

# NPDC Long-Term Plan - 2021-2031

Submission by Climate Justice Taranaki Inc. 5th April 2021

## Introduction

1. Tēnā koutou, tēnā tātou! Kei te mihi atu tēnei rōpu ki a koutou, koutou ngā kaikaunihera o te Kaunihera-ā-Rohe o Ngāmotu. Whakarongo mai ki ēnei kupu - ka ora te whenua, ka ora te tangata. He taonga tuku iho te kōhauhau - tiakina! He taonga tuku iho te wai - tiakina! He taonga tuku iho te whenua - tiakina!
2. 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, air and soil, crucial to sustaining livelihoods and quality of life. CJT has been incorporated under the Incorporated Societies Act 1908 since 26th February 2015.
3. CJT welcomes the opportunity to provide feedback on the New Plymouth District Council (NPDC) Draft Long-Term Plan 2021-2031 (the plan). This submission goes beyond the key proposals on which Council is seeking feedback.
4. Over the past 15 months, our group - with input and participation from numerous other community groups - has written a document to articulate our vision: **“Toitū Taranaki 2030 A Community Powered Strategy for a Fast and Just Carbon Neutral Transition.”** We suggest that we weave and create a way of looking at this transition journey through a different lens, an all inclusive mana taiao mana tangata lens respectful of environment and people. If we continue to use the same lens that created the problem, which has not been respectful of land, water, air and people, or other species that share our biosphere, we will only get the same outcome. Therefore it is not a separate component of the whole but interweaves through the whole, with the principle to indigenise, to decolonise, to reconnect and revitalise our innate knowledge of how to live sustainably on this planet within our communities.
5. We have **attached this document to this submission and would like it to be read and considered** by councillors and staff as it forms part of our submission.
6. We think the plan misses the mark completely when it comes to the urgent task of addressing climate change. Spending a mere \$3.45 million to \$4.5 million on the climate is simply a joke when compared to the hundreds of millions being spent on roads, plumbing and recreation. We respectfully request that you urgently re-draft the plan and give adequate resource to our collective task of solving the climate crisis.

## Big Call 1: Fixing our plumbing

Plumbing and Infrastructure Investments

7. CJT generally supports the infrastructure investments considered in the plan to catch up on important work to ensure future generations have access to safe drinking water. We support **OPTION 3** (\$248m over 10 years). However, we have serious concerns around the general direction of the system and whether staff and councillors are applying a climate lens to the investment. We also think that spending \$248m on plumbing but only \$3.45m on the Climate Action Framework (OPTION 2) is disproportionate.
8. It is our view that stormwater should be stored or diverted from wastewater infrastructure to cut costs on treatment and reduce overflows of untreated water to waterways and the sea during high rains. Reducing hard surfaces (ie. concrete and tarseal) will reduce flash floods and help replenish groundwater. Our rivers, wetlands and creeks are our number one safeguard to prevent flooding. Luckily, the days of treating them like a dump to wash all our waste away seem to slowly (too slowly!) come to an end. Wetlands are vital ecological systems that clean waterways and control and balance waterflow. Outside of Te Papakura o Taranaki, most wetlands have been drained for so-called development or industrial dairy farming. Wetlands provide a place for important natural methane-digesting methanotrophs and can be 'super carbon sinks'.
9. Greywater should be separated from blackwater and any new housing developments should have mandatory composting toilets. Composting toilets are the way of the future. They do not use any precious water and energy and no pipes and chemicals are needed either.
10. Furthermore, we think the thermal dryer has no future. Whether it's run on gas or hydrogen - it's old and dated technology and as a community, we can do better than that! At minimum we would request a new business case that looks more closely at the future cost of natural gas with the government-mandated phase out of new and existing home natural gas connections. Given the anticipated loss of investment in natural gas production ([Methanex announced in February](#) it would be closing its Waitara plant, citing "inability to secure gas supply"), we think it's unreasonable to assume NPDC can count on an abundant supply of cheap natural gas for the anticipated 25-year lifespan of the new thermal dryer.
11. As for hydrogen replacing natural gas at the waste treatment facility, we would cite the recent Climate Change Commission Advice evidence document (CCC Evidence Chap 4a page 9-10): *"hydrogen heating is highly unlikely to be a lower cost decarbonisation choice than direct electrification due to inherent inefficiencies in its production from electricity and then combustion for heat. Conversion losses can be upwards of 70%."*
12. In general we feel NPDC has given insufficient consideration to the technological inefficiency, high costs and heightened safety risks of producing, storing, transporting, using and converting hydrogen. These were clearly articulated by Professor of Mechanical Engineering Susan Krumdierck in her keynote address for the Convergence for Carbon Transition 2020. See <https://www.stuff.co.nz/environment/300165952/hydrogen-a-magic-pill-or-magic-bean>

and

<https://theconversation.com/why-new-zealand-should-invest-in-smart-rail-before-green-hydrogen-to-decarbonise-transport-153075> and Krumdierck's hydrogen crash testing video at <https://www.youtube.com/watch?v=M9AwGLnDl0Q>

13. We would also request that NPDC explore the business case of powering the Thermal Dryer with bioenergy (in lieu of natural gas) produced by a potentially privately funded anaerobic digester that would co-share the site. The digester would process New Plymouth's curbside food waste, along with a range of commercially produced animal and food waste.
14. In short, a water-based regional sewage system was only made possible with fossil fuels. A world transitioning away from fossil fuels cannot sustain this infrastructure without radical changes. Removing water at source would be of huge benefit.

#### Water Meters and water conservation

15. CJT opposes water meters as a solution to preserving water. The right to water is a human right. We disagree that a regressive charge should be applied on water. Should a low-wage single-mum pay the same as a millionaire CEO? The idea that the working poor should have to budget whether they can afford to run the washing machine or have a drink of water is abhorrent. Water is a community taonga and should be made available free of charge to everyone.
16. Metering is a usual first step towards involving the private sector in the management and distribution of water. The potential profits available to businesses managing household water supply are huge. Whether publicly or privately managed, a user-pays system is unfair. People on low incomes or with large families are disproportionately affected by charging for water. On top of this people have no choice but to use water – consumers can't shop around for an alternative. Water is a public good and a human right. Its supply should not be left to the whims of the market. Access to sufficient quantities of clean water is the most basic of public health measures and something that benefits us all.
17. We do not support any of the options in the consultation document. There are many more direct and targeted approaches to reducing water usage, such as promoting water recycling, rainwater tanks and water education programmes. We propose the following measures:
  - Expand the current conservation education programme
  - Subsidise the purchase and installation of rainwater tanks and/or greywater reuse systems
  - Investigate increased council water storage capacity across the district
  - Expand leak detection programme
  - Charge large industrial and commercial users more
18. The mandatory installation of rainwater tanks on new builds and a council subsidy scheme on purchasing rainwater tanks - similar to the insulation scheme - would help alleviate water shortage issues. Most rural houses across the region rely solely on rainwater to meet their water needs. We live in a region with plenty of precipitation

and most sections in the suburbs have plenty of space for a tank. Similar rules and subsidies should also be considered for greywater collection and reuse systems.

#### Stormwater management Waitara

19. We support investing in Waitara's stormwater management system. While we may be stating the obvious here - who knows - but it is imperative that the hapū of Waitara and the Waitara community are the decision-makers when it comes to the awa. The hapū are the original kaitiaki of the awa. They know this river inside out especially since before the awa was dammed, redirected, deforested and filled with silt and discharge wastes as it is now.
20. Waitara is a very low-lying community with many properties barely a couple of meters above sea-level. With a projected sea-level increase, Waitara will be extremely vulnerable in years to come and a high-tide with a river flood is likely to have severe consequences for the community and the whole region. Coastal residents should be supported to move inland or to higher ground, deforestation should be banned within a kilometre of the river's edge and wetlands upstream should be restored to slow flooding down.

## **Big Call 2: Greening our place**

#### Climate Action Framework

21. It is our view this proposal is completely inadequate. Planting trees and a few electric cars - has the council really understood the seriousness of the climate crisis? We have all spent the last couple of years in workshops and working groups trying to come up with strategies and visions for a just transition. But all we get is a few measly millions on climate change - it's quite frankly pathetic!
22. A just transition means acknowledging the underlying injustices that got us into the climate and ecological crisis, so we can get out of it safely without disproportionately harming the already disadvantaged. "Just bringing the emissions down" as some businesses advocate is not so simple or appropriate in our interconnected supply chains of a global market economy, with the interconnected effects of social and environmental degradation. Capitalist economies essentially rely on capitalising from unlimited growth and exploitation of finite natural resources and workers across the globe. Not only is it unethical but it is hugely wasteful and gives little thought to indirect consequences or future needs. To knowingly deplete essential finite resources, while generating often-toxic waste, is a form of ecocide.
23. Electric vehicles should be left for those performing essential services, the mobility impaired and for car shares and public transport. While this certainly applies to some council work, we also think that the council should make use of the existing public transport system. You will soon find out, that said system is completely inadequate. However, it is your role - together with the Taranaki Regional Council (TRC) - to sort that out and provide proper public transport. Waiting for demand to increase is a cop out. We don't wait for demand to drive recycling and composting because we know it is the responsible thing to do. Same goes for getting people out of the thousands of

private cars and into shared transport. We think the council should get more e-bikes and BeeCards for all their staff and have meetings remotely using internet technology.

24. Steps NPDC could implement immediately include heeding TRC Director of Corporate Services Mike Nield's call to make the cost of bus travel more competitive by closing the New Plymouth CBD to vehicle traffic (bar deliveries and mobility impaired) and increase the number and cost of paid car parks at the city edge (thus increasing the cost of private vehicle usage to encourage shared transport use).
25. Park'n'ride facilities could also be implemented immediately with bike lock-up containers at the ends of town (such as there is by Centre City) and better arterial bus services which connect to an inner-city round route. Bus shelters could be increased in number, built better to protect from the elements and resituated where visibility is limited eg. Blagdon main road.
26. NPDC also needs to serve as a role model for alternative (ie. non private fossil fuel vehicle transport) by ending their sponsorship/support of the CBD's annual Americarna and any event, company, competition or activity which promotes or advertises fossil fuel vehicles.
27. Council should be putting money into promoting vehicle share schemes, including subsidising the vehicles eg. bikes, scooters, EVs, and providing priority traffic lanes and free parking.
28. Council could also support neighbourhood composting schemes at public facilities such as playgrounds and schools. There are plenty of examples from other cities for how to do this cost-effectively and safely eg. fencing and community user group management.
29. Council should disassociate themselves from fossil fuel companies and create an ethical policy around dealing with any companies who harm the planet and/or society.
30. A big part of our contribution to greenhouse gases is our export-import economy. For many industries such as dairy, forestry and fossil fuels, we are exporting 80-95% of the product overseas and then importing some things we have just exported or cheap stuff we could have made here more ethically. The council should be investing in promoting local farmers markets, crop swaps, local manufacturing and diversification of our economy so we can provide for local needs with local produce.
31. Planting trees is great. However, we need to do that on a much bigger scale than what is proposed in the plan. We want you to expand the community planting programme and support rewilding programmes on farms. A rate reduction could be given to farmers who use regenerative practices and retire land for regenerate forests. We also want tree planters and those who maintain them for the first years to be contracted and paid a living wage rather than relying on environmental work to be done by volunteers with no long term management plans. There is huge scope for just reducing the amount of public land which is mown for no reason other than

someone's aesthetic preferences, and to let it rewild naturally. We are extremely disappointed that after all these years of talking about climate action, so little comes out from council and other decision makers. Time is running out!

### Tracks and Trails Network

32. We are not opposed to what is proposed but we aren't super enthusiastic either. If this solely has a recreational and tourist outlook, then we think it's a waste of money. Having people drive across town in their private cars so that they can go for a walk or a fun bike ride contributes further to our emissions. Yes, we are all for people having fun and enjoying themselves outdoors but often people say "I don't feel safe biking on the road with all that traffic" so then we jump in our cars, contribute even more to said traffic so we can enjoy a safe bike ride elsewhere. During lockdown, when traffic decreased significantly, we saw how many people enjoyed biking and walking again in their neighbourhoods because they felt safe. If this project could also address the need for active transport as a means to commute, to get to school and work as we rebuild our active and public transport networks, then this would make sense and the climate lens would be applied.
33. Active transport options are a key component in the decarbonisation of our movements. Having access to safe transport options for walking and cycling means the community can feel confident when opting for active and healthy modes of getting around. While the recreational benefits are obvious to everyone, we should not lose sight of the bigger goal of changing our transport habits.
34. We need to prioritise funding on cycle routes and walkways for daily commuters in particular between the edges of town and the centre, and around schools and major work places or recreation sites. Speed humps and garden boxes or slow zones and delivery/mobility-impaired vehicle only zones can be implemented to reduce speed and traffic for very little cost but with huge benefits.
35. Feedback from cycle groups locally (especially with the massive increase in New Plymouth vehicle traffic in the last three years) and elsewhere is that safety issues around motorized vehicles continue to be the main barrier to residents shifting from vehicles to bicycles for work commutes and errands. The danger of mixing vehicles and cycles can only be safely addressed by creating separate cycleway infrastructure or eliminating private cars on the main street, and we would regard these as a priority to recreational/tourist focused objectives.

## **Big Call 3: Paying it forward**

### Sports Hub

36. While we can see the community need for sports, it is our view that there is lots of existing infrastructure at schools already that could be upgraded and opened to the community. We are opposed to the proposed Sports Hub as it stands. Furthermore, the Track and Trails proposal is largely recreational already. Spending more money on another recreational project while we are already spending money on repairing the TRC stadium seems excessive. \$50 million has recently been allocated to rugby facilities and ratepayers were levied for decades for provision of their facilities. This is

embarrassing not only in and of itself when other groups facilities and necessary infrastructure have been under resourced and inadequate. If we are concerned about our community not being active enough then we should be encouraging active transport that not only helps our bodies but helps the planet by taking cars off the road.

37. Facing now an existential crisis, to not allocate adequate resources is a life threatening decision which is unconscionable, meaning the capacity of the NPDC being “fit to govern” for everyone, has to be questioned. We would hope a more responsible allocation of resources in order for the community to adapt to this crisis would have been evident, particularly given this plan is for ten years. This takes us beyond the time limit for having adapted to the crisis the public faces. There WILL be innocent victims of industries which have been empowered and unopposed, exploiting resources and polluting here for decades.
38. The specific facilities proposed for the sports hub are already in existence (and sadly underutilised) in local schools, and it makes far more sense for NPDC to work with schools to facilitate their use by community sports groups. A win-win for students and the community.
39. We also think that no ‘climate lense’ has been applied to this project. There appears to be no mention of the integration of the Hub into the public transport network. Instead, a large space has been designated for carparks and passenger drop-offs.
40. Furthermore, what about the heating, cooling and lighting needs for the space or the artificial plastic turf? Are these sustainable solutions? No.
41. If the project gets the green light from council, we want a shift towards integrating environmental planning and projects to the hub. This would include:
  - Solar panels on the roof
  - Passive solar heating
  - Rainwater collection
  - Community garden and food forest
  - Community composting facility
  - Nature playground
  - Public transport integration and no new carparks
  - Zero Waste policy
  - Sustainable building materials, and
  - No night games outside.

## **Conclusion**

42. We are disappointed. For us, this is another missed opportunity to really demonstrate that we - as a community - are willing to make the changes that are so urgently required.

43. Whatever happens next, it's clear we're all up against a ticking clock so we need as many people to do as much as they can particularly in these next ten years. We need to look up from individual changes and blame, and focus on what can not just reduce the most emissions quickly, but what can have the most social and broad environmental benefits. Put simply, we need major social change and system change. We'll need to challenge and push ourselves out of our comfort zones and make decisions and changes that will support long term commitments. We'll need to support each other in the good and the bad times, discarding egoistic ideals of going down in popular history or getting personal benefits over others. We need to grow a large social movement for change based on equity and survival of the many. As we have all learned in this Covid-19 pandemic: we need to 'flatten the curve'. Think long term. Act early. Support the vulnerable. Work together. And be kind to each other.
44. Nāu te rourou, nāku te rourou, ka ora ai te iwi.
45. Tēnā koutou, tēnā koutou, tēnā koutou katoa.



# Toitū Taranaki 2030

## A Community Powered Strategy for a Fast and Just Carbon Neutral Transition



Written by Climate Justice Taranaki, with contribution from members of several Taranaki community groups and unions. Published March 2021.

*We reserve the right to change our views and opinions expressed in this document.*

*Tēnei te ara kei runga,  
Ko te ara o tēnei Tupua,  
Ko te ara o tēnei Āriki,  
Ko te ara o tēnei Matua ā-iwi.  
Ko te ara o Ranginui e tū nei, o Papatūānuku e takoto nei,  
Kia rarau iho rā ngā tapuwae o Tāne,  
Tēnei te pō, nau mai te ao.  
Taupokina te pō, hinga te pō, turakina te pō,  
Te pō uriuri, Te pō tangotango, Te pō oti atu ki te pō, hurihia ki tua!  
Hura te rā! Kake te rā!  
Matike te rā ki te pae o Kare-Taitimu, o Kare-Taipari, o Kare-Taimoana  
Takapau whāriki i Papatūānuku e takoto nei.  
Piki ake, kake ake te rā i te Pae-tū-o-Rangi  
Huakina! Huakina te umu!  
Huakina te umunui, te umuroa  
Te umu o Tū-te-wiwini, o Tū-te-wawana, o Tū-te-nganahau!  
I te ata pō, i te ata hāpara, i te ata umurangi, huakina!*

*A new dawn is coming. Let's not delay. Remember the knowledge of our ancestors who went before us and rise to greet the sun's rays, fully prepared and ready for the new day that is to come.*

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*Photo of Taranaki Mounga by [David Young](#).*

## Summary

For decades, scientists have warned us that unabated climate change will bring environmental and social devastation like we have never seen before. Current estimates give us less than **nine years** to stop runaway climate chaos, let alone rebalance the damage to our planet from the past two centuries since the start of the 'industrial revolution'.

The Covid-19 pandemic has been a wake-up call for many, allowing us to see an immediate global threat and that big changes can be made quickly when political support and collective responsibility is there. Unlike Covid though, the threats from climate change are slower and wide-ranging while the changes needed are more long-lasting and have already faced decades of resistance from the industries who profit from polluting the atmosphere and exploiting our planet and people.

Many concerned about climate change and excessive resource extraction have long been working on [finding the underlying problems and the best solutions](#) for a sustainable and just future. We have struggled for generations to be heard, meticulously gathering evidence, trialling solutions and demanding change on the streets and in the halls of businesses, councils, parliaments and the UN. The rich elites and their corrupt politicians, who have plundered and profited off the destruction of our biosphere, have stood in the way of a just transition all that time denying their harm, offering false solutions that greenwash 'business as usual' and suggesting individual change rather than system change. The poor and working classes who already suffer the most, did not make this problem, **big industry** did and they **must halt their polluting and carry the cost of transition for society**.

While in recent years the New Zealand government is starting to take climate change more seriously, the changes suggested are not fast enough, rely too much on technological fixes and off-setting and do not sufficiently control industrial pollution. As a country we have avoided change arguing we are small and our impact insignificant but we know for our size and population that we are indeed one of the world's [worst emitters](#). We've also argued that if we change before other countries then our economy will suffer unfairly but nations and businesses are desperately looking for leaders in climate transition and if change is done well we can only benefit. That our economy will suffer is a given and it will only get worse, the slower we act.

If we want a truly just transition to living within planetary and regional ecosystem limits with a decent and meaningful life for all people, then those who care and those who can, need to come together to work more strategically and faster. Social change comes from society pushing for change. We need to educate, upskill, collaborate and encourage more people to act.



We advocate for a more community-resilience approach that focuses on industry and structural changes that drastically and urgently cut emissions and provide for our people to transition while also extending aid to those less fortunate, notably climate refugees.

This 2030 just transition plan focuses on our region of Taranaki but **we need the country to change if we are to effectively change**. Hence the targets and suggestions for change are more generic in their focus but applicable to Taranaki still. It is hoped this document will be useful for setting good targets, timeframes and action paths that can be used by our communities here and in other parts of the country including councils, government and businesses.

The long term **focus of our paper is on becoming carbon neutral, based on pre-industrial levels** of carbon in the atmosphere, roughly 280ppm CO<sub>2</sub>-e, at the high end of when global temperatures were in a natural dynamic cycle that has held for far longer than the existence of humankind. We know this is pushing the boundaries in which the global 'acceptable' goal is to aim for 1.5°C of warming beyond pre-industrial levels. Accepting this dangerous level of warming in no way compensates for the effects already locked in from excessive emitting. It is not good enough especially for those in low-lying islands like our Pacific cousins who are our tuakana, our genealogical elders, our whānau.

With the clock-ticking for urgent change however, focusing on real carbon neutrality is not helpful right now as this will take too long, further delaying urgent action, and we must also consider effects already locked in, 'committed' by present and near-future greenhouse gas emissions in the atmosphere. We have settled therefore on a **short-term 2030 just transition strategy** in which the aim is **to dramatically reduce our gross emissions in Aotearoa as fast as possible**. This requires **phasing out fossil fuels and shifting towards a predominantly domestic economy** rather than export and import focussed, given the environmental, economic, cultural and social injustice of continuing such an economy.

This paper suggests to weave and create a way of looking at this transition journey through a different lens, an all inclusive mana taiao mana tangata lens respectful of environment and people. If we continue to use the same lens that created the problem, which has not been respectful of land, water, air and people, or other species that share our biosphere, we will only get the same outcome. Therefore it is not a separate

component of the whole but interweaves through the whole, with the principle to indigenise, to decolonise, to reconnect and revitalise our innate knowledge of how to live sustainably on this planet within our communities.

Focusing on our tūpuna maunga always reminds us that we are but a small part of an unbounded universe. Our tūpuna navigated the vast corners of the Pacific Ocean to these shores with the aid of signs from Taiao and stories from our ancestors. The sun, moon and stars continue to rise in the east of our tūpuna maunga and set in the sea. These are constant reminders to care for our whenua and food crops, and our family, friends and community. We need to be ever mindful of what the future is bringing day upon day, year upon year in this very changeable time, as Papatūānuku and her tamariki try to resettle the problems humans have created. Toitū Taranaki. We need to stand within nature again, not against nature....

***"Ehara taku toa i te toa takitahi. Engari, he toa takitini"***

*Success comes from working together not alone.*



## Background - who contributed to this document

This 2030 strategy plan is a collaboration of research, experience, writing and ideas from several community groups and concerned residents of Taranaki, who met and discussed paths forward in two community-run just transition meetings in New Plymouth in 2019. We are tāngata whenua, workers, parents, scientists, farmers, students, health specialists and community organisers who want to see urgent action in our region and across the country for a 2030 just transition to a carbon neutral economy.



*Just Transition Community Conference June 2019, New Plymouth*

It is an independent extension of the Taranaki 2050 process that was supported by the Ministry of Business, Innovation and Employment, Venture Taranaki and Taranaki District Councils and which produced the Taranaki 2050 Roadmap in July 2019, and further Action Plans.

We were concerned that important community messages in the roadmap process had either failed to be incorporated or were uncertain in their interpretation within the Roadmap. Some of those who collaborated to produce this document had also been involved in the 2050 Roadmap process but wanted collective action to support elements of the roadmap key to community goals, and also fill gaps, or indeed change the map.

Ultimately this document has been a compilation of feedback from those initial community meetings with substantial elaboration and editing by Climate Justice Taranaki volunteers, taking in more recent research and just transition ideas, evolving government policies and the [2021 Climate Change Commission draft advice to government](#).



*Taranaki 2030 Just Transition Community Strategy Hui, Nov. 2019, New Plymouth*

# 1. Toitū Taranaki - Why a 2030 Community Just Transition Strategy

## 1.1 Current NZ situation

The previous New Zealand government agreed in Paris, 2015, “to reduce greenhouse gas emissions (GHGs) to 30% below 2005 levels by 2030”.

In April 2018, The [Productivity Commission](#) found that three particular shifts must happen for New Zealand to achieve its low-emissions goals:

- A **transition from fossil fuels** to electricity and other low-emission fuels across the economy;
- **Substantial afforestation**; and
- **Changes to agricultural production** structure and methods.

The vision of the [Taranaki 2050 Roadmap](#) in 2019 is for a “low-emissions economy” by 2050. The present NZ government agreed, in The Climate Change Response (Zero Carbon) Amendment Act, November 2019, to set a new domestic greenhouse gas emissions reduction target for New Zealand to play our role to “keep global warming to no more than 1.5 degrees celsius above pre-industrial levels” by:

- reducing **net** emissions of all greenhouse gases (except biogenic methane) to zero by **2050**, and
- reducing emissions of biogenic methane to 24–47% below **2017** levels by 2050, including to 10% below 2017 levels by 2030.

The NZ Climate Change Commission (CCC), in its draft advice to the government (February 2021), pointed out that **the government’s current Nationally Determined Contribution is insufficient** to achieve our share of the reduction to limit global warming to 1.5 degrees C. Yet the Commission’s suggested emissions budgets also fall short of meeting our obligations.

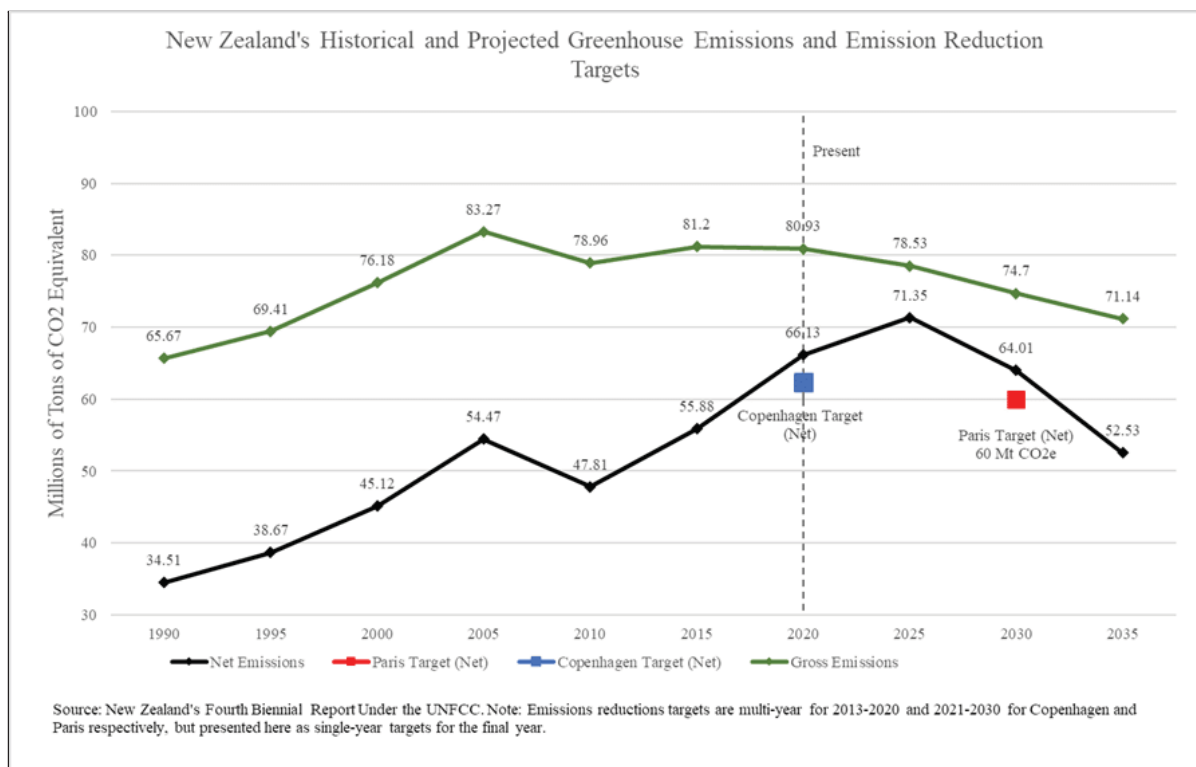
When [the government agreed](#) to the Paris Agreement “to reduce greenhouse gas emissions (GHGs) to 30% below 2005 levels by 2030”, they in fact compared 2005 *gross* emissions to projected 2030 *net* emissions. This improved the appearance of our poor commitment but actually meant allowing a **10% increase in gross emissions** (with international aviation and shipping emissions not even decided on until 2024). At the end of 2019, the government reported a projected **20% increase in emissions by 2030** in the current Nationally Determined Contribution under the Paris Agreement.

The Climate Change Commission does not challenge this net-gross accounting fraud but continues it with their [own net-gross calculations](#) incorrectly using the 2010 gross CO2 emissions amount for net CO2, leading to a 564 MT ten year target when it should indeed be 485 MT. The [Lawyers for Climate Action NZ reiterated](#) that to do our ‘fair share’, we should be aiming at no more than 400 MT, and warned, “if the temperature increase



exceeds 1.5° Celsius, we consider that adoption of the Commission’s draft advice by the Government would not be consistent with the Crown’s obligations under Te Tiriti o Waitangi”.

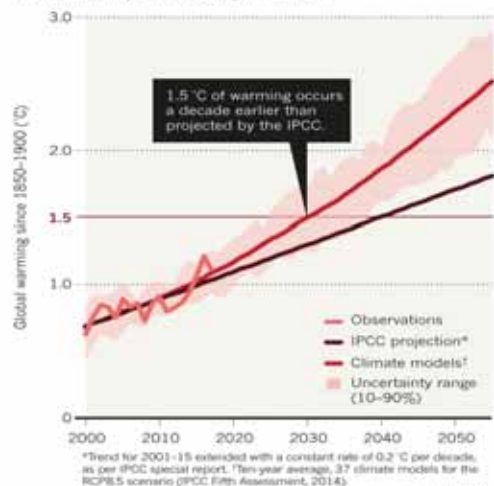
Moreover, neither the government’s commitment nor the Commission’s advice meets **the global average reduction of 30%** we’re meant to aim for, when we consider the separate lower methane reduction targets. Methane is calculated using the GWP100 (x25) assessing its impact over a hundred years rather than ten years, in which its impact is far worse. Under the UN agreements, as a developed country we are required to do our “fair share” and set our “highest possible ambition”, meaning aiming higher than the global average anyway. **Oxfam for example suggests 80% reductions.**



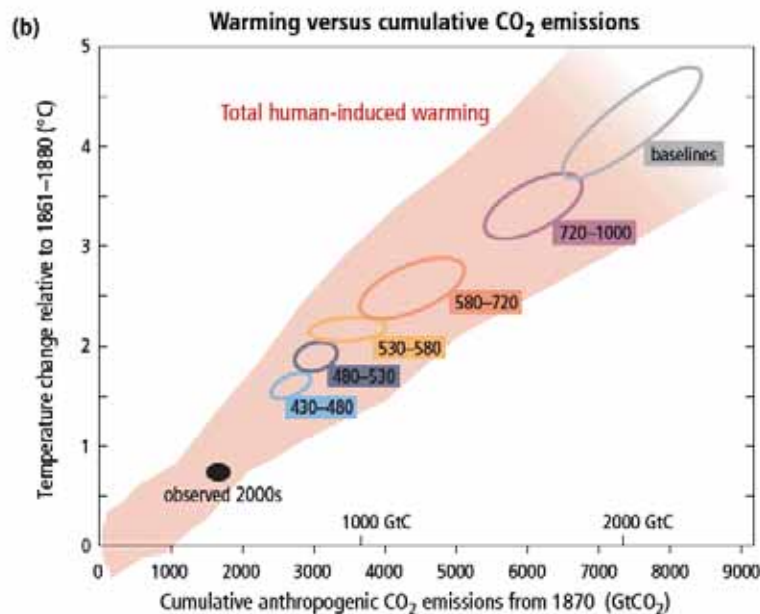
The hard fact is that New Zealand’s gross GHG emissions have gone up to 78.9 million tonnes CO2-e (in 2018), 24% higher than in 1990 “mostly due to increases in methane from **dairy cattle** digestive systems and carbon dioxide from **road transport**”. The government’s emissions targets and suggested policy changes were and still are weak, further delaying any real action. It still gives special allowances to our worst emitting industries, relies too much on technology that does not yet exist sufficiently (eg. carbon capture storage and new ruminant feeds) and allows for offsetting emissions overseas that drives carbon prices down.

### ACCELERATED WARMING

Climate simulations predict that global warming will rise exponentially if emissions go unchecked.



The Intergovernmental Panel on Climate Change (IPCC) Global Warming of 1.5°C [Special Report](#) (2018) warned that at the current rate, global warming is likely to reach 1.5°C between 2030 and 2052 and other [reports](#) have estimated we could reach that before 2030. In late 2020, we had reached 1.1°C of warming. Even if all the current pledges made in the Paris agreement are implemented, temperature rise is estimated at over 2°C by 2050 or 2.86-3.2°C by 2100 ([Carbon Action Tracker, 2018](#)) and according to Climate Reality Check's September 2020 [publication](#) current emission loads have already **locked us in** to ~490ppm and ~2.4°C of warming, which is extremely dangerous, nearing catastrophic (3°C) with 4°C being "unlivable for most people".



**Figure SPM.5 |** (a) Emissions of carbon dioxide (CO<sub>2</sub>) alone in the Representative Concentration Pathways (RCPs) (lines) and the associated scenario categories used in WGIII (coloured areas show 5 to 95% range). The WGIII scenario categories summarize the wide range of emission scenarios published

*"A limited number of studies provide scenarios that are more likely than not to limit warming to 1.5°C by 2100; these scenarios are characterized by concentrations below 430 ppm CO<sub>2</sub>-eq by 2100 and 2050 emission reduction between 70% and 95% below 2010."* IPCC, 2014: Climate Change 2014: [Synthesis Report](#).

The longer we wait the less time we have to avoid further warming, with feedback loops such as increasing ice thaw changing albedo and releasing methane bubbles from permafrost, ocean warming triggering release of methane clathrates off continental shelves and the [reduced ability of forests to absorb carbon](#). We must set tougher targets but more importantly we must set strong, matched policy and action urgently.

## 1.2 Real Carbon Neutral

The term carbon neutral, like [net zero](#) and carbon zero are fairly new concepts and open to various interpretations and corruption. As teenage activist Greta Thunberg [said at Davos, 2020](#) *"We're not telling you to keep talking about reaching net zero emissions or carbon neutrality by cheating and fiddling around with numbers... We're not telling you to offset your emissions by just paying someone else to plant trees in places like Africa while at the*

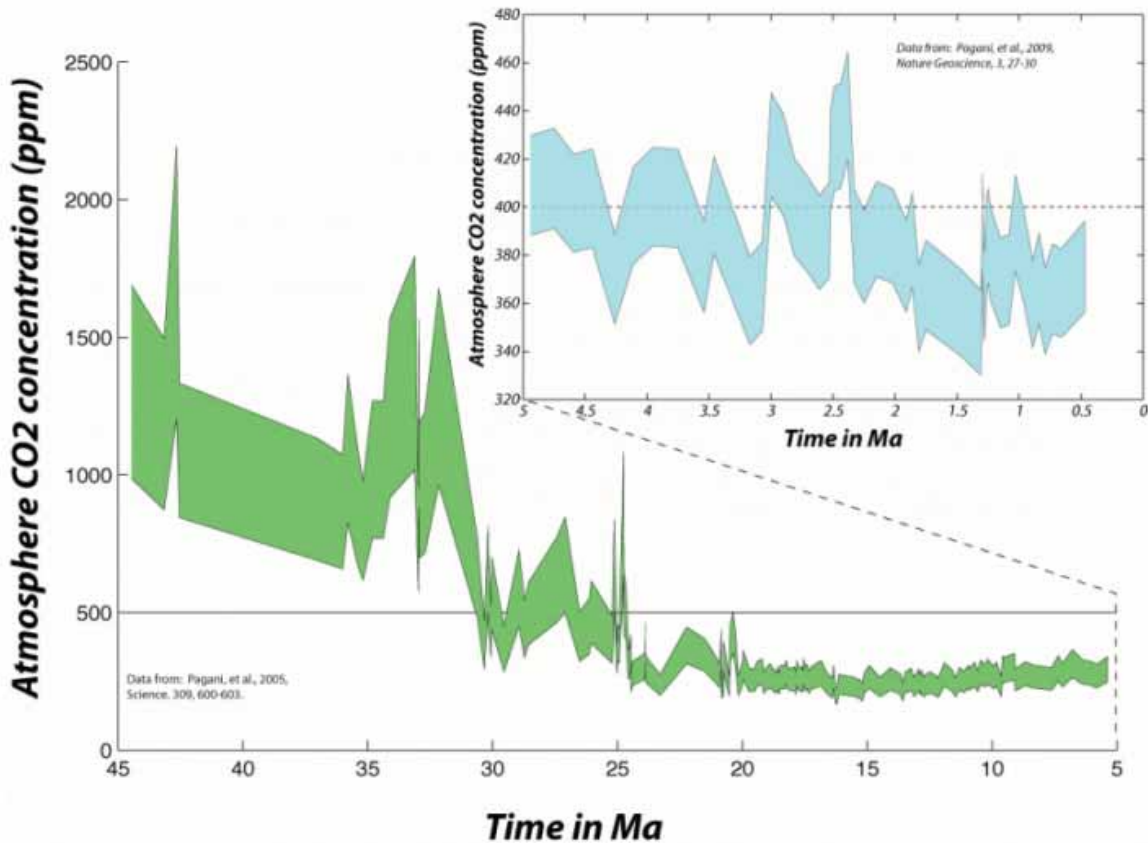
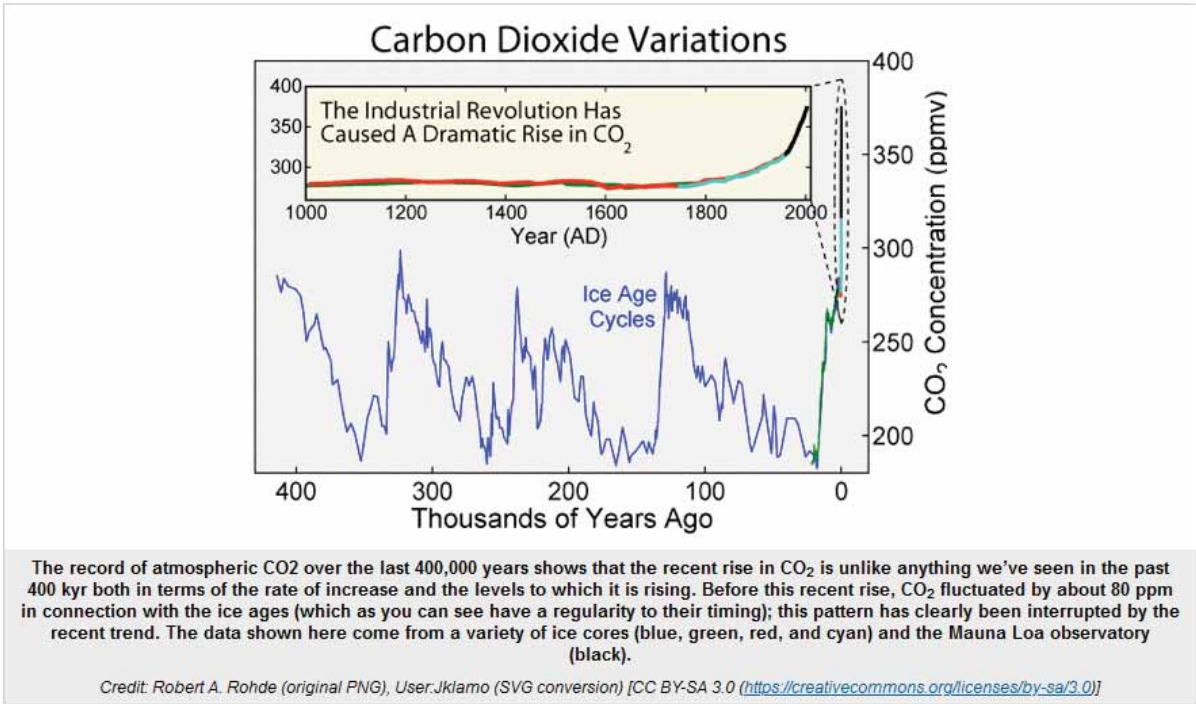
*same time forests like the Amazon are being slaughtered at an infinitely higher rate. Planting trees is good of course but it is nowhere near enough of what is needed and it cannot replace real mitigation and rewilding nature... We don't need a 'low carbon economy'. We don't need to lower our emissions. Our emissions have to stop... We must forget about net zero, we need real zero."*

We define this then as **balancing all measurable greenhouse gas emissions with the biosphere's ability to draw down all those emissions from the atmosphere and from surface oceans**. That means massively reducing greenhouse gas emissions while restoring healthy carbon sinks such as wild forests, wetlands, oceans and soils. Crucially we need to bear in mind that we have already pushed the climate beyond natural cycles and some natural **carbon sinks may be unable to function properly** for the foreseeable future, and we have already emitted masses of GHGs into the atmosphere which need drawing down as we urgently reduce our use of fossil fuels. Hence we cannot rely on carbon offsetting and must focus on cutting actual emissions.

### **1.3 The underlying problem is not emissions**

We need to take a wider look though to see what is causing this polluting economy. On the [graph below](#) we see that CO2 levels started rising in the late 1700s with the industrial revolution, as humans started burning fossil fuels and deforesting the planet at unprecedented rates. This was in tandem with a rise in machine development and increased urbanisation of populations to run those machines, and through the generations created a spiritual and cultural disconnection from the natural world and their communities. Typically this was forced on workers by the bourgeoisie, a new class of machine, mine and factory owners who began to rise politically where the feudal landowners had dominated for generations.

As people had to move, the few remaining common lands including farms and forests were taken up by those same owners and put into private hands, for more profit and power, rather than for public good. As resources shrank and to keep the owners' profits up, this destructive economic practice spread across the planet via the military creation of occupied colonies. This colonisation began in the 15th century following the Papal Bull Doctrine of Discovery to legitimize unsustainable, greedy European monarchies' expansionism alongside religious fervour to convert 'savages' and take their lands and resources. The huge energy power of fossil fuels and new machines sped up colonisation and hence the state of communities and the environment continued worsening across the globe, to the point now the greed-mad rich look to far off planets for their expansion.



If we look wider still at the natural cycles of temperature and CO<sub>2</sub> in the atmosphere ([graphs above](#)), we see that 460ppm was the maximum our [pre-human ancestors](#) have experienced, about 2.5 millions years ago. Generally Homo sapien humans however have existed between 180-280ppm in the last 300,000 years with the lower end being the cold

glacial periods. For the last few thousands years we'd lived in the stable Holocene period between 260-280ppm.

In recent years however, communities have called for a target of 350ppm CO2 equivalent (first surpassed in [1988](#)), the lower end estimate of what our pre-human ancestors experienced half a million years ago but higher than we, Homo sapiens, have experienced before now (noting the impacts have not come to bear yet).

Therefore our ultimate goal **should be reducing carbon in the atmosphere to pre-industrial levels: about 280ppm and 0°C anthropogenic warming**. This may require carbon drawdown to even lower than industrial levels in the short term considering the effects of climate change that have already been set in motion by the past 200yrs of polluting. That of course is a daunting target to aim for but one we would be wise to aim for.

## 1.4 Why 2030 targets

The IPCC warned in 2018 that with business as usual, we could reach a 1.5°C warming by 2030. Focussing on 2100 or 2050 targets just kicks the can down the road. **The tipping point is 2030.**

The recently announced [Carbon Neutral Government Programme](#) (Dec 2020) for the public sector to reach net zero emissions by 2025 is encouraging but the door is left open to utilise carbon offsetting rather than actual carbon reductions, despite not having enough electric boilers available to get schools off coal and gas in time, and there already being a massive stockpile of carbon units to deal with via the ETS.

The 2018 ban on some new petroleum exploration lessened the potential future risk of GHGs increasing but would not bring them down as production and exploration still continue in Taranaki and we continue to import many petroleum products and put no restrictions on promoting private petroleum vehicles.

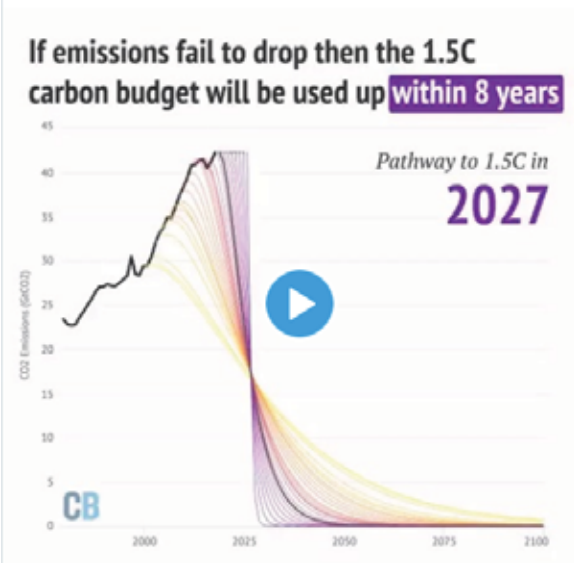
Large sections of the agricultural industry remain in denial continually demanding special treatment despite being responsible for half of our gross GHG emissions and knowing that agriculture will suffer some of the worst effects of climate chaos. Since 1990, there has been an 89.6% increase in the number of dairy cows and some 650% increase in the use of nitrogen-based synthetic fertiliser ([NZGHGI, 1990-2017](#)).

Different reduction targets for biogenic methane and continued reliance on [emissions trading schemes](#) will not effectively reduce GHGs. [Carbon capture and storage](#) “are still largely in a research and concept phase in Aotearoa”, as the [CCC has pointed out](#), and should not be considered at this late stage. As they say, “pigs may fly”.

**A 2030 target is prudent, giving more assurance and clarity to businesses and communities to act now.**

We need certainty around the future of our economy. It is irresponsible to waste money, resources and time on 'business as usual', leaving the burden of massive change to future generations. Considerations of inter-generational equity and [ecocide](#) are rapidly gaining legal status globally, mirroring long-held indigenous concerns. The cliff is getting steeper and steeper as this graph clearly shows. We must follow the expert [advice](#) of scientists who stress "the longer emissions reductions are delayed, the more difficult it will be to reach a particular target." We need urgent, massive action now.

UNEP: 1.5C climate target 'slipping out of reach' | @hausfath @robbie\_andrew.j.mp/2pQPhXg



To the naysayers who think it can't be done, just remember how fast some changes happen:



Many **solutions already exist** that are affordable and available but require transformative **social, political and economic change**. We need well-planned strategies with the incentives and support to rapidly adopt change. The Covid-19 pandemic is a wake-up call that some nations are able to take unprecedented actions based on peer-reviewed science, as an urgent response to a global threat. The result of halting much of the world's international and local travel has been substantial reductions in climate damaging emissions. If we seriously want to avoid catastrophic runaway climate change, a [global](#) emergency, we must respond in an analogous manner to the current approach to Covid-19, albeit with better local and global cooperation across and within communities, and with a long-term view.

## 1.5 Community Powered

It was encouraging that many members of the public collaborated in the Taranaki 2050 Roadmap consultation workshops. It was frustrating however that many vested self-interests, such as energy companies, outnumbered others in discussions and appeared to dominate decision-making (the **chair of the Roadmap Lead Group during the process was the CEO of Todd Energy and chair of industry lobby group PEPANZ**). Many Māori, in particular, were hōhā (fed up) with the process and continue to not feel properly involved, heard or to have much confidence in the process.

While viewpoints of industries are needed, their understanding of the broader economic and social shifts required for a truly just and sustainable transition, is limited, if not oppositional. Some of those industries (i.e. those who rapidly exploit non-renewable resources and workers from country to country) are inherently unsustainable and have blocked development of sustainable economies that are community-based and provide for our natural environment and people. Corporations often pay little if any tax, once their special tax subsidies, expense and asset write-offs, subsidiary company fees and 'emergency' bailouts et cetera are tallied up. And when companies fail, they can leave and declare bankruptcy while taxpayers are left to clean up the mess, as occurred with oil company [Tamarind Taranaki Ltd.](#)

Furthermore, elected politicians are not necessarily representative of their communities as only citizens with the confidence, education, social networks, financial backing and belief in the current government system typically stand for election and win. Those most in need may never vote let alone stand, yet can be some of the most innovative and resourceful in creating simple, affordable solutions. This is the case during emergencies where poor, close-knit communities, including iwi and hapū, often organise faster and more respectfully than governments or mainstream institutions, because they are adept at using the little resources they have efficiently and prioritising those most in need.

The rise in new climate groups and comments from the large crowd at the June 2019 Just Transition Community Conference in New Plymouth, demonstrated that many in our community want small-scale, local, community-based projects to be supported. The government however has [fast-tracked](#) large-scale projects under the Covid-19 crisis and bypassed legislation enacted to protect our environment and communities. The urge to

fund big projects such as hydrogen production and offshore wind farms, with inherent risks to communities and the environment, are not given to communities to debate and assess properly. Smaller onshore projects run by local communities using proven clean technologies, are likely to be safer, more accessible, efficient, affordable and accountable as profit-making is generally not a primary goal.

The need for urgent action should not be at the loss of accountability.

Fully functional democracy requires people to have more say in where our money is spent, how our economy, towns and workplaces operate and how our environment is protected. Increasing participation by local communities in planning and decision-making is essential for successful transition and stability. Digital technology can greatly help with this as we've seen with recent increased participation in surveys and submissions.

Tāngata whenua should be treated as [true Tiriti partners](#) with real authority and resources to protect Taiao and revive and revitalise Māori communities with new and traditional knowledge and customs. Their longstanding knowledge of this whenua and commitment to protect the land and people will provide guidance to a sustainable future.

## 1.6 Just transition



A just transition means acknowledging the underlying injustices that got us into the climate and ecological crisis, so we can get out of it safely without disproportionately harming the already disadvantaged. “*Just bringing the emissions down*” as some businesses advocate is not so simple or appropriate in our interconnected supply chains of a global market economy, with the interconnected effects of social and environmental



degradation. Capitalist economies essentially rely on capitalising from unlimited growth and exploitation of finite natural resources and workers across the globe. Not only is it unethical but it is hugely wasteful and gives little thought to indirect consequences or future needs. To knowingly deplete essential finite resources, while generating often-toxic waste, is a form of [ecocide](#).

Writer-comedian Ben Elton, described current economic models well in 'Dying of consumption', 1993: *"...The one single and abiding criterion by which the success of countries is judged is in terms of their 'growth'. Each year the great nations agonize over how much they have 'grown'. How much more they have made, how much more they have consumed. Consumer confidence is actually considered a measure of a country's relative economic strength. ... Consumption is synonymous with 'growth' and growth is good. It is always good, whenever and wherever. Hence, clearly consumption is good, all consumption, anywhere, anytime. Judged by the logic of world economics, the death of the planet will be the zenith of human achievement, because if consumption is always good, then to consume a whole planet must be the best thing of all."*

As agricultural commentator [Julia Jones](#) put it in 2019 *"It's likely New Zealand can feed around 40 million people [[MPI report](#)] and 4.5 million of those are our own citizens, so that really only leaves the capacity to feed 35 million people... There was a point where, as producers, you were being told: 'More, more, more – produce more, buy more, do more, feed more'. It didn't matter if it was your processor, your banker, scientists or your neighbour... even the government was telling you: 'Whatever you do, do more because New Zealand is feeding the world and you are the backbone of our economy'... After years of rapid growth, however, you woke up one day and found the narrative had shifted from more to less; suddenly you, the producers, were the villains and all those cheering you on were nowhere to be seen... Collectively, as a country, we got to this point and collectively we need to remind ourselves and urban communities that farming is indeed a very noble and valued career. New Zealand is not destined to feed the world; it never was."*

This is a fundamental concept to understand, that **we as a country are providing for roughly ten times the people who actually live here - with a heavy cost to the environment and society**. In the midst of a housing crisis and urban expansion, we should rethink our provinces and rural areas with succession in mind. We could **increase rural housing and shift to small-scale regenerative agriculture for domestic markets** with a win-win for the environment, urban and rural communities and new immigrants.

It is the very nature of the globalised, over-consumptive economy that must be restructured if emissions are to be reduced substantially.

Professor Kate Raworth proposes a different kind of economics called 'Doughnut Economics' with the aim that *"no one falls short on life's essentials (from food and housing to healthcare and political voice), while ensuring that collectively we do not overshoot our pressure on Earth's life-supporting systems, on which we fundamentally depend..."* [Kate Raworth](#). The '[Amsterdam City Doughnut](#)' was recently launched as a transformative tool for downscaling the 'doughnut' holistically.

Indeed, the climate crisis sits within and is connected to many other issues of social inequality, pollution, habitat destruction, resource depletion and mass species extinction. If we are to react responsibly and wisely, we must successfully address the connections between rising temperatures from greenhouse gas emissions from fossil fuels and deforestation with industrial farming, labour inequality and the massive globalisation of markets which stem from colonisation, racism, classism, patriarchy and the industrial revolution.

*"He manawa piharau. He manawa tītī"*

*Be like the small lamprey and muttonbird braving flooded rivers and storms, never giving up the fight to get where we need to go.*

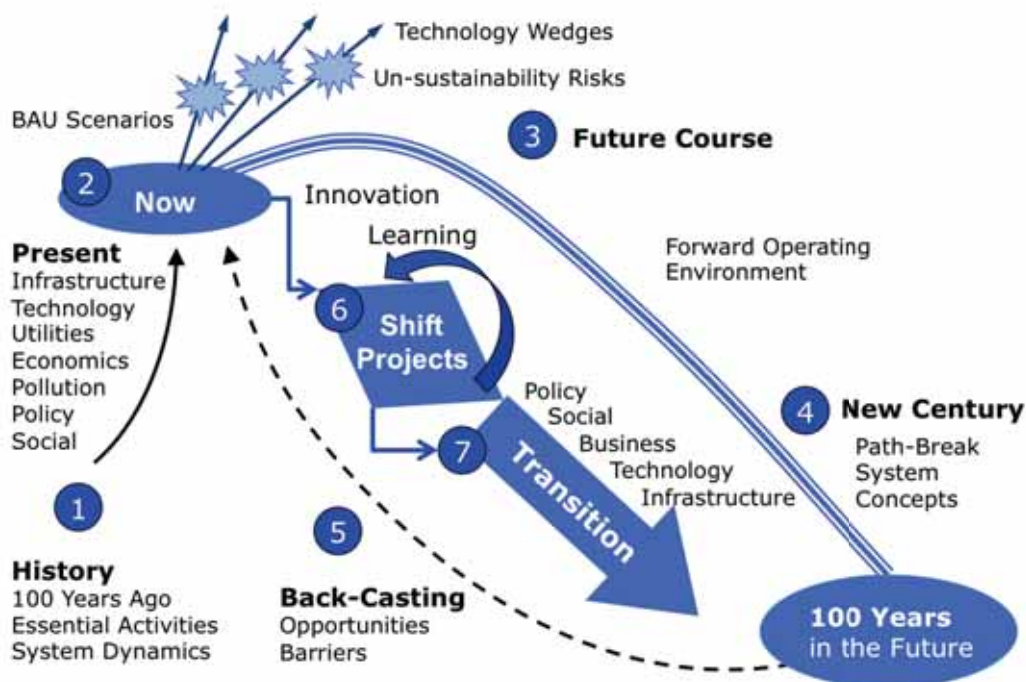
If we take the path of a truly just transition, we won't only reduce emissions and the impacts of climate change, but solve a whole lot of these other issues as well. Enabling more people to participate in decisions that affect their lives, reducing excess consumption and providing fair wealth distribution are not big sacrifices to address the climate crisis and leave a fair and equitable legacy for our children.

## 2. 2030 Just Transition Strategy: The need for Targets & Action Plans

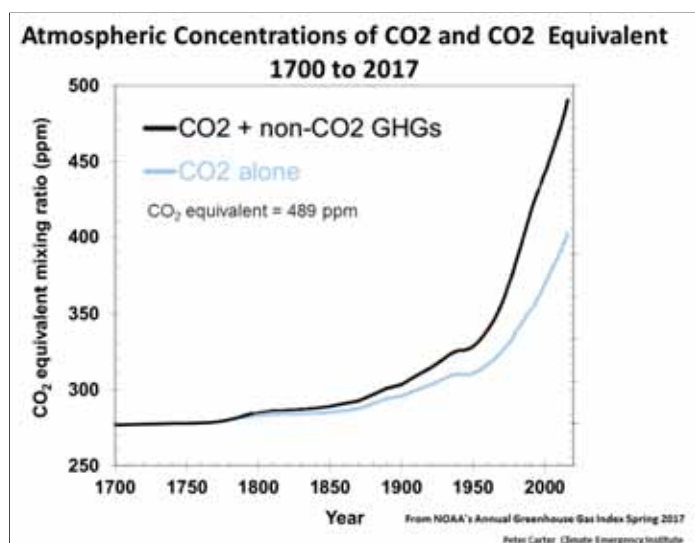
If we are to substantially reduce our greenhouse gas emissions by 2030 and redesign our lifestyles and economy to suit, we need to start with:

- **what needs to change** ([the big 3](#): energy, reforestation and agriculture)
- **clear targets** for where we want to be in the near future, and
- **pathways to get there** that are fast and appropriate.

New Zealand's [Transition Engineers](#) encourage us to look back to similar situations and forward to our target situation and theoretically test 'shift projects' to get there, taking into account **barriers and opportunities** and the **social, political and economic changes** that might need to be made. The shift projects that don't work with these conditions are discarded and the others we pursue.

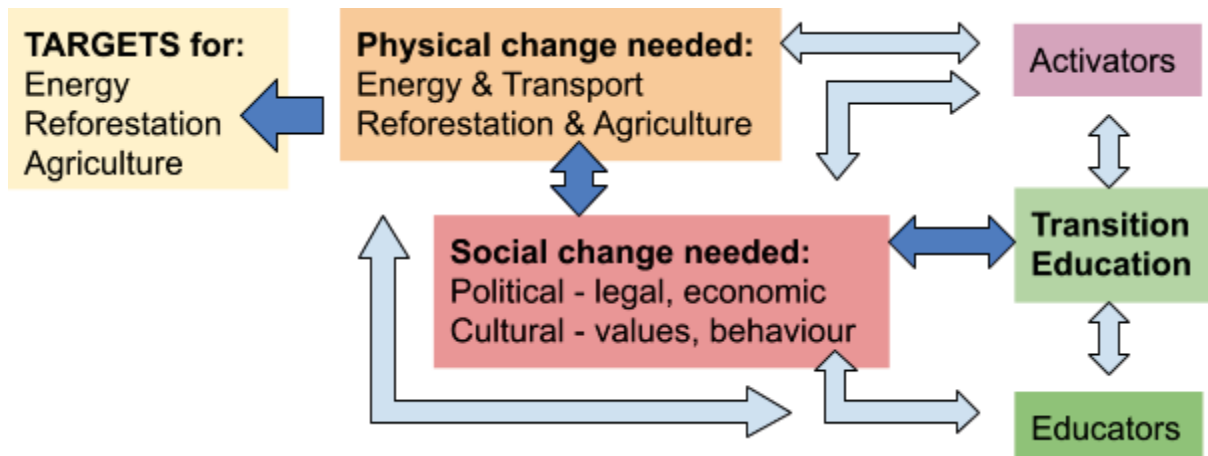


It helps to look back at how things were at a time in our history when global emissions were close to carbon neutral. As a rough guide, between the 280ppm long term and 350ppm short term goals, **the world reached emissions of 320ppm CO<sub>2</sub>-e around 1950**. In Aotearoa in 1950 we had 1.9 million people here, under half the population now of 4.86 million in 2021. We used far less energy and had quite different lives technologically, socially, environmentally and politically than now.





Following on from this line of thinking, we have laid our strategy out in this document like this diagram shows:



We work backwards from targets to actions, with education being the catalyst for the social and political change required for those actions to happen. The education however needs to be specific transition education created by a collaboration from activators and educators such as ecologists, engineers, marketers, planners, activists, health workers, teachers and community organisers. Working together with education institutions and changemakers in industry and political and cultural sectors, the actions need to take form to meet the targets.

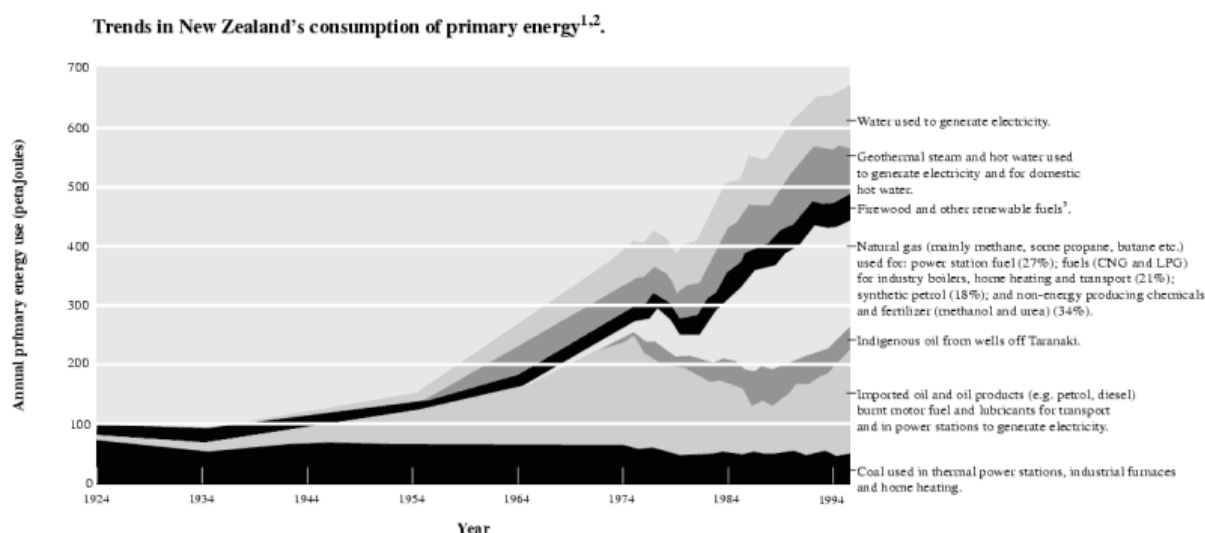
## 2.1 NZ Targets for 2030

[The Production Gap Report \(2020\)](#) explained that “between 2020 and 2030, global coal, oil, and gas production would have to decline annually by 11%, 4%, and 3%, respectively, to be consistent with a 1.5°C pathway. Preliminary estimates suggest that global fossil fuel production could [have declined] by 7% in 2020, primarily as a result of the COVID-19 pandemic and lockdown measures. Specifically, coal, oil, and gas supply could decrease by 8%, 7%, and 3%, respectively, in 2020 relative to 2019. But government plans and projections indicate an average 2% annual increase for each fuel.” The expansive onshore [seismic surveys](#) and [drilling campaign](#) in Taranaki in search of more gas in 2021 being a case in point.

The Covid-caused reduction in fossil fuel use shows however that when we must change we can, at least temporarily. The goal then is to enable similar changes long term without harm to vulnerable peoples and with a more sustainable and resilient economy.

### 2.1 a) Energy Targets

New Zealand’s use of energy has dramatically increased over the last 100 years from 100 PJ to over 900 PJ, including a major rise in domestic and imported fossil fuels and a much smaller rise in domestic production of renewable energy typically used to generate electricity.



<sup>1</sup> Primary energy is the energy content of a resource at the point of extraction or importation. A third of the energy is lost after this point, either as waste heat (e.g. in generating electricity from fossil fuels and geothermal steam) or as non-energy products (e.g. methanol and urea from natural gas). As a result, the amount of energy actually consumed in mechanical movement, useable heat and electricity is considerably less than the amount extracted.

<sup>2</sup> Data are decadal 1924-1974, yearly thereafter.

<sup>3</sup> Firewood and other renewable fuels includes wood, biogas (e.g. methane generated from rotting matter by bacteria) and industrial waste, but not water-based renewables (i.e. geothermal steam and hydro).

Source: Ministry of Commerce

In 2019, according to [MBIE’s Energy in NZ 2020 report](#) we used a total of **902.55 petajoules**, mostly from oil (295.9) and gas (185.09), just over a third from renewables

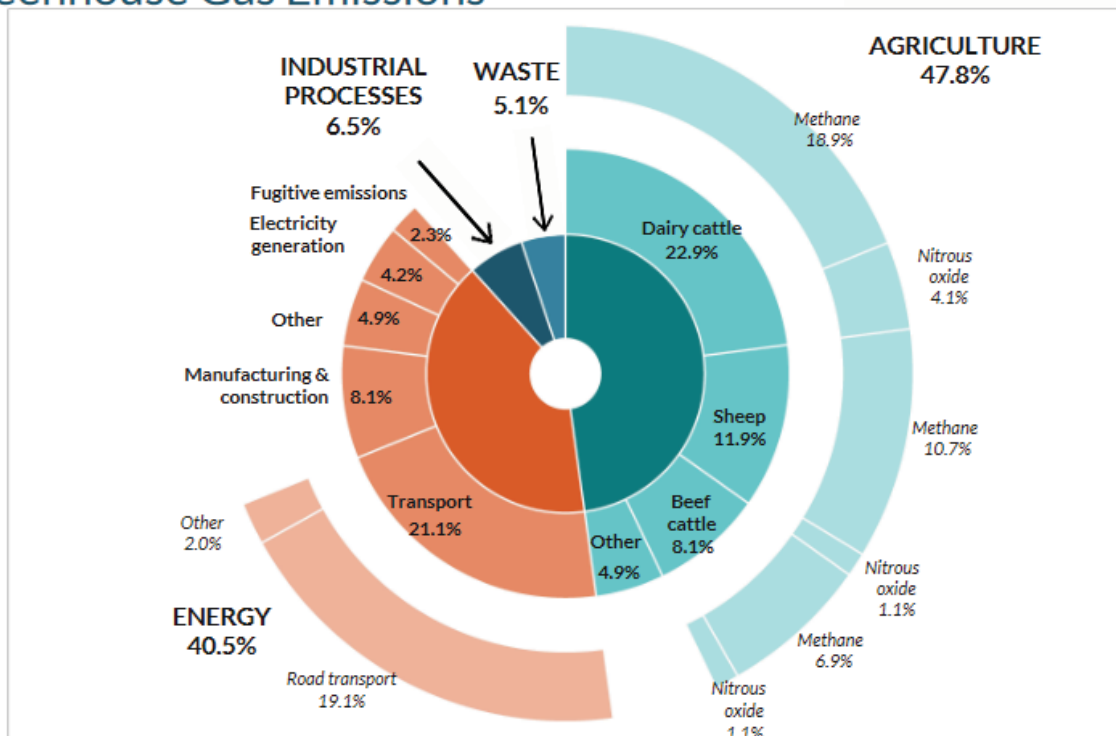
including wood (356.16) and some coal (64.24, not much changed since 1954) with some waste heat (1.17). Total **non-renewables (coal, oil and gas) equalling 545.23 PJ, roughly 60%**. (It is noted also in this annual data from 1990-2019, that oil use has doubled and renewable geothermal energy use has tripled since 1990.)

New Zealand's gross GHG emissions were [78.9 MT in 2018](#) with roughly 40.5% of that coming from the energy sector, meaning roughly **31.95 MT CO<sub>2</sub>-e from 902.55 PJ of energy used**.

Over **half our energy was used for transportation**, the majority being **road transport** (bearing in mind international travel is not accounted for, yet).

## NEW ZEALAND'S Greenhouse Gas Emissions

Source: New Zealand's Greenhouse Gas Inventory 1990-2018, published April 2020



Note: Percentages in the graph may not add up to 100 due to rounding. Fugitive emissions are from the leakage, burning and controlled release of gases in oil and gas operations as well as escaping gases from coal mining and geothermal operations. Agricultural methane is mainly from livestock digestive systems and nitrous oxide is mainly from manure on soil. Emissions from Tokelau are not represented on this graph as they are 0.005% of New Zealand's gross emissions.

The vastly higher energy consumption now compared to the 1950s is not only due to population growth and the rise in private car ownership, but also largely due to rapid expansion in industrial agriculture, other industries, processing and freight. Many were results of the [‘Think Big’ era](#) in the late 1970s when environmental stewardship became trumped by economic gains from exploiting offshore oil and gas for energy and for export-focused industries. Such emission intensive industries included the Mobil synthetic-petrol plant at Motunui, the oil refinery at Marsden Point and methanol production from natural gas in Waitara. (Nearly all of the crude oil produced in NZ is exported because of our limited refining capabilities while all domestic use of oil for

transport, aviation, agriculture and industries is met by import ([MBIE, 2019](#)). Half of the coal produced in NZ is exported annually while some large users import coal for processing and electricity generation.)

It is clear from this, which energies need to be targeted:

**ENERGY TARGET ONE - Phase out fossil fuel domestic production and imports by 2030 with bans on new exploration, new production and new associated infrastructure by 2023.**

**ENERGY TARGET TWO - Phase out fossil-fuel based transportation by 2030 with a ban on new fossil-fuel vehicle imports by 2022.**

**ENERGY TARGET THREE - Phase out all fossil-fuel use in agriculture and other industries by 2030 with a ban on new infrastructure by 2022.**

This will be done through **reduction, removal, re-localisation and substitution**. In other words, reduce our energy consumption first and foremost, remove fossil fuels and associated machines and infrastructure that can't be repurposed, decentralise our public services and economies so we have the capacity to live and work within our local environs, and substitute essential energy needs with renewable energy and sustainably produced biofuels.

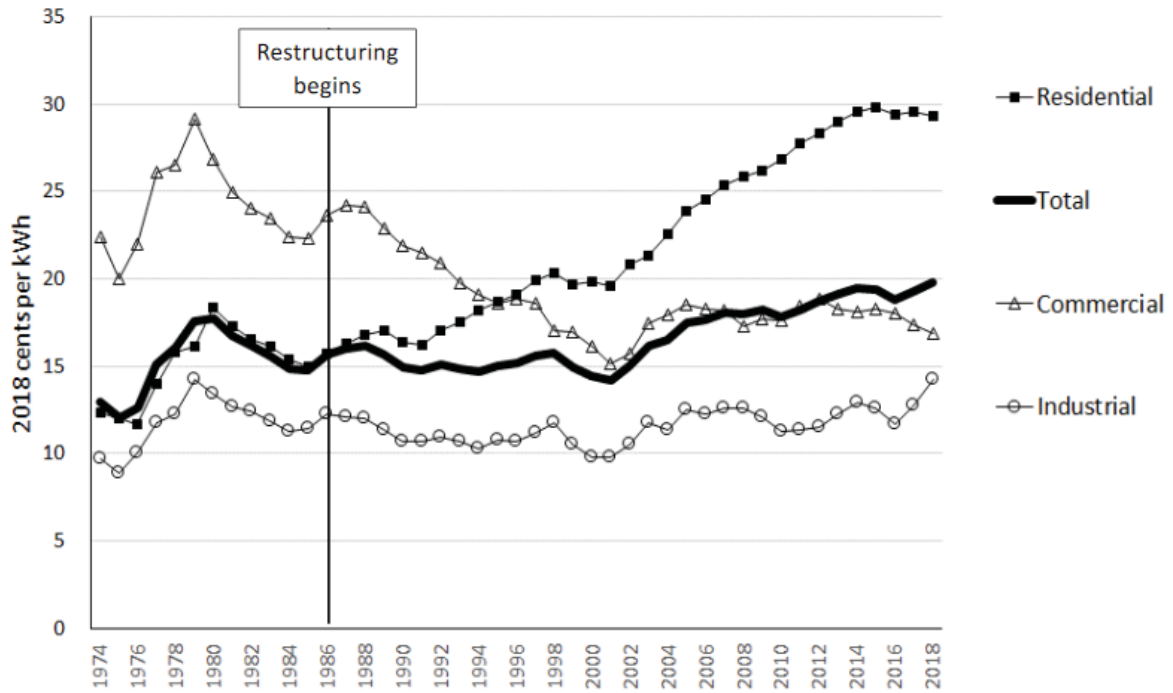
For example, we cannot replace the entire country's fleet of private vehicles with EVs (for reasons discussed later), so the emphasis will be on reducing private car ownership, banning new imports of fossil-fuel cars, making public transport more accessible, decentralising services and the where and how we work, and prioritising EVs for maximum output such as small-medium buses and small-medium trucks alongside repairing and electrifying the rail network.

**ENERGY TARGET FOUR - get energy production, transmission, distribution and pricing back under public control by 2025.**

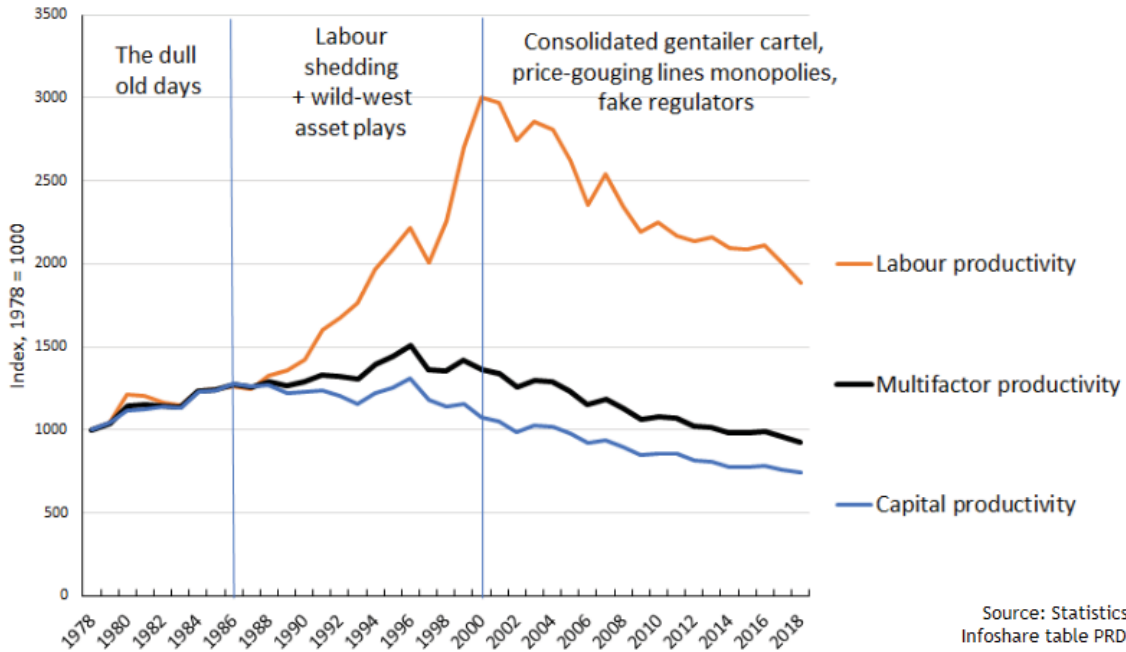
It's become painfully clear after several decades of corporate control of energy, that their interests were focussed on maximising profits while driving up demand and price while stripping public infrastructure. The graphs below, adapted by Dr Geoff Bertram from [MBIE data](#), show massive price hikes for residential users and decreases for commercial users while profits went sky-high through labour cuts and new control of pricing. Corporate control of pricing is also allowing energy companies to maintain their argument for continuing fossil fuel energy, while being able to restrict new renewable energy builds. Community control (central/local governments, iwi, hapū or community groups) will put costs back fairly where they belong and ensure longevity and environmental protection through better planning and infrastructure support. Decentralised power generation close to users would save resources and energy wasted on long-distant transmission and reduce risk.



Real electricity price by end-use sector 1974-2018



Productivity trends in "Electricity, gas, water and waste services"



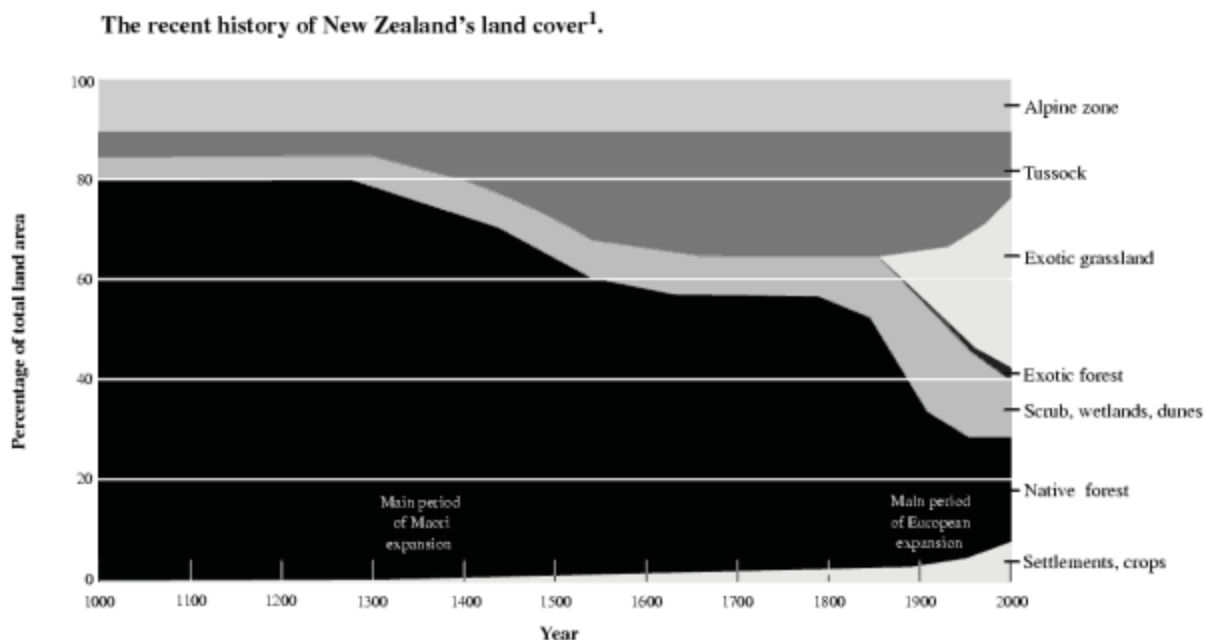
Source: Statistics NZ  
Infoshare table PRD014AA

## 2.1 b) Reforestation Targets

In the last century Aotearoa experienced intensive burning and chopping down of native forests for the increasing number of new settlers from Europe and elsewhere, especially those wanting grazing land. This was much more and much faster than the forest clearing period of early Māori, many centuries earlier.



Photo: A.W. Reid c.1900, deforestation near Stratford, Taranaki

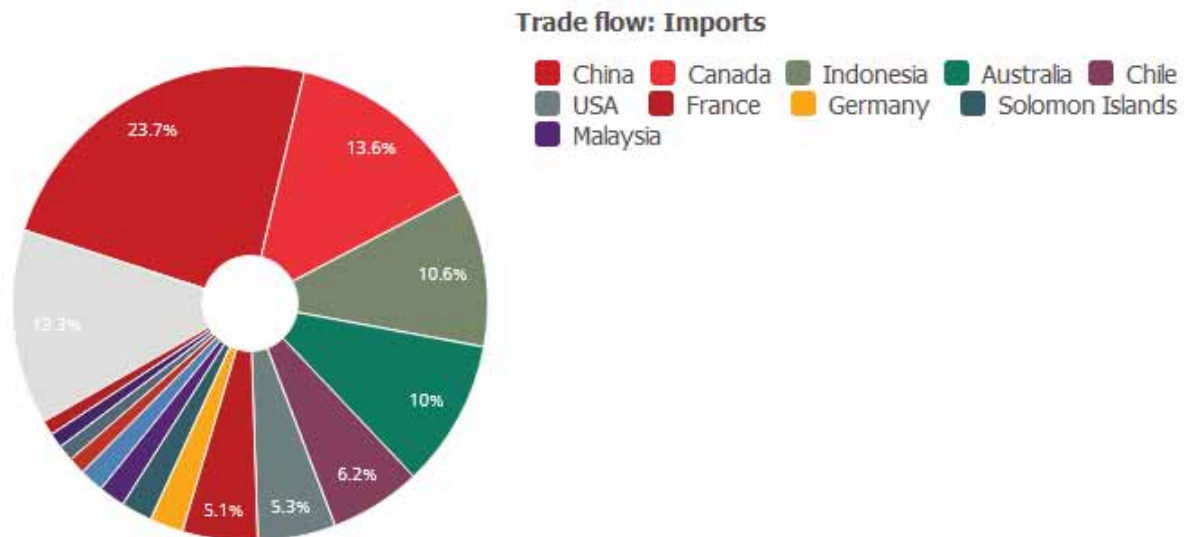


The diagram above from a [MfE SoE report in 1997](#) shows a slow but substantial reduction from **80% native forest** to under 60% accompanied by an increase in tussock land and some cropping and settlements during Maori expansion, followed by little change for three centuries. Coinciding with the industrial revolution, from the 1800s at unprecedented rates, the colonial settlers rapidly cleared native forest and tussock land for exotic grassland with more settlements, crops, scrub and exotic forest. In the 1920s the Forest Service realised a major timber shortage might occur so major exotic forestry planting began, along with major harvesting from the 1950s, but native forests continued to decline.

[MfE's 2019 GHG Inventory](#) estimated native forest cover had shifted from about 85-90% pre human expansion to **24-29%** natural forest in 2017 with 7.8% exotic forestry, 54.5%

grassland, 1.8% cropping, 2.6% wetlands, 0.9% settlement and 3.3% classified as 'other', on a land area of 26.8 million hectares. Since 2000, settlements have increased as well as forest harvesting with further native and exotic plantings and land conversions for grassland.

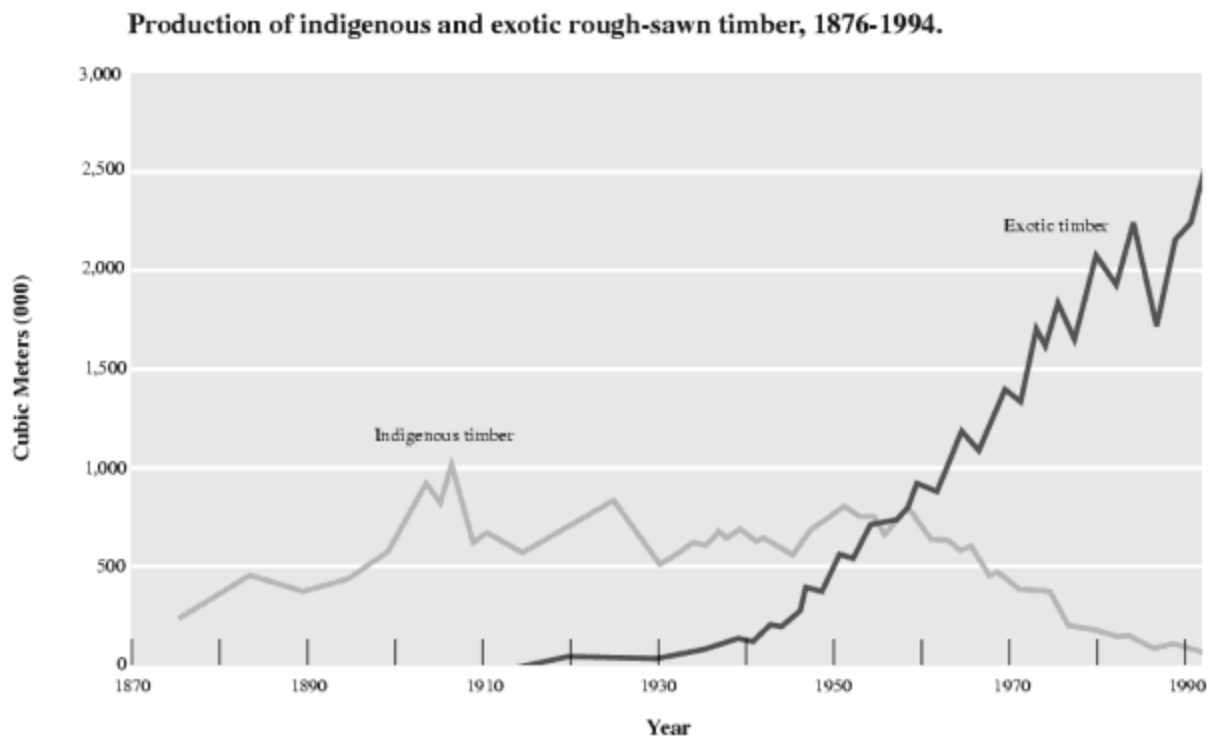
We need to also consider imports of forest products ([mainly from](#) China, Canada, Indonesia, Australia and the USA in 2019). Importing timber products 'exports' our emissions (and manufacturing jobs).



We also export forest products, often to the same countries, exacerbating our emissions here at home and for those overseas while also **wasting fossil fuel on shipping** products back and forth between countries as [shown](#) below. When the export market dominates, local users often have to put up with [supply shortages](#) or high prices. When price determines the product, we often end up with low quality products (with low social and environmental protections) that quickly end up as waste to keep consumers buying more new stuff.

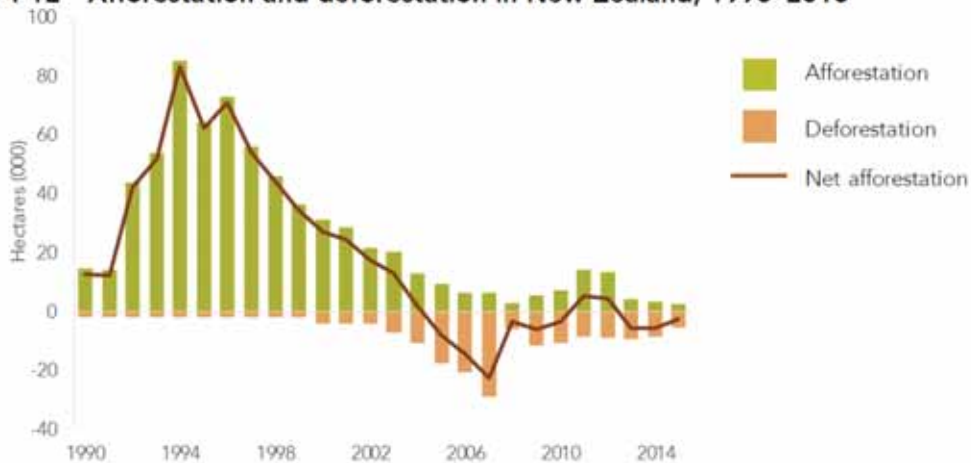


The result is that we have mostly replaced native forest felling with exotics but increased the amount we fell overall to feed export markets, as this [graph](#) shows:



At the same time new planting has decreased substantially since the 1990s ([graph](#) below), and Taranaki is currently felling the eastern hills ‘Wall of Wood’:

**Figure 4-12 Afforestation and deforestation in New Zealand, 1990–2015**



Source: MfE (2017f).

While the government’s [One Billion Trees](#) by 2028 programme aims to double current planting and improve suitability of planting, it’s nowhere near enough. There also appears to be no specified goal as to how much of the planting will be permanent forest rather than for production. The [CCC’s draft advice recommends](#) close to 300,000 ha of native and 380,000 ha of exotic tree planting by 2035. Accounting for how much carbon plants can

sequester constantly changes with more research. Additionally, price, trading theories and pressure from corporate interests make it hard to set a target. The CCC warns of risks of relying heavily on exotic pine forestry for CO2 removal. It indicates strongly the need to diversify and to substantially increase native plantation forest, or replace exotic plantations with natives as they are harvested.

The Emissions Trading Scheme however still doesn't cap emissions and allows [international offsets](#), thus limiting incentives for permanent planting by landowners in this country. The ETS' bank-and-wait for regulation changes or better profits scheme has also meant huge stockpiling of credits ([117.2 million NZUs in 2021](#)) unspent on actual reforestation and free credits (8.4 million NZUs) for big users who can threaten to shift overseas.

On top of all this is still the problem of wasteful slash'n'burn during land deforestation, conversion from forestry to pasture and continuing tree-clearing in cities and private backyards for example.

Therefore we could set:

**REFORESTATION TARGET ONE - phase out importing and exporting timber and shift forestry markets in Aotearoa predominantly towards the domestic market by 2030, reducing deforestation while creating new local wood processing and manufacturing jobs, decreasing transport emissions and helping ensure social and environmental protections.**

Importing and exporting forest products using fossil fuels cannot continue into the near future. It is extremely wasteful of energy and perpetuates the exploitation of workers (NZ's most dangerous occupation) and the environment. There is still no viable shipping alternative at the same scale anyway (see [wind-powered cargo ship](#) design and noting [hydrogen-based transport](#) is very energy inefficient).

We should consider forestry for our human needs such as timber and firewood in *addition* to permanent forests needed for carbon sinks, biodiversity and ecosystem services. Non-permanent forestry, while excluded from a long term carbon sink, will become essential for a carbon neutral economy with minimal imports and exports. Hence a separate domestic forestry target based on sustainable harvest needs to be set. According to [MPI](#) data on NZ production, trade and consumption of roundwood from 1996-2018: domestic production was 33,101,420m<sup>3</sup>, imports were 4,199,130m<sup>3</sup> and exports were 23,784,290m<sup>3</sup> in 2018. (In the year ending September 2019, this rose to almost 37 million m<sup>3</sup> of roundwood being removed, with 62% exported, leaving 14.06 million m<sup>3</sup> used domestically.)

So using the 2018 figures, removing exports from production and adding imports means domestically **our consumption was at least 13.5 million m<sup>3</sup>**. On [average](#) a hectare (ha) of forest will grow 23m<sup>3</sup> of wood a year. So with **our total land area** of 26.8 million ha in Aotearoa, we suggest the following targets.

**REFORESTATION TARGET TWO - establish a sustainable forestry industry that meets all ongoing domestic consumption by 2030 consisting of a minimum 2.2% of total land area or of 0.587 million ha, requiring a reduction in current exotic forests by about 5.6% or 1.5 million hectares.**

Given we potentially have more than we need with 7.8% of our total land area in exotic forestry (in 2017), which often has native forest undergrowth, we could **redesignate up to 5.6% or 1.5 million hectares of those forests to quickly become permanent forest carbon sinks** instead. Depending on how the economy shifts, we may need to keep more land in exotic forestry however to compensate for the transition from emissions-heavy cement, steel and petrochemical plastics to timber and paper.

A permanent carbon sink does not just have to be forest. By including wetlands, tussocklands, scrub and dunelands we are diversifying carbon sinks that play their own natural roles in habitat succession, biodiversity and ecological processes. Wetlands in particular provide a place for important natural [methane-digesting methanotrophs](#) and can be '[super carbon sinks](#)'.

Pre-industrial Aotearoa had about 50% native forest cover, 25% tussock land and 10% wetland, scrub and dunes, meaning **85% natural land cover compared to 34.9% in 2017** with 29% natural forest, 2.6% wetland and 3.3% 'other'. Our population is much larger than in pre-industrial times so we might need more than 15% of the total land area to live comfortably but considering how much wood and agricultural products we currently export overseas we can surely use far less than now. Disappointingly, the CCC draft advice to plant 300,000 hectares of native forests by 2035 represents just over 1% of total land area utilising some marginal farmland. Hence we recommend a more ambitious target.

A larger amount is also needed in the long term, considering [future wildfires](#) from already locked-in global warming and current failing natural carbon sinks such as under permafrosts and in our oceans. Great care will be required in selecting species and locations and good maintenance to minimize risks of literally 'putting more fuel on the global warming fires of the future'. Therefore we recommend carefully prepared reforestation schemes that take these risk factors into account. This may also include increased focus on 'blue carbon', notably the expansion of mangrove forests along sheltered shores. These would serve the additional purposes of wildlife habitat and minimising erosion as sea level rises.

**REFORESTATION TARGET THREE - establish a total permanent carbon sink from native forest, tussock land, wetland, scrub and duneland at a minimum of 60% of total land area or 16 million ha by 2030, an increase of 25.1% total land area from 34.9% (in 2017). Ideally that includes 40% total native forest (up 11% from 29%) and 10% total wetland (up 7.4% from 2.6%).**

Allowing the aforementioned 5% of exotic forestry to rewild would mean only 20% need be planted or rewilded by 2030. Rewilding is cheaper and faster than planting and more effective for biodiversity. If we're going to reduce agricultural exports (see next section)

then there will be more marginal farmland available for reforestation. Permanent cover [syntropic agroforestry](#) could also be included in these permanent carbon sinks perhaps, as a way of providing jobs and production within a permanent forest cover.

**REFORESTATION TARGET FOUR - reform the ETS or switch to a carbon charge by 2022 that caps emissions, stops international offsetting and free allocations, includes agriculture and sets a price that will reduce emissions sufficiently to meet our targets.**

To ensure the new permanent carbon sink areas are created there needs to be appropriate incentives and regulation in place. The current **Emissions Trading Scheme has many issues** such as international offsetting, no carbon cap, market pricing and world price constraints, exclusion of agriculture, free allocations for emission intensive industries, and corporate capture. But some [argue](#) setting up a new carbon tax or carbon charge may delay things and prevent urgent emissions reductions. Dr Geoff Bertram [proposes](#) the main thing we need is price and/or quantity **certainty**, where the ETS is completely uncertain, with major stockpiling of credits and no emission reductions.

However it is done, **agriculture** needs to be brought into the mix, **free allocations** need to stop, carbon emissions need to be **capped** and **pricing needs to increase** to between [\\$75-200 a tonne](#) for it to be a strong incentive **to reduce polluting** and **support faster replanting** of forests. A small portion of this money could be used to support regenerative agriculture that uses large trees (eg. syntropic farming), or semi-permanent cover to enrich soil carbon, depending on the age of maturity of the trees and the harvesting technique (less intensive and staggered rather than mass harvesting).

## 2.1 c) Agriculture Targets

In 2018 Agriculture's GHG emissions sat at **47.8% of our total emissions, or 37.7 MT**, our country's consistently worst emitter (and major polluter of waterways and soils). These emissions are mainly made up of **methane CH<sub>4</sub>** (which is much more harmful than CO<sub>2</sub> but shorter-lived, changing into CO<sub>2</sub> at about 9%/yr) and **nitrous oxide N<sub>2</sub>O** (which is even more harmful plus long-lived).

Currently agriculture emissions are barely impacted by any climate agreements as farmers argue that new technology should provide solutions soon to cut emissions directly and that because methane emissions are shorter-lived we shouldn't worry about it so much. The problem is that the technology doesn't even exist yet while the pollution does. Over a short period, such as until 2030, CH<sub>4</sub> emissions are still far more harmful than CO<sub>2</sub> and of course come with the even worse N<sub>2</sub>O, as the following graph from the CCC report shows.

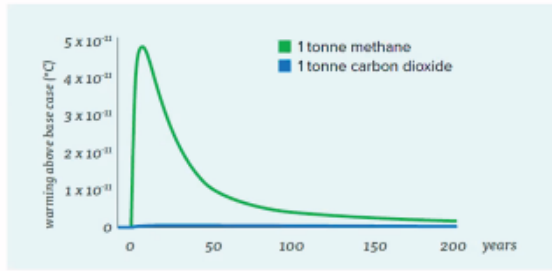


Figure 4.1: The warming effect of a tonne of methane and a tonne of carbon dioxide.

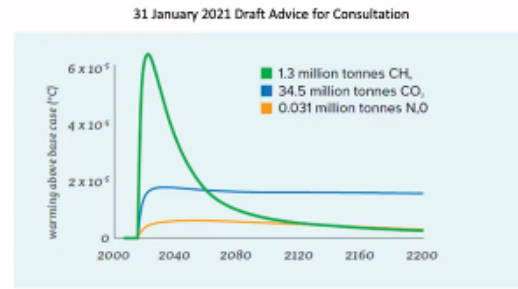


Figure 4.2: The effect of the country's yearly emissions of carbon dioxide, methane and nitrous oxide on warming. Note: This figure is based on 2016 emissions in Aotearoa.

This accounting practice makes our CH<sub>4</sub> emissions seem equivalent to our CO<sub>2</sub> emissions if we waited 60 years but we can't afford to wait that long, especially if farming is slow, or fails to change and agricultural emissions just remain high, as they have done since the 1960s.

This graph below from a recent [Landcare Research paper](#) shows agricultural emissions over time in MT CO<sub>2</sub>-e (combined CH<sub>4</sub>, CO<sub>2</sub>, N<sub>2</sub>O etc). **Agricultural emissions have increased massively since pre-industrial times** and remained fairly steady since the 1960s, with a shift away from sheep to dairy in the 1990s but otherwise no major reductions.

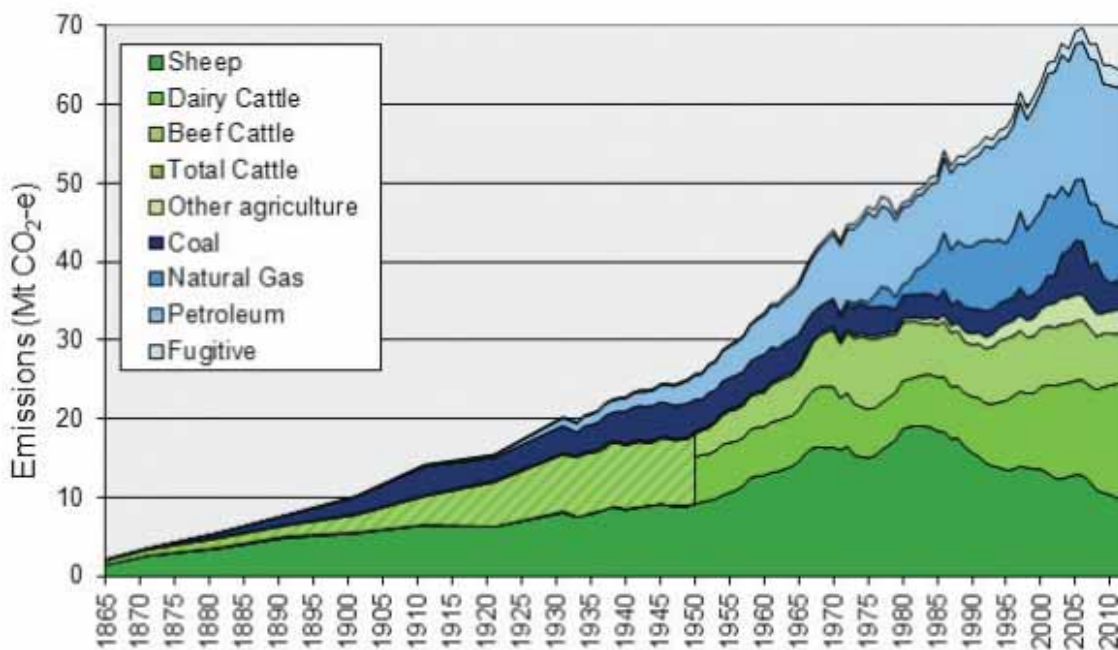
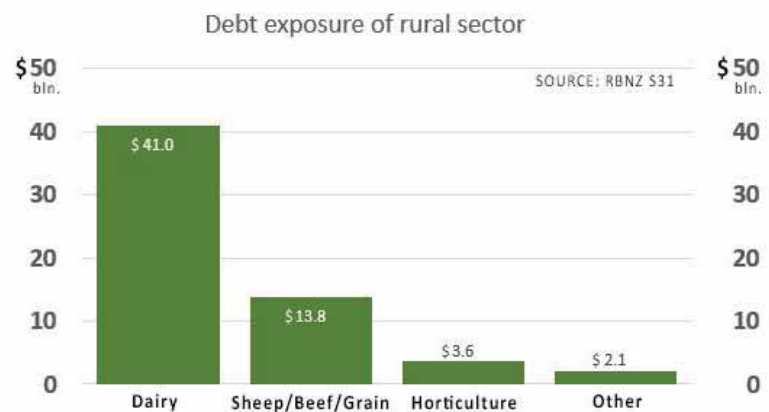


FIGURE 7 New Zealand's agricultural and energy-related anthropogenic greenhouse gas emissions, 1865–2012 (source: own calculations<sup>7</sup>).

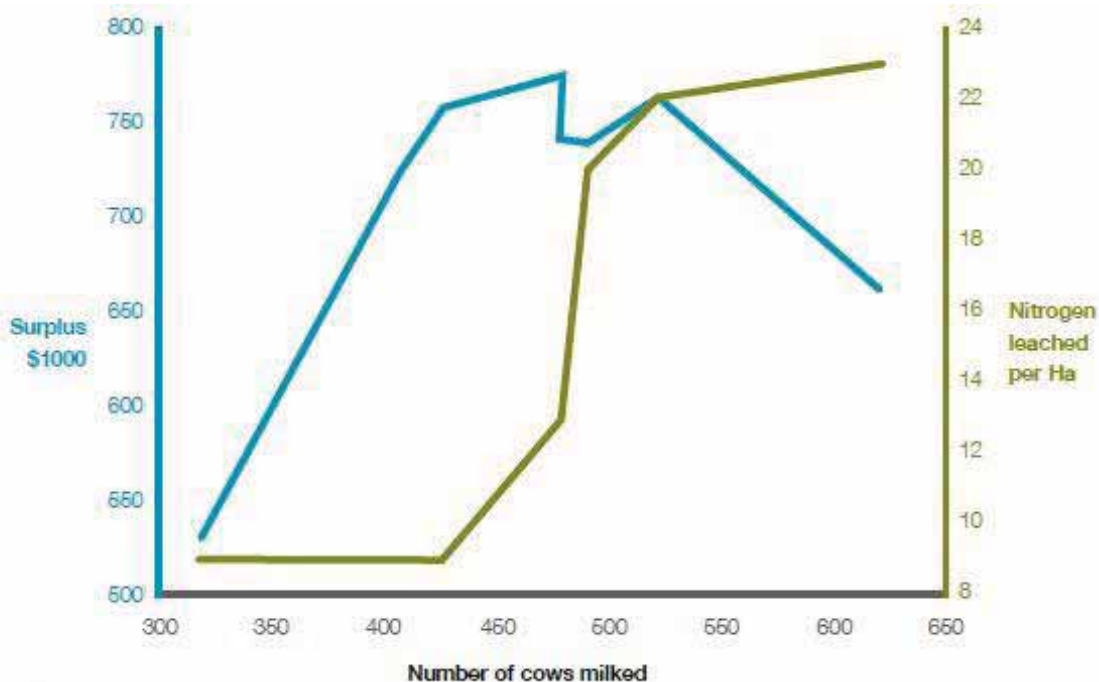
Given that large dairy corporations like [Fonterra export 95%](#) of their product overseas to around 130 different countries and use massive amounts of fossil fuel to produce, process, transport and package their product, it is an industry that needs a climate justice overhaul. At 22.5% of our country's total greenhouse gas emissions, the **dairy industry is our largest single greenhouse gas emitter** and even more so when transport and production



emissions are also considered. With dairy industry debt at around [\\$41 billion](#) in 2018 and the average farm owner-operator owing more than 50% of their assets including land, change is ripe for farmers to **downshift and/or diversify to smaller farms focussed on lower inputs and environmental impacts, creating quality domestic products with less debt and less competition.**



Interestingly, the CCC [draft advice evidence](#) notes that Opepe Farm Trust viewed that “the time for large scale expansive pastoral agriculture had passed and that a mixed land use approach to farming was the future.” The graph below from [Dr Mike Joy](#) is a particularly interesting study seeking to find the ‘sweet point’ where income still remains high but environmental impacts are minimal due to cutting fertiliser and reducing stock numbers. This would of course affect emissions as well.



*Figure 21. Modelled changes in profit and nitrogen leaching (from overseer) with reduction in intensity from current level on a real farm of 620 cows. (Numbers from Tom Phillips, Massey University)*

While there are issues with measuring tools and different farm conditions, there are countless examples now of regenerative agriculture producing similar results like this. As mentioned previously, particular drivers of our current high-emitting agriculture are the fossil-fuel based transport, packaging, processing and [fertiliser industry](#). These can be substantially reduced by banning synthetic and imported fertilisers and feeds, and shifting

our economy to a predominantly domestic market based on healthy regenerative agricultural practices with networks of small, local processing plants and retail outlets.

Therefore we could set:

**AGRICULTURE TARGET ONE - phase out all fossil-fueled processing of agricultural products by 2028 and all fossil-fueled transportation for agriculture by 2030.** Farm vehicles will ideally shift to EVs and biofuel.

**AGRICULTURE TARGET TWO - phase out natural gas-derived and imported fertilisers and feeds for agriculture by 2025.** All agriculture will ideally shift to regenerative systems by 2030.

**AGRICULTURE TARGET THREE - shift central and local government plans, policies and bylaws, and banking rules to allow subdivisions and mortgages for smaller rural land blocks by 2022,** to enable small-scale agriculture and land use diversification, new housing, forestry and other local needs such as local processing and retail.

## 2.2 Energy, Reforestation & Agriculture Downshift 2030 Overview

To reach these targets, much needs to change across Aotearoa and indeed the planet. These changes more often than not overlap due to the interconnectedness of our economy, society and environment. The following sections provide simple action plan timelines and more depth and examples as to how the needed changes could manifest and why.

To try and not lose the linkages and to keep it simple, the three previous target areas have henceforth been expanded and split into two:

- a) **energy & transport** and
- b) **reforestation and agriculture.**

### 2.2 a) Energy & Transport Action Plan

Below is a suggested timeline for an action plan to deliver the Carbon neutral 2030 targets. **Grey** are the things to stop, **white** are the things to support:

2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
No new coal, oil & gas permits	No new oil & gas drilling. Close all coal mines (& remediate by 2027)		Phase out oil & gas production*						
Ban new gas utilities	Phase out coal boilers			Phase out gas utilities except biogas					
80-90km/hr speed limit	Disincentivise private car ownership			Reduce international trade to essentials** only					
Ban fossil fuel car imports		Disincentivise non-essential^ air travel				Phase out large trucks			
Ban fossil fuel vehicle ads	Decrease car parks, redesign cities for active and public transport					Urban & rural cycle lanes on all commuter routes			
Support community-owned renewable energy					Zero waste Aotearoa				
Support energy-efficiency retrofits				Energy production & national grid into public ownership					
Support Scooter/Ebike/EV share schemes					Regional trains operational				
Public transport promotion campaign		Urban & regional public transport free or affordable, replace FF buses with EVs							
Restore, expand daily public transport services					Web communication <a href="#">fossil fuel free</a>				
Support kinetic/electric product manufacturing					Support sail ships to the Pacific				

\* except emergency services until renewable energy alternative is available

\*\* Items that are not able to be made here and still considered essential by society eg. medicines

^ Short-term holiday-goers and business meetings for example

Our energy and transport transition plan aims to meet reduction targets by 2030 through:

- **ending exploration and reliance on fossil-fuels, and restricting production** for essential services only,
- substantially **cutting energy wastage and consumption**, and
- transitioning to the **manufacture and efficient use of renewable energy-based infrastructure and transportation**, providing new jobs and strengthening **community energy resilience**.

## Fossil-fuel exploration, production and reliance

The government's ban on much of the country's offshore exploration was a step in the right direction but to reach reduction in energy use we need to 'turn the tap off' and encourage some big behaviour and structural changes, and support innovation.

All forms of [perverse subsidies](#) and other [investments](#) to the fossil fuel industry need to stop and **bonds and insurances** need to be mandatory at adequate levels to fully cover **decommission** and any potential risks such as well casings that only have an average life span of [20-30 years](#).

Natural gas is neither renewable [nor a transition](#) fuel due to the urgency of our climate crisis. Crucially, any new gas fired peaking power plants "*will have design lives of at least 40 years, and will need a major new gas user such as a petrochemical plant, to keep the gas flowing*", [warned the late Jeanette Fitzsimons](#). Regrettably, the Taranaki 2050 Roadmap and the recent [Energy Transition Pathway Action Plan](#) continue to advocate for gas exploration and mining, claiming falsely that it is an essential transition fuel. This is contrary to [numerous studies](#), including [full life-cycle analyses](#) that have demonstrated that gas is just as bad as coal in its climate damaging effects.

Notably, the CCC identifies fuel switching in buildings away from coal and gas systems as an effective emission reduction pathway. The draft advice includes all new space heating or hot water systems in new buildings to be electric or biomass after 2025, no further natural gas connections to the grid or bottled LPG connections after 2025, and a complete transition away from using natural gas in buildings by 2050. We see these as essential minimal policy change that could be strengthened further.

Petro-chemical industries (e.g. methanol and urea production) consume half of our domestic natural gas production while industrial dairying burns coal and gas to dry milk for export. These industrial uses need to be phased out by 2030 if we are serious about a zero-carbon economy. It is critically important that no new fossil fuel processing plants are built to support industrial dairying or other heavy emitting industries.

When it comes to hydrogen, Taranaki and the government's 'great hope' to preserve Taranaki's Energy province status along with all our private vehicles plus cargo ships, trucks and aeroplanes, it's a [con](#). Although green-hydrogen from renewable energy is preferred over blue or brown hydrogen which are still reliant on fossil fuel mining, the technology is extremely energy wasteful, the fuel is highly volatile and the technology and infrastructure upgrade is expensive, [complex and uncertain](#). Current business models for Aotearoa rely on starting with using fossil fuel-based hydrogen and relying on a large export market to cover costs - both of which are economically and environmentally

unsustainable. Carbon capture and storage (CCS) which blue hydrogen relies on has mainly been a [greenwashing tactic](#) by the coal and now gas industry to continue extracting fossil fuels, and it causes [social harm](#). Numerous [critiques](#) have been written by energy experts, [engineers](#) and [Climate Justice Taranaki](#). Chemical engineer Tom Baxton explained, "Hydrogen receives so much interest because it fits many business models. Fossil companies like it because it will be derived from fossil fuels for the next decade or more. Gas grid operators and gas boiler manufacturers see hydrogen as their only survival route as fossil fuel burning is being phased out. And the power utility companies also like it as they'll be able to sell more power thanks to hydrogen inefficiencies." Indeed, we should not be blinded by 'exciting new and business-driven, unproven technologies in the face of a climate emergency. Let's focus on technologies and solutions that have been trialed and tested and work sustainably now.

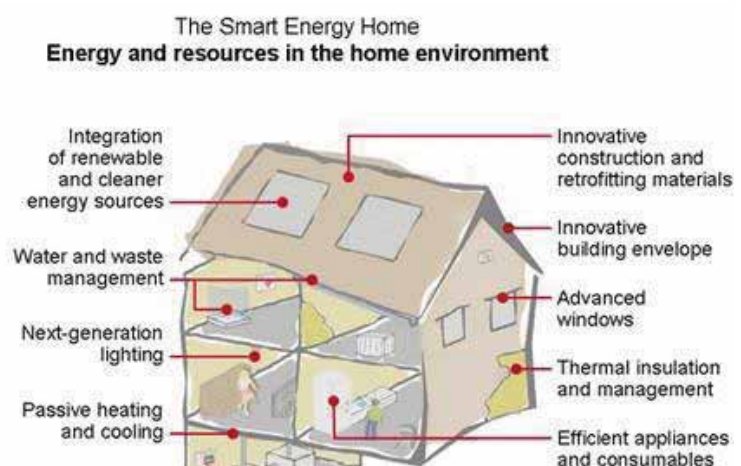
## Energy efficiency - cutting waste and consumption

A great deal of energy could be conserved by prioritising energy use and improving the way industries, businesses, the public sector and households operate. Cutting energy wastage and consumption would substantially reduce our need for fossil fuels, cut greenhouse gas emissions, improve air quality and make it more feasible for a smart renewable energy mix to provide for all our needs.

One big change that needs to happen is around energy and price control, with companies like [Meridian spilling water](#) from their hydro dams instead of generating power. Such practices also keep the reliance on fossil fuels and energy prices high. Investigations are ongoing into this criminal practice and we support an end to it and a return to publicly-owned energy production and infrastructure.

The new [Resource Management Amendment Act](#) will allow local governments to take into account GHG emissions once the Zero Carbon Act has been updated. This needs to happen as quickly as possible. Strict rules and consent conditions need to be introduced to monitor and cut fugitive emissions from the energy and petrochemical industries. Fugitive emissions in 2017 were responsible for [almost 6%](#) of our energy sector emissions resulting *"from production, transmission and storage of fuels, and from non-productive combustion. Examples are emissions from the venting of CO<sub>2</sub> at the Kapuni Gas Treatment Plant, gas flaring at oil production facilities, and emissions from geothermal fields,"* MBIE energy sector greenhouse gas emission [website](#). The International Energy Agency ([IEA estimates](#)) that around 45% of the global fugitive methane emissions from the oil and gas industry could be avoided with measures that would have no net cost. Indeed, much should be fixed with existing pipelines, flaring, processing, storage, refining, decommissioning and coal mining to stop or reduce these emissions. Public pressure and legislative reform are needed to ensure necessary improvements.

In terms of household energy loss, regulations, standards, incentives and support are needed



for energy efficient building designs, insulation and Net Zero Energy Building (example in [diagram](#)). Several councils across Aotearoa, such as [Nelson City Council, run an Eco Building Design Advisor service](#) which offers ratepayers and residents free, tailored, research-based information for new and existing homes to ensure or improve their energy performance and health outcomes. The [Greater Wellington Regional Council offers loans for ratepayers to purchase insulation](#), to be paid back over nine years through rates. The New Plymouth District Council [has brought in](#) a similar programme which could be expanded to all Taranaki councils, to help reduce overall energy consumption and enhance community wellbeing.

Major education and advocacy programs are needed to promote and support less and smarter use of energy mix including electricity, firewood and bioenergy. Various community initiatives, studies and models exist in NZ and globally, e.g. [Transition Network](#), [Blueskin Energy Network](#) and research into [renewable energy options for Parihaka Papakāinga](#). Learnings from such initiatives are valuable for any new projects of a similar nature. It should be normal to see households shutting and opening curtains with the moving of the sun and business lights going out at the end of the work day. Open burning of organic household, business, farm and forestry waste should be a thing of the past, when they can be turned into valuable materials, renewable fuel or feed the soil.

*[Rocket stove](#) cooks, boils water and heats thermal mass.*

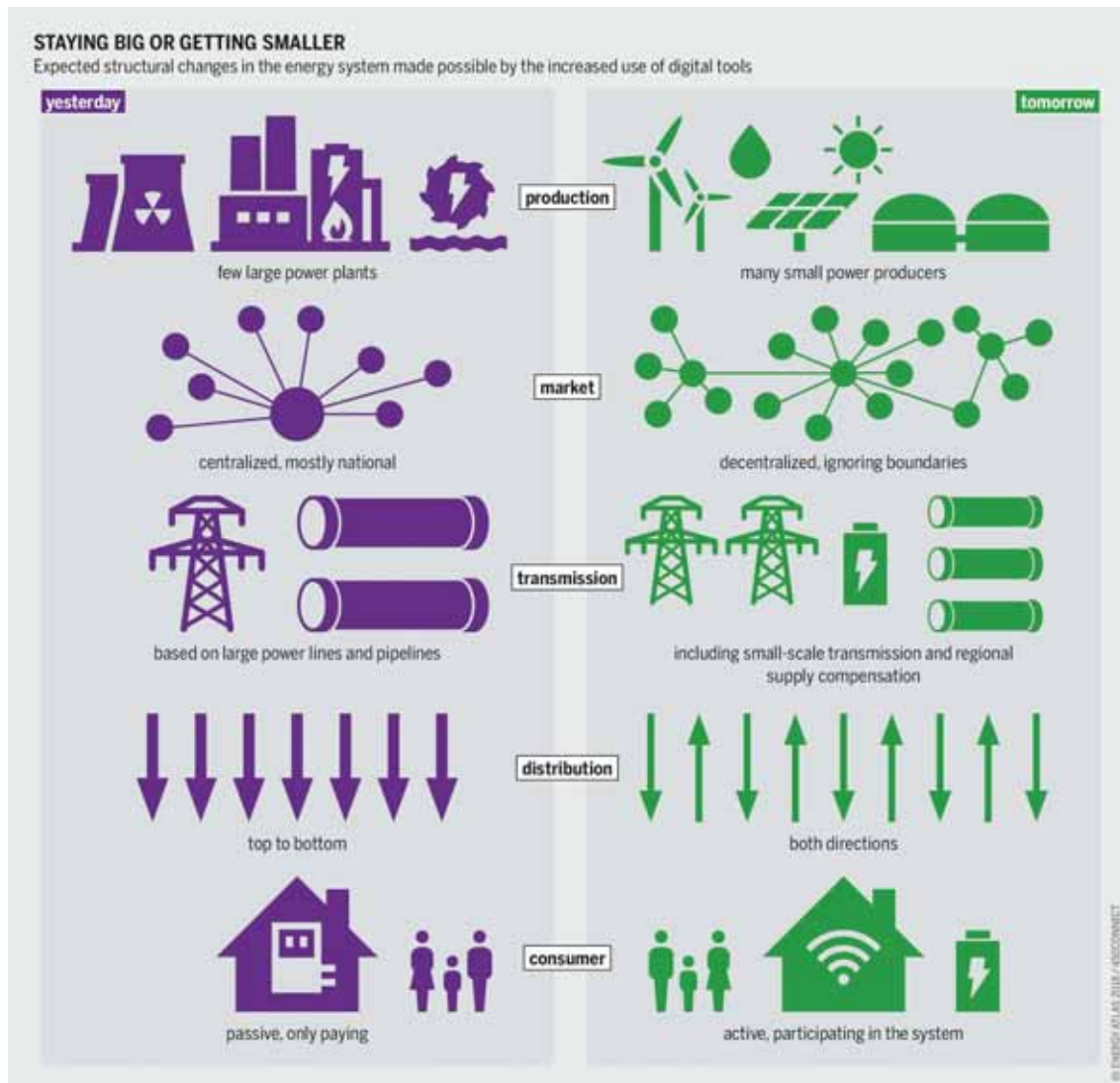


Indeed there is huge potential to cut greenhouse gas emissions and generate renewable energy from the waste sector. The current practice of trucking wastes hundreds of kilometers to be processed or dumped is unacceptable. We need to seriously become a zero waste country by 2030 and re-establish a thriving circular economy. This means banning poorly made and 'disposable' plastic or mixed component items that can't be recycled (not down-cycled either). For household food scraps and green wastes, home or [community composting facilities](#) offer the most affordable solution and have the ability to provide local jobs and support local food production which also reduce energy wastage.

The major change will need to come from substantially reducing or ending international transportation such as for exports and imports, private vehicle use, and changing human behaviour so that people live, work, trade and socialise more locally, using online tools or shared electric and/or kinetic transport for communicating and travelling further afield. Policy and education campaigns will be essential, focused on reducing the unsustainable desire for unnecessary consumption of goods and energy. We need to learn to preserve precious fossil fuel energy and products like plastics for truly essential things that cannot be created otherwise.

## Shifting to a renewable energy-based future

Shifting our economy to run on renewable energy is a significant challenge but not impossible. Even with massively reducing energy wastage and shutting down heavy emitting industries, more clean energy may be needed to meet increasing demand for electricity as we transition off fossil fuels, but that should not be our focus. We shouldn't need more new energy. We need to use less energy and use what we already produce more efficiently. Long distance transmission for example, is hugely inefficient, as is everyone working and cooking meals at the same time. An overhaul of our energy infrastructure and how our society operates will need to occur.



Many examples of well-tested, clean, renewable energy production already exist and are becoming increasingly affordable. Whatever the technology, careful assessments of [full life cycle impacts](#) including [mining impacts offshore](#) and end of life, are necessary to ensure that it is a responsible choice. Just as we don't want a disrupted climate, we don't want massive solar and wind turbine graveyards and more flooded valleys for dams. Enabling regulatory environments and positive financial incentives are then required for appropriate adoption, scaling and development of the chosen technologies.

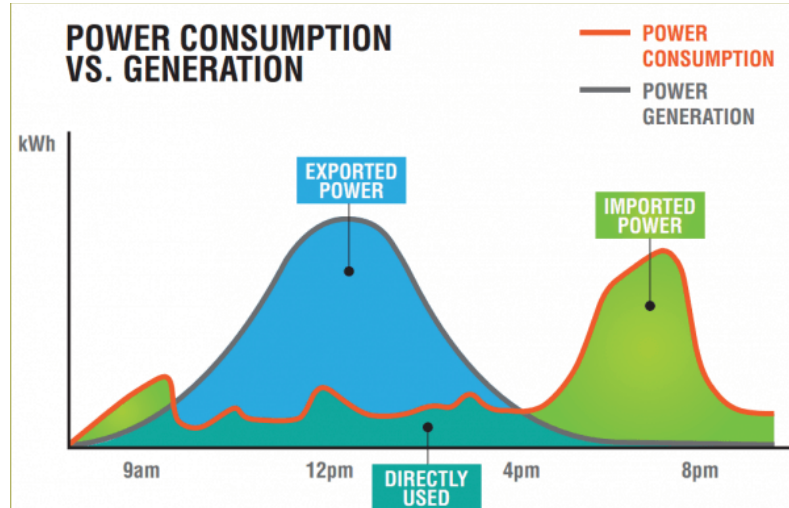
Legislation should not be overlooked to [fast track infrastructural projects to stimulate the economy](#) such as following the Covid-19 pandemic. Instead, they should be evaluated

based on their ability to deliver long-term climate and other environmental and social benefits, whether they are energy or transport sector projects. The Climate Change Commissioner further advised the government to use "[\*wellbeing indicators to measure how New Zealand is recovering and progressing towards an inclusive, low-emissions and climate-resilient future\*](#)".

For industrial process heat, substantial amounts of renewable energy need to be sourced and developed such as that which will finally be freed up by the exit of Rio Tinto and their aluminium smelter. If we are to move away from exporting 95% of dairy products most of Fonterra processing plants that burn fossil fuels would not be needed, while small local dairy factories could be powered by small hydro dams or biogas from farm wastes. In addition, bioenergy generation from [anaerobic digestion of residue organic wastes](#), such as municipal wastewater, agricultural and industrial food processing wastes, has the potential to reduce our energy and waste footprint, especially when done locally. Such alternative energy would also benefit the public sector in its transition away from fossil fuels, as typically used in swimming pools, but also in wastewater treatment such as by New Plymouth District Council.

When considering widespread adoption of certain renewable technologies by communities, focus on those that are produced responsibly, are safe, socially acceptable, affordable and easily maintained, such as micro-hydro (instead of mega dams), photovoltaic and biogas. Consider [onshore versus offshore](#) wind power for example. Studies show that coastal wind farms [compare well](#) with offshore cost wise. Offshore wind farms have high installation and maintenance costs and increase risks to marine wildlife through sea movement disruption and turbine injury.

For energy storage globally, pumped hydro energy storage accounts for 97%, but with a massive social and environmental footprint associated with damming rivers. [Off-river pumped hydro storage](#) (ORPHS) and [underwater hydro storage](#) is now being trialled in several countries for smaller storage with smaller environmental footprint. Compressed Air Energy Storage (CAES) is another environmentally friendly, long-life option that can be either [large-scale](#) or [small-scale](#).



Lithium-ion batteries have their environmental problems especially associated with mining and end-of-life disposal however, there are evolving alternatives that do not require harmful mining such as [salt batteries](#) and technologies for repurposing old batteries such as from EVs for home use. Power conservation and well-timed power usage at the height of energy production is clearly an important focus area to reduce the need for storage. There are many ways to promote and control this by scheduling activities appropriately



such as using solar electricity in the day and wood in the evening, or using more electricity late at night than the evening if on the grid. Smart technology can be set to do this.

## Community energy resilience

The electricity system in NZ is complex, involving five major power generation companies (the government has a major shareholding in three of them), the state-owned Transpower (with private fixed-rate bond [investors](#)) which runs the national grid, 29 distribution companies and some 48 retailer brands, all regulated by the [Electricity Authority](#). This model allows private profit-making on what is an essential public service, pushing prices higher than they need to be and effectively creating a corporate welfare system that, because of the inflated prices, also requires government to subsidise many senior citizens' heating bills.

Dr Geoff Bertram advocates for electricity regulation reform. In the 83 [Energy Watch newsletter](#), he wrote "most of NZ's bulk electricity supply is produced at low cost but is paid for as if it were high cost generation. This anti-competitive arrangement delivers vast profits to the power plant owners, which are 1/3 the NZ Government and 2/3 private corporations." **Public ownership** would ensure profits are put back into the public coffers and people pay a fair price.

A distributed model of power generation and management using publicly-owned, renewable energy generation in smart, community micro-grids has the advantage over the current centralised, large-scale production system, by reducing waste and costs in long distance transmission and increasing community control over prices. Community members will gain skills necessary for maintaining the system and have the opportunities to share in the benefits and responsibilities of ownership. A publicly-owned two-way smart-grid made up of many micro-grids and retaining the current large-scale renewable energy generators reduces the overall risk for the country.

Legislative reform and financial incentives are needed to allow and encourage more distributed renewable energy production and smart grids to connect to each other and/or feed into the main grid to boost overall energy production and community resilience in times of need. Any regulatory barriers that prevent people from trading or gifting energy should be removed.

Government support of businesses such as [Solarcity](#) is helpful but needs to go further so more people can access these types of shared services. Consider offering zero interest loans for families or communities to replace existing household gas appliances with electric ones or install community renewable energy systems that work best in their situations. Also drop the standard levies to join the grid so it is more cost effective for low electricity users to generate power.

The West Australia government's new [Distributed Energy Resources Roadmap](#) outlines a transition to a decentralised, democratised and data driven power system, in response to the huge uptake of rooftop solar energy generation by communities. The roadmap aims to integrate such distributed renewable energy resources with the existing centralised power system to form a safe, reliable, efficient and fair electricity system for all users. [Community battery storage](#) or 'power banks' will be made accessible at low fees to solar households to store and draw excess power such as for EV charging.

Indeed, there is tremendous opportunity for co-benefits when energy transition is integrated with other areas of work, notably housing, transport, wastes, food production and even land use planning, communications and employment arrangements, all of which carry their own energy footprint.

With initial financial incentives, enabling regulations and the upsurge of smart technologies and social entrepreneurship, the community-based renewable energy model has the potential to revolutionise our energy system. It not only provides local employment and affordable energy, but opportunities for individuals to become producers or 'prosumers' and collaborators rather than simply consumers totally reliant on profit-driven companies.

## Local government energy transition

Local governments are key energy users and are therefore highly influential in the overall energy consumption at local levels. They have statutory responsibility to mitigate climate impacts on communities and are liable for public infrastructure damage caused by extreme weather events and sea level rise. An increasing number of councils have acknowledged that we are in a climate emergency or urgency (in the case of New Plymouth District Council - NPDC). Many local government leaders, including New Plymouth District Mayor, have signed up to the Global Covenant of Mayors for Climate and Energy, with commitments for GHG emissions reduction and climate change preparedness. The NPDC Climate Action Framework (2019) goes as far as calling Taranaki "the national epicentre of New Zealand's transition to a local carbon economy". In order to live up to this, NPDC has the obligation to show leadership in transitioning off natural gas use.

More specifically, over half of NPDC's emissions are attributed to natural gas consumption, the wastewater treatment plant (63%), Todd Energy Aquatic Centre (16%), Govett-Brewster Art Gallery (6%) and Puke Ariki (5%). [Council's recent decision](#) to replace the waste water treatment thermal dryer with one run mainly on natural gas and up to 25% hydrogen over time, because this is a "shovel ready project" the Crown will fund, was a [poor decision](#). Council needs to consult and work more closely with community groups and specialists with expertise on [energy transition](#) rather than locking in public funds to dead-end infrastructure. There must be scope in the future to reduce waste volumes through Three Waters improvements, residential greywater and composting toilet installations, and a reconfiguration to biogas.

Local governments also have the ability to help phase out business and household fossil fuel use through district plan rules, especially for new development areas which could be made free from piped gas infrastructure.

## Transport

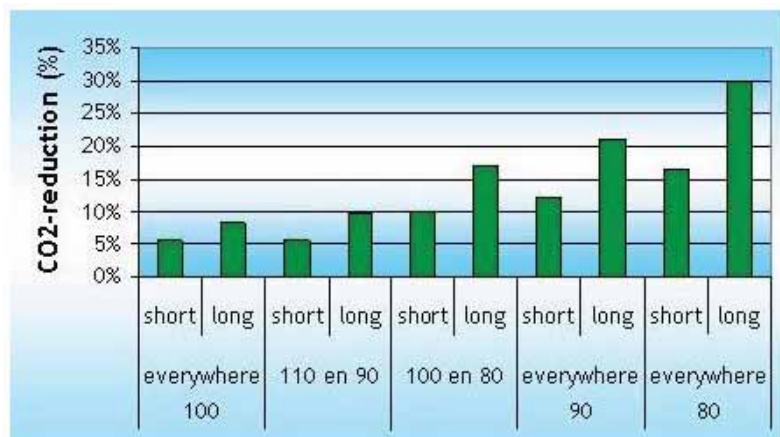
In order to reduce transport related greenhouse gas emissions the top priorities should be to:

- promote **localised activity**, goods production and responsible transportation,
- phase out **importing and exporting of goods** that are available in Aotearoa already and/or non-essential, and limit non-essential **international travel**,
- provide and promote frequent, well connected and free **public transport** (or at least cheaper than multiple people driving private vehicles or flying),

- restore **rail transport** for freight and passengers and **electrify the rail** system,
- Reduce road speed limit from 100 km/hr to 80-90 km/hr, for savings in fuel, reduced emissions and reductions in accidents
- ban fossil-fuel **vehicle imports** urgently,
- **ban/restrict advertising** of fossil fuel vehicles (similar to cigarettes),
- phase out **private vehicle ownership** and increase **vehicle sharing** through support,
- increase **active modes of transport** such as walking and cycling, in particular extending **cycle lanes** across the region on all commuter routes,
- increase access to **electric and pedal-powered vehicles**,
- make **online communication** easier and [fossil-fuel free](#).

The 2020 Covid-19 lockdown gave communities the opportunity to reclaim neighbourhood streets for safe recreation. This was a useful model of how to continue operating essential services with limited transportation while people learn to work from home, reduce shopping trips, grow their own food and exercise locally. It increased understanding of the near forgotten risk of disease spreading from excessive international travel. For decades, emissions from international travel have been excluded from climate agreements and 'free trade' deals have increased imports and exports, bringing flight prices down and increasing GHGs. This Covid-19 disaster, and previous ones such as 9/11 show that reducing international and inter-regional travel massively reduces GHGs in the atmosphere. We need to make long term societal shifts now that **encourage living locally and supporting local produce and services**. Frivolous international travel like shopping weekends in Sydney need to be a shunned thing of the past.

Aotearoa is a country of many proud car owners with the second highest private car ownership in the world. In just a few generations 'car culture' has shifted to one of individualists putting their own needs and convenience or fear of dealing with others first. What began as a symbol of freedom, fun and security turned into something that is denying those very things for our own children and those in poorer countries. **Car culture needs to stop**. One aspect of this is the increasing rush to get from point A to B. This has multiple negative issues, from road rage to excessive fuel use, to increased risk of accidents. One measure that will help to address these problems is a reduction in speed limit, as for [example](#) from 100 km/hr to 80-90 km/hr on the open road. This will benefit both internal combustion vehicles and EVs, the former through less fuel consumption and emissions, the latter through more efficient battery use. It will also help to reduce accidents and our tragic road toll and encourage more people into



public transport. Aotearoa did adopt this strategy during the 'oil shock' period, and surely our current situation is far more dire.

[Several countries](#) have started banning fossil-fuel vehicles and we need to do the same. We also need to find ways to gradually **reduce private vehicle ownership** either through taxes, parking fees or social pressure as has been done with smoking over the years by campaigning, advertising bans and creating car-free areas.

## MATERIALS - PLATINUM



- Fuel Cell electrochemistry **MUST** use Platinum – No way over this barrier
- Fuel Cells for cars require platinum = 30-60 g. Future R&D could lower to 10 g/car
- 2018 global Pt production was around 200 tonnes, (mostly from South Africa) half of which was used in catalytic converters for cars and diesel trucks
- Could produce 4M HFCV cars using 120 tonnes
- There are 1.4 billion cars on Planet Earth



*Slide by S. Krumdieck and J. Land presented at the [Transition Engineering Convergence 2020](#)*

**Electric vehicles should be left for those performing essential services and for car shares and public transport.** It is not possible for everyone, or even half of us to switch to an electric car as there is not enough platinum (an essential EV component) in the world and it depletes when used in an EV engine. Electric buses are already operating in several cities including Wellington and Auckland with electric trams being around for many decades.

Municipalities across [many countries](#) of the world offer **free public transport** with much success, some for several decades. It is offered in various ways such as to under 19 year olds or to senior citizens, women, those who can't afford to pay or to the public more



generally. [Luxembourg](#) is the first country to offer free public transport as of 2020. Free public transport could be introduced in stages such as on weekends and holidays or just in CBDs, gradually shifting to all days and all regions. The gross amounts of funding normally spent on new roads should be redirected to cover these costs as well as paying decent wages to transportation staff and providing them with good facilities, increasing and improving transport routes and services, providing easy access for all people, and for masses of promotion to help change the car culture in this country. At the very least public transport should cost less to take a whanau on the bus or train than to take a private petrol car.

We need to **upgrade and expand railway line networks**, infrastructure and electrify rail to encourage a shift to renewable energy and get people out of cars. This would also support getting freight off roads and greatly reduce roading maintenance costs and traffic accidents. When looking at the government's 2020 [Green Freight Strategy](#), it seems clear that hydrogen is an inefficient choice and that electric vehicles using renewable energy are the best option followed by full biofuel vehicles where EVs are not possible. However, as costs to replace diesel trucks is a significant barrier, support for wider uptake of biofuels in existing vehicles and sustainable production of advanced biofuels that do not require blending could be helpful, in addition to getting long-haul freight onto [electric rail](#) and using a mix of small to medium EV trucks. Incentives to encourage early adopters is advised. Ideally we should stop shifting freight around when local products are readily available. It's unclear how to make this happen on a domestic level other than socialising the idea as a moral choice.

We quickly saw during the Covid lockdown how people started **getting back on bikes** when there were less cars on the road because they felt it was safe to do so again. At present, many of our cities and rural areas are not designed for safe active transport. If more people were able to walk, cycle or skate safely, there would be a decline in vehicles on the road and increased fitness and [well being](#) reducing demand on health services. Being outside is also an essential part of [reconnecting with nature and community](#), helping us to care for the planet and each other. This has decreased so much in recent decades with our increasingly sedentary indoor lifestyles. There are countless ways to promote active transport such as **increasing cycle lanes and restricting vehicles on roads**. Other than a proposed underpass on Wairau Rd, the current suggestions for new cycle lanes and walkways in the Taranaki Regional Council's [Regional Land Transport Plan 2021-2031](#) are [designed](#) by Taranaki Trails Trust more for recreational users and do not really include commuter routes. While it's great for encouraging people outdoors it does little to reduce the huge emissions from daily commuters.

Shifting more of the country's vehicles to electric vehicles, whether individually owned or shared, will take time and needs support by way of banning petrol and diesel imports, fast-tracking and supercharging the "feebate" scheme to make it easier for New Zealanders to purchase electric cars, increasing charging stations across the country, and increasing support for home and work-based solar PVs with EV charge ability. Access to larger EVs that can accommodate larger families and groups needs financial support to assist poorer families. Several EV car-share companies have sprouted up in cities like

Auckland and Christchurch, with support from the Energy Efficiency and Conservation Authority (EECA). Expansion of such car-share models will significantly reduce vehicle ownership, lessening our overall environmental footprint. Cargo bikes and larger [pedal-powered EVs](#) and even buses are starting to come on the market in many parts of the world. We surely have enough engineers in Taranaki to make our own.



One issue we don't consider enough is the embodied carbon energy of using the internet and technology for online communication and data storage. When we look at material extraction, manufacturing and processing, transport, data servers, cables, accessories and software, online support, device charging and end of life material recovery the ICT sector is responsible for at least ["3-4% of global emissions"](#) and rising. Divestment from fossil fuels and ethical business is starting a shift towards [fossil free data](#) at least but we have a long way to go to clean up the material side of the industry and rising energy use.

## 2.2 b) Reforestation & Agriculture Action Plan

2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Ban blood phosphate	Ban forest to grassland conversion			Phase out farming on tussock and dune land					
No new* exotic forestry			Phase out export/import industry except essentials**						

Phase out coal-power processing	Phase out gas-power processing	All awa swimmable
Phase out synthetic fertiliser		Stock excluded from all waterways <sup>^</sup>
Ban PKE import	Support domestic timber processing, manufacturing	
Support local markets	Restore rural services, recreation facilities	
Increase permanent native forest, wetland, tussock land and duneland		
Support regenerative agriculture initiatives	Permanent carbon sink areas pest free	

\* unless conversion from exotic grassland and for local sustainable use

\*\* Such as medical, aid supplies or items unavailable here deemed essential by society

<sup>^</sup> not just over 1m wide and 'natural', especially for spring fed Taranaki Ringplain streams that flow out to kaimoana reefs.

To reach the targets for reforestation and agriculture in the country's leading fossil fuel producing region and one of the top dairy intensive regions in Aotearoa is a real challenge. It requires [cultural shifts](#), legislative reform, financial incentives, redesigning product markets, retraining local communities in multiple fields, shifting ownership of various assets, and careful management of risk, stress and uncertainty. We also need to address animal welfare, workers rights, and health and safety.

We have suggested solutions below with these issues in mind:

- **Reduce stock numbers** - a growth based economy trying to keep on top of unsustainable debt has encouraged farmers to increase stock and use technology and external inputs while reducing labour. This has pushed workers out of rural areas and created near feudal systems of asset rich landowners in cities and over-worked, under-paid staff alongside polluted waterways, depleting soils, rising costs and huge greenhouse gas emissions. We can fence and plant every river and

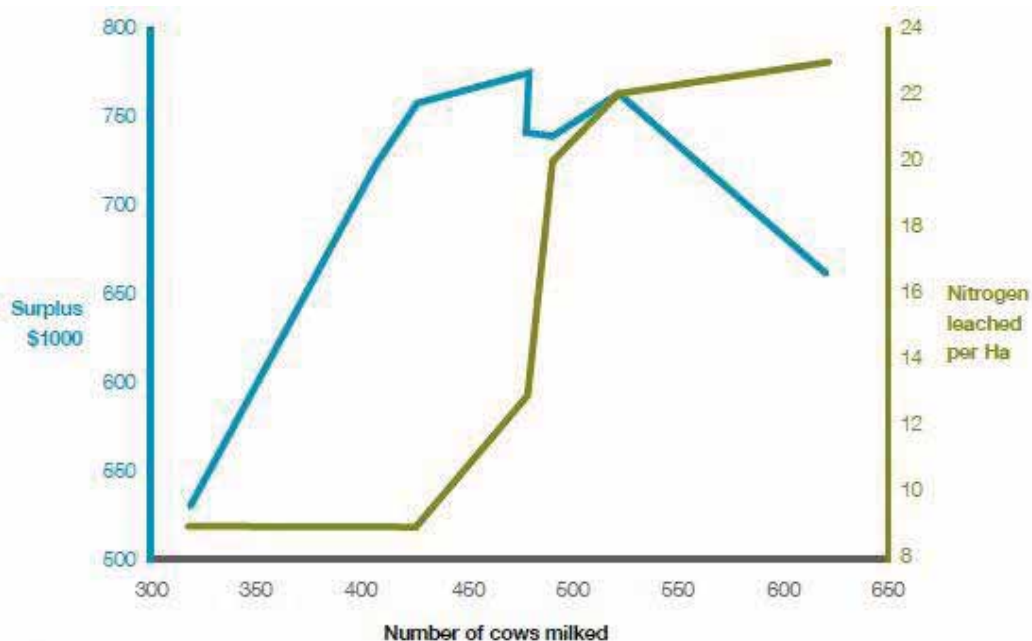


Figure 21. Modelled changes in profit and nitrogen leaching (from overseer) with reduction in intensity from current level on a real farm of 620 cows. (Numbers from Tom Phillips, Massey University)

try to feed or inject cattle with new stuff (that doesn't exist yet) to reduce their burping, but it's still unsustainable on so many levels and the next generation of farmers is not sticking around. Several studies have shown that if stock numbers and synthetic fertiliser inputs are reduced, farmers can maintain a decent income while having lower costs, and reducing the workload and retiring marginal lands better suited to other uses, notably agroforestry or rewilding.

- **Cut synthetic fertilisers, blood phosphate and PKE** - using urea derived from natural gas and/or blood phosphates taken from Western Sahara under Moroccan military occupation, is no longer acceptable. Similarly, with feed products taken from agricultural practices that destroy forest habitat such as palm kernel extract (PKE). We need to ban the imports of blood phosphate and PKE and swiftly phase out synthetic fertilisers to help agriculture to be regenerative rather than degenerative. There are many alternatives available, already in practice by progressive farmers, such as effluent discharge to land, compost, no-till, mixed-clover pastures, mob-grazing and edible hedging such as tagasaste and Banksia.
- **Stop forest to farm conversions** - Any forestry lands should be replanted as sustainable harvest forests or permanent land cover areas. We do not need anymore pasture lands. Similarly dune areas, tussocklands, wetlands and estuaries need to be fully protected and restored as permanent land cover areas and '[significant ecological areas](#)'.
- **Shift the research** - stop wasting time and money trialling expensive, uncertain new technologies such as genetic engineering and spray-on de-nitrifying solutions in the hope to continue business as usual. We cannot keep exporting things like dairy products if we are serious about being carbon neutral. Instead, focus on researching holistic solutions that are affordable, economically sustainable, user-friendly, respectful and beneficial to ecosystem health and wellbeing of the average producer.
- **Ban fossil-fuel powered processing plants** - some of our biggest single emitters are milk processing plants run on coal. Any processing needs to use renewable energy and as exporting downshifts there will be less need for today's food processing.
- **Downsize farms** - new, young farmers are opting for smaller acreage and houses, smaller machinery and things like electric hand tools. Large dairy farms can be down-sized to feed a domestic market, and sections sold to pay-off debt and/or put into permanent land cover or sustainable forestry blocks. This reduces debt, workload, stress and risk along with emissions while growing rural communities and the associated support and social benefits.
- **Downshift import and export markets** - this can start with products that are already produced in Aotearoa such as fruit and vegetables. A free-trade market is only good for those doing the trading but does little to protect growers, manufacturers and the rest who want a stable climate. We need to cut emissions from needless shipping of goods across the planet and leave precious fossil fuels for essential items we can't produce here such as some medicines and for things like emergency aid to our Pacific cousins.





- **Localise markets** - plan, reorganise and protect farming for local consumption and domestic markets. This is better for our health from eating fresh products and reduces transport and processing emissions along with unnecessary packaging. It also builds stronger communities through increased regular interaction and support. Current local growers are seeing a massive rise in demand during this covid-19 pandemic as people see the change coming from the need to travel less, shop locally and grow their own. An increasing number of locals are seeking fresh, healthy, ethically-grown kai. We need law reforms of such acts governing things like free-trade, fair trade, food and safe handling to even the playing field between large and small producers and sellers, and to assist zero waste initiatives and direct trade between consumer and producer.
- **Diversify farms and food production** - increase horticulture in dairy farming districts (eg. fruit, vegetables, nuts, timber, fungi), urban farming, community-supported agriculture (CSAs) and community gardens. This increases access to more foods, employment, farming skills, increases ecological biodiversity, community self-sufficiency and resilience, and reduces economic risk and farmer stress or boredom.

Regenerative biological farming with mob grazing and free-range chicken [orchard](#) polyface farming:



Community-supported organic market gardens. Multi-layered, diverse, syntropic agroforestry.

- **Polyface farming** - multi-purposing land by rotating different animals on the same area one after the other simulating natural herd communities and migration eg. pigs, chickens, cattle. This allows diverse animal fertilisers, different grazing styles and enables birds to eat parasites, which increases soil and animal health while creating multiple income streams for farmers.
- **Regenerative farming** - builds soil carbon with longer-standing and more diverse pastures, which increases animal health and reduces pollution and soil run-off to waterways. It also reduces expensive vet bills and artificial inputs like synthetic and imported fertilisers and machinery for ploughing and reseeded that are no longer needed. Stock number reductions will be needed to reduce stress on soils and pasture, focussing on high quality over quantity. Many are already leading the transition and should be supported to assist others to a more [taiao-based farming and landuse model](#). Farmers and wannabe farmers should be provided assistance to transition off intensive dairy blocks, especially those who chose to go early.
- **Once a day milking** - shifting to [milking once a day](#) (OAD) leaves herds less stressed and better cared for while producing high quality milk under reduced workloads for staff, reduced feed requirements, effluent run-off and other associated costs but with a better quality of life for all. It requires cattle that can handle OAD and a 2-3 year transition to get production up to twice a day levels.

- **Ban winter hard-grazing and limit stock numbers** - prevent pasture and soils being destroyed and eroded in heavy rain with runoff and leaching of effluent to waterways, and harm to animal health.
- **Phase out intensive indoor farming** - this is expensive, wasteful and unnecessary when there are far better options to manage soil damage and animal well-being that don't put farmers into more debt. If lands are not suitable for dairy and require indoor housing, then other land uses should be adopted instead.
- **Diversify with cropping** - NZ currently imports about [560kMT](#) of wheat and [200kMT](#) of corn and almost [400kMT](#) of soybean meal, steadily rising from the 1980s. According to [Stats NZ](#) 2019 however, Taranaki only produces a tiny amount of sweetcorn, barley, squash, maize, potatoes and avocados. Integrate other food and fibre crops that are affordable in local markets and support better wages for farmers rather than relying on imported grains like rice and wheat from poorer countries with worse labour conditions.
- **Sustainable harvest forestry** - instead of shipping low value, unprocessed pine overseas, change the local forestry and timber processing industry to grow high value trees that are more resistant to rot and disease and future climate impacts on small community timber lots rather than toxic chemical processing. Planting and selective harvesting needs to be coordinated among communities to avoid mass harvests that flood the markets, driving prices down and causing environmental damage. Coppicing and a wider variety of timbers should be more readily available to increase ecological biodiversity and decrease soil damage. Local manufacturing of timber and paper products should also be restored to replace imported products (including 'cheap' plastics) and provide more local jobs.
- **Permanent land cover areas - carbon sinks, [biodiversity](#), freshwater and wild habitat protection** - new land areas and harvested forest blocks can be bought with public money derived from carbon charges to restore native forests, tussock lands, wetlands, scrubland and dunelands. These lands would be held as public conservation lands or as iwi or community-owned conservation blocks. Not only does this provide carbon sinks, ecological services such as wind shelter, water storage and ecological refuges but wild produce such as rongoā, fish, birds, plant foods and fibres for all to enjoy. Protected wetlands, riparian and estuarine habitats hold and release water slowly to manage flow in drought and heavy rain while cleaning water for drinking, recreation, fisheries and kaimoana on coastal reefs and out to sea. Pest control will need to be a part of management which provides jobs. In parts of Taranaki, dairy farms extend to the high tide and will be progressively submerged as sea level rises. Planned retreat will need to be carefully managed to minimise pollution. Planting can help in this way and slow down erosion (and sea-level rise).
- **Support Māori to repopulate their lands** - the call to reduce council rates on Māori-owned land and assistance to increase access for land under multiple-ownership will greatly help Māori get back on their land to live, produce food and care for taiao. So much Māori-owned land is tied up in old perpetual leases and unworkable land ownership agreements forced on Māori many generations ago during the various eras of land confiscation by the crown which is

still ongoing today. Major legal assistance, law reform and financial aid are needed to increase access, use of and management of Māori lands by Māori.

- **Bring in capital gains taxes** - we're really seeing now how important capital gains tax is with house prices skyrocketing from Covid bailouts that made [multiple home owners richer at the expense of workers](#) who may now never own a home. To reduce inequality and concentration of wealth the rich should pay their fair share in taxes that support the whole community rather than putting their excess wealth in more land and housing. This would lower prices and bank debt while increasing access to land for more people. It would also ease the growing divide between the richer 'boomers' and poorer students and young workers who are set to suffer most from climate chaos.
- **Ban more foreign ownership of land** - many countries like Thailand don't allow land to be owned by non citizens. We have seen in recent years how forests, farms and housing have been bought up by foreign investors creating a rise in prices and social unrest through less control by local communities who bear the brunt of any local problems.
- **Financial advisor controls and better access to information** - the NZ farming sector already has over \$40 billion of debt and high rates of depression and suicide. Restrictions are needed to stop corporate and government advisors from pressuring farmers to buy assets they can't afford or sometimes even need, putting them into mounting debt that builds stress and risk. Rural internet access and more affordable or free advice and training should be provided to give farmers more options and the best, unbiased information.
- **Better protect workers rights** - legal and social support is needed to stop unfair contracts where farm staff can work 80hr weeks and barely break even, or where foreign workers can effectively be forced into modern-day slavery and rural isolation. We need living wages for all workers and better housing conditions so that agricultural jobs are not farmed out to cheap foreign labourers and their agents. There is an apparent continuing need for foreign workers and they should enjoy the same rights, privileges and protections as local workers. Product prices, shareholder payouts and management salaries need to be adjusted accordingly to provide for all.
- **Better protect animal well-being** - the shift away from meat eating and towards veganism has already increased in younger generations wanting to reduce GHG emissions and stop animal cruelty. Ethically-raised animal production needs to be supported as a new norm.
- **Stop mining, oil and gas prospecting, exploration, production and toxic chemical disposal or use** on farm land to protect soils, water and communities from contamination and potential leaks and explosions.
- **Methane digesters** - [biogas and compost on farms](#) needs to be encouraged and supported for powering farms, feeding soils and reducing fugitive emissions.
- **Support home composting and small-scale community resource recovery, composting and recycling operations** - this saves money and is far more efficient than trucking 'waste' to other regions (even if they're electric trucks). There are many great examples of community- run schemes that create good jobs, provide healthy food and restore abandoned areas, such as [Kai Cycle](#) in Wellington. Councils



need to shift waste management budgets from large corporations to community zero waste initiatives that require less resources, create more jobs and encourage people to deal with their own green waste at home or in their neighbourhoods. Councils, government departments, schools, community groups and businesses can also provide land and resources for community composting and gardens.

## 2.3 Mana Tāngata Mana Taiao - Political & Cultural Action Plan

The greatest obstacle to just transition to a zero carbon future is inequality. There is a huge disparity in access to and use of resources. For example, people as consumers are expected to use less resources and/or acquire more climate friendly, often more expensive things like organic food, electric vehicles or solar panels. But not everyone is able to and is that what we really need anyway? In an age of freedom promotion and the pursuit to do whatever we want, such expectations can, on top of all those changes, make people feel limited, controlled and particularly for the poor: even more disadvantaged. This leads to social unrest which has serious costs to people's time, health and the economy.

*"The true measure of any society can be found in how it treats its most vulnerable members," Mahatma Gandhi.*

True social justice will require honest disclosure of the disparities in our societies and a fundamental shift in attitudes amongst the privileged and more able sectors of society to share their wealth and consume less. This will take cultural change in values and behaviour and political change, which will come from increased education around equity and sustainability and interaction between all classes of society. It will also require upskilling and resourcing of disadvantaged communities to increase their participation in decision-making.

A lot of money and assets will need to flow from the private sector to the public sector to make a just transition possible for everyone. Whether that's voluntary or in the form of taxes, we know from the years of trying that it is not going to be easy. We're going to have to rely on a majority of us putting the needs of the many before our own personal wants and ensuring public entities manage our shared resources well and fairly. The Covid crisis clearly showed that when an immediate threat is recognised, countries are willing to shut down international flights and businesses. The climate crisis is heading us towards ["mortality rates equivalent to the Covid crisis every year by mid-century unless urgent action is taken"](#) according to Mark Carney (Feb. 2021), the United Nations envoy for climate action and finance.

There is a lot of good that can come out of this transition such as increased public control, better mental health and a heightened sense of security and stability, in a time where business and society is increasingly moving in the opposite direction. Reducing the quantity of consumption doesn't need to mean killing our economy, it can mean a shift to quality products that comes with better environmental protections and more jobs to manufacture and maintain the items with far less waste which is so rampant in today's take-use-dump society.

Below are some ideas for the next decade for **political and cultural change** based on the previous mentioned targets and action points:

2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Measure and charge global travel GHGs in ETS/tax			Limit international travel			Limit international trade			
Capital gains tax		Limit multiple house ownership			Limit new land ownership			No homelessness	
Reform ETS / new carbon tax		Inheritance tax		Wealth tax		All buildings energy efficient			
Phase out grey/stormwater in sewers				Support greywater, compost & rainwater infrastructure					
Ban disposable plastics & aluminium				Redesign & build local, domestic market economies					
Charge business for water takes		Incr. social housing stock			Major papakāinga housing & land support				
Living wage for all		4 day work/school week			Mobility access in all public & work spaces				
No GST on food		Overhaul food & trade acts			Crown increase return of land to Māori				
Support circular economy infrastructure				Co-mgmt iwi & regional councils			Zero waste NZ		
Remove refugee quota, increase intake				Residency for Pacifica in NZ			Free education & health		
Decentralise & redesign town/country for active & public transport							Free local public transport		

The government, councils, iwi and community organisations should work together with industries, unions, technical and education institutions to develop effective [jobs-rich transition pathways](#) that [provide for workers'](#) welfare, education, upskilling and retraining for new jobs needed to support local communities, economies and [climate-friendly industries](#). The latter offer a huge array of jobs and business opportunities, from decentralised renewable energy production and distribution to green building, product stewardship, resource recovery, upcycling and recycling, diversified regenerative agriculture and marketing, shared-transport and [ecosystem restoration](#), etc. The New Climate Economy estimated that [65 million new low-carbon jobs](#) could result from bold climate action by 2030 globally.

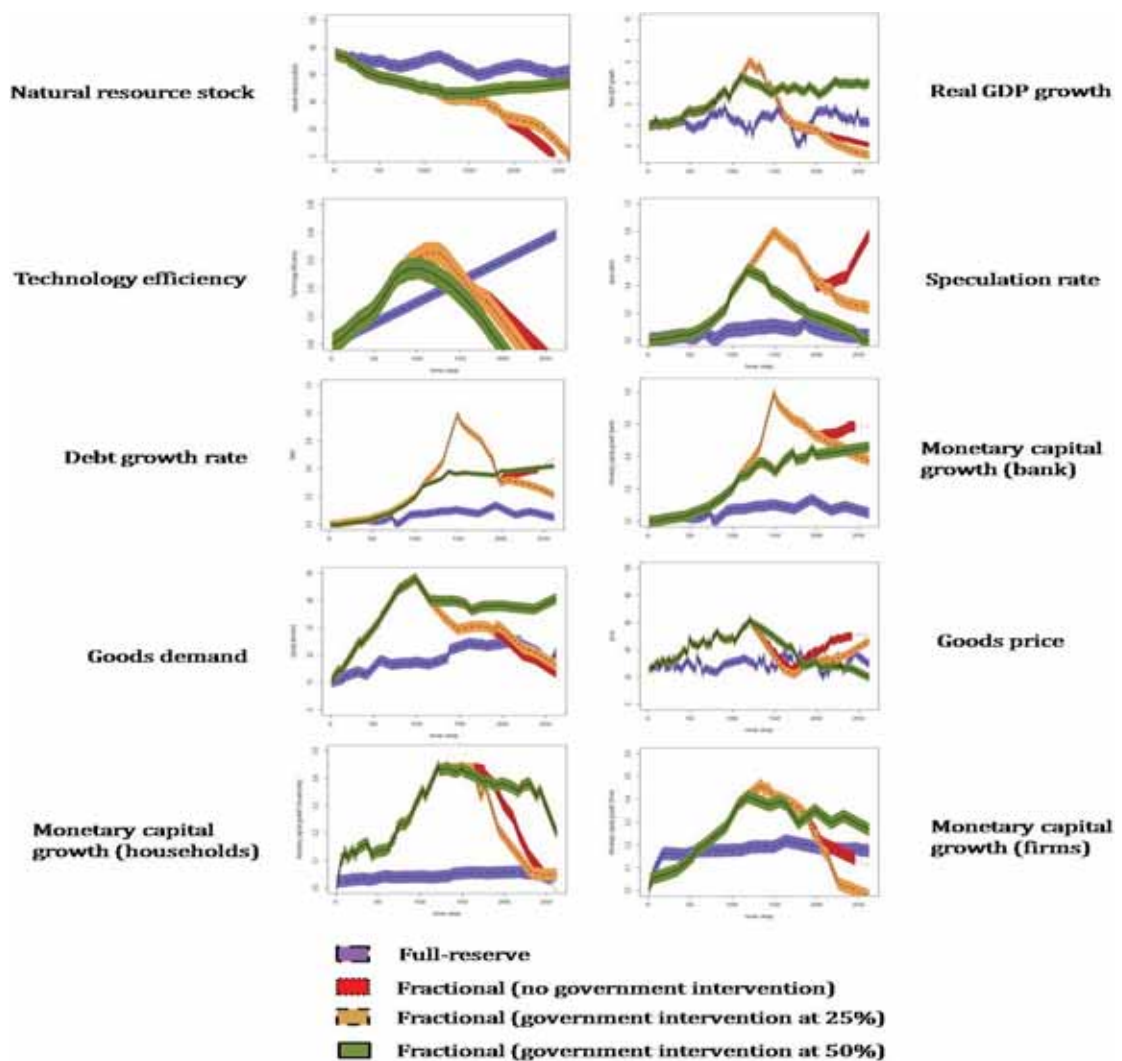
Below are some suggestions to reduce disparity and enhance social justice:

- Introduce **capital gains tax** on houses and property beyond the primary home or farm. **Limit the number of houses** a person and/or family can own and bring in new laws to **discourage large new home builds**. Locking up excess private funds in assets the community desperately needs stops poorer people from acquiring basic necessities for a decent life while the rich pay no taxes on houses or land that gain capital value, increasing demand and price. It also encourages gentrification and class division forcing poorer people out of their communities or to commute long distances, while damaging the rural environment and housing stock as fewer and fewer people control more and more assets.
- Greatly invest in better communication systems, education and up-skilling that **assists more people, especially the disadvantaged, to fully participate in decision-making** that affects their communities. This investment should be spread amongst government departments and independent community groups.
- **Limit the number of cars** per household through social expectation changes and taxes on more than one vehicle per household except where a vehicle is necessary for essential service work. This needs to be done in unison with increasing access to public and shared transport. One car per household will create massive emission reductions and encourage communities to share vehicles and only travel when necessary, while those who want to own more will have to pay a social tax to the community for that privilege or be using it for an essential service.
- Heavily **subsidize public transport**, in particular with family and group discounts, so it is actually cheaper, more accessible and more convenient than using private vehicles. Aim for local and rural public transport to be **free by 2030** with low costs for inter-regional transport.
- **Limit international transportation** to essential goods and private travel as mentioned in previous sections eg. whanau reconnection, and **include GHG emissions in national calculations and carbon tax** requirements. This will raise our measured national emissions requiring even more urgent reductions in GHGs.
- Support large workplaces to use shared transport for workers. Just cutting even part of the journey of a worker can greatly reduce emissions while building social networks, providing some down time for workers to relax, socialise or do other work and reduce their time away from home.

- **Exclude more areas from parking and driving of private vehicles** eg. CBDs, recreational spaces, so more land is available for housing, retail, recreation, wildlife and agriculture.
- **Reform trade acts to greatly limit exports and imports** to prevent similar products being transported back and forth overseas. This should increase local production, manufacturing and processing here where we can more easily ensure more ethical and environmentally sustainable production.
- **Support farmers markets and local manufacturers** who sell only locally, use local ingredients and hire local staff with a living wage at least, rather than outsourcing overseas to poorer or more corrupt countries.
- Introduce a **carbon charge or reform the ETS** so that the poor are not penalised, as mentioned earlier.
- **Reward earlier transitioners** who do the right thing through reduced rates or other direct or community benefits
- **Reform welfare and income legislation** to provide a living wage as a minimum for all workers, students and unemployed including 'volunteers' like carers, domestic workers, community workers, also contractors and immigrants on work visas. Give employment preference to local iwi/hapū to restore mana whenua and build local community networks.
- Bring in an **inheritance tax** so those who earn through privilege can pay their fair share to society.
- Introduce a **wealth tax** that focuses on hidden **asset wealth** and provides money for community needs such as healthcare and education. If designed well, this will not harm people who already have more than they need but will greatly help those who don't have enough.
- **For advertising and marketing**, develop and incentivise public education and awareness campaigns with disincentives and **controls** similar to tobacco, to reduce desires to consume excessively, in particular private vehicles and overseas tours.
- **Scrap GST on food** as it is a basic necessity. The main **argument** not to scrap GST on food, has been the need for taxes but this can be achieved by increasing income tax for higher earners and through new capital gains taxes.
- Address the housing crisis by **guaranteeing adequate supply of affordable, healthy homes, ending money creation by banks and capping rents at 25% of income.**
- **Cap public service worker salaries** (eg. **council staff** who earn over \$250k), and create better work environments to attract and retain great staff.
- Bring in **more controls on financial** advisors, loan sharks and bankers so they don't encourage or allow people to get into debt they can't afford.
- **Free healthcare and education** for all ages by 2030 to reduce disparity in communities and increase opportunity and well-being of the disadvantaged. Change school zoning and school fee systems to increase mixing of social classes and equalize education opportunities.
- Support **transfer of power or joint management for iwi/hapū** in resource management, as under sections 33 and 36 of the RMA, and in forthcoming replacement legislation.
- Require fees and support for iwi/hapū to deal with resource consent processing.



- **Get rid of the refugee quota system and increase intakes.** Assist climate refugees especially from the Pacific to come and live here in community groupings so they can retain their language, culture and society while, like all immigrants should, assist them to understand and respect Māori tikanga as well
- **Allow Pacifica migrants to become residents** of Aotearoa and stop deportation of convicts who have family here and no support in their country of origin.
- **End the ability of private banks to create money and assign this function to the Reserve Bank of New Zealand, also known as sovereign money (matched with transition to direct democracy as opposed to representational government).** Contrary to popular belief, the vast majority of money circulating in our economy isn't issued by government but by private banks. Under the current system, banks create money out of thin air when they issue loans. This is where 98% of our money comes from. New Zealand's current debt-based monetary system is directly linked to growing levels of public and private debt, creeping inflation, recession, unemployment and low wages, rising inequality, skyrocketing housing prices, overexploitation of natural resources and funding shortfalls in public services like health care, education and housing. [Sovereign money](#) would help free us from a debt-based money system and lessen inequality with more public control. A 2018



study [Exploring the role of debt in natural resource \(un\)sustainability](#), shows “debt-bearing economic systems can result in a complete collapse of both natural and economics systems... However... the debt-based system is not by definition unsustainable. Rather, the behaviour of entities and agents, and their decisions and relationships with regard to the environment, show a tendency to increase natural resource unsustainability. In the model, the particular uses that firms make of credits—causing the decoupling between GDP and resource availability—are based on (i) speculation, and (ii) exponential investments on technological development.”

## **Decision-making at the heart of a just transition**

For 180 years this country has been run by a central government of elected representatives under foreign colonial rule. After years of struggle tangata whenua and women can now vote but still the power remains with mostly male Pakeha under British-style law and order. This has brought major economic change where natural resources have been plundered and exported overseas. In recent decades under strong direction of big business and profit-focussed, exploitative capitalist models our communities, infrastructure and workplaces have been centralised, privatised, mechanised and replaced with overseas workforces who suffer appalling conditions. All so the business owners and authorities can avoid paying the true price of their products and putting in place proper protections. This process has also disempowered many people from being able to or wanting to engage in community planning and decision-making.

If we are to have a just transition we need to:

1. Put governance back in the hands of indigenous peoples who have the knowledge to re-establish sustainable economies and rebalance the unequal and over-use of the planet’s resources. This can start with truly honouring Te Tiriti o Waitangi and governing at all levels of community in 50:50 partnership with tangata whenua.
2. Put decision-making power also back in the hands of those who are most affected by economic change and climate change, namely the poor, those living off the land, women, children, tangata whenua and workers. Some people may not have the necessary skills so they will need upskilling and resourcing to do a good job. It’s time our councils and governments shift power off the corporates to support real public participation.
3. Decision-making authorities should also be decentralised on a workable scale so that decision-makers can have a thorough understanding of issues in their actual communities. In other words community boards and hapū should have more authority in their territories while central and regional governments, with reduced authority, are there to ensure integrated management of national and regional issues.
4. Decision-makers should have limited terms on the job eg. 3 terms of 3 years, to ensure people don’t see the job as a personal career to build their ego and power base or waste their time just enjoying perks and privilege, but actually do their job for our communities. We need to have succession planning built into our governance structures.

## Te Tiriti o Waitangi

A political agreement we could refer and adhere to is Te Tiriti o Waitangi in particular the clauses of Te Tiriti.

Some really key kupu and principles are in the preamble 'whanaungatanga' authentic engagement, the pursuit of the right relationship, each party works towards learning about the practice of relating to each other.

**Article One** – kawanatanga / governorship – when Te Tiriti was signed Māori were agreeing to a separate governance system for Pakeha, not to come under that governance system themselves. This was later enforced on Māori when [Māori population shrank](#) due to poor isolating of new, sick settlers. Ensure Tiriti partner input within strategic decision making, full and proper consultation with Māori, including Māori in all decision making as partners to the crown, not as stakeholders.

**Article Two** – tino rangatiratanga / absolute sovereignty – integrated concepts of cultural vitality, healthy lifestyles, environmental integrity and social inclusion, along with the critical determinants of leadership and autonomy.

**Article Three** – ōritenga – Māori enjoying the same levels of wellbeing as tauwi, advocate for equitable distribution of power and resources.

**Article Four** – wairuatanga – In te Reo Māori, whakapono is the verb to believe or have faith, while wairuatanga is the noun for spirituality. As Marsden (2003) explained in a collection of essays, the Woven Universe, Māori spirituality is like many other indigenous worldviews in holding the sacred unfolding of creation to be at the core of everyday life, embedding the basic concerns of human existence with the larger order of the natural and cosmic world. From a Māori worldview, all life is sacred and everything has a mauri, so therefore all things are related and interconnected and this is how we should view the world and conduct our lives.

## 2.4 Ora Taiao, Ora Tāngata – Transition Education Action Plan

Just transition education needs to be [appropriate](#).

Tāngata whenua have been advocating for generations to refocus our thinking and behaviour towards sustainability and that we are a part of the environment and the environment is part of us. Our whakapapa is interlinked with all life and material on this planet and the wider universe. We are here as kaitiaki for past, present and future generations, to help care for and maintain a balance so life is sustained. There is mauri, wairua and mana in all things.

Just transition education needs to be founded in respect for the natural environment and other living things. New legislation such as [Te Mana o Te Wai](#) provides a good example of shifting in the right direction in which the needs of wai and aquatic life come before the needs of humans, followed last by commercial enterprise.

**Mana Taiao** – the rights of whenua, wai, air, biota, energy and materials need to be protected first and foremost with sustainable takes only, that do not diminish mauri, wairua or mana. *Riro taonga mai, hoki taonga atu* - balanced reciprocity of gifting and receiving goods. The health of Taiao is to be at the forefront of just transition goals. This means that our mindset, actions, tikanga, culture and policies need to incorporate all combined effects on Taiao not separately and not on a cost:benefit comparison, open to mitigation that bears no benefit for the affected environment.

**Mana Tāngata** – the right to be human, living decent and equitable lives with our mauri, wairua and mana intact

- to be spiritually, mentally and physically well
- to be suitably housed in a warm and healthy home
- entitled to relevant and meaningful education, te reo Māori inclusive
- to be treated in a just and equitable manner
- to have fair and meaningful work
- to have access to basic needs and decision-making
- and the means to sustain ourselves within our communities.

Mana Taiao always comes first. Communities need to reconnect with Taiao and understand and maintain healthy natural environments which nurture and sustain healthy communities. If we damage or destroy our biosphere, we damage or destroy ourselves. If we heal the biosphere, we heal ourselves. So this needs to be the mindset we take forth. In other words, integrity along the whole pathway, rather than poor quick fixes and inappropriate mitigation.

### **Drivers of change**

Major social and political change needs serious planning, resources, education and upskilling support. This needs to provide for children to kaumātua but especially for disadvantaged peoples during the next crucial decade. We cannot leave it to the already privileged and powerful who have failed for years to bring change, nor can we leave it for our children to deal with.

**Transition education is probably the most important thing** we should do in the next two years to get the region and country downshifting quickly. We're going to need well-connected and highly skilled **educators and activators** to help the community transition and push for change in the places of power and resistance. Many of those will in turn need to upskill the next groups and so on and so on to build numbers and increase change exponentially.

Some crucial areas to focus on are:

- **Policy advisors, town planners and community decision-makers** gaining a good understanding of the underlying causes of climate change, what climate change means for us now and in the future, and what are real just transition solutions.

- **Retraining support of workers who must transition** off industries that need to be phased out eg. oil and gas, road and international transport and intensive farming industries.
- **Support for community activators and educators**, including advocates and organisers to increase understanding of how to turn knowledge into action eg. communication upskilling, trials and demonstrations, long term planning, unpacking policies and government workings.
- Specific retraining to support import/export-based, international travel-based **industries to refocus to local markets**.
- **Support for expansion or new domestic industry** to fill import gaps eg. timber manufacturing and manufacturing of things like EVs, pedal-hybrid vehicles, wind turbines and hand-powered farm tools.
- Specific training, resources and finance to support **community co-operatives** set up businesses like Community Supported Agriculture, farmers markets and community gardens.
- Fund education programmes and **multimedia resources** to help people transition from old habits to new eg. online documents, posters, digital memes, wananga, waiata, art, webinars, documentaries, podcasts, tv and radio shows, games.

Particular actions that would support this are:

- Promoting the [NZ Transition Engineers](#) training and their Canterbury university micro [course](#)
- Free tertiary education with an adequate living allowance for all who need it, not parent income tested. See NZ University Students Association [petition](#)
- Unemployment benefits transferred easily into student living allowances without a decrease in payment
- A specific transition education fund being set up for at least ten years, to support new transition educators and resources.



- Online education increased with community support such as childcare, mental health, study support
- Mandatory decolonisation and climate justice workshops for all public service workers and elected decision-makers so they can better understand social issues in Aotearoa for tāngata whenua, connect to their own history and therefore gain broader perspective for making fair decisions for the community

## Conclusion

“May you live in interesting times” - Frederic R. Coudert, 1939.

At this time, after over a year of consultation, research, reflection, many edits and the Covid-19 global pandemic, aviation experts are [announcing](#) normal flights should resume again in 2023.

No-one knows when or even if life will return to ‘normal’ and really, it shouldn’t. For the past few generations some of us have enjoyed unprecedented wealth and got used to excessive lifestyles. Many of us have suffered too much for too long, with species extinction off the scale and many natural habitats and ecological systems may never recover.

Covid-19 has in a painful way given us a chance to experience an alternative future and rethink what’s actually important. The emergency made us take immediate action but now we have the opportunity to make some of those temporary good changes more permanent and get rid of the ones that aren’t. There has been a huge rise in climate policy changes across the globe in the past year and massive reshuffling of the economy. Digital technologies have allowed more access to information and more participation in social and political change and decision-making. The recent [Climate Change Commission advice](#) offers some good direction, albeit too little and too slow still. That document and many others to come this year as well as yet another UN Climate Change Conference in November will allow avenues for more change. There is still a lot to be hopeful about in these hard but interesting times.

### ‘The Sea is rising and so must we’

Whatever happens next, it’s clear we’re all up against a ticking clock so we need as many people to do as much as they can particularly in these next ten years. We need to look up from individual changes and blame, and focus on what can not just reduce the most emissions quickly, but what can have the most social and broad environmental benefits. Put simply, we need major social change and system change. We’ll need to challenge and push ourselves out of our comfort zones and make decisions and changes that will support long term commitments. We’ll need to support each other in the good and the bad times, discarding egoistic ideals of going down in popular history or getting personal benefits over others. We need to grow a large social movement for change based on equity and survival of the many. As we have all learned in this Covid-19 pandemic: we need to ‘flatten the curve’. Think long term. Act early. Support the vulnerable. Work together. And be kind to each other.

‘Nāu te rourou, nāku te rourou, ka ora ai te iwi’

LET'S FLATTEN THIS CURVE TOO

