the social cost of carbon (SCC). The recent IPCC report (Special Report on Global Warming of 1.5 °C, October 2018, Ch 2, P 151) says "the SCC literature has identified a range of factors, assumptions and value judgements that support SCC values above [US]\$100 / tCO₂₋₁" (above approx. NZ\$150 / tCO₂₋₁). This damage figure can be expected to increase with time. Having emissions charges below this level is completely counter-productive because we are subsidising the damage that emitters are making rather than giving them the appropriate economic incentive to change. The Commission needs to have the power to rapidly increase carbon charges to the damage figure.

9.3 In order to meet the reductions in global emissions that the IPCC has projected are necessary by 2030, the IPCC says that by 2030 carbon prices (CO_{2-e} prices per tonne) will need to be in the range of US\$135 (around NZ\$203) to US\$5,500 (around NZ\$8,250) (Special Report on Global Warming of 1.5 °C, October 2018). As a developed country with strong resources and expertise, New Zealand needs to aim considerably higher than the global average, which implies that our carbon price in ten years' time will need to be well over \$200 / tonne. We believe the Commission needs to have the necessary powers to ensure that this happens.

10. Restrict forestry offsets

10.1 The Bill does not currently restrict forestry offsets as a way of reducing our net emissions. While planting trees is a very useful step in reducing net emissions, it has risks because trees are not permanent, for example they can be destroyed by fire, as has been happening increasingly frequently as temperatures continue to warm. Including trees grown for timber is also problematic because the carbon captured as the tree grows is treated as being released again when the tree is harvested. We therefore ask that the Bill include a cap on forestry offsets and that the Commission have the power to review this, if necessary.

10.2 The Commissioner for the Environment, Simon Upton, in his recent report (A Zero Carbon Act for New Zealand, March 2019) recommends that we deal with agricultural greenhouse gases and forest sinks together,

while dealing with fossil carbon dioxide emissions separately. This means that forestry offsets can only be used to arrive at net figures for agricultural emissions. We support this approach..

10.3 The legislation should impose a mandate for the Commission to consider emissions reduction targets beyond net zero in 2050. For example, targets for reduction of gross emissions to coincide with the time when no further forestry credits can be achieved within New Zealand.

11. Cease the use of banked units

11.1 Allowing entities to “bank” emissions units, for use at a later time when the unit price has increased, undermines the effectiveness of the emissions trading scheme. We recommend that units that date back to a different price period can only be returned to the government for a refund of the price originally paid, and that current emissions must be covered by submitting current units.

11.2 An exception to the above may be units held as credits earned from forestry plantings, which may have to be used to cover emissions costs when trees are harvested.

12. Prohibit international credits

The current wording of the Bill says that targets must be met “as far as possible” domestically. We have already seen how accepting international emissions credits can seriously reduce the effectiveness of our emissions trading scheme. If we want to help other countries there are other more effective and less damaging ways to achieve this. New Zealand needs to meet its targets by reducing its own emissions. We therefore call for the Bill to include the prohibition of the use of international credits to meet our emissions targets.

13. Phase out free units to trade exposed industries

Some emissions-intensive and trade-exposed (EITE) industries currently receive up to 90% of their New Zealand emissions units free of charge. This creates a very serious financial blockage to getting these industries to reduce emissions by moving to renewable energy sources, or via other means. A much more sensible way of proceeding would be for the government to charge such industries for their emissions, but to give them some financial assistance with the capital and operating costs involved in moving away from fossil fuels. We believe it would be appropriate for the Commission to have some power regarding the timing and rate of phase-out of free units, and the possibility of some compensatory assistance.

14. Appropriately consider embodied emissions in imported products

The current definition of gross emissions appears to focus on greenhouse gases emitted directly within New Zealand’s borders, and excludes offshore emissions associated with the production of imported goods. While this may be consistent with UN IPCC Guidelines for National Greenhouse Gas Inventories, it has the potential to disadvantage New Zealand industry.

The UK Climate Change Commission was similarly created to focus and report on domestic emissions only. It has subsequently indicated that it will monitor the UK’s consumption-based emissions, and stated that the country must avoid “offshoring” its territorial emissions by importing more goods. The NZ Climate Change Commission must have this mandate from its outset.

An example from New Zealand’s steel industry illustrates this point. Recycling scrap steel generates much lower emissions than producing new steel from iron sand, but Pacific Steel’s recycling plant in Otahuhu was decommissioned in recent years due to the significant cost of replacing equipment at the end of its serviceable life. Future increases in carbon pricing could have the beneficial outcome of driving the reintroduction of steel recycling, followed eventually by a transition away from the manufacture of new steel. However, if competing

steel products arriving from offshore are not subject to the same emissions charges, the effect could be to wipe out the New Zealand steel industry with no improvement to global emissions.

We recommend that the Commission is given a specific mandate to make recommendations to government on trade issues affecting the carbon footprint of New Zealand's overall consumption. Again, the success of the Montreal Protocol is instructive; controlled ozone-depleting substances were identified, and these could only be traded with other parties to the protocol. Consideration needs to be given to identification of products that are imported with significant embodied emissions, a determination as to whether these goods have been manufactured under an internationally linked ETS scheme, and if not whether New Zealand Emissions Units need to be purchased at the time of import.

15. Include international aviation and shipping

Our understanding is that international aviation and shipping emissions arising from fuels supplied in New Zealand are not covered by the Bill. We believe they should be. We therefore ask that the Bill be revised to include New Zealand's share of international aviation and shipping emissions.

16. Redistribution of funds from carbon charges

Currently there has been very little attention to redistributing funds from carbon charges so that New Zealand citizens are not seriously adversely affected in what goods and services they can afford to purchase, and we can make a just transition to a lower emissions economy. This is going to become very important as carbon prices rise. For example, leading climate scientist, James Hansen, and others have suggested a citizen's dividend be introduced. (see, for example, https://en.wikipedia.org/wiki/Carbon_fee_and_dividend) that is paid monthly to each adult, with a half payment per child under 18 years old, with a limit of 2 children per family. It is really important that some form of revenue recycling is introduced because unless this happens significant increases in emissions charges are probably not going to be workable or politically tenable. Hence this issue needs to be addressed in the current Bill, or otherwise elsewhere reasonably rapidly. We also recommend that the Commission be given an advisory role on this matter.

17. Allow climate change to be considered under the Resource Management Act

To make the proposed Zero Carbon Bill effective, climate crisis issues need to be allowed to be considered under the Resource Management Act (1991). Given the urgency and critical importance of addressing climate crisis issues, it seems extraordinarily strange that this issue cannot be considered under current resource management processes. Putting a clause in the current Bill that allowed climate crisis issues to be considered under the RMA would be a fast and effective way of dealing with this issue. Also, the 2004 amendment to the RMA, which stopped the effects of greenhouse gas emissions on climate change being considered when issuing resource consents, must be urgently repealed.

OTHER

Oral submission

We would like to be invited to present our submission in person to the select committee.

Further work

Please contact the authors if you are seeking further information:
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Kind regards

Hugh MacMurray Thomas Neizert Peter Whitmore

On behalf of the National Committee of Engineers for Social Responsibility Inc.
