

Climate Change Response (Zero Carbon) Amendment Bill

Submission by Climate Justice Taranaki Inc., 16 July 2019

Introduction

1. Climate Justice Taranaki Inc. (CJT) is a community group committed to justice, action and true solutions to our climate crisis. Our members include scientists with bachelor degrees in ecology, geography, anthropology up to coral ecologists with doctorates. Most of us are parents or grandparents. We are community and market gardeners, farmers, writers, teachers, musicians, artists, community organisers and researchers. Most of our members and over 1000 supporters are based in Taranaki. Several of our members and supporters are tangata whenua. We raise awareness on social justice issues around climate change which impact disproportionately heavily on the under-privileged and on future generations. We advocate for policies and decisions that alleviate the impacts and empower communities. We support communities in building climate resilience.
2. We submitted on the Ministry for the Environment Zero Carbon Bill Discussion Document in July 2018¹. Many of the points raised in the current submission reflect or reiterate what was presented in our original submission.

Key points of submission

3. We support limiting the global average temperature increase to 1.5° Celsius above pre-industrial levels as the aspirational goal, and the establishment of an overarching legislative framework for clear and ambitious New Zealand climate policies as the purpose of the Bill.
4. The Bill should be a stand-alone and over-riding piece of legislation that governs every decision with implications on emissions and climate.
5. The Bill must properly honour Te Tiriti o Waitangi by putting Māori at the decision-making table, preferably a majority, as tangata whenua are committed longterm to this whenua and have a long history and knowledge of how to live sustainably within the limits of these islands.
6. The target for New Zealand to achieve net zero emissions by 2050 is too far away. It should be 2040.
7. The targets for biogenic methane emissions by 2030 and 2050 are too weak. They need to be much more ambitious to enable rapid transition to net zero emission agriculture.
8. Carbon offset needs to be capped, e.g. to 30% of total emissions. They need to be set up in a way where benefits continue to come if you maintain healthy forests and don't allow companies to just walk away and leave a bankrupted liability.
9. All emissions targets and emissions budgets must be enforceable in a court of law, so not rendering the Bill toothless.
10. Climate change risk assessments and adaptation need to occur at all levels, with resources provided to regional and local authorities for effective implementation of adaptation plans.

¹ Climate Justice Taranaki, 18 July 2018. Submission on the Ministry for the Environment Zero Carbon Bill Discussion Document. <https://climatejusticetaranaki.files.wordpress.com/2018/07/cjt-submission-on-zero-carbon-bill-discussion-july18-final.pdf>

Purpose

11. We support limiting the global average temperature increase to 1.5° Celsius above pre-industrial levels as the aspirational goal. The IPCC special report *Global Warming of 1.5°C* clearly stated that limiting global warming to 1.5°C compared to 2°C is projected to lower the impacts on terrestrial, freshwater, coastal ecosystems, marine biodiversity, fisheries and ecosystems, and their functions and services to humans (IPCC, 2018)². The report also projected less climate-related risks to health, livelihoods, food security, water supply, human security, and economic growth with global warming of 1.5°C compared to 2°C. However, “*these risks depend on the magnitude and rate of warming, geographic location, levels of development and vulnerability, and on the choices and implementation of adaptation and mitigation options*” (IPCC, 2018).
12. In New Zealand, the development and implementation of clear and ambitious climate policies to help limit global warming and climate extremes, is long overdue. It is our hope that the Bill will enable these.
13. Recognising the high per capita emissions of New Zealanders and our responsibility and potential as leader and catalyst for change, our climate policies must be ambitious and comprehensive.
14. Such policies must honour Te Tiriti o Waitangi and contribute to climate justice, ensuring that Māori communities and other disadvantaged and vulnerable communities and individuals are not further disadvantaged in the process. The common practices and processes in which business stakeholders ultimately have more say than iwi and community will not create fair outcomes for all.
15. Climate policies must also be supportive of other environmental policies notably biodiversity conservation and ecosystem restoration. E.g. reforestation or afforestation for the purpose of carbon sequestration should be focussed on native species and contribute substantively to ecosystem restoration³ rather than compromise it.
16. **The Bill should be a stand-alone and over-riding piece of legislation that governs every decision with implications on emissions and climate.** It should have effects on other legislation, notably the Crown Minerals Act (CMA), the Exclusive Economic Zone and Continental Shelf Act (EEZ-CS Act) and the Resource Management Act (RMA), to ensure that they are aligned with and supportive of the purpose, emissions target and budgets of the Bill. In the current form, being amendments to the Climate Change Response Act 2002 with heavy reliance on the Emissions Trading Scheme, we don’t believe that the Bill will achieve the above purpose.
17. The Explanatory note of the Bill specifically mentions the Commission’s function in recommending unit supply settings for the NZ ETS, “*which will be brought into operation by proposed legislative changes to improve the scheme.*” We submit that the Commission should also have the function in recommending legislative changes to the Crown Minerals Act, Exclusive Economic Zone and Continental Shelf Act and the Resource Management Act, so that they are aligned with and supportive of the purpose, emissions target and budgets of the Bill.

² IPCC, 2018. Summary for Policymakers. In: *Global Warming of 1.5°C*. <https://www.ipcc.ch/sr15/>

³ Clarkson, B., Kirby C. and Wallace, K. 2018. Restoration targets for biodiversity depleted environments in New Zealand. The Environmental Research Institute, University of Waikato.

https://www.researchgate.net/publication/329629756_Restoration_targets_for_biodiversity_depleted_environments_in_New_Zealand

Te Tiriti o Waitangi

18. In respect to Section 3A on Te Tiriti o Waitangi, it is crucial that iwi and Māori involvement goes beyond consultation or 'take into account'.
19. We ask that this section be strengthened and expanded to include proper recognition of mātauranga⁴ and tangible support for iwi and Māori communities to enhance their climate resilience, adaptation^{5, 6} and sustainability, e.g. in the case of marae in vulnerable coastal locations.
20. We reiterate, put Māori at the decision-making table, preferably as the majority. Tangata whenua are committed longterm to this whenua and our people and have a long, rich history and knowledge of how to live sustainably within the limits of these islands. We need their knowledge and foresight but under their terms, not appropriated under tauwiwi terms.

2050 target is too far away

21. As we submitted on the discussion document in July 2018, a net zero emission target by 2050 does not reflect the fact that we need to act urgently. Governments worldwide are beginning to recognize that we are in a climate emergency^{7, 8, 9, 10}. The 2050 target fails to acknowledge that current policies globally are nowhere close to the target of keeping temperature rise below 2°C, let alone 1.5°C. Even if all the pledges made in the Paris agreement are implemented, temperature rise is estimated at over 3°C by 2050 or 2.6-3.2°C by 2100 (Carbon Action Tracker, 2018)¹¹. This means that we need more ambitious and nearer targets to drive emissions reduction to net zero.
22. Every time we get an estimate of predicted climate temperature rise, the date moves closer and closer as more feedback loops become evident such as melting glaciers and sea ice that increase the planet's warming. Now methane effects are being more appropriately assessed in a shorter time frame we also see the need to move faster to reduce more of our GHG emissions. It would not be surprising if the IPCC's 2030 estimate might soon turn into a 2025 estimate. Time is running out, effects are looking to be worse so working with worst case scenarios is surely more wise than hoping for best case scenarios.
23. The UNFCCC 2015 Paris Agreement¹² to which New Zealand is Party, stated, *"...Parties aim to reach global peaking of greenhouse gas emissions as soon as possible, recognizing that peaking will take longer for developing country Parties, and to undertake rapid reductions thereafter in accordance with best available science, so as to achieve a balance between anthropogenic emissions by sources*

⁴ Climate change scientists look to Māori and other indigenous people for answers. 23 Feb 2019.

<https://www.stuff.co.nz/environment/climate-news/110587713/climate-change-scientists-look-to-maori-and-other-indigenous-people-for-answers>

⁵ NIWA website, accessed on 13 July 2019. Climate and Māori Society. <https://www.niwa.co.nz/climate/information-and-resources/climate-and-m%C4%81ori-society>

⁶ Māori Community Adaptation to Climate Variability and Change, 2014. <https://www.mpi.govt.nz/dmsdocument/27052-maori-community-adaptation-to-climate-variability-change>

⁷ Brian Kahn, 10 July 2019. AOC and Bernie Sanders are asking Congress to declare a Climate Emergency. <https://earther.gizmodo.com/aoc-and-bernie-sanders-are-asking-congress-to-declare-a-1836220259?IR=T>

⁸ Paris declares 'climate emergency'. <https://www.france24.com/en/20190709-paris-declares-climate-emergency>

⁹ Climate Emergency Declaration website. <https://climateemergencydeclaration.org/>

¹⁰ PM Jacinda Ardern: Government 'not opposed to' idea of declaring a climate emergency, 3 July 2019.

<https://www.stuff.co.nz/environment/climate-news/113946213/more-than-50-of-new-zealands-top-scientists-call-on-government-to-declare-climate-emergency>

¹¹ Carbon Action Tracker website, accessed on 12/07/2018. Addressing global warming – 2100 warming projections. <https://climateactiontracker.org/global/temperatures/>

¹² UNFCCC Paris Agreement, 2015. https://unfccc.int/sites/default/files/english_paris_agreement.pdf

and removals by sinks of greenhouse gases in the second half of this century, on the basis of equity, and in the context of sustainable development and efforts to eradicate poverty” (Article 4).

24. As Kevin Rolfe pointed out in his submission¹³ on the Bill, the article encourages Parties to halt emissions “*as soon as possible*”, especially developed countries which are expected to peak ahead of developing countries and “*undertake rapid reductions... on the basis of equity...*”
25. As a developed nation, New Zealand needs to set a much stronger target and act to achieve it, if the global target of reaching net zero emission by 2050 as expected in the Paris Agreement is to be met.
26. The 2018 IPCC special report *Global Warming of 1.5°C* stated¹⁴, “*In model pathways with no or limited overshoot of 1.5°C, global net anthropogenic CO₂ emissions decline by about 45% from 2010 levels by 2030 (40-60% interquartile range), reaching net zero around 2050 (2045-2055 interquartile range).*” The Bill needs an interim target for all greenhouse gases for 2030 (not just biogenic methane) to reflect the crucial findings in the IPCC 1.5°C report.
27. In our 2018 submission, we reiterated the call for net zero greenhouse gas emissions by 2040 by Forest and Bird and Taranaki Energy Watch, and proposed a mid-term target for 2030 which would reflect substantial increase in commitment from our ‘insufficient’ National Determined Contribution of 30% reduction from 2005 levels by 2030. Our positions on these remain the same.

Biogenic methane targets are far too weak

28. The agricultural sector contributes nearly half of New Zealand’s gross emissions. Recent figures indicate methane from livestock was 82.5% of methane emissions across all sectors and 96% of all agricultural methane emissions (Stats NZ, 2019)¹⁵. Biogenic methane from the waste sector is relatively small by comparison.
29. Methane is 86 times more potent than CO₂ on the 20-year timescale. “*While CO₂ persists in the atmosphere for centuries, or even millennia, methane warms the planet on steroids for a decade or two before decaying to CO₂*” (Vaidyanathan, 2015)¹⁶. This is why we need deep cuts in methane emissions from now.
30. The IPCC 1.5°C report stated, “*Modelled pathways that limit global warming to 1.5°C with no or limited overshoot involve deep reductions in emissions of methane and black carbon (35% or more of both by 2050 relative to 2010).*” It also projected a “*decline by about 25% by 2030*” of non-CO₂ emissions, also relative to 2010, to be consistent with 1.5°C warming.
31. The proposed target of 10% reduction (from 2017 levels) of biogenic methane emissions by 2030 in the Bill is therefore substantially lower than what is projected by IPCC as required to limit global warming to 1.5°C, based on the latest science. The proposed reduction of “*at least 24% to 47% less than 2017 emissions*” by 2050 also does not reflect IPCC’s recommendations.
32. The IPCC 1.5°C report warned, “*Potential additional carbon release from future permafrost thawing and methane release from wetlands would reduce budgets by up to 100 GtCO₂ over the course of this*

¹³ Kevin Rolfe, 2019. A submission on the Climate Change Response (Zero Carbon) Amendment Bill.

<https://kevinrolfeconsultingltd.co.nz/wp-content/uploads/2019/07/A-Submission-on-the-Climate-Change-Response-Zero-Carbon-Amendment-Bill.pdf>

¹⁴ IPCC, 2018. Summary for Policymakers. In: *Global Warming of 1.5°C*. <https://www.ipcc.ch/sr15/>

¹⁵ Stats NZ, 18 April 2019. New Zealand’s greenhouse gas emissions. <https://www.stats.govt.nz/indicators/new-zealands-greenhouse-gas-emissions>

¹⁶ Gayathri Vaidyanathan, 2015. How bad of a greenhouse gas is methane?

<https://www.scientificamerican.com/article/how-bad-of-a-greenhouse-gas-is-methane/>

century and more thereafter...” Release of ice gas methane clathrates from continental shelves will exacerbate this problem of positive feedback on the climate system. It is therefore crucial that we set an ambitious reduction target for methane emissions.

33. Unfortunately, IPCC has in some cases under-estimated the rate of change and required emission reductions. Hence we call for more stringent reductions than recommended by IPCC. If 2017 must be used as the baseline, then we call for at least a 50% reduction in methane emissions by 2030 and for zero net emissions by 2040.
34. Moreover, virtually all of the nitrous oxide emissions in New Zealand is biogenic, derived from interaction between animal urine and soil microbes, while small amounts are derived from fertiliser and dung (PCE, 2016)¹⁷. Notably, nitrous oxide is a long-lived greenhouse gas nearly 300 times more potent than CO₂ on the 100-year time scale. By substantially reducing agricultural methane emissions through destocking, cessation of urea fertilisers, integration of tree crops and transition to regenerative agriculture which can provide carbon sinks, nitrous oxide emissions will also be reduced, along with numerous co-benefits, notably improvements in water quality, soil integrity and animal welfare.
35. This is in agreement with the Parliamentary Commissioner for the Environment’s view that treating biological methane and nitrous oxide together *“has the potential to optimise both economic and environmental outcomes and provide the basis for a more integrated, landscape-wide approach to managing the environmental impact of New Zealand’s land-based sectors”* (PCE, March 2019)¹⁸.
36. It is imperative for New Zealand to transition from high input, industrial animal agriculture to low input, sustainable agriculture, halt further conversion¹⁹ of natural habitats for farming and other landuse, and invest heavily on native forest and biodiversity restoration. Some farmers are currently complaining about farming land being turned into forests but we equally remind farmers that they turned millions of hectares of good forest land, carbon sinks and biodiversity paradises into mono-cultures to export product overseas. They should not blame forestry for destroying farming communities when it is their very farming model that has destroyed most farming communities across this country in the last few decades. It is time to reverse that model and put more land back into native forest and wetland. These habitats bring back another favourite farming community past-time and economy (that farm encroachment on waterways has almost destroyed): fishing.
37. In addition, there is proven potential for the waste sector to reduce or utilise biogenic methane emissions for energy production^{20, 21, 22}, thereby reducing its climate impact and reliance on fossil fuels and contributing to a circular economy.

¹⁷ Parliamentary Commissioner for the Environment, October 2016. Climate change and agriculture: Understanding the biological greenhouse gases. <https://www.pce.parliament.nz/publications/climate-change-and-agriculture-understanding-the-biological-greenhouse-gases>

¹⁸ Parliamentary Commission for the Environment, March 2019. Farms, forests and fossil fuels: The next great landscape transformation? <https://www.pce.parliament.nz/publications/farms-forests-and-fossil-fuels-the-next-great-landscape-transformation>

¹⁹ Ministry for the Environment and Statistics NZ, 2019. Environment Aotearoa 2019.

²⁰ Brian Cox, 2019. Bioenergy & biofuels – Transition pathway for Taranaki. Presentation at the Just Transition Community Conference, New Plymouth, 15 June 2019. <https://www.bioenergyfacilities.org/facility/awapuni-landfill-palmerston-north>

²¹ Jonassen Industrial Projects Limited website, accessed on 13 July 2019. <https://www.jipl.co.nz/food-waste-energy-2/>

²² PGF boost for ‘game changing’ energy initiatives, 8 July 2019. <https://www.stuff.co.nz/environment/114081692/pgf-boost-for-game-changing-energy-initiatives>

38. Furthermore, black carbon emissions should be reduced by banning new coal-fired power plants and boilers²³, decommissioning old power plants and rapidly replacing gas and diesel engines with cleaner forms of energy. Re Fonterra, “on its current plans, it reserves the right to still be building new coal fired plants in 2030. Those could have a life of up to 30 years. Fonterra is delusional if it believes it could still be burning coal in 2060” (Rod Oram, 2019)²⁴.

Emissions reduction targets and budgets not enforceable

39. Clause 5ZJ(1) states, “No remedy or relief is available for failure to meet the 2050 target or an emissions budget, and the 2050 target and emissions budgets are not enforceable in a court of law, except...” Clause 5ZK states, “(1) A person or body may, if they think fit, take the 2050 target or an emissions budget into account in the exercise or performance of a public function, power, or duty conferred on that person or body by or under law... (2) However, a failure by any person or body to take the 2050 target, an emissions budget; or guidance issued under section 5ZL into account does not invalidate anything done by that person or body.”
40. As such, the emissions reduction targets and budgets are not enforceable and, as noted above, the Bill is simply toothless.
41. We submit that the Bill needs to be revised to make the emissions targets and budgets enforceable. It should require councils and other government authorities and personnel to take the emissions target and budget into account when exercising public function, power, or duties, and hold them accountable if they fail.
42. New clauses need to be added to require industries and companies to follow emissions targets and budgets and to hold them accountable if they fail. If companies opt to shift overseas then it will be clear where their loyalties lie - not in our people, our country or, for that matter the well-being of our biosphere. They do so at risk of losing any social licence they may currently have.

Carbon offsets must be strictly limited

43. In our 2018 submission, we raised serious concern over carbon offsets and creative accounting.
44. We are opposed to any offshore offsets or mitigation. We are deeply concerned by the interpretation in Subpart 2 Setting emissions budget, Clause 5S, “**net budget emissions means gross emissions, offset by removals and offshore mitigation**”. We ask that the phrase “as far as possible” be removed from Clause 5W “(1) Emissions budgets must be met, as far as possible, through domestic emissions reductions and domestic removals.”
45. Subpart 2 Clause 5S has also this interpretation, “**removals mean carbon dioxide equivalent greenhouse gases that are removed from the atmosphere.**” We ask that carbon capture and storage (CCS) be specifically excluded from the interpretation of “removals” and “net budget emissions”. Evidence overseas have shown that CCS has failed to effectively remove GHG but are largely a tactic used by fossil fuel companies to prolong their operations (Forcey, 2019)²⁵. For example, “An estimated 6.2% of the Petra Nova power station’s emissions are captured, compressed and then

²³ Oil and gas ban could force rethink of Fonterra’s plans to cut coal, 21 May 2019.

<https://www.stuff.co.nz/business/farming/112865084/oil-and-gas-ban-could-force-rethink-of-fonterras-plans-to-cut-coal>

²⁴ Rod Oram, 24 March 2019. Oram: Time for Fonterra to get serious.

<https://www.newsroom.co.nz/2019/03/24/499640/time-for-fonterra-to-get-serious>

²⁵ Tim Forcey, 2019. The Fossil Fuel Industry is Co-opting the Idea of “Hydrogen”. Presentation at the Just Transition Community Conference, New Plymouth, 15 June 2019. <https://vimeo.com/347463769>

piped 130km to help extract stubborn oil out of a depleted oil field. In the process, an estimated 30% of the carbon dioxide leaks back into the atmosphere, not to mention the emissions that will ultimately be released when the extracted oil is consumed” (Simon Holmes a’ Court, 2018)²⁶. “The No. 1 outcome we wanted to make clear is there is no substitute for mitigation and adaptation,” Waleed Abdalati, a professor at the University of Colorado²⁷. This industry needs to be halted to cool the planet urgently. We must not hand out any special allowances that allow them to ‘green’ their portfolios while still extracting fossil fuels. The technology is still largely unproven and if they were serious about reducing emissions through this technology they would have done it decades ago.

46. The Parliamentary Commissioner for the Environment (2018²⁸ and March 2019) has repeatedly cautioned about the risk of relying heavily on forest sequestration. Indeed, we support Coal Action Network Aotearoa’s submission²⁹ that a cap such as no more than 30% of emissions may be offset with forestry. As with CCS and hydrogen, it is just another delay tactic that will not aid reductions in GHG emissions.
47. It would be far better if, rather than having large forest swathes open to harvest and replant and the harm that brings, that we had native forest and wetland corridors from mountain to sea and small plantations for timber and firewood built around sustainable rural community farms. Examples of this are evident across Europe. This would hopefully be less attractive to international buyers who could cash in and run, and instead become part of a rural sustainable culture. Trees are beneficial to farm animals in many other ways too and for newly rising forms of sustainable agriculture like syntropic, polyculture, biological and regenerative farming which focus on multiple levels built on healthy, deep soils that store more carbon.

Climate change adaptation at all levels

48. It is not clear in the Bill how the national adaptation plan will be implemented or the source of its operational finance. We ask that a clause be added to enable the implementation and financing of the plan.
49. Regional and local authorities carry the responsibilities and direct costs of climate change associated impacts in terms of damages to public infrastructure and services. We ask that, as a matter of urgency, central government provide resources and substantive support to regional and local authorities for the development of risk assessments and implementation of adaptation plans. Given recent issues with water pipes, landfills, forestry, roading and sewage pipe damage from large storms, more work in particular needs to be done around updating infrastructure and systems to prevent disasters like these. Decentralised systems such as compost toilets, grey water systems and rain water tanks are less likely to fail large communities and initiatives like zero waste obviously stop increasing the landfill problem.

²⁶ Simon Homes a’ Court, 16 Feb 2018. It’d be wonderful if the claims made about carbon capture were true. <https://www.theguardian.com/commentisfree/2018/feb/16/itd-be-wonderful-if-the-claims-made-about-carbon-capture-were-true>

²⁷ Umair Irfan, 25 May 2017. Will carbon capture and storage ever work? <https://www.scientificamerican.com/article/will-carbon-capture-and-storage-ever-work/>

²⁸ Parliamentary Commissioner for the Environment, 2018. Response to Productivity Commission Low-Emissions Economy draft report. <https://www.pce.parliament.nz/publications/response-to-productivity-commission-low-emissions-economy-draft-report>

²⁹ Coal Action Network Aotearoa Newsletter, July 2019. <https://mailchi.mp/73fc91f7b9e8/a-call-to-action?e=f3552412cc>

50. Before closing this submission, we have attached our 2018 submission which further elaborates many of the points raised above, as annex for supplementary information.

ANNEX

Ministry for the Environment Zero Carbon Bill Discussion Document

Submission by Climate Justice Taranaki Inc., 18 July 2018

Introduction

51. Climate Justice Taranaki Inc. (CJT) is a community group dedicated to environmental sustainability and social justice. This includes issues of inter-generational equity, notably in relation to climate change, which will impact future generations' inalienable rights to safe water, food and shelter, crucial to sustaining livelihoods and quality of life. CJT became an incorporated society on 26 February 2015.

Key points of submission

52. CJT strongly support the immediate introduction of a Zero Carbon Act.
53. We call for net zero emissions by 2040, with a mid-term target for 2030 which reflects big cuts at the very start.
54. We need to include all greenhouse gases, both long-lived and short-lived, in our emission reduction and net zero targets.
55. Reductions should be solely of domestic emissions without relying on international carbon units or creative accounting.
56. Five-yearly emissions budgets need to be well designed, audited carefully and reported transparently.
57. The Zero Carbon Act would only be effective if it is well supported by concrete plans, actions and fiscal inputs, and other legislative and policy alignment.

Objectives

58. Page 20 of the discussion document lists three objectives:

Sustainable and productive economy

59. While we fully support the need to diversify the economy and limit greenhouse gas (GHG) emissions, we also need to acknowledge that the current global and national economies are not 'sustainable' or 'productive' economies. The growth-economy and our current monetary systems rely heavily on speculations, debts³⁰, extractions of finite resources (e.g. mining of fossil fuels) and overexploitation of renewable resources and the marginalised sections of the society.
60. A major reform of the monetary system, starting with a Bill which gives the Reserve Bank of New Zealand the exclusive right to issue all NZ money (cash and electronic) and stops all commercial banks from issuing any new money, would be the first step to shifting NZ's money supply "*from a largely privately-created money supply where most money is supplied as a profit-making debt for the benefit of commercial institutions, to a fully publicly-created money supply... free of any debt, in accordance with the needs of the country's economy as a whole,*" Draft Reserve Bank of New Zealand (Creation of Currency) Bill 2012³¹.

³⁰ 97% owned, documentary online: https://www.youtube.com/watch?feature=player_embedded&v=d3mfkD6Ky5o

³¹ Draft Reserve Bank of New Zealand (Creation of Currency) Bill 2012.
<http://www.positivemoney.org.nz/Site/Legislation/default.aspx>

Global and local leadership

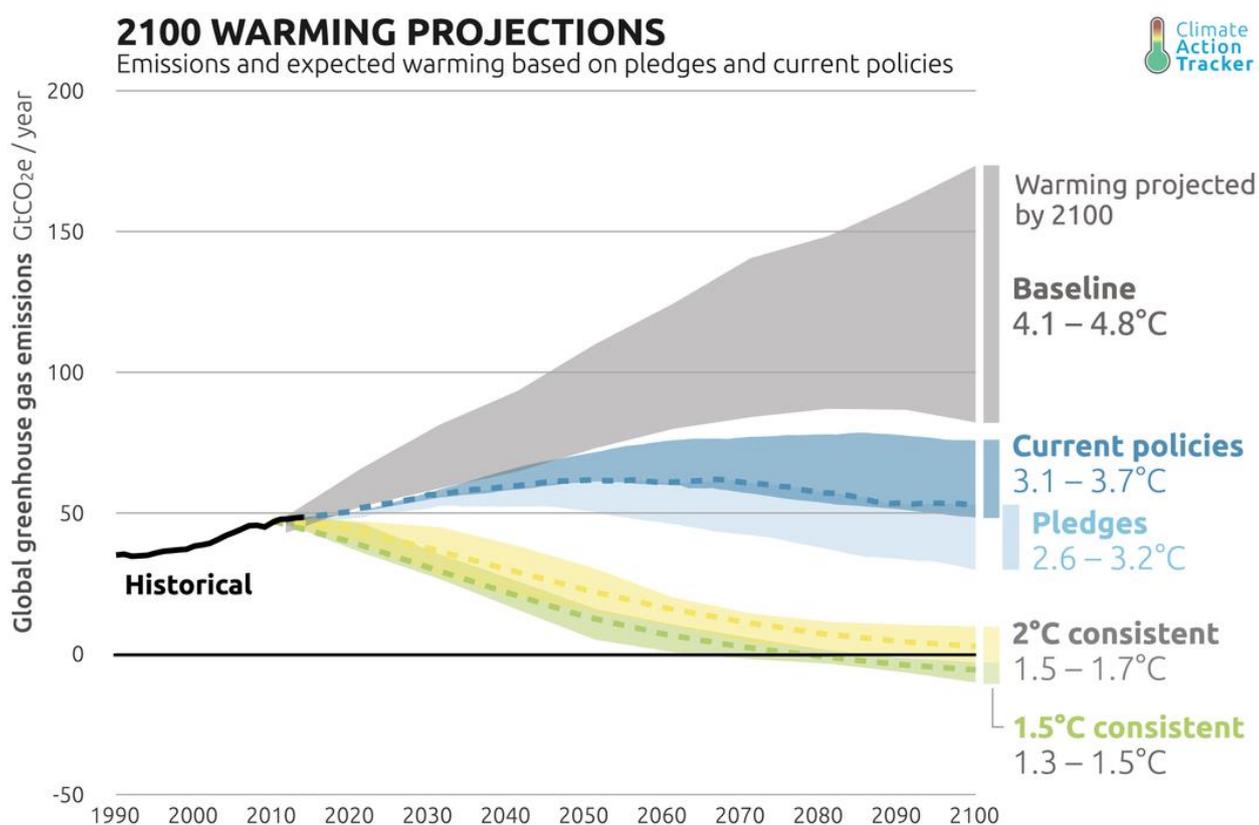
61. While it is most admirable to aim to be “*leading at home and internationally*”, it is equally important to provide an enabling and supportive environment for domestic (district and regional) and international (e.g. Pacific Island nations) governments, research institutions, businesses and civil societies so that they can implement the innovations sparked by New Zealand’s leadership.

Creating a just and inclusive society

62. This objective is very much dependent on the success or failure of a major monetary system reform into a positive money system that is stable, sustainable, productive and fair³². Of critical importance to the ‘just and inclusive society’ that we envisage is resilience – resilience to climate disruptions and the socio-economic turmoil that comes with them.

What target we should set?

63. A 2050 target is a long way away and does not reflect the need to act urgently. It does not take into account the fact that New Zealand’s National Determined Contribution (NDC) in the Paris climate agreement is insufficient³³. It fails to acknowledge that current policies globally are nowhere close to the target of keeping temperature rise below 2°C, let alone 1.5°C. Even if all the pledges made in the Paris agreement are implemented, temperature rise is estimated at over 3°C by 2050 or 2.6-3.2°C by 2100 (See graph below from Carbon Action Tracker)³⁴. This means that we need more ambitious and nearer targets to drive emissions reduction and transition to a zero-carbon economy.



³² Positive Money website, accessed on 12/07/2018. <http://www.positivemoney.org.nz/Site/What/default.aspx>

³³ Climate Action Tracker, 30 April 2018. Country summary – New Zealand. <https://climateactiontracker.org/countries/new-zealand/>

³⁴ Carbon Action Tracker website, accessed on 12/07/2018. Addressing global warming – 2100 warming projections. <https://climateactiontracker.org/global/temperatures/>

64. The Westpac Climate Change Impact Report (2018)³⁵ concluded that, “Taking earlier, planned action on climate change under the central scenario is modelled to save NZ\$30 billion in GDP growth by 2050 compared with the shock scenario... a key component of this being the phased introduction of agriculture into the NZ ETS from 2020 through 2030.”

Net zero emissions by 2040, with a mid-term target for 2030

65. We support the call for net zero emissions by 2040 by Forest and Bird and Taranaki Energy Watch, considering the urgency for action.
66. We need deep cuts in emissions at the very start i.e. from now.
67. We propose a mid-term target for 2030 which reflects substantial increase in commitment from our ‘insufficient’ National Determined Contribution of 30% reduction from 2005 levels by 2030.
68. The 2030 target will help guide us towards the net zero target by 2040. The exact numerical target will need to be science based and determined by the Climate Change Commission using local, national and global data.
69. As an example, in 2017, a team of scientists published an eye-opening paper in *Science* magazine, plotting a roadmap for rapid decarbonization (Rockstrom, et al, 2017)³⁶. The roadmap includes clear, strong targets:
- Global CO₂ emissions have to decline by half each decade from 2020...
 - Net emissions from land use (agriculture and deforestation) have to fall to zero by 2050...
 - Technologies to suck CO₂ out of the atmosphere have to start scaling up massively, until we’re pulling 5 gigatons of CO₂ per year out of the atmosphere by 2050 – nearly double what all the world’s trees and soils already do (Plumer, 2017)³⁷.

Targets backed by concrete actions

70. The roadmap goes onto more specific targets and actions to be achieved either globally or by certain countries; e.g. By 2020, all countries would have laid down policy to cancel the \$500 billion per year of global fossil fuel subsidies; By 2030, coal power is phased out in rich countries which also no long sell new combustion engine cars; By 2040, leading countries like Denmark and Sweden should have completely carbon-free grids and have electrified virtually all of their transport, heating and industry; By 2050, we’d need to be removing more than 5 gigatons of CO₂ per year from the atmosphere, etc. (Rockstrom, et al, 2017).
71. Such a roadmap, if adapted for NZ, could inform our own carbon budgets and more importantly, the concrete plans and actions that are needed to stay within budget and on target. We recommend starting with the following policy changes and concrete actions:
- End all fossil fuel subsidies (between 2009 and 2016, the level of subsidies increased from \$40.5 million to \$87.7 million, a more than 100% increase)³⁸
 - Stop issuing any new prospecting, exploratory and mining licenses for coal, oil and gas. Ban fracking because of the climatic, environmental and social harm.

³⁵ Westpac NZ Climate Change Impact Report, April 2018. <https://www.westpac.co.nz/assets/Sustainability/Westpac-NZ-Climate-Change-Impact-Report.pdf>

³⁶ Rockstrom, J., O. Gaffney, J. Rogelij, M. Meinshausen, N. Nakicenovic, H. J. Schellnhuber, 2017. A roadmap for rapid decarbonization. *Science* 24 Mar 2017: Vol.355, Issue 6331, pp.1269-1271. <http://science.sciencemag.org/content/355/6331/1269>

³⁷ Plumer, Brad, 24/03/2017. Scientists made a detailed “roadmap” for meeting the Paris climate goals. It’s eye-opening. <https://www.vox.com/energy-and-environment/2017/3/23/15028480/roadmap-paris-climate-goals>

³⁸ Loomis, Terrence, Oct 2017. Ending government oil & gas subsidies. http://www.terrenceloomis.ac.nz/uploads/5/3/3/3/5333337/govt_subsidies_update_report_2017-3.pdf

- Stop issuing new or extending expired consents for coal or gas-fired power stations³⁹ and coal boilers (e.g. Fonterra's)⁴⁰.
- Divert government research and development funding from petroleum⁴¹ including methane hydrates⁴² to renewable energies, waste to energy, transport electrification⁴³, sustainable agriculture and agro-forestry⁴⁴ and other sustainable innovations. This should include fast-tracking development and processing of renewable energy generation proposals and projects.
- Introduce a carbon tax on emissions and sources of emissions (e.g. petrochemical industries, products and derivatives), and subsidies for sustainable alternatives. This will aid the transition.

Other legislative and policy reform

72. The Crown Minerals Act, Resource Management Act and Exclusive Economic Zone and Continental Shelf Act will require critical amendments or reform to bring them in alignment with the Zero Carbon Act, so that they support rather than contradict or compromise each other.
73. There are significant risks from the Investor State Dispute Settlement and other clauses in so-called 'free trade agreements' (e.g. the Trans Pacific Partnerships), and these need to be considered in respect of the Zero Carbon Act and others.
74. Emissions from the military and their climate impacts have traditionally been ignored in all UN climate talks because of pressure from *"military generals and foreign policy hawks opposed to any potential restrictions on US military power... The military is not just a prolific user of oil, it is one of the central pillars of the global fossil-fuel economy"* (Buxton, 2015)⁴⁵. We are strongly opposed to the new government's decision to purchase four Boeing Poseidon military aircrafts⁴⁶. The \$2.3 billion earmarked for these 'submarine-killers' would be far better spent on transitioning NZ to a zero carbon, socially just society, and enabling us to reach out to Pacific Islands and other nations stricken by climate disruptions.

Options for a new climate change target for 2040 (not 2050)

75. We support net zero emissions of all gases (long and short-lived) by 2040, with ambitious mid-term reduction targets for short-lived gases (notably methane) by 2030.
76. The discussion document gives heavy emphasis on the relatively rapid degradation of methane but fails to acknowledge its very high global warming potential (GWP). Critically methane has a 20-year GWP of 84-87⁴⁷; i.e. it absorbs far more energy (heat) than CO₂ over its lifetime. Although methane (CH₄) lasts about a decade in the atmosphere, it gradually breaks down, via several steps, into CO₂

³⁹ Larsson, Amanda, 13/07/2018. A \$100 million mistake: MP is wrong about a new gas-fired power plant.

<https://www.stuff.co.nz/taranaki-daily-news/news/105468493/a-100-million-mistake-mp-is-wrong-about-a-new-gas-fired-power-plant>

⁴⁰ Coal Action Network Aotearoa, accessed on 15/07/2018. Fonterra quit coal. <https://coalaction.org.nz/fonterra-quit-coal>

⁴¹ GNS website, accessed on 15/07/2018. Oil and Gas – Enhancing petroleum prospectivity and exploration effectiveness. <https://www.gns.cri.nz/Home/Our-Science/Energy-Resources/Oil-and-Gas>

⁴² GNS website, accessed on 15/07/2018. Gas hydrates as an energy resource. <https://www.gns.cri.nz/Home/Our-Science/Energy-Resources/Gas-Hydrates/Current-Research/Gas-hydrates-as-an-energy-resource>

⁴³ Energy Efficiency and Conservation Authority website, accessed on 15/07/2018. Low emission vehicles contestable fund. <https://www.eeca.govt.nz/funding-and-support/low-emission-vehicles-contestable-fund/>

⁴⁴ Kunambura, Andrew, 18/03/2018. Agro-forestry: Missing link in nutritional, food security discourse.

<https://www.dailynews.co.zw/articles/2018/03/18/agro-forestry-missing-link-in-nutritional-food-security-discourse>

⁴⁵ Buxton, Nick, 25/11/2015. The elephant in Paris – the military and greenhouse gas emissions. <https://www.tni.org/es/node/22587>

⁴⁶ Edwards, Bryce, 16/07/2018. Political roundup: Where are the protests over the Government's new 'submarine-killers'? https://www.nzherald.co.nz/nz/news/article.cfm?c_id=1&objectid=12089992

⁴⁷ US EPA website, accessed on 12/07/2018. Greenhouse Gas Emissions – Understanding Global Warming Potentials. <https://www.epa.gov/ghgemissions/understanding-global-warming-potentials>

and water vapor, both of which are GHG themselves. Water vapor is the most abundant GHG in the atmosphere involved in a feedback loop which is critically important although not well understood⁴⁸. For as long as we allow methane emissions, even stabilised at a reduced level, there will be continuous climate impact from an especially potent GHG and the longterm effects from the CO₂ resulting from the breakdown of CH₄.

77. The document also fails to consider the various positive climate feedbacks associated with methane emission. For example, the more methane there is in the atmosphere, the more hydroxyl (OH) radical is used up and the longer the methane lasts⁴⁹. Another positive feedback relates to the dissociation of gas hydrates⁵⁰ as the climate warms, releasing yet more climate-warming methane. Furthermore, the melting of the permafrost has been shown to release more methane than previously thought and drive another feedback loop not taken into account by most climate models^{51, 52, 53}.

Cut short-lived gases fast now and aim for net zero emissions of all gases

78. It is therefore of critical importance that we substantially reduce short-lived gases, especially methane, to a minimum as soon as possible, with a goal of net zero emission. This is what we must do, if we truly want New Zealand to be a leader, stimulate innovation and influence global climate actions.

79. Methane emissions from the fossil fuel industry must be properly monitored and cut to zero (see points 21, 33 and 34)^{54, 55}.

80. In terms of long-lived gases, nitrous oxide N₂O stays in the atmosphere for an average of 114 years and has a GWP of 300. It must be included as a key target for emission reduction which is achievable through using less urea and improving soil and livestock management, as well as cutting stock numbers.

81. Since both methane and nitrous oxide emissions in NZ are largely coming from unsustainable, industrial agriculture under poor management, strong reductions of these gases would have far-reaching co-benefits in terms of improving water quality, protecting soil integrity, fostering animal welfare and supporting farmers in low-input yet profitable and sustainable livelihoods.

82. There are significant environmental, social and economic opportunities for NZ to expand and diversify our organic and biological farming practices, with health benefits to people nationally and internationally. This should be incentivised, in association with the Billion Trees program which

⁴⁸ NOAA National Centers for Environmental Information National Oceanic and Atmospheric Administration, accessed on 13/07/2018. Greenhouse Gases – Water Vapor. <https://www.ncdc.noaa.gov/monitoring-references/faq/greenhouse-gases.php?section=watervapor>

⁴⁹ Schmidt, Gavin, September 2004. Research Features – Methane: A scientific journey from obscurity to climate super-stardom. https://www.giss.nasa.gov/research/features/200409_methane/

⁵⁰ Ruppel, Carolyn, 2011. Methane hydrates and contemporary climate change. <https://www.nature.com/scitable/knowledge/library/methane-hydrates-and-contemporary-climate-change-24314790>

⁵¹ Colman, Zack, 1 August 2017. Should the world tap undersea methane hydrates for energy? <https://www.scientificamerican.com/article/should-the-world-tap-undersea-methane-hydrates-for-energy/>

⁵² Helmholtz Association of German Research Centres, 20 March 2018. Thawing permafrost produces more methane than expected. <https://phys.org/news/2018-03-permafrost-methane.html>

⁵³ Berwyn, B. 19 July 2017. Methane seeps out as Arctic permafrost starts to resemble Swiss cheese. <https://insideclimatenews.org/news/18072017/arctic-permafrost-melting-methane-emissions-geologic-sources-study>

⁵⁴ Konschnik, Kate and S.M. Jordaan, 2017. North American oil and gas sector: a proposed science-policy framework. <https://www.tandfonline.com/doi/abs/10.1080/14693062.2018.1427538?journalCode=tcpo20>

⁵⁵ Fitzsimons, Jeanette, 19/06/2018. Cutting methane hard and fast is the best path to Carbon Zero. <https://thespinoff.co.nz/society/19-06-2018/cutting-methane-hard-and-fast-is-the-best-path-to-carbon-zero/>

requires careful planning and implementation to avoid the spread of weed species⁵⁶, take into account climate vulnerability⁵⁷ and promote ecological benefits.

What does 'net' mean?

83. In the description of 'gross emissions' (p.23 of document), it is important to acknowledge all major emitters of GHG, including burning of fossil fuels for air, land and maritime transport, animal agriculture, industrial heat production from burning of coal, and the oil and gas and petrochemical industries, etc. A reference to the annual Energy in New Zealand report (MBIE, 2017)⁵⁸ would be useful.
84. In regards to the oil and gas industry, the amounts of intentional and fugitive methane and other gases^{59, 60} emitted into the atmosphere from upstream to downstream processes, are largely unaccounted for and under-estimated⁶¹. This raises questioning⁶² demonstrating that the argument that gas is a clean, bridge or transition fuel obsolete⁶³. In NZ's last three GHG inventory reports⁶⁴ for the UNFCCC, the Expert Review Team pointed out that there were transparency and confidentiality issues concerning reporting by the mineral, chemical (e.g. Methanex) and metal industries. There needs to be a critical review and improvements in the reporting and analysis of GHG emissions for any emissions budgets and targets to be meaningful.

Carbon offsets and creative accounting

85. The term 'net emissions', while widely used to take into account forms of landuse that sequester carbon and international carbon credits, is fraught with confusion and open to undesirable, 'creative accounting'.
86. The Parliamentary Commissioner for the Environment (2018)⁶⁵ recently warned that *"Relying heavily on forest sequestration is risky... New Zealand has a long tradition of using substantial volumes of international credits and forestry offsets to meet its emission reduction targets. While this has helped to minimise the short-run cost of climate action, it has also masked an increase in gross emissions – which in 2016 were almost 20% above 1990 levels.⁶⁶... there has been international scepticism about relying heavily on carbon offsets from afforestation. The European Union... excluded such offsets in*

⁵⁶ Ministry recommended pest weeds in oversight for Billion Tree plan, 5 July 2018.

<http://www.radionz.co.nz/news/national/361119/ministry-recommended-pest-weeds-in-oversight-for-billion-tree-plan>

⁵⁷ Flooding and slips isolate Coromandel Peninsula, 15 July 2018. <http://www.radionz.co.nz/news/national/361840/flooding-and-slips-isolate-coromandel-peninsula>

⁵⁸ Ministry for Business, Innovation and Employment, 2017. Energy in New Zealand. <http://www.mbie.govt.nz/info-services/sectors-industries/energy/energy-data-modelling/publications/energy-in-new-zealand>

⁵⁹ Methane emissions from coal seam gas development raise climate change concerns, 3 March 2017.

<http://www.abc.net.au/news/2017-02-28/methane-emissions-from-coal-seam-gas-climate-change/8310932>

⁶⁰ Earthworks, 19 Oct 2016. Endeavor Energy Davis-Owens A Unit, Reeves County, Texas.

<https://www.youtube.com/watch?v=RAo3mh8CwMU&feature=youtu.be>

⁶¹ Guglielmi, Giorgia, 21 June 2018. Methane leaks from US gas fields dwarf government estimates. *Nature*: 558, p.496-497. .

<https://www.nature.com/articles/d41586-018-05517-y>

⁶² Gilblom,, Kelly. 20 Dec 2017. Insidious gas leaks are casting doubts over Shell's clean credentials.

<http://royaldutchshellgroup.com/2017/12/20/insidious-gas-leaks-are-casting-doubts-over-shells-clean-credentials/>

⁶³ Loomis, T, May 2018. Why natural gas isn't a bridge fuel to a low emissions economy. Fossil fuels Aotearoa Research Network.

http://www.terrenceloomis.ac.nz/uploads/5/3/3/3/5333337/ffarn_paper_-_gas_not_a_transition_fuel_v.2.pdf

⁶⁴ Ministry for the Environment, 2018. New Zealand's greenhouse gas inventory 1990-2016.

<http://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/National%20GHG%20Inventory%20Report%201990-2016-final.pdf>

⁶⁵ Parliamentary Commissioner for the Environment, 2018. Response to Productivity Commission Low-Emissions Economy draft report. <https://www.pce.parliament.nz/publications/response-to-productivity-commission-low-emissions-economy-draft-report>

⁶⁶ Ministry for the Environment, 2018. New Zealand's Greenhouse Gas Inventory 1990-2016, p.1.

<http://www.mfe.govt.nz/publications/climate-change/new-zealands-greenhouse-gas-inventory-1990%E2%80%932016>

the EU ETS, and cited New Zealand's use of forestry offsets as a reason why they would not consider linking with our own ETS."

87. The Commissioner pointed out two key risks in relying too heavily on forest sinks:

- The carbon stored in the forests can be released back into the atmosphere, either through intentional clearing without replanting, or through fire, pests, disease and storms, some of which will be aggravated by climate change itself.
- Each tonne of emissions offset by forestry is a tonne not reduced at source.

Serious efforts in reducing gross emissions

88. We therefore advocate putting serious efforts on actually reducing gross emissions, guided by gross emissions targets and budgets, and substantially increasing carbon sequestration, rather than focussing on net emissions.

Beware of techno-fixes

89. While new technologies certainly have a role to play in reducing GHG emissions and mitigating climate change, techno-fix⁶⁷ must be treated with caution and as a last resort, because of the inherent risks, costs, the hidden agendas of some of those pushing for them and the lack of regulatory capacity.

90. For example, GNS has been researching the development of carbon capture and storage (CCS)⁶⁸: *"...retro-fitting capture of CO₂ is expensive and so far we have not tried to do this in New Zealand. If large new industrial sources are planned then it would be advisable to consider including carbon capture technology."* This technology is costly, uncertain and dangerous⁶⁹, with serious human health and safety risks to neighbours. NZ has abundant renewable energy sources and livestock is the major source of GHG. It does not make environmental, social or economic sense to invest in CCS, if we are truly committed to reducing emissions and building a zero carbon and sustainable economy.

91. We also have serious concerns over the New Energy Centre and Hydrogen projects in Taranaki that are being supported by the new government⁷⁰. The Tapuae Roa Make Way for Taranaki Action Plan (April 2018)⁷¹ describes the so-called 'Energy Future' as this: *"The vision for the future is to have strong, secure and sustainable energy and petrochemical industries... At the heart is a New Energy Development Centre promoting development in clean energy technology and practice... the development of Taranaki as a hydrogen centre. Hydrogen is a clean energy carrier and storage medium for renewably generated electricity, and can be used for zero emission transport."*

92. But hydrogen H₂ is only as clean as the energy source and methods used to produce it. We would support electrolysis⁷² which uses renewable energy to split water into hydrogen and oxygen, but not thermochemical processes such as natural gas reforming⁷³ or coal gasification. It is our

⁶⁷ Huesemann, M. and J. Huesemann, 2013. Techno-Fix. <https://www.utne.com/arts/techno-fix-ze0z1304zcalt>

⁶⁸ GNS Science, accessed on 15/07/2018. Why we should assess CO₂ storage potential in New Zealand? <https://www.gns.cri.nz/Home/Our-Science/Energy-Resources/Carbon-Capture-and-Storage/Why-CO2-Storage>

⁶⁹ Mikulka, Justin, 23 March 2018. Aliso Canyon disaster highlights risks, inadequate safety rules governing natural gas storage. <https://www.desmogblog.com/2018/03/23/aliso-canyon-disaster-phmsa-natural-gas-storage-regulation>

⁷⁰ Taranaki set for \$20m provincial growth fund injection, 6/04/2018. <https://www.tvnz.co.nz/one-news/new-zealand/taranaki-set-20m-provincial-growth-fund-injection>

⁷¹ Tapuae Roa – Make Way for Taranaki Action Plan, 6 April 2018. <http://www.makeway.co.nz/media/1028/tapuae-roa-action-plan-6-april-2018.pdf>

⁷² US Energy Efficiency & Renewable Energy, accessed on 18/07/2018. Hydrogen Production: Electrolysis. <https://www.energy.gov/eere/fuelcells/hydrogen-production-electrolysis>

⁷³ US Energy Efficiency & Renewable Energy, accessed on 18/07/2018. Hydrogen Production: Natural gas reforming. <https://www.energy.gov/eere/fuelcells/hydrogen-production-natural-gas-reforming>

understanding that H₂ is commonly created through natural gas reforming or ‘cracking’ which involves splitting up the methane molecule (CH₄) found in natural gas⁷⁴. In the case of Taranaki, the production of the gas and energy needed for hydrogen production would most likely involve hydraulic fracturing (fracking). We fear that Taranaki’s ‘Energy Future’ projects with hydrogen focus may have been designed to prolong fossil fuel mining, with known environmental and social harm^{75, 76, 77}. Any follow-up implementation would require hugely expensive and risky investments, when there are already other proven technologies for low-emission transportation and renewable energy alternatives. We reiterate our call for actions to end all fossil fuel mining (see point 21).

Sustainable landuse practices, innovations and community leadership

93. Indeed, landuse changes will have to be a key to reducing gross emissions (Table 1 of discussion document), given our excessive emissions from industrial animal agriculture. But improvements in land management can also yield substantial reduction.
94. These should involve reducing stock numbers (rather than vaccines), phasing out the use of urea, super-phosphate⁷⁸ and other agrichemicals to restore soil health and encourage multispecies in pastures, diversifying agriculture integrating tree crops, apiculture and agro-forestry, and reforming our forestry and logging practices⁷⁹ (e.g. no more clear felling; reduce reliance on fast-growing exotic species). Already some farmers are taking bold, positive steps and leading the way, as showcased by Ngai Tahu Farming (discussion document p.18). Such examples need to be championed and supported to foster community-led initiatives that drive societal change to a more sustainable, just and resilient future.
95. In addition to developing more diverse and sustainable farming and forestry practices on land, innovations like seaweed farming⁸⁰ may also have multiple benefits from carbon sequestration to the production of food, fertiliser and biofuel.
96. In closing this submission, CJT thank the Minister for this opportunity to share our views on this critically important matter.

⁷⁴ Stecher, Nicolas, 25/10/2017. Are Hydrogen cars the next big thing... again? <http://www.thedrive.com/tech/14431/are-hydrogen-cars-the-nextbig-T>

⁷⁵ Concerned Health Professionals of New York, 13/03/2018. Compendium of scientific, medical and media findings demonstrating risks and harms of fracking. <http://concernedhealthny.org/compendium/>

⁷⁶ Climate Justice Taranaki, 20 Feb 2018. Drivers & victims of the fossil fuel industry in New Zealand. <https://climatejusticetaranaki.files.wordpress.com/2018/02/slides-for-palmy-20feb2018-v5.pdf>

⁷⁷ Taranaki Energy Watch website, accessed on 18/07/2018. Regional and district plans. <http://www.taranakienergywatchnz.org/district-plan/>

⁷⁸ Sahrawis top New Zealand in legal test case, 27 Feb 2018, Asia Times. <http://www.atimes.com/article/sahrawis-top-new-zealand-legal-test-case/>

⁷⁹ GDC to investigate where Tologa Bay logging debris came from, 5 June 2018. <http://www.radionz.co.nz/national/programmes/checkpoint/audio/2018647967/gdc-to-investigate-where-tologa-bay-logging-debris-came-from>

⁸⁰ NIWA, 21 June 2018. One of the world’s leading scientific publishers has named a paper cowritten by a NIWA scientist as one of 250 groundbreaking findings that could “help change the world”. <https://www.niwa.co.nz/news/niwa-seaweed-scientist-tackling-global-climate-change-issue>