Climate Change
Tai Tokerau Northland Trust

19 June, 2019

The Honourable James Shaw, Minister of Climate Change

The Honourable Damien O'Connor, Minister of Agriculture and Rural Communities

The Honourable Dr Megan Woods, Minister of Research, Science and Innovation

The Honourable Shane Jones, Minister of Regional Economic Development

The Honourable David Parker, Minister of the Environment

Re: Regenerative Agriculture

Dear Ministers,

This open letter commends Government on progressing the Climate Change Response (Zero Carbon) Bill (the Bill) through the house and urges you to accelerate the alignment of the whole machinery of government with its intent. Our focus is on the contribution that regenerative agriculture can make to the nation's efforts to contribute to limiting global temperature increase to 1.5oC and to facilitate and to support transformations to adapt to the impacts of the climate emergency .

To realise our commitment will require transformations across New Zealand society, especially in the food system. The Drawdown project[i] identifies the need to either sequester or reduce emissions of 1049 gt of CO_2 equivalents by 2050. Food accounts for 31% of this quantum and land use a further 14%. Industrial food systems will not achieve the necessary transformations[ii]. Industrial agriculture, with current trends of increased agrichemical and agriceuticals use, and intensification, hamper our ability to control greenhouse gasses and also further transgress planetary boundaries of chemical pollution, nitrogen and phosphorus loading, and freshwater withdrawals[iii]. These also impact on social foundations compromising our access to clean water and healthy food. The trend away from family farms, combined with the policy focus on plantation forestry further depopulates and impoverishes rural New Zealand.

Regenerative agriculture is used here as a term to include those farmers and horticulturalists who have a soil first focus. This includes practices such organic, biodynamic, biological and tikanga Māori agriculture. It is better aligned with the intent of the bill, as it reduces agrichemical and agriceutical use, is generally less intensive and offers the best option to retain the family farm as a social foundation of rural communities. Family farms create more vibrant rural communities, that often benefit from other income streams from family members working beyond the farm. But regenerative agriculture also scales up. For example, the six Aquila Sustainable farms in Southland are milking 5,500 cows[iv].

Contrary to Government narrative, regenerative practices can sequester soil carbon and reduces nitrous oxide and methane emissions.

Government can best progress policy with a clear electoral mandate. But the current narrative is simplified to "forestry good – agriculture bad". Publications and funding decisions from Government

agencies inhibit the development of more nuanced discourse and perpetuate practice that will fail to reduce emissions. Government agency reports such as the 2018 Productivity Commission report[v], Sir Peter Gluckman's report[vi] and this year's Parliamentary Commissioner for the Environment report[vii] continue to position agriculture as a problem and fail to explore the potential of pasture and horticultural soil carbon sequestration. This is exacerbated by a call by some to stop consumption of meat and dairy. More nuanced discourse supporting a plant rich diet can be based on reducing per capita consumption of meat and dairy, but focusing more on reducing highly processed industrial foods. This is also consistent with KPMG 2019 Agribusiness Report and the shift from volume to value[viii].

Contestable funding decisions reveal a similar pattern.

> *It appears that funding mechanisms such as MPIs Sustainable Farming Fund are primarily interested in sustaining existing agricultural processes. Unitec applied for funding into research on biologically dynamic swales as a mechanism for the denitrification of run-off. On receipt of our rejection letter, Unitec checked the successful projects, most of which researched ideas around the economic sustainability of existing farming practice.* Marcus Williams, Director of Research and Enterprise, Unitec.

Mike Taitoko, in an international soil carbon discussion group commented recently about a failed regenerative agriculture MIBE Endeavour Fund bid. Mike commented that a bid to carry out regenerative agriculture research was declined due to not passing the science excellence threshold. He also stated, as a consequence, "Healthy Soils Legislation is probably not happening anytime soon and we will continue on with dirty ag!"

On enquiring about funding for a regenerative agriculture project through the Provincial Growth Fund, I was told that fund applications need to demonstrate employment growth. This appears to be prioritised over other stated objectives.

Outdated science paradigms

Without greater transparency from the machinery of Government, we are left to speculate as to the cause of the misalignment between the Bill and other Government activity. This may be caused by adherence to outdated science paradigms, consequent poor policy advice, and the undue influence of agribusiness.

You are probably familiar with Thoms Kuhn's *The Structure of Scientific Revolutions*[ix]. He wrote that science doesn't advance in a linear manner but progresses through paradigms. The orthodoxy becomes established and resists any significant change until sufficient dis-confirming evidence overwhelms it. In New Zealand, the science community appears to be captured by the industrial agriculture lobby, while internationally, the emergence of the science of regenerative agriculture is firmly established and supported by organisations such as 4 per 1000. In addition to the exciting potential of pasture-based sequestration, a diverse range of horticulture crops have proven potential for sequestration and the science to support this is advancing rapidly.

Some New Zealand researchers appear to conclude that "soil carbon levels in New Zealand's grazing lands are at or near steady state"[x] . Unlike Australia for example, who have begun paying farmers for sequestered carbon [xi] , this is not seen as an option for us. Meanwhile our science persists with "boys toys" science, seeking technological fixes such as breeding single species patentable pasture grasses and methane inoculations. While these may be valid, regenerative practices, sometimes based on older technologies such as pasture diversity remain unsupported.

Poor policy advice

These distortions in science appeal to Government advisors claim that "uncertainty remains around our ability to increase carbon stocks". I have visited farmers who focus their farming methods on improving the soil. They report a range of observable improvements including topsoil depth, improved water infiltration and retention and subsequent benefits to animal health, evidenced by reduced expenditure on animal remedies. Perhaps the question is not "can we increase soil carbon?", but "how can we increase soil carbon?".

The influence of agribusiness

The agricultural lobby is powerful in New Zealand. The Bill's authors have listened to the farming lobby and have proposed more moderate methane targets that reflect the rapidly evolving understanding of the complexity of methane and its atmospheric cycling. Farming must transform and we cannot afford, socially, environmentally or economically to perpetuate current practice.

The International Panel of Experts on Sustainable Food Systems identify eight lock-ins that restrain the shift from agricultural food systems to sustainable food systems. Among these is Concentration of power – created when

> food systems, in their current forms, allow value to accrue to a limited number of actors, reinforcing their economic and political dominance, and thus their ability to influence the policies, incentives and imperatives guiding those systems" [xii].

Achieving complex change

Achieving complex change requires policy, resources, and individual and social shifts in thinking and behaviour. The Bill provides the policy framework, but in relation to the potential for soil carbon sequestration will be ineffective. Organisations such as Beef + Lamb have made laudable attempts to create more space for climate-friendly innovation through, for example, Red Meat Profit Partnership extension groups. But the development of the huge transformative potential of regenerative agriculture remains hobbled by lack of resources for co-ordinated science-based research. Policy here exacerbates this by creating a firewall, inhibiting learning from the rapid advance in regenerative agricultural science in countries such as Brazil, India, China, Cambodia, Kenya France[xiii] and the United States.

Regenerative agriculture for mitigation and adaptation

Regenerative agriculture offers significant opportunities to both sequester carbon, enhance recycling of methane and reduce nitrous oxide flows into air and water and also to improve adaptation through ecosystem resilience. Additionally, they support our contribution to the United Nations Sustainable Development Goals. In the interests of brevity these benefits are only bullet pointed here and are illustrated with observations from our own regenerative farmers.

- Farmers are growing topsoil and therefore soil carbon and extended carbon penetration in the subsoil through diverse pasture species and micro-biome and dung beetle activity.

> *We have doubled the topsoil on our 100 ha, now organic dairy farm. In places from 70 to 100 mm to now 200 plus with a lot more life in it… It has taken us about 20 years of learning and experimenting. We are not leaders in this. There are people doing the job way better and faster than us.* Fraser Cranston, dairy farmer

- Soil organic content and structure is improved, therefore increasing water and nutrient capacity, soil biome-plant synergies and enhanced infiltration rates. These factors improve catchment resilience.

> *Our water infiltration rates are rapid and the soils ability to retain water has increased significantly. I notice that when it rains after a dry period the water runs off into drains from the neighbour's farm in a half hour or so, but on our farm it takes a long time to appear in drains.* Alistair Crawford, dairy farmer

- Sediment loss into waterways is reduced thus improving coastal and harbour ecosystems for marine life.
- Plant and animal health is enhanced. Regenerative farmers report significantly reduced expenditure on agriceuticals.

> *In 2005 our animal health expenses were $26,000. Since converting our dairy operation to organics in 2006 those costs have dropped below $3000 per year. Over time our animals have become more resilient and we have not used any chemical drenches or antibiotics for 13 years.* Janette Perrett, dairy farmer

- Fewer off farm inputs are required as most regenerative farmers are on a trajectory toward minimal artificial fertiliser and many shun the use of imported agrichemicals. Many now encourage broadleaved plants, once killed with herbicides.
- The market is shifting to pasture-based meat and dairy evidenced by the $2.00 plus premium paid by Fonterra for organic milk. This may be only a short-term advantage for us, as regenerative practice is better supported in some other countries, but will probably become the default position globally.

Recommendations

1. Embed stronger statements in the Bill to encourage the development of regenerative agriculture.
2. Adopt an organisational learning kaupapa in Government departments and agencies and work to align departmental thinking with the requisite transformations required at all levels to meet our climate commitments.
3. Change contestable funding streams and dedicated departmental funding to systematise regenerative agriculture research. Increase transparency in decision-making about fund allocations.
4. Consider relabeling the Sustainable Food and Fibre Futures fund as the Regenerative Food and Fibre Futures Fund.
5. Refocus the Provincial Growth Fund to support the transformation of rural industries and climate action.
6. Consider long-term implications of policy that, for example, provides perverse incentives to purchase land suited to agriculture and horticulture for forestry.
7. Ensure some of the funding from the $229 million from the 2019 budget for waterways to be used for "top of the cliff" reduction in nutrient flows rather than "bottom of the cliff" riparian planting. This might be achieved through sub catchment projects.

Regenerative farmers are improving their land in isolated pockets throughout the country. Progress is hampered, not just by isolation and lack of support, but from hostility from some quarters. If we are guided by the advances in regenerative agriculture overseas, our farmers will optimise

regenerative agriculture and further diversify land use to include appropriate trees and horticultural crops in the landscape. This transformation will enrich resilient rural communities and ecosystems, generate health-sustaining food and drawdown carbon into the soil.

Our situation remains dire and there is an urgent need for supportive action to achieve this. To replace our current light vehicle fleet with EVs will take some decades, even if current imports were 100% electric, but we can accelerate action on the soil now. It is already here.

Please note this letter is not intended to be a petition, but the names appended here represent a sample of the network.

Sincerely,

Peter Bruce-Iri,
NorthTec

Janette Perrett
Farmer,
Hikurangi

Malcolm McCullum,
Farm Consultant,
Waimate North

Max Purnell,
Farmer,
Miranda

Hal Harding,
Farmer,
Northern Wairoa

Marcus Williams,
Director Research & Enterprise,
Unitec

Mike TaiToko,
CEO
Takiwā

Nadine Moore,
Farmer,
Kaipara

Linda Matson,
Farmer,
Maungatapere

John Ballinger,
Land Management Advisor,
Northland Regional Council

Nicole Masters,
Soil Scientist,
Huntly

Fraser Cranston,
Farmer,
Whangarei

Sean Neal,
General Manager
Aquila Sustainable Farming

Carol Peters QSM,
Climate Change Tai Tokerau
Northland Trust,
Whangarei

---

[i] Paul Hawken, *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming.* (S.l.: PENGUIN BOOKS, 2018).

[ii] IPES-Food, "From Uniformity to Diversity: A Paradigm Shift from Industrial Agriculture to Diversified Agroecological Systems.," 2016, http://www.ipes-food.org/images/Reports/UniformityToDiversity_FullReport.pdf.

[iii] Kate Raworth, *Doughnut Economics: Seven Ways to Think like a 21st-Century Economist*, 2018.

[iv] Karen Trebilcock, "Organics: Success with the Switch," *NZ Farm Life Media - Down to Earth* (blog), July 26, 2018, https://nzfarmlife.co.nz/organics-success-with-the-switch/.

[v] Productivity Commission, "Low-Emissions Economy" (Wellington: Productivity Commission, April 27, 2018), https://www.productivity.govt.nz/sites/default/files/Productivity%20Commission_Low-emissions%20economy_Final%20Report_FINAL.pdf.

[vi] Peter Gluckman, "Mitigating Agricultural Greenhouse Gas Emissions: Strategies for Meeting New Zealand's Goals" (Wellington: Office of the Prime Minister's Chief Science Advisor, July 2018),

http://www.pmcsa.org.nz/wp-content/uploads/Mitigating-agricultural-GHG-emissions-Strategies-for-meeting-NZs-goals.pdf.

[vii] Parliamentary Commissioner for the Environment, "Farms, Forests and Fossil Fuels (Overview)," March 26, 2019, https://www.pce.parliament.nz/media/196517/overview-farms-forests-and-fossil-fuels.pdf.

[viii] Wheeler and Proudfoot, "Agribusiness Agenda 2019 | KPMG | NZ," KPMG, June 17, 2019, https://home.kpmg/nz/en/home/insights/2019/06/agribusiness-agenda-2019.html.

[ix] Thomas S Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1970).

[x] Manaaki Whenua, Landcare Research, "Can We Increase Soil Carbon to Offset Methane and Nitrous Oxide Emissions from Agriculture?," Manaaki Whenua - Landcare Research, accessed March 28, 2018, http://www.landcareresearch.co.nz/science/greenhouse-gases/agricultural-greenhouse-gases/soil-carbon-offset.

[xi] Olivia Calver, "Money in Dirt - the Future of Carbon Farming," The Land, April 3, 2019, http://www.theland.com.au/story/5981001/money-in-dirt-the-future-of-carbon-farming/.

[xii] IPES-Food, "From Uniformity to Diversity: A Paradigm Shift from Industrial Agriculture to Diversified Agroecological Systems."

[xiii] Meriel Watts and Stephanie Williamson, *Replacing Chemicals with Biology: Phasing out Highly Hazardous Pesticides with Agroecology* ([George Town], Penang, Malaysia: Pesticide Action Network Asia and the Pacific, 2015).